



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

**3.3.3 Average number of research papers published per teacher in the Journals notified on
UGC -CARE list in the UGC website/Scopus/ Web of Science/ PubMed**

INDEX SHEET

Sl.No	DESCRIPTION	PAGE NUMBER
1	CERTIFICATE OF THE HEAD OF THE INSTITUTION	2
2	NUMBER OF PAPERS PUBLISHED PER FULL TIME TEACHER WITH WEB- LINK PROVIDED	4
3	ACADEMIC YEAR 2024-25	5



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

CERTIFICATE OF THE HEAD OF THE INSTITUTION



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

TO WHOMSOEVER IT MAY CONCERN

This is to certify that number of research papers published per teacher in the Journals notified on UGC -CARE list in the UGC website/Scopus/ Web of Science/ PubMed during the last year

<u>Academic Year</u>	<u>2024-2025</u>
Number of papers published	104
Total Number of teachers in our Institution	109




DR. ANIL. M

Principal
Mahe Institute of Dental Sciences & Hospital
MAHE

**Dr. ANIL MELATH, MDS.,
PRINCIPAL**



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

NUMBER OF PAPERS PUBLISHED PER FULL
TIME TEACHER WITH WEB-LINK PROVIDED



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

ACADEMIC YEAR 2024 - 2025

A Comparative Assessment of Fracture Resistance of Zirconia Crowns Prepared With Different Finish Line Designs – A *In Vitro* Study

Jobin Joy, Abhinav Mohan K, Unni Pypallil, Cimmy Augustine, Lino Paul, Nirosha Vijayan

Department of Prosthodontics and Crown and Bridge, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

Submitted: 05-Dec-2024

Revised: 05-Dec-2024

Accepted: 10-Dec-2024

Published: 29-Apr-2025

Abstract

Introduction: The purpose of this work is to evaluate and contrast many finish line designs on monolithic zirconia crown fracture resistance. **Materials and Methods:** Four typhodont mandibular first molar teeth (Nissin TM) were acquired. Tooth preparation was performed. Teeth were classified into four categories according to the architecture of their margins. Group A: Flat-ended shoulder; Group B: Round-ended shoulder; Group C: Radial shoulder; Group D: Deep chamfer. Forty monolithic zirconia crowns were fabricated. One load-to-failure examination using a computer-operated universal testing machine assessed the zirconia crowns' fracture strength. **Results:** The mean Fracture Resistance for Group A was 1254.266 ± 79.626 , Group B was 2324.585 ± 113.996 , Group C was 1461.733 ± 93.715 , and Group D was 2768.063 ± 96.855 . The difference in average Fracture Resistance among the four groups was statistically significant at $P < 0.001$. **Conclusion:** The outcomes of the current study reveal that the group with a deep chamfer finish line had the greatest fracture resistance. The group utilizing a flat-end shoulder finish line exhibited the lowest fracture resistance.

Keywords: All ceramic, finish line, fracture resistance, zirconia

Introduction

All ceramic crowns possess both aesthetic and biocompatible properties. An inherent drawback of all-ceramic restorations is their susceptibility to fracture when subjected to occlusal and lateral forces.^[1,2] Zirconia's debut in dentistry revolutionized the planning and implementation parameters of all-ceramic restorations. Moreover, the material's fracture resistance and the strength of an all-ceramic repair are influenced by a proper preparation design with sufficient material thickness.^[3-6] Hence, this work aims to assess and contrast the impact of various finish line designs on the fracture resistance of monolithic zirconia crowns.

Materials and Methods

Four mandibular first molar typhodont teeth (Nissin TM) were obtained. Tooth preparation was executed utilizing Mani diamond burs and MIK burs. Teeth were categorized into four types based on the type of margin design. Group A: Flat-ended shoulder; Group B:

Round-ended shoulder; Group C: Radial shoulder; Group D: Deep chamfer.

Following the preparation of each tooth with a cold cure acrylic base, the teeth were subsequently fixed to a $9 \times$ size crucible former and vacuum invested. Following this, the casting process was carried out using Co-Cr metal in an induction casting machine. Defective castings or surface porosities were rejected. Impressions of the test models were obtained. The scanning was conducted utilizing the Shining 3D Auto Scan-DS-EX Pro scanner.

Forty monolithic zirconia crowns were produced and categorized into four groups according to the finish

Address for correspondence: Dr. Jobin Joy, Department of Prosthodontics and Crown and Bridge, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India. E-mail: jobinjoy57@gmail.com

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Joy J, Mohan KA, Pypallil U, Augustine C, Paul L, Vijayan N. A comparative assessment of fracture resistance of zirconia crowns prepared with different finish line designs - A *in vitro* study. J Pharm Bioall Sci 2025;17:S501-3.

Access this article online

Quick Response Code:



Website: <https://journals.lww.com/jpbs>

DOI: 10.4103/jpbs.jpbs_1820_24

Impact of Intracanal Medication Duration on Healing Outcomes in Cases of Periapical Abscesses – Systematic review

Dr. Noushad M C¹, Dr. Kavya Maheesan^{*2}, Dr. Jamsheed Erikkil Thavath³, Dr. Nisha Ann John⁴, Dr. Adarsh V J⁵, Dr. Rizleena Majeed⁶

¹Professor and HOD, Department of Conservative Dentistry and Endodontics, Kannur Dental College, Kerala India

²Associate Professor, PhD scholar KIIT Bhubaneswar, Kannur dental college, Kerala, India

³Registrar Endodontics, Armed forces hospital, Khams Mushait, Southern region, Saudi Arabia

⁴Senior Lecturer, Conservative Dentistry and Endodontics, Pushpagiri College of Dental Sciences, Pushpagiri Medicity Road, Perumthuruthy, Thiruvalla-689107, Kerala, India

⁵Professor, Department of Conservative Dentistry and Endodontics, Mahe Institute of Dental Sciences, Kerala, India

Associate Professor, Department of Periodontology, Kannur dental college, Kerala, India

*Corresponding Author:

Dr. Kavya Maheesan

Associate Professor, PhD scholar KIIT Bhubaneswar, Kannur dental college, Kerala, India

Cite this paper as: Dr. Noushad M C, Dr. Kavya Maheesan, Dr. Jamsheed Erikkil Thavath, Dr. Nisha Ann John, Dr. Adarsh V J, Dr. Rizleena Majeed, (2025) Impact of Intracanal Medication Duration on Healing Outcomes in Cases of Periapical Abscesses – Systematic review. *Journal of Neonatal Surgery*, 14 (8s), 724-734.

ABSTRACT

Background: Post-treatment apical periodontitis and postoperative pain remain critical challenges in endodontics, with success often relying on effective intracanal medicaments to control microbial infection, reduce inflammation, and promote tissue healing. Recent advancements in medicament formulations and techniques have expanded the options for managing these conditions, necessitating a systematic review of their efficacy.

Objective: To evaluate the effectiveness of various intracanal medicaments, including calcium hydroxide (CH), triple antibiotic paste with diclofenac potassium (TAPC), nano-based formulations, and Ledermix paste, in reducing microbial load, controlling inflammation, and alleviating postoperative pain in endodontic treatment.

Methods: Relevant studies were reviewed to assess the antimicrobial efficacy, pain management outcomes, and healing potential of different intracanal medicaments. The studies utilized various methodologies, including randomized controlled trials and retrospective analyses, with outcome measures such as bacterial reduction, levels of inflammatory mediators, pain scores, and imaging-based assessments of lesion healing.

Results: Calcium hydroxide demonstrated significant microbial reduction (up to 99.5%), decreased inflammatory mediators (IL-1 β , TNF- α), and enhanced tissue healing, making it a reliable choice for managing apical periodontitis. TAPC showed superior pain relief compared to CH due to its dual antibacterial and anti-inflammatory action, significantly reducing pain within 48 hours. Nano-based formulations, including nano-silver and nano-calcium hydroxide, provided enhanced pain relief and effective microbial control while maintaining safety and reliability. Ledermix paste emerged as the most effective for rapid pain reduction in cases of acute apical periodontitis, highlighting the importance of corticosteroids and antibiotics in medicaments. Advanced imaging modalities like CBCT facilitated accurate diagnosis and monitoring of periapical healing, demonstrating a high healing rate (76%) for large lesions treated nonsurgically.

Conclusion: This review confirms the efficacy of traditional calcium hydroxide and highlights the advantages of innovative formulations like TAPC, nanoparticles, and Ledermix paste in improving treatment outcomes. Rapid pain relief, effective microbial control, and enhanced healing underscore their potential for routine clinical use. The findings also emphasize the importance of advanced imaging and individualized treatment planning. Further research is warranted to optimize medicament protocols and explore the long-term implications of emerging formulations.

Keywords: Intracanal medicaments, calcium hydroxide, triple antibiotic paste, nanoparticles, Ledermix paste, postoperative pain, apical periodontitis, CBCT, endodontics.



Sub-lingula Osteotomy—A Novel Modification of Sagittal Split Osteotomy

Benny Joseph¹ · Anroop Anirudhan² · Deepti Krishnan Kutty¹ · Niyas Ummer³ · C. M. Anjana⁴

Received: 21 September 2022 / Accepted: 16 November 2024
© The Association of Oral and Maxillofacial Surgeons of India 2024

Abstract

Introduction Sagittal split osteotomy is still considered as a difficult procedure though there are many modifications to make it safer, more reliable, and more predictable with less relapse. Currently the most accepted technique of sagittal split osteotomy is the modification described by Epker in 1957. In Epker's modification, the medial ramus osteotomy is the most difficult to perform and may cause bad split at times, especially if the ramus is thin and/ or lingula is placed at a higher level. In this article, the authors describe a novel sublingula technique of medial ramus osteotomy, which makes the osteotomy easier and predictable with less risk of bad split without additional risk of damage to inferior alveolar nerve.

Method Fifteen patients (30 sides) underwent surgery using the sublingula osteotomy technique. CBCT was taken for all patients as a guide to locate lingula, mandibular foramen, and inferior alveolar nerve.

Discussion This novel modification of sagittal split osteotomy makes the medial ramus osteotomy easier to perform and reliable as the cut is low and short with less risk of bad split without additional risk of damage to inferior alveolar nerve. The use of CBCT to locate anatomical structures helps in precise planning of the osteotomy, and hence, this modification works well with less experienced surgeons.

Keywords Bilateral sagittal split osteotomy modification · Sublingula · Cone Beam Computer tomography · Bad split

Introduction

Sagittal split osteotomy (SSO) has been evolving ever since its introduction by Trauner and Obwegeser [1] in 1953. There are many modifications [2] in the literature that make SSO more reliable and easier to perform.

Currently, the most accepted technique of SSO is the modification described by Epker [3] in 1957. The modification of Epker [3] has three osteotomies (1) the medial ramus

osteotomy which is performed horizontally above the lingula and terminate just posterior to the lingula to avoid damage to inferior alveolar nerve, (2) the vertical osteotomy is made from medial ramus osteotomy, staying within the buccal cortex and ends inferiorly just mesial to the second molar, and (3) the buccal osteotomy begins at the lower border of the mandible and meets the vertical osteotomy.

Above the lingula, the width of the ramus is very less and there is no marrow space. This makes osteotomy difficult to perform and increases the risk of bad split. This is especially true if the mandible is thin or the lingula is positioned high near the sigmoid notch.

If the height and posterior extent of the cut are shortened, the procedure will be easier to perform and the risk of bad split will be reduced as there is more medullary space at the lower region of ramus.

Cone Beam Computed Tomography (CBCT) is useful in identifying the anatomical landmarks such as lingula and the mandibular foramen. It is also possible to determine the position of the inferior alveolar canal and its variations from normal anatomy, which helps to prevent damage to inferior

✉ Deepti Krishnan Kutty
drdeeptikk1@gmail.com

C. M. Anjana
anjnanrp@gmail.com

¹ Department of Oral and Maxillofacial Surgery, KMCT Dental College, Kozhikode, Kerala, India

² Department of Oral and Maxillofacial Surgery, Mahe Dental College, Kozhikode, Kerala, India

³ Department of Oral Medicine and Radiology, KMCT Dental College, Kozhikode, Kerala, India

⁴ Department of Oral Medicine and Radiology, M.E.S Dental College, Perinthalmanna, Kerala, India

A Comparative Evaluation of Shear Bond Strength of Moisture Tolerant Pit and Fissure Sealant and Flowable Composite: An *In vitro* Study

Durga Satya Sai Kamakshi Amruthavarshini Adapa, Ambili Ayilliath, Rena Ephraim, Mridhul M U, Fazila Azhikoden
Department of Pediatric and Preventive Dentistry, Mahe Institute of Dental Sciences and Hospital, Puducherry, India

Abstract

Background: The retention rate of a pit and fissure sealant is directly related to the micromechanical bond between the sealant and enamel. This research article aimed to assess the shear bond strength of moisture tolerant pit and fissure sealant and compare it with a flowable composite which is famed for its retention and strength. **Aim:** To compare the shear bond strength of moisture tolerant pit and fissure sealant with flowable composite. **Materials and Methodology:** Forty premolar teeth extracted for orthodontic purpose were randomly categorized into two equal groups with 20 samples each. Buccal/lingual enamel surface of the tooth was etched with 38% phosphoric acid for 20 s and Embrace wetbond sealant (EWS) and Estelite Flow Quick High Flow Flowable composite (EFC) as sealant was applied and cured. Shear load was applied using a universal testing machine and bond strength calculated in mega pascals (MPa) and tabulated. Statistical analysis was carried out using IBM SPSS and Mann–Whitney to compare the shear bond strength between the study groups. $P \leq 0.05$ was considered as the level of significance. **Results:** The Mann–Whitney test compared the shear bond strength values and it was found that EWS *in vitro* had a shear bond strength of 2.918 ± 0.7396 MPa. Comparative evaluation of the two showed a statistically significant value of $P = 0.004^*$. **Conclusion:** Moisture tolerant pit and fissure sealants have good shear bond strength which will ensure its retention on to the teeth especially in very young and specially abled children.

Keywords: Dental caries, first permanent pre-molars, pit and fissure sealant, shear bond strength

INTRODUCTION

Pit and fissure sealants are commonly used to prevent caries formation in permanent molars in young children and medically compromised patients, especially those with a high risk of dental caries.^[1-3] First permanent molars are highly susceptible to caries during the eruption phase because the enamel is immature, and since it is the last tooth in the arch, is difficult for children to brush and keep it clean.^[2] Sealants act as a physically protective layer that prevents demineralization of enamel by blocking the interaction of fissure microorganisms and their nutrient substrates.^[4,5] The success of pit and fissure sealants depends on the factors such as an efficient marginal seal, retention and resistance to wear and abrasion.^[3,4] The filler content in the sealant increases its viscosity and decreases wear resistance. The material is technique sensitive and the cooperation of the child increases the longevity of the sealant on the tooth. The newer fissure

sealants have been manufactured to be moisture tolerant, so as to overcome saliva contamination during the application process in children and thereby increase its retention. As long as the sealant remains intact, caries will not develop.^[4] The placement of sealants is scientifically sound and cost-effective technique for preventing pit and fissure caries in children.^[4,5] Sealing ability and shear bond strength differs among different fissure sealants. Shear bond strength measures the ability of sealant to bond to tooth structure. Higher shear bond strength

Address for correspondence: Dr. Ambili Ayilliath,
Department of Pediatric and Preventive Dentistry, Mahe Institute
of Dental Sciences and Hospital, Chalakkara, Palloor, Mahe,
Puducherry - 673 310, India.
E-mail: dr_ayilliath@yahoo.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Adapa DS, Ayilliath A, Ephraim R, Mridhul MU, Azhikoden F. A comparative evaluation of shear bond strength of moisture tolerant pit and fissure sealant and flowable composite: An *in vitro* study. Kerala Dent J 2025;48:34-8.

Submitted: 07-Sep-2024;

Revised: 09-Oct-2024;

Accepted: 29-Oct-2024;

Published: 19-Feb-2025

Access this article online

Quick Response Code:



Website:
<https://journals.lww.com/kedj>

DOI:
10.4103/KSDJ.KSDJ_56_24

The Oral Microbiome and Systemic Health: Bridging the Gap Between Dentistry and Medicine

Review began 01/29/2025
Review ended 02/10/2025
Published 02/12/2025

© Copyright 2025

Chandra Nayak et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

DOI: 10.7759/cureus.78918

Subash Chandra Nayak¹, P. Bhagya Latha², Bharath Kandanattu³, Unni Pypallil⁴, Ankit Kumar⁵, Harish Kumar Banga⁶

1. Department of Conservative Dentistry and Endodontics, Hi-Tech Dental College and Hospital, Bhubaneswar, IND 2. Department of Zoology, SIR C R Reddy College, Eluru, IND 3. Pediatric and Preventive Dentistry, Institute of Dental Studies and Technologies, Modinagar, Ghaziabad, IND 4. Department of Prosthodontics, Mahe Institute of Dental Sciences & Hospital, Mahe, IND 5. Dentistry, Mithila Minority Dental College and Hospital, Darbhanga, IND 6. Fashion and Lifestyle Accessory Design, National Institute of Fashion Technology, Kangra, IND

Corresponding author: Subash Chandra Nayak, subashchandraayako12@gmail.com

Abstract

The oral microbiome, consisting of a mixture of bacteria, fungi, and viruses, is an important contributor to oral and systemic health. Microbial balance disruptions are associated with oral pathologies like dental caries and periodontitis as well as systemic diseases such as cardiovascular diseases, adverse pregnancy outcomes, and respiratory diseases. This review explores the mechanistic pathways linking oral dysbiosis to systemic inflammation, endothelial dysfunction, and immune modulation. The roles of key microbial species in health and disease are analyzed, with an emphasis on how hematogenous dissemination leads to systemic pathologies through inflammatory signaling. Also, advances in high throughput sequencing are discussed, as well as microbial diversity and its implications for diagnostics and therapeutics. The review highlights the potential of oral microbiota-targeted interventions to mitigate systemic diseases through dentistry and medicine integration, by throwing light on interdisciplinary strategies. Future work should focus on the evaluation of the mechanisms by which the oral microbiome plays a role in systemic diseases through the integration of multi-omics approaches such as metagenomics, transcriptomics, and metabolomics. Furthermore, clinical trials need to be designed in a way to evaluate the efficacy of microbiome-targeted therapies in the prevention of cardiovascular diseases, adverse pregnancy outcomes, and autoimmune disorders.

Categories: Dentistry, Medical Education

Keywords: bacterial oral microbiota, dental medicine discipline, oral health, periodontitis, pregnancy

Introduction And Background

The oral microbiome comprises all the genetic material of all the microorganisms that live in the oral cavity, bacteria, viruses, fungi, and protozoa, while the oral microbiota represents the microbial community present in the oral cavity, including both identified and unidentified microorganisms in various oral niches, i.e. teeth, tongue, gingiva, and saliva [1]. Research over the past decade has steadily shown strong associations between periodontal diseases and systemic conditions such as cardiovascular diseases, pregnancy complications, rheumatoid arthritis, or Alzheimer's disease [2-4]. Overall, these findings emphasize the need to adopt a multidisciplinary method that brings together oral drugs and systemic healthcare.

Many well-documented pathways have explained the impact of oral microbes on systemic health. The most strongly supported mechanism explains hematogenous dissemination as the means of delivery of periodontal pathogens (e.g. *Porphyromonas gingivalis*, *Aggregatibacter actinomycetemcomitans*) into the bloodstream where the organisms initiate a systemic inflammation capable of incapacitating endothelial function and damaging organs [5]. Second is molecular mimicry, whereby one of the ways the bacterium manages to escape attack is by being sufficiently like existing tissues on the inside so that the immune system attacks the right tissues instead. Other pathways to be examined are those between gut microbiome interactions, i.e., how the oral microbiota impacts the composition of the gut microbiome over immune responses and ultimately in metabolic and inflammatory disorders. Moreover, sharing of oral microbiota can impact digestion and nutrition and consequently bring on systemic metabolic change and inflammation, especially in the gut and cardiovascular system [6].

Periodontal disease is correlated with other chronic conditions and there are both modifiable and nonmodifiable risk factors. The periodontal tissue flora is adversely affected by smoking and local inflammation is exacerbated, while stress, obesity, and diabetes predispose to dysbiosis and increased inflammatory responses in the periodontium, which further amplify systemic pathology [7]. Furthermore, since periodontal therapy consists of plaque removal, antibiotic treatment, and host modulation, it will aid in reducing systemic inflammatory mediations and overall organ burden [8]. Nevertheless, to solidify the available body of evidence, further research pursued in collaboration between dentistry, medicine, and microbiology is needed, as illustrated in Figure 1.

How to cite this article

Chandra Nayak S, Latha P, Kandanattu B, et al. (February 12, 2025) The Oral Microbiome and Systemic Health: Bridging the Gap Between Dentistry and Medicine. Cureus 17(2): e78918. DOI 10.7759/cureus.78918

An interdisciplinary approach for the closure of midline diastema using esthetic buttons

Romario Jerie¹, Jithesh Kumar², Panchami Marish², Steve Mathew Jacob³, N Prakash⁴

From ¹Post Graduate, ²Professor, ³Senior Lecturer, Department of Orthodontics, ⁴Post Graduate, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

ABSTRACT

This case report intended to evaluate the clinical outcome of the esthetic buttons for midline diastema space closure rather than full conventional fixed appliance therapy followed by conventional frenectomy. Four esthetic buttons were placed on the central incisors (2 on each tooth) for complete bodily movement of the teeth followed by traction. Space closure was achieved by a 1-month time interval followed by a build-up of lateral incisors and followed by frenectomy. This approach can be followed in patients with compromised financial support who are seeking orthodontic treatment for minor correction and with compromised periodontal support as this delivers less force with great comfort. Patients who are hesitant to begin treatment due to financial obstacles with fixed appliance therapy may find this helpful.

Key words: Esthetic button, Frenectomy, Midline, Translation

The word “Diastema” means interval in Greek. In dentistry, this term is used to describe the space or gap between two or more teeth that are located close to one another. Anterior midline diastema is characterized by a separation of more than 0.5 mm between the proximal surfaces of central incisors [1]. Midline diastema is commonly seen in the maxillary arch while rarely in the mandibular arch [2]. Many children experience a midline diastema with their permanent central incisors eruption [3]. When the incisors first appear, they may be separated by bone and the crowns will tilt distally due to root crowding [4]. The midline diastema will close or contract with the emergence of the lateral incisors and permanent canines. In some individuals, the midline diastema does not close naturally [5]. About 98% of 6-year-olds, 49% of 11-year-olds, and 7% of 12–18-year-olds are affected by midline diastemata (or diastemas) [6]. A midline diastema causes esthetic and psychological anguish, leading to patients seeking orthodontic treatment. The causes of midline diastema are numerous [7]. Some of the etiologic factors include proclination of maxillary incisor, labial frena, incomplete fusion of the interdental septum, pseudomicrodontia, supernumerary tooth like Mesiodens, peg-shaped lateral incisors, congenital absence of lateral incisors, pathologies (e.g., cysts) in the midline region, habits such as digit sucking, tongue thrusting, and/or

lip biting, the discrepancy in dental and skeletal parameters, and most commonly genetics [8]. Once the causative factor is determined, the treatment plan must be made whether to use a multidisciplinary approach for space closure or to simply fill the voids using direct and/or indirect restorative treatments [5]. There are several potential treatment approaches for midline diastema, including orthodontic equipment, restorative treatments, and prosthetic rehabilitation. A thoroughly prepared diagnosis enables the practitioner to select the most appropriate treatment approach primarily based on time limits, as well as physical, physiological, and economic challenges [9]. The rationale for using technique was simple, esthetic, and composite buttons in combination with elastics is an alternative technique for the closure of spaces in patients with good occlusion in posteriors and low financial budget.

This case report demonstrates a step-by-step practical guide for closure of midline diastema using a combination of orthodontic treatment, including cosmetic composite buttons and direct resin restoration, followed by frenectomy.

CASE REPORT

A 16-year-old female student brought aesthetic concerns about spacing in the upper front tooth region to the attention of the Department of Orthodontics, MINDS.

Correspondence to: Romario Jerie, Department of Orthodontics and Dentofacial Orthopedics, Mahe institute of Dental Sciences and Hospital, Mahe - 673 310, Puducherry, India. E-mail: romarioprince520@gmail.com

© 2025 Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC-ND 4.0).

Access this article online	
Received - 25 October 2024 Initial Review - 09 November 2024 Accepted - 15 December 2024	Quick Response code 
DOI: 10.32677/ijcr.v11i1.4880	



A Comprehensive Review on Gingival Bleeding

Vishnusripriya J^{1*}, Subair K², Nanditha Chandran³, Hemalatha DM¹, Aswathy Santhosh⁴ and Aswana Asok⁴

¹Senior Lecturer, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, India

²Professor, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, India

³Reader, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, India

⁴Fourth Year BDS Student, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, India

***Corresponding Author:** Vishnusripriya J, Senior Lecturer, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, India.

DOI: 10.31080/ASDS.2025.09.1981

Received: January 23, 2025

Published: January 31, 2025

© All rights are reserved by

Vishnusripriya J., et al.

Abstract

Gingival inflammation, characterized by increased crevicular fluid production and bleeding from the gingival sulcus, is the earliest symptoms of gingivitis. This bleeding is crucial for early diagnosis and prevention of advanced gingivitis, as it indicates an inflammatory lesion in the epithelium and connective tissue. Gingival bleeding is an early sign of periodontal destruction, and its severity can be evaluated using the gingival index and bleeding on probing. Despite the lack of data on the effectiveness of periodontal personal hygiene in treating gingival bleeding, continued bleeding on probing is a reliable indicator of periodontal disintegration.

Keywords: Gingival Bleeding; Oral Hygiene; Periodontal Diseases; Smoking

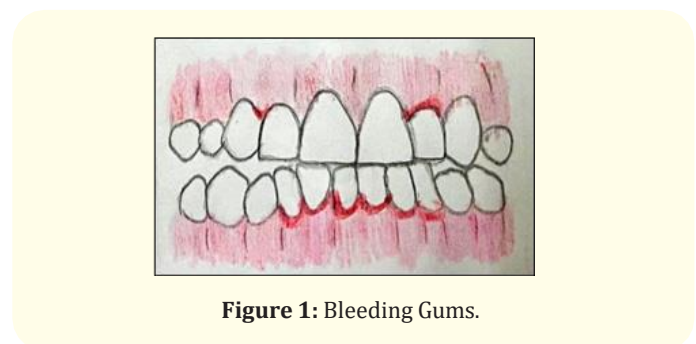
Introduction

Gingival inflammation, characterized by increased crevicular fluid production and bleeding from the gingival sulcus, is the earliest symptoms of gingivitis. This bleeding, easily detectable clinically, is valuable for early diagnosis and prevention of advanced gingivitis. It indicates an inflammatory lesion in the epithelium and connective tissue, causing dilatation of blood vessels and thinning of the sulcular epithelium (figure 1).

Causes of gingival bleeding

Gingival bleeding can be caused by local and systemic factors.

Local factors include Infectious diseases like ANUG (Acute Necrotizing Ulcerative Gingivitis) and AHGS (Acute Herpetic Gingiva



Stomatitis), Chronic conditions like gingivitis and periodontitis, Traumatic injuries like brushing, food impaction, and tooth pick injury, Post-surgical conditions and Congenital conditions like haemangioma.

Laser-Assisted tooth extraction: A review of clinical outcomes and application

Rilna P^{1*}, Chythanniya Vishwanathan¹, Anjali Sudhakaran¹, Aysha Basheer², Ayisha Fidha²

¹ MDS and Senior Lecturer, Department of oral and maxillofacial Surgery, Mahe Institute of Dental Sciences and Hospital, Mahe, Kerala, India

² Department of Oral and Maxillofacial Surgery, Mahe Institute of Dental Sciences and Hospital, Mahe, Kerala, India

Abstract

Laser-assisted tooth extraction has gained attention in dental surgery for its advantages over traditional extraction methods. This review examines how lasers improve the extraction process by reducing tissue trauma, minimizing pain, and enhancing post-operative recovery. Using lasers in extractions promotes better bleeding control, lowers the risk of infection, and accelerates healing, making it a beneficial choice in select clinical cases. This article also discusses the types of lasers commonly used, their clinical effectiveness, limitations, and potential future developments. Understanding the role of laser-assisted extraction can help dental professionals improve patient care and outcomes.

Keywords: Laser-assisted tooth extraction, dental lasers, minimally invasive dentistry, hemostasis, dental surgery, infection control, tissue trauma reduction

Introduction

Tooth extraction is a common dental procedure where a tooth is removed from its socket in the bone. Traditionally, this was done with manual tools like forceps, which could cause tissue damage, bleeding, and longer recovery times. Many patients also experience discomfort, require local anesthesia, and may face complications like infection, pain, and swelling.

Recently, laser technology has changed dental practices by offering a less invasive alternative. Lasers are now used in various procedures, including soft tissue surgeries and cavity preparation. Laser-assisted tooth extraction has become more popular because it provides greater precision, reduces damage to surrounding tissues, and minimizes discomfort. Additionally, lasers help control bleeding and lower the risk of infection, leading to faster healing and fewer complications.

Types of lasers used in tooth extraction

Erbium YAG Laser

Erbium lasers are effective for removing enamel, dentin, cementum, and bone, making them useful for procedures like root tip extractions. When combined with water irrigation, the laser removes tissue while minimizing damage. The water helps clear debris, and the laser also sterilizes the area. However, since the laser doesn't target only hard tissue, care must be taken to avoid damaging surrounding areas ^[1].

Diode Lasers

Diode lasers and electrosurgery are alternatives for exposing impacted teeth, especially if they're not deeply buried in bone. Diode lasers help sterilize and speed up healing, while electrosurgery controls bleeding but can cause more damage. Compared to scalpels, lasers need less anesthesia, cause less pain, and result in fewer complications like bleeding or swelling. The laser cuts and reshapes tissues with minimal bleeding, often without needing stitches, and helps tissues heal without lasting damage ^[2].

Among various laser systems, diode lasers are commonly used for Low-Level Laser Therapy (LLLT) to enhance wound healing in both animal and human studies, as their wavelength penetrates deeply into tissues ^[3].

CO2 Lasers

One of the earliest lasers used in soft tissue surgery was the CO2 laser. Emitting light with wavelengths of 10,600 nm and 9300 nm, it can function in either continuous or intermittent modes. By sealing nerve endings, the CO2 laser's high temperature helps limit bleeding, remove tissue rapidly, maintain sterility, and lessen pain and inflammation following surgery. The CO2 laser effectively vaporizes oral tissues because they contain a high percentage of water (70–90%). Through photothermal effects, the laser promotes cellular rupture, which results in tissue vaporization ^[4].

Nd: YAG Lasers

The Nd: YAG's deeper penetration results in the thickest coagulation layer and hemostasis. The laser radiation can biostimulate the surrounding tissue to create angiogenesis and fibroblasia due to its deeper penetration. Osteonecrosis after tooth extraction in patients on bisphosphonates has been effectively treated with biostimulation using the Nd: YAG ^[5].

Mechanism of Laser assisted extraction

Dental lasers use a fiberoptic cable, hollow waveguide, or articulated arm to transmit light to the target tissue. Other parts include cooling systems and focusing lenses. The active medium, which might be a gas, crystal, or semiconductor, determines the laser's wavelength and other characteristics ^[6].

Four possible interactions between the laser light and tissue are absorption, transmission, scattering, and reflection. Depending on the amount of water in the tissue, the laser causes photochemical reactions by raising its temperature when it is absorbed. The tissue vaporizes (dissolves) at 100°C. Proteins denature at 60°C to 100°C without causing



International Journal of Applied Dental Sciences

ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2025; 11(1): 240-243
© 2025 IJADS
www.oraljournal.com
Received: 06-01-2025
Accepted: 08-02-2025

Dr. Rilna P

MDS & Senior Lecturer,
Department of Oral and
Maxillofacial Surgery, Mahe
Institute of Dental Sciences and
Hospital, Mahe, Kerala, India

Chythanniya Vishwanathan

MDS & Senior Lecturer,
Department of Oral and
Maxillofacial Surgery, Mahe
Institute of Dental Sciences and
Hospital, Mahe, Kerala, India

Anjali Sudhakaran

MDS & Senior Lecturer,
Department of Oral and
Maxillofacial Surgery, Mahe
Institute of Dental Sciences and
Hospital, Mahe, Kerala, India

Aswin

Undergraduate Student,
Department of Oral and
Maxillofacial Surgery, Mahe
Institute of Dental Sciences and
Hospital, Mahe, Kerala, India

Athira

Undergraduate Student,
Department of Oral and
Maxillofacial Surgery, Mahe
Institute of Dental Sciences and
Hospital, Mahe, Kerala, India

Corresponding Author:

Dr. Rilna P

MDS & Senior Lecturer,
Department of Oral and
Maxillofacial Surgery, Mahe
Institute of Dental Sciences and
Hospital, Mahe, Kerala, India

Advances in piezoelectric Instruments: Applications and outcomes in oral surgery

**Rilna P, Chythanniya Vishwanathan, Anjali Sudhakaran, Aswin and
Athira**

DOI: <https://www.doi.org/10.22271/oral.2025.v11.i1d.2124>

Abstract

Piezoelectric instruments have gained significant traction in surgical applications over the last two decades. By utilizing piezoelectric technology, which converts electrical signals into mechanical vibrations, these devices offer precise, controlled cuts with minimal damage to surrounding soft tissues. This article reviews the key applications of piezoelectric instruments in oral surgery, examining their benefits, limitations, and potential for future advancements.

Keywords: Piezoelectric, hemostasis, osteotomy, minimal trauma, advancements

Introduction

A more contemporary surgical method called piezo surgery allows the hard tissues to be sectioned while preserving the nearby soft tissues, including the brain, mucosa, and neurovascular systems. Ultrasonic micro vibrations are the basis for its operation ^[1].

In oral and maxillofacial surgery, manual tools like the chisel, osteotome, or gouge have long been used for hard tissue treatments. Recent years have seen the use of motorized devices that can be powered by electrical energy or air pressure. These devices have a number of disadvantages, such as the potential for soft tissue damage to critical anatomical structures like the maxillary sinus or inferior alveolar nerve, tissue necrosis from overheating bone, loss of fine-touch sensitivity from the need for pressure on the handpiece, difficulty determining cutting depth, and iatrogenic impairment in undesirable areas due to inaccurately adjusting the speed of a rotating head or saw ^[2].

HISTORY

The French physicists Jean and Marie Curie originally explained the piezoelectric effect theory in 1880 ^[3]. By altering the typical ultrasonic technology, Italian oral surgeon Tomaso Vercellotti created the novel piezo surgery approach later in 2000 to get over the limitations of traditional apparatus in oral bone surgery. "Piezo" comes from the Greek word "piedin", which means "to press tight, 'squeeze'". The core idea behind piezo surgery is the "piezo-effect" theory, which states that crystalline structures may change their electrical fields ^[4]. In 1881, Gabriel Lippmann used mathematical inference from thermodynamic principles to predict the opposite piezoelectric phenomenon, which states that applying an electric field to crystal materials results in the internal development of a mechanical strain.

In a 1980 study on dogs' alveolar bone, Horton *et al.* compared bone regeneration using rotating instruments and ultrasounds. They found that while the ultrasonic group's bone regeneration was superior to that of the rotating instrument group, the rotating instrument group's surface appeared smoother ^[5]. Piezoelectric bone surgery was created in 1999 by Vercellotti T and Mectron Spa. The first human clinical trial employing "piezoelectric bone surgery" to preserve bone integrity was reported by Vercellotti T in 2000 ^[6]. After combining the piezo effect with ultrasound, the Piezo surgery[®] was released as a surgical instrument in 2001. In 2002, this gadget received commercial approval in Germany. Vercellotti created the ideal frequency techniques for carrying out surgical operations in 2003 ^[7].

Short Communication

Determination of minimal inhibitory concentration of citric acid as a root canal irrigant against *E. faecalis* and *C. albicans*

Athira Ravi, Rena Ephraim*, Dhanya Kamalakshan Belchada, Anjali Kanadan

Department of Pediatric and Preventive Dentistry, Mahe Institute of Dental Science and Hospital, Chalakkara, Palloor, Mahe, UT of Puducherry, India

Received: 23 October 2024

Revised: 06 January 2025

Accepted: 07 January 2025

*Correspondence:

Dr. Rena Ephraim,

E-mail: renajosephdr4@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

The clinical success of primary teeth endodontic therapy depends strongly on attaining prepared root canals with sufficient disinfection levels. Therefore, using natural or chemical cleaning agents to properly clean the root canals is becoming more and more important. With little to no impact on the organic components, citric acid is effective in dissolving the smear layer and the inorganic components of root dentine. Study included the custom preparation of citric acid to 3 different concentrations-6,8, and 10%. MTCC strains of *C. albicans* and *E. faecalis* were cultured on Sabouraud Dextrose agar plates and blood agar respectively. Three wells each were prepared on cultured plates and the solutions of citric acid was inoculated into them. The zone of inhibition was noted after 24 hours in each plate. The greatest zone of inhibition will be determined in each of the plates and the concentration was recorded with *E. Faecalis* and *C. Albicans*. The lowest concentration of citric acid that is capable of inhibiting bacterial growth will be taken as the minimum inhibitory concentration of citric acid against the respective organism. 8% concentration of citric acid can be used as an irrigant and gives a greater inhibition zone almost as much as that of 10 % citric acid.

Keywords: Citric acid, *C. albicans*, *E. faecalis*, Root canal irrigant

INTRODUCTION

The clinical success of pulpectomy treatment in primary teeth depends strongly on attaining prepared root canals with sufficient disinfection levels.¹ The clinical evidence revealed that mechanical preparation of root canal with hand or rotary instruments has a narrow disinfectant effect as it leaves behind marked number of infected debris or necrotic tissues inside the root canals.² Hence, there is an increased need for employing chemical or natural agents to effectively clean the pathogenic microorganisms from the infected root canals.³

During chemo mechanical preparation, either by hand or rotary instruments, results in producing considerable quantities of debris and smear layer.^{4,5} Smear layer is composed of organic and inorganic components like vital

or necrotic pulp tissue, micro-organisms, saliva, blood cells, and tooth structure.⁵ Irrigating solutions are used for removal of this smear layer and also for different purposes like lubrication, removal of debris, and anti-bacterial effects.

With little to no impact on the organic components, citric acid is effective in dissolving the smear layer and the inorganic components of root dentine. Citric acid has proven to be beneficial in regenerative endodontic procedures due to its property of higher TGF-β1 release.⁶ It also has lower cytotoxicity when compared to other irrigants as its toxicity is dose-dependent.⁷

Citric acid has proven to be effective in smear layer removal, showing better results in coronal and middle root thirds, improving its effect when combined with

Efficacy of New Bioceramic Materials in Root Canal Obturation

Hasna Haridas¹, Mookambika Ramachandran¹, Drishya Kishore¹, Namitha Divakar¹, Aswanth Ajay¹, Sona Joseph²

¹Department of Conservative Dentistry and Endodontics, Sree Anjaneya Institute of Dental Sciences, Modakallur, Kozhikode, Kerala, India,
²Department of Conservative Dentistry and Endodontics, Mahe Institute of Dental Sciences, Mahe, Puducherry, India

Submitted: 21-Jun-2024

Revised: 28-Jun-2024

Accepted: 05-Jul-2024

Published: 19-Sep-2024

Abstract

Background: The efficacy of root canal obturation is crucial for the long-term success of endodontic treatments. Recently, bioceramic materials have gained attention due to their superior biological and physical properties compared to traditional materials. **Materials and Methods:** In this study, 60 extracted human teeth with single canals were randomly divided into three groups ($n = 20$) based on the obturation material used: Group A (EndoSequence BC Sealer), Group B (BioRoot RCS), and Group C (Conventional Gutta-Percha with AH Plus Sealer). All canals were prepared using a standardized protocol and obturated using the respective materials. The quality of obturation was assessed using micro-CT analysis, measuring void volume percentage and adaptation to canal walls. Additionally, apical sealing ability was evaluated using a dye penetration test. **Results:** Group A showed a significantly lower void volume percentage ($2.1\% \pm 0.3$) compared to Group B ($3.4\% \pm 0.5$) and Group C ($5.6\% \pm 0.7$) ($P < 0.05$). Micro-CT analysis revealed better adaptation to canal walls in Group A and Group B compared to Group C. The dye penetration test indicated that Group A had the least apical leakage ($0.5 \text{ mm} \pm 0.2$), followed by Group B ($0.8 \text{ mm} \pm 0.3$), and Group C ($1.5 \text{ mm} \pm 0.4$) ($P < 0.05$). **Conclusion:** The new bioceramic materials, EndoSequence BC Sealer and BioRoot RCS demonstrated superior performance in root canal obturation compared to the conventional AH Plus Sealer.

Keywords: Apical sealing, BioRoot RCS, dye penetration test, endodontics, EndoSequence BC Sealer, micro-CT analysis, root canal obturation, void volume

Introduction

The success of endodontic treatments heavily relies on effective root canal obturation, which aims to completely fill the root canal system, preventing reinfection and ensuring long-term tooth retention.^[1] Traditionally, materials such as gutta-percha in combination with various sealers have been used for obturation; however, these materials have limitations, including inadequate sealing properties and susceptibility to shrinkage.^[2]

Recently, bioceramic materials have emerged as promising alternatives in endodontics due to their superior biological and physical properties. These materials are known for their excellent biocompatibility, bioactivity, and ability to form a hydroxyapatite layer, which enhances the seal and promotes healing.^[3,4] Among the new bioceramic sealers, EndoSequence BC

Sealer and BioRoot RCS have garnered significant attention for their potential to improve the quality of root canal obturation.^[5,6]

EndoSequence BC Sealer is a premixed, injectable bioceramic sealer that exhibits excellent flowability and bonding to dentin, providing a tight seal with minimal voids.^[7] Similarly, BioRoot RCS, a tricalcium silicate-based sealer, has shown promising results in terms of sealing ability and biocompatibility, making it a suitable choice for root canal obturation.^[8]

Address for correspondence: Dr. Hasna Haridas, Department of Conservative Dentistry and Endodontics, Sree Anjaneya Institute of Dental Sciences, Modakallur, Kozhikode, Kerala, India.
 E-mail: hasnaharidas84@gmail.com

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Haridas H, Ramachandran M, Kishore D, Divakar N, Ajay A, Joseph S. Efficacy of new bioceramic materials in root canal obturation. J Pharm Bioall Sci 2024;16:S3230-2.

Access this article online

Quick Response Code:



Website: <https://journals.lww.com/jpbs>

DOI: 10.4103/jpbs.jpbs_712_24

Effect of Sterilization on Surface Roughness of Different Archwire

Syed A. Abdulhameed¹, Ruma Rani², Ashwathi N.³, Dwijesh S. Goswami⁴, Jeff Z. Nixon⁵, G. Chandra Mohan⁶

¹Department Orthodontics and Dentofacial Orthopaedics, Meenakshi Ammal Dental College and Hospital, Chennai, Tamil Nadu, India, ²OMFS, Darbhanga Medical College and Hospital, Bihar, India, ³Department of Orthodontics, Kannur Dental College, Anjarakandy, Kerala, India, ⁴Department of Orthodontics and Dentofacial Orthopaedics, Ahemdabad Dental College and Hospital, Ahmedabad, Gujarat, India, ⁵Department of Orthodontics, RKDF Dental College and Research Centre, Bhopal, Madhya Pradesh, India, ⁶Department of Orthodontics, Malla Reddy Dental College for Women, Hyderabad, Telangana, India

Submitted: 04-Jul-2024

Revised: 06-Jul-2024

Accepted: 15-Jul-2024

Published: 19-Sep-2024

Abstract

Background: Orthodontic archwires undergo various sterilization procedures to ensure they are free of microbial contamination before clinical use. However, the impact of these sterilization methods on the surface roughness of different types of archwires is not well understood. **Materials and Methods:** In this study, we evaluated the effect of three common sterilization methods (autoclaving, dry heat, and chemical sterilization) on the surface roughness of three types of orthodontic archwires: stainless steel, nickel-titanium, and beta-titanium. A total of 90 archwire samples (30 of each type) were divided into three groups, each subjected to one of the sterilization methods. Surface roughness was measured using a profilometer before and after sterilization. Data were analyzed using ANOVA and *post hoc* tests to determine significant differences. **Results:** The results indicated that autoclaving significantly increased the surface roughness of nickel-titanium archwires (mean increase of 0.12 μm , $P < 0.05$) compared to dry heat and chemical sterilization. Stainless steel archwires showed a moderate increase in surface roughness with autoclaving (mean increase of 0.08 μm , $P < 0.05$), while beta-titanium archwires exhibited the least change across all sterilization methods (mean increase of 0.03 μm , $P > 0.05$). Dry heat sterilization had a minimal effect on the surface roughness of all archwire types, whereas chemical sterilization showed a significant increase in roughness for stainless steel archwires (mean increase of 0.10 μm , $P < 0.05$). **Conclusion:** Sterilization methods, particularly autoclaving, can adversely affect the surface roughness of orthodontic archwires, potentially impacting clinical performance.

Keywords: Autoclaving, beta-titanium, chemical sterilization, dry heat sterilization, nickel-titanium, orthodontic archwires, stainless steel, sterilization, surface roughness

Introduction

Orthodontic treatment involves the use of archwires, which play a crucial role in the alignment and movement of teeth. The efficiency of these archwires is influenced by their surface properties, including surface roughness, which can affect the friction between the archwire and brackets.^[1,2] High surface roughness can increase friction, potentially leading to slower tooth movement and prolonged treatment duration.^[3]

Sterilization of orthodontic archwires is a critical step to prevent cross-contamination and ensure patient safety. Common sterilization methods include autoclaving, dry heat, and chemical sterilization. Each method has distinct advantages and limitations regarding its effectiveness and

impact on material properties.^[4] Previous studies have shown that different sterilization techniques can alter the surface characteristics of dental materials, including changes in surface roughness.^[5,6]

The surface roughness of orthodontic archwires is particularly important as it can influence the biomechanics of tooth movement and patient comfort. Stainless steel, nickel-titanium, and beta-titanium archwires are widely used in clinical practice due to their favorable mechanical properties and

Address for correspondence: Dr. Syed A. Abdulhameed,

Department of Orthodontics and Dentofacial Orthopaedics, Meenakshi Ammal Dental College and Hospital, Chennai, Tamil Nadu, India.

E-mail: syedashik10@gmail.com

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Abdulhameed SA, Rani R, Ashwathi N, Goswami DS, Nixon JZ, Mohan GC. Effect of sterilization on surface roughness of different archwire. J Pharm Bioall Sci 2024;16:S3263-5.

Access this article online

Quick Response Code:



Website: <https://journals.lww.com/jpbs>

DOI: 10.4103/jpbs.jpbs_772_24

Angioedema in a 9-year-old Child after Dental Treatment: A Rare Complication Explored through a Case Report

Katherina S Barman¹, Rena Ephraim², Prathima G Shivashankarappa³, Anagha Chonat⁴ 

Abstract

Aim and background: Angioedema is a nonpruritic swelling that typically affects the skin, mucous membranes of the face, and perioral soft tissues. It can be life-threatening, but it is usually not and can be treated conservatively unless the airway is compromised. This paper seeks to illuminate a rare case of hereditary angioedema (HAE) onset following dental procedures in a 9-year-old Indian boy.

Case description: A 9-year-old male patient reported a chief complaint of spacing in the upper anterior region, which was diagnosed to be due to impacted supernumeraries. Two days after the oral surgical procedure, the child developed symptoms of periorbital edema with facial swelling. A second episode occurred a day after the delivery of the orthodontic appliance. This was also associated with facial swelling, respiratory distress, and gastrointestinal (GI) symptoms. A diagnosis of angioedema was confirmed and was treated appropriately.

Conclusion: Dental professionals must be aware of the possibility of triggering AE, a potentially fatal condition in patients. This case highlights the importance of comprehensive medical history intake and timely physician collaboration when confronting unexpected symptoms following a dental procedure.

Clinical significance: Awareness of rare conditions like HAE can aid dental professionals in early identification and appropriate management, preventing dangerous exacerbations and contributing to safer dental care.

Keywords: Angioedema, Case report, Dental procedures, Hereditary angioedema, Orthodontic appliance, Pediatric dentistry, Supernumerary teeth.

International Journal of Clinical Pediatric Dentistry (2024): 10.5005/jp-journals-10005-2955

Introduction

Hereditary angioedema (HAE) is a potentially fatal autosomal dominant disorder. The clinical appearance is characterized by recurring episodes of edema in the face, upper airway, gastrointestinal (GI) system, skin, and urethra.¹ The absence or malfunction of the C1 esterase inhibitor (C1-INH), a plasma protein that inhibits bradykinin activation and produces increased vascular permeability and edema, is the cause of this condition.² Several cases of HAE affecting adults have been reported from India.³ However, no case of HAE affecting young children has been reported. Here, we present a case of angioedema in a 9-year-old child following dental treatment procedures.

Case Description

A 9-year-old male child came to the Department of Pedodontics and Preventive Dentistry with the primary complaint of upper front tooth spacing. A medical history review found that there was no medical or familial history of sickness. The orthopantomogram (OPG) showed two impacted supernumerary teeth between the upper two central incisors (Fig. 1). Following an investigation, it was determined that the best course of action would be to extract supernumerary teeth followed by orthodontic therapy. The supernumeraries were retrieved under local anesthesia with 2% lignocaine hydrochloride and a vasoconstrictor (Fig. 2). Resorbable vicryl rapide 2-0 sutures were used, and the parent and child received postextraction instructions. The patient was requested to return after a week for review. Only 3 months later, the parent and their child reported to the clinic.

When asked about the delay in reporting for review, the parent stated that the child had developed symptoms of periorbital swelling followed by facial swelling 2 days after extraction. They sought emergency treatment at the local Government General Hospital. There was no prior bug bite, eating of new food, or contact

^{1,3,4}Department of Pediatric and Preventive Dentistry, Indira Gandhi Institute of Dental Sciences, Sri Balaji Vidyapeeth, Puducherry, India

²Department of Pediatrics and Preventive Dentistry, Mahe Institute of Dental Sciences and Hospitals, Puducherry, India

Corresponding Author: Katherina S Barman, Department of Pediatric and Preventive Dentistry, Indira Gandhi Institute of Dental Sciences, Sri Balaji Vidyapeeth, Puducherry, India, Phone: +91 6380764728, e-mail: drkathybarman@gmail.com

How to cite this article: Barman KS, Ephraim R, Shivashankarappa PG, et al. Angioedema in a 9-year-old Child after Dental Treatment: A Rare Complication Explored through a Case Report. *Int J Clin Pediatr Dent* 2024;17(11):1285–1288.

Source of support: Nil

Conflict of interest: None

Patient consent statement: The author(s) have obtained written informed consent from the patient's parents/legal guardians for publication of the case report details and related images.



Fig. 1: OPG revealing two supernumeraries between 11 and 21

Content available at: <https://www.ipinnovative.com/open-access-journals>

Journal of Oral Medicine, Oral Surgery, Oral Pathology and Oral Radiology

Journal homepage: www.joooo.org

Original Research Article

Prevalence of oral mucosal lesions in tobacco users: An institutional study in south India

Megha B^{1*}, Ibthisam¹, Ireen Babu¹, Henna K¹, Hridhya Ramesh¹, Hiba Mohammed¹¹Dept. of Oral Medicine and Radiology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

ARTICLE INFO

Article history:

Received 28-10-2024

Accepted 04-12-2024

Available online 18-12-2024

Keywords:

Tobacco

Leukoplakia

OSMF

Tobacco pouch keratosis

Chewers mucosa

Oral cancer

Potentially malignant lesions

ABSTRACT

Background: Use of tobacco in smoking and smokeless form is very prevalent in India. Various oral mucosal lesions are associated with use of tobacco products.**Aim:** To assess prevalence of various oral mucosal lesions associated with tobacco use.**Materials and Methods:** This cross-sectional study was conducted in department of oral medicine and radiology in a dental college in South India. Study included 342 tobacco users. Status of tobacco usage was elicited from each participant. Each participant was examined for oral mucosal lesions.**Result:** 256(74%) participants had habit of smoking and 58(17%) had habit of chewing betel quid and 28(8%) had habit of both. Oral mucosal lesions were detected 144 participants.**Conclusion:** Various oral mucosal lesions were found to be associated with tobacco usage. Participants were educated regarding harmful effects of tobacco usage.This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.For reprints contact: reprint@ipinnovative.com

1. Introduction

Use of tobacco in smoking and smokeless forms is found to be associated with various potentially malignant disorders and oral cancer.¹ According to WHO approximately 6 million death occur due to tobacco use per year and this might increase to 8 million by 2030.² Deadly carcinogens are found in both smoking and smokeless forms of tobacco.³ Use of tobacco leads to thickening of epithelium and increased keratinization. These might later lead to dysplastic changes and development of potentially malignant disorders and oral cancer.²

Various oral mucosal lesions associated with tobacco use include leukoplakia, smokers palate, tobacco pouch keratosis and oral cancer.⁴ Oral cancer is one of the most common cancer in India. This could be due to high prevalence of usage of betel quid, pan masala and other tobacco products.⁵ In India smokeless form of tobacco is

most commonly used, which include betel quid, khaini, gutka etc.⁶ This study aims at promoting early diagnosis of lesions associated with smoking and prevent the malignant transformation of such lesions. Study also aims at educating patients about ill effects of tobacco.

2. Materials and Methods

The present study was a cross-sectional prevalence study conducted in a dental college in South India.

Participants for the study were selected from the outpatients of department oral medicine and radiology who were willing to participate in the study. Patients who had habit of tobacco usage for more than a year was included in the study. Patients who had quit the habit for more than a month time were excluded from the study. Ethical clearance for the study (MINDS/SSIX/15042024/UG-004) was obtained from the institutional ethical committee before the start of the study.

* Corresponding author.

E-mail address: meghab.2012@gmail.com (Megha B).

Access this article online

Quick Response Code:



Website:
www.jorthodsci.org

DOI:
10.4103/jos.jos_39_24

Evaluation of the efficiency of SmartArch, copper-NiTi, and NiTi archwires in resolving mandibular anterior crowding: A double-blinded randomized controlled trial

Thrishna Ashok, Pavithranand Ammayappan, Lidhiya Alexander, Shivashankar Kengadaran¹ and Praveen Kumar

Abstract

BACKGROUND/OBJECTIVE: Resolution of crowding remains a chief concern for patients seeking orthodontic treatment. The choice of the initial aligning archwire is crucial for achieving treatment success. Nickel-titanium (NiTi) archwires have been the first choice since their introduction. Multi-force archwires are a recent development that claims to deliver optimal orthodontic force tailored to specific teeth. The aim of this study was to compare the clinical efficiency of SmartArch® archwires with conventional and thermoelastic NiTi.

METHODOLOGY: Thirty-nine patients were randomly allocated into three groups (group 1: NiTi, group 2: Cu-NiTi, and group 3: SmartArch®). Only patients with Little's irregularity index of >4 mm were included. Study models were fabricated at each time interval of four weeks (T0, T1, T2, and until decrowding). The reduction in the irregularity score was calculated and analyzed using the Shapiro-Wilk and Kolmogorov-Smirnov tests, the Kruskal-Wallis test, the Kaplan-Meier method to create a survival curve, and Mantel-Cox log-rank test to compare survival times.

RESULTS: The Little's irregularity index reduced with treatment in all patients, irrespective of the groups, with no significant difference ($P = 0.467$) in the reduction among the groups evaluated. On average, it took 10.77 ± 2.52 weeks for group 1, 11 ± 4.22 weeks for group 2, and 9.54 ± 2.6 weeks for group 3. Patients with rotated canines took a longer duration to achieve decrowding, irrespective of the archwires used.

CONCLUSION: This study found no clinically significant difference in the efficiency of decrowding among the archwires.

The study was approved by the Institutional Review Board and Institutional Ethical Committee (IGIDSIEC2021NRP13PGTHODO) and registered under the Clinical Trial Registry (CTRI/2021/09/036859) of India.

Keywords:

Alignment, Cu-NiTi, decrowding, initial archwire, lower anterior crowding, mandibular anterior teeth, multi-force archwire, SmartArch®

Introduction

Anterior teeth crowding is a primary concern for patients seeking orthodontic

treatment. The success of orthodontic treatment largely depends on a proper diagnosis and a solid understanding of biomechanics. Understanding the physical properties of materials used in treatment

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Ashok T, Ammayappan P, Alexander L, Kengadaran S, Kumar P. Evaluation of the efficiency of SmartArch, copper-NiTi, and NiTi archwires in resolving mandibular anterior crowding: A double-blinded randomized controlled trial. J Orthodont Sci 2024;13:42.

Departments of
Orthodontics and
¹Public Health Dentistry,
Indira Gandhi Institute
of Dental Sciences,
Pondicherry, India

Address for correspondence:

Prof. Pavithranand
Ammayappan,
MDS, FDSRCS (Eng),
Professor and
Head, Department
of Orthodontics and
Dentofacial Orthopedics,
Indira Gandhi Institute of
Dental Sciences, Sri Balaji
Vidyapeeth University,
Puducherry, India.
E-mail: pavithranandam
mayappan@igids.ac.in

Submitted: 27-Mar-2024

Revised: 27-Jun-2024

Accepted: 10-Aug-2024

Published: 25-Nov-2024



An Insight into Dental Pain

Hemalatha DM^{1*}, Subair K², Vishnusripriya¹, Annu Roy³ and Anshana M³

¹Assistant Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

²Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

³Fourth Year Student, Mahe Institute of Dental Sciences, Chalakkara, India

***Corresponding Author:** Hemalatha DM, Assistant Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India.

Received: September 23, 2024

Published: October 10, 2024

© All rights are reserved by
Hemalatha DM., et al.

Abstract

Dental pain is most common type of pain with no age prediction. A good history taking and examination is the key for finding the origin of the pain. Primary physician should be able to assess dental condition and refer it to the dentist. Pain should be differentiated between odontogenic and non odontogenic origin for their better prognosis. The use of medications is a common prophylaxis is common in practice.

Keywords: Pain; Non – Odontogenic; Pulpitis; Pericoronitis; Periosteum; Paracetamol; NSAID; Opioid

Introduction

Dental pain can be occurred after a trauma or inflammation of dental tissues. It affects significant number patients in the world. The most common orofacial pain is dental pain.

Clinically dental pain can be of different types like, short and sharp, dull and aching, persistent pain and gnawing types of pain. Non odontogenic source also cause dental pain, and also be a referred pain from other parts of the body. Children are mostly experiencing dental pain since their parents have high risk of getting caries. History taking and examination is the important step for differentiating odontogenic and non odontogenic dental pains. Non steroidal anti inflammatory drugs such as ibuprofen, paracetamol are common drugs of choice for pain relief [1].

Physiology of pain

It seems that the pulp's sensory system is well adapted to alerting dentists to possible tooth injury. Numerous A (myelinated) and C (unmyelinated) nerve fibers innervate the tooth. These comprise sympathetic fibers that regulate pulpal blood flow in addition to sensory afferent fibers. Branching off from the sensory nerves in the peripheral pulp, the sub odontoblastic plexus is an interlacing network of fibers. Nerve fibers that originate from this plexus

reach the dentin, predentin, and odontoblastic layer before ending as free nerve terminals. Pulpal stimulation in all its forms is regarded as noxious and solely produces pain [4].

This indicates that fluid displacement in dentinal tubules, which in turn activates A fibers, is responsible for the sensitivity of dentin. C fibers seem to react only to irritating stimuli that have a direct impact on the pulp. Although the exact function of odontoblasts in pain registering remains unknown, their death does not appear to impact dentin sensitivity [4]. Research suggests that certain inflammatory mediators and variations in intrapulpal pressure reduce the pulp's nerve terminals' pain threshold.

Types

When a tooth comes into contact with something cold or sweet, it may cause a brief, intense discomfort that could be reversible pulpitis. Discomfort that is dull, agonizing, and pulsating and that is brought on by thermal stimuli (heat or cold). There is no swelling and the discomfort might last for a long period, possibly developing into irreversible pulpitis. Acute abscess that could impede breathing and speaking by blocking the airway [8]. They may result from cellulitis in the soft tissues of the mouth cavity, or from Ludwig's angina. When it reaches the terminal stage, tooth loss may occur



PERIODONTITIS AND RESPIRATORY DISEASES

BY

Dr Nanditha Chandran^{1*}, Dr Anil Melath², Dr Vishnusri Priya J³ Jazeera K N⁴, Jaleena J A⁵

¹Associate Professor Department of Periodontics and Implantology Mahe Institute of Dental Sciences and Hospital,Chalakkara (PO), Palloor,Mahe-673310

²Professor and Head of Department, Department of Periodontics and Implantology Mahe Institute of Dental Sciences and Hospital,Chalakkara (PO), Palloor,Mahe-673310

³Senior Lecturer Department of Periodontics and Implantology Mahe Institute of Dental Sciences and Hospital,Chalakkara (PO), Palloor,Mahe-673310

⁴Third year BDS Student Department of Periodontics and Implantology Mahe Institute of Dental Sciences and Hospital,Chalakkara (PO), Palloor,Mahe-673310

Third year BDS Student Department of Periodontics and Implantology Mahe Institute of Dental Sciences and Hospital,Chalakkara (PO), Palloor,Mahe-673310



Article History

Received: 01/09/2024

Accepted: 09/09/2024

Published: 11/09/2024

Vol – 1 Issue – 9

PP: -01-04

Abstract

Respiratory diseases causes significant number of deaths and considerable amount of sufferings in human beings. Recent evidence suggests that the oral disorders, particularly the periodontal disease, may influence the development of respiratory infections like bacterial pneumonia and chronic obstructive pulmonary disease. Periodontitis causes microbial and immune imbalances of the lung through several mechanisms lile; the inflammatory reaction in the lung was directly caused byperiodontal pathogens under periodontitis after inhalation and colonization on the lung; the oral colonization of pneumonia-associated pathogens was promoted by periodontitis status; the respiratory epithelium structure was affected by periodontitis status; imbalances in neutrophils, macrophages, and inflammatory cytokines were caused by periodontitis status. The present article briefly reviews the association between periodontitis and various respiratory diseases.

INTRODUCTION.

Periodontitis, also called as a destructive gum disease, ranks among the six most prevalent non-communicable diseases globally.^{1,2} Periodontitis is characterized by chronic inflammation of the periodontal tissues primarily resulting from the polymicrobial infection.³ Recent research confirms that the periodontal infection is likely a risk factor for cardiovascular disease and respiratory disorders. Scientific evidence suggests that untreated moderate periodontitis could potentially impact an individual systemically and may play a role in cardiovascular disease, diabetes, and respiratory disorders.⁴ Respiratory diseases contribute significantly to illness and death among human populations. The anatomical connection between the lungs and the oral cavity makes the oral cavity a potential reservoir of respiratory pathogens.

However, the infective agent must overcome the immunological and mechanical defenses to reach the lower respiratory tract. These defense mechanism are highly

effective that in healthy individuals, the distal airways and lung tissue remain sterile,despite the high bacterial counts (10^6 aerobic bacteria and 10^7 anaerobic bacteria per milliliter) found in the upper airway.⁵

COMMON LUNG DISEASES MANIFESTED DUE TOPERIODONTITIS

Periodontitis has the potential to exacerbate systemic diseases, including those affecting the pulmonary system.⁶ The periodontal treatment of a patient with pulmonary disease may require alteration depending on the nature of the respiratory problem. Pulmonary diseases range from obstructive lung diseases such as Asthma, Emphysema, Bronchitis, and Acute obstruction to restrictive ventilatory disorders caused by muscle weakness, scarring, obesity, or any condition that could interfere with effective lung ventilation.^{7,8} The most common diseases in lung possibly due to periodontitis includes, Pneumonia, Chronic obstructive pulmonary disease, and Asthma.

*Corresponding Author: **Dr Nanditha Chandran.**



© Copyright 2024 GSAR Publishers All Rights Reserved

[This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.](https://creativecommons.org/licenses/by-nc/4.0/)



Artificial Intelligence in Dentistry- A Review

Hemalatha DM^{1*}, Subair K², Vishnu Sripriya¹, Liyana Hassan³ and Megha RP⁴

¹Assistant Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

²Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

³Third Year BDS Student, Mahe Institute of Dental Sciences, Chalakkara, India

***Corresponding Author:** Hemalatha DM, Assistant Professor, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, India.

Received: August 09, 2024

Published: August 28, 2024

© All rights are reserved by
Hemalatha DM., et al.

Abstract

Artificial intelligence has become ubiquitous in day to day activities. Its use is inevitable and the medical profession has started to use the mimicking use of artificial intelligence in complex proposed predictions and decision making. AI have shown numerous applications in dentistry predicting the wide variant anatomy of the jaws. hese days, a computer can identify or predict a result from a large database thanks to machine learning. The AI based comprehensive care system is anticipated to establish superior patient care as well as creative research and development in the future, enabling cutting edge decision support tools.

Keywords: Neural Network; ANN; CNN; Artificial Intelligence

Introduction

John McCarthy created the term artificial intelligence (AI), which describes machines that can mimic human knowledge and behavior. The term artificial intelligence (AI) has gained widespread usage due to its excessively broad definition. One area of AI that academics and industry professionals have extensively used for data analysis is machine learning. Arthur Samuel originally discussed machine learning in 1959, defining it as a method that allows computers to learn without explicit programming. T AI will continue to have a significant impact on dentistry from a broad standpoint because of the necessity for accurate treatment methods and immediate information interchange, even in the face of potential misunderstandings and patient privacy concerns [1].

Chances of AI in medicine and dentistry

AI technologies have also been widely adopted in the medical field, primarily in the area of computer thus far. Diagnostic imaging is essential and inevitable in healthcare. Artificial intelligence (AI)

is particularly well-suited to address the variability in subjective individual examinations and to improve care effectiveness.

AI makes the best use of multilevel data and enables an understanding of interactions by integrating heterogenous data domains, such as medical/dental history, socio-demographic and clinical data, imaging data, biomolecular data, socio-network data, etc. AI has the potential to improve mundane tasks and boost in-person interaction between medical professionals and their patients (also known as "Humanizing Care").

AI also promises to increase patient participation in healthcare, particularly if individuals actively contribute their data through other means. Self- management and self-monitoring will empower. In order to support the world health organization's (WHO) sustainable development goals, AI may also help alleviate human resource or manpower shortages, which have been noted and are predicted to persist in many regions of the world [2].



ASSOCIATION OF DENTAL CARIES AND DIABETES.

Dr Jeena Sebastian, Dr Anjali K, Dr Megha B, Anshana MAfra P

Professor, Assistant Professor, Senior lecturer, Student

Puducherry University

Abstract

Diabetic patients are recognized to be more prone to dental caries due to various risk factors. Despite the existing understanding, the exact impact of factors like blood glucose levels, salivary glucose concentration, and glycemic control on the development of dental caries in individuals with type 2 diabetes (T2D) remains unclear. It is crucial in caries management to evaluate a patient's susceptibility to caries. High blood sugar levels leading to hyperglycemia can reduce salivary flow rate, a common occurrence during periods of inadequate metabolic control in diabetes, creating an environment conducive for aciduric bacteria to flourish and caries to initiate formation. Because diabetes causes long-term glucose leakage into saliva, which indirectly raises oral microflora metabolic activity, modifies dental biofilm, and ultimately promotes the development of dental decay and periodontal diseases, diabetes may be linked to a higher prevalence of dental caries. Diabetes is a metabolic disorder characterized by improper lipid, carbohydrate, and protein metabolism. Hyperglycemia causes a decrease in salivary flow rate, which is common during periods of poor diabetes metabolic control, allowing aciduric bacteria to thrive and caries to form.

Keywords

Glucose, Diabetes, Salivary, Metabolism, Dental caries, Periodontitis.

Introduction

Dental caries remains one of the most predominant and progressive aspect of dentistry. Historically their treatment is by removal of the cavitated tissue and replace them with suitable restorative material¹. Dental caries are reported to be more common in diabetic people. Diabetes is marked by abnormal metabolism of carbohydrate, protein and lipids. Hyperglycemic stage can alter the function of saliva by reducing the flow rate and production². The possible risk variables including blood and salivary glucose management play in development of dental caries in T2DM. Diabetes is associated with the development of periodontal disease and an increased number of other consequences including neuropathy, retinopathy and nephropathy².

Determination of Yen Angle in Children with Mouth Breathing Habit

Anusree Nair¹, Rena Ephraim², Sharath Chandrashekhar³,
Dhanya K. B.⁴, Ramnesh P.⁵, Rakesh R⁶

How to cite this article:

Anusree Nair, Rena Ephraim, Sharath Chandrashekhar *et al.* Determination of Yen Angle in Children with Mouth Breathing Habit. Ind J Dent Educ. 2024;17(3):121-126.

Abstract

Background: There is a lengthy and contentious history of the connection between respiratory function and the development of occlusal and craniofacial morphology. Mouth-breathing influences skeletal growth and thereby affect the cephalometric parameters. The present study aimed to determine the YEN angle in children with mouth breathing habit having Class I occlusion.

Aim: Determination of YEN angle in children with mouth breathing habit.

Settings and Design: Department of Pediatric and Preventive Dentistry, Mahe institute of dental sciences, Mahe. Prospective study.

Methods: 48 children of age group 9-12 years with mouth-breathing habit having Class I malocclusion were selected. Water holding and butterfly test was used to confirm the diagnosis of the habit. Their lateral cephalograms were taken and the ANB angle, Wit's assessment YEN angle was measured by manual methods. The Pearson's correlation coefficient and the coefficient of variation statistical analysis were carried out with an alpha level of 5%.

Results: The mean YEN angle in mouth breathers with Class I occlusion was $119.7 \pm 2.783^\circ$. The YEN angle showed a moderately negative correlation with the ANB angle, which was statistically significant ($r = -0.31$, $p = 0.03$).

Author's Affiliation: ¹Postgraduate, ²Professor & HOD, ^{3,4}Associate Professor, ⁵Assistant Professor, ⁶Private Practitioner, Department of Pediatric and Preventive Dentistry, Mahe Institute of Dental Sciences and Hospital, Mahe 673310, Kerala, India.

Corresponding Author: Rena Ephraim, Professor & HOD, Department of Pediatric and Preventive Dentistry, Mahe Institute of Dental Sciences and Hospital, Mahe 673310, Kerala, India.

E-mail: renajosephdr4@gmail.com

Received on: 10.08.2024

Accepted on: 11.09.2024

Conclusion: From our study we found that the YEN angle is a homogenously distributed angular parameter that is highly predictable when utilized to evaluate sagittal discrepancy in patients with Class I occlusion having mouth-breathing habit.

Keywords: YEN angle; ANB angle; Wit's analysis; Class I occlusion; Mouth breathing.



This work is licensed under a Creative Commons
Attribution-NonCommercial-ShareAlike 4.0.

A Comprehensive Review on Classification of Furcation Involvement

Vishnusripriya J*, Anil Melath, Jilu Abraham, Hemalatha DM, Swetha S, Ummukulsu PK

Department of Periodontics, Mahe Institute of Dental Sciences and Hospital

Citation: Vishnusripriya J*, Anil Melath, Jilu Abraham, Hemalatha DM, Swetha S, Ummukulsu PK . A Comprehensive Review on Classification of Furcation Involvement. *Int Dent Jour.* 2024;1(1):1-11.

Received Date: 09 October, 2024; **Accepted Date:** 16 October, 2024; **Published Date:** 18 October, 2024

***Corresponding author:** Vishnusripriya J, Senior Lecturer, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital.

Copyright: © Vishnusripriya J, Open Access 2024. This article, published in *Int Dent Jour (IDJ)* (Attribution 4.0 International), as described by <http://creativecommons.org/licenses/by/4.0/>.

ABSTRACT

Different classifications have been presented over the years for the furcation involvement examination. While each classification has advantages and disadvantages of its own, Glickman's classification remains the best to this day. You can find potential classifications in this article for quick reference to aid in the conclusion of the examination for furcation involvement. It also provides you with information on the diagnosis and toolkit used to clinically examine cases of furcation involvement, determine a definitive treatment plan, and raise the possibility of a better prognosis for the patient.

Keywords: Classification , Furcation Involvement , Glickman , Diagnosis , Prognosis

INTRODUCTION

According to the glossary of terms of the American Academy of Periodontology, a furcation involvement exists when periodontal disease has caused resorption of bone into the bi- or tri-furcation area of a multi-rooted tooth. Many authors have proposed classification based on the horizontal or vertical attachment loss. Glickman in 1953 classified based on the extent and main characteristics of the furcation defect. Hamp , Nyman and Linde , Tarnow and Fletcher classified based on the horizontal and vertical attachment loss. Other classifications based on the anatomy of the furcation, number of remaining bony walls , morphology of the existing bone walls , relationship between root trunk and horizontal or vertical attachment loss. This classifications can help the clinicians to provide a better diagnosis , prognosis , treatment plan.

Classifications

1. Glickman, et al (1953)

Grade I: Incipient lesion. Supra-bony pocket and slight bone loss in the furcation area.

Grade II: Loss of inter-radicular bone and pocket formation but a portion of the alveolar bone and periodontal ligament remain intact.

Grade III: Through-and-through lesion.

Grade IV: Through-and-through lesion with gingival recession, leading to a clearly visible furcation area.



A Revisit of Non-Carious Cervical Lesions

Vishnusripriya J^{1*}, Anil Melath², Nanditha Chandran³, Hemalatha DM¹,
Fathima UM⁴ and Faby Ashraf⁴

¹Senior Lecturer, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, India

²HOD, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, India

³Reader, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, India

⁴Final Year BDS Student, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, India

***Corresponding Author:** Vishnusripriya J, Senior Lecturer, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, India.

DOI: 10.31080/ASDS.2024.08.1918

Received: August 27, 2024

Published: September 28, 2024

© All rights are reserved by

Vishnusripriya J., et al.

Abstract

Hard tissue loss in the cervical regions of teeth is a common and complex dental condition known as noncarious cervical lesions (NCCLs). In contrast to caries, NCCLs are brought on by a number of variables, such as occlusal tension, friction, and acid erosion. The current understanding of NCCLs, including their origin, clinical manifestations, and diagnosis, is reviewed in this article. We talk about how crucial it is to pinpoint the underlying causes and create individualized preventative and treatment plans. A number of therapeutic alternatives are also investigated, such as root covering surgery and adhesive restorations. The purpose of this article is to improve patient outcomes by giving dental professionals a better understanding and management of NCCLs, a complex disorder.

Keywords: Non Carious; Abrasion; Erosion; Abfraction; Management

Introduction

Dentists frequently encounter the problem of hard tissue loss at the cemento-enamel junction (CEJ) in the course of their clinical work. These can have a variety of shapes and are referred to as non-carious cervical lesions. It is possible to observe enormous wedge-shaped defects, wide lesions that are scooped out, or shallow grooves. The labial, lingual/palatal, or proximal surfaces of the teeth may sustain these lesions [13]. To avoid more harm and to keep the current lesions from getting worse, it is critical to comprehend the underlying causes of these lesions. If the underlying causes of these lesions are not addressed, treatment will not be long-lasting. The most often mentioned reasons for cervical lesions include dental flexure, abrasion, and erosion. Hard tissue loss that is chemically caused and does not include germs is called dental erosion. It is typically brought on by tissues dissolving in acid. Conversely, abrasion refers to the erosion of tooth structure caused by external mechanical forces, with brushing being the main contributor. Another mechanism that might result in the loss

of dental hard tissue is tooth flexure [7,8]. Although cervical lesions can develop anywhere in the dental arch, they are most frequently observed on teeth that are not molars. Lesions that are angular are more common than those that are rounded. It is believed that the lesion's shape depends on what caused it [1,6,9,11,12]. Determining the best course of action for treatment requires an understanding of the etiology of cervical lesions.

Etiology

The non-carious cervical lesion (NCCL) is when there's a loss of tooth tissue at the neck of the affected teeth, but it's not related to tooth decay. It's been studied by many researchers since way back in 1908.

Erosion

Erosion is when the hard dental tissues slowly get worn away due to chemicals, not bacteria. The smooth surfaces of our front and premolar teeth are particularly vulnerable to this when we

Dental Age Estimation by Modifying Nolla's Method to Determine the Accuracy in Children in the Region of Mahe

Anusree Nair¹, Rena Ephraim², Ambili Ayilliath³,
Sharath Chandrashekhar⁴, Dhanya K B⁵, Sreelakshmi R⁶

How to cite this article:

Anusree Nair, Rena Ephraim, Ambili Ayilliath *et al.*, Dental Age Estimation by Modifying Nolla's Method to Determine the Accuracy in Children in the Region of Mahe. *Ind J Dent Educ.* 2024;17(4):163-169.

Abstract

Background: Age estimation has many factors, viz, skeletal age, sexual age, chronological age (CA) and dental age (DA). Assessment of tooth development is widely being used these days for age estimation because of its reliability and ease of procedure. The tooth with its developmental phases impart non-invasive, non-destructive attributes to assess the person's age. However, ethnicity, influence of hormonal and racial factors, environmental changes, and various diseases may alter the results in certain areas.

Aim of the study: To estimate the Dental age of children aged 7-10 years by Nolla's method using Orthopantomographs, in the region of Mahe.

Materials and Methodology: 60 digital Orthopantomographs (OPGs) were used for the study to estimate the DA of children, using Nolla's method of DA estimation. Seven permanent teeth in the left mandibular quadrant were assessed as per Nolla's method. This was compared to the other quadrants and the results were analysed to determine the DA. The mean difference between the DA and CA was calculated using a paired t-test. Correlation between CA and DA was analysed using Pearson's correlation coefficient. The statistical analysis was done using IBM SPSS Statistics for Windows, Version 26.0.

Results: The DA of children of Mahe showed under estimation using Nolla's method of age determination. Among the quadrants, the maxillary right quadrant showed the least under estimation or most accurate age estimation.

Conclusion: By using a proper regression equation, the Nolla's method can be made more accurate for age determination in the children of Mahe.

Keywords: Dental age (DA), Chronological age (CA), Nolla's method, Children, Underestimation, Regression equation.

Author's Affiliation: ¹Post graduate, ²Professor & HOD, ³Professor, ^{4,5}Associate Professor, ⁶Assistant Professor, Department of Pediatric & Preventive Dentistry, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry 673310 India.

Corresponding Author: Rena Ephraim, Professor & HOD, Department of Pediatric and Preventive Dentistry, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry 673310 India.

E-mail: renaephraim98@gmail.com

Received on: 18-12-2023

Accepted on: 14-02-2024



This work is licensed under a Creative Commons
Attribution-NonCommercial-ShareAlike 4.0.



PIEZOSURGERY IN PERIODONTICS - A REVIEW

¹Dr Nanditha Chandran, ²Dr Subair K, ³Dr Vishnusri Priya J, ⁴Merin Binu George, ⁵Mudra Maria Mathew

¹Associate Professor, ²Professor, ³Senior Lecturer, ^{4,5}Third year BDS student

¹Department Of Periodontics

¹Mahe Institute of Dental Sciences and Hospital, Chalakara, Palloor (PO), Mahe-673310

Abstract : Piezoelectric technology has emerged as a significant advancement in periodontics, offering precise and minimally invasive options for various periodontal procedures. This article explores the application of piezoelectric devices in periodontal surgery, scaling, and root planing, emphasizing their advantages over traditional methods. The technology's ability to selectively target mineralized tissues while preserving soft tissues leads to improved patient outcomes, reduced postoperative discomfort, and faster recovery times. Additionally, the article discusses the potential of piezoelectric instruments in enhancing surgical precision and reducing intraoperative complications, thereby advancing the standard of care in periodontal therapy.

IndexTerms - Piezosurgery, bone cutting, implantology, vibrations

INTRODUCTION

The word “piezo” originates from the Greek word “piezein”, which means pressure. It was created in 1988 by Italian oral surgeon Tomaso Vercellotti to enhance and alter conventional ultrasonic technology in order to get over the limitations of conventional apparatus in oral bone surgery .¹

The method involves the deformation of crystals and ceramics by electric fluxes, which causes them to oscillate and produce ultrasonic frequency movements that can precisely cut bone structures without injuring soft tissue. The handpiece is powered by microvibrations with an amplitude of 60 to 210 mm when the frequency is adjusted between 25 and 30 kHz. Although the product's primary goals are soft tissue preservation and bone removal, certain models include a modified setting that can be used to remove lesions from soft tissues. Low bleeding tendency is a result of this instrument's selective and **thermally innocuous nature**.¹

HISTORICAL BACKGROUND

Jacques and Pierre Curie discovered the piezoelectric phenomenon in 1880. When Catana initially described the cutting effects of high-frequency sound waves on the tooth hard tissue in 1953, the field of dentistry saw a surge of interest in ultrasonics, primarily in the fields of periodontology and endodontics. Zinner initially used ultrasonic scalers in the periodontal process in 1955. These devices had a single, large universal tip, but today there are several site-specific, smaller tips available.²

Despite the fact that Horton and colleagues initially described ultrasonic osteotomies over 20 years ago, this method was not followed for a long time. Vercellotti et al. reintroduced this strategy for soft tissue and nerve preservation surgery in 2000, overcoming the drawbacks of using conventional equipment in oral bone surgery. First reports of it concerned sinus grafting, alveolar crest expansion, and preprosthetic surgery.²



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

ESTROGEN AND PROGESTERONE GENE EXPRESSION IN ENDOMETRIOSIS

**Bobby Joseph¹, Boopathi K^{2*}, Aswathy Sundaresh³, Suresh A⁴, Abdul Adil VK⁵, Parvathy S¹,
Deepthi S¹, Shaiju B¹, Sreekutty M¹, Sreeshma P Pillai¹, Sheena KS⁶, Dinesh Roy D^{7*}**

¹Research Scholar, Meenakshi Academy of Higher Education and Research (MAHER- Deemed to be University), West K.K Nagar, Chennai, Tamil Nadu, India.

²Professor, Dept. of Plastic Surgery, Meenakshi Medical College Hospital and Research Institute, Enathur, Kanchipuram, Tamil Nadu, India.

³Associate Professor, Medical Biochemistry, Sree Gokulam Medical College & Research Foundation, Venjaramoodu, Thiruvananthapuram, Kerala, India.

⁴Scientist cum Research Scientist, Central Research Laboratory, Meenakshi Medical College Hospital and Research Institute, Enathur, Kanchipuram, Tamil Nadu, India.

⁵Research Scholar, Department of Microbiology, M R Government Arts College (Affiliated to the Bharathidasan University, Tiruchioppalli), Mannargudi, Thiruvavarur, Tamil Nadu, India.

⁶Research Scholar, Chettinad Academy of Research and Education (deemed to be university), Kelambakkam, Chennai, Tamil Nadu, India.

⁷CEO & Senior Cytogeneticist, Genetika, Centre for Advanced Genetic Studies, Thiruvananthapuram, Kerala

***Corresponding Authors:** Dr. Boopathi K & Dr. Dinesh Roy D

E-mail: drkpathi@gmail.com & drdineshroyd@gmail.com

Phone No: 9444661143 & 944707420

Orcid ID: 0009-0002-8866-3409 & 0009-0005-7124-148X

Smoking–The Perilous Voyage of Periodontal Disease

Vishnusripriya J¹, Subair k², Nanditha Chandran³, Hemalatha DM⁴, Albin Job⁵, Akshaya Pramod⁶

¹Senior Lecturer, Department of Periodontics, Mahe Institute of dental sciences and hospital.

²Professor, Department of Periodontics, Mahe Institute of dental sciences and hospital.

³Reader, Department of Periodontics, Mahe Institute of dental sciences and hospital.

⁴Senior Lecturer, Department of Periodontics, Mahe Institute of dental sciences and hospital.

⁵Third Year BDS Student, Department of Periodontics, Mahe Institute of dental sciences and hospital.

⁶Third Year BDS Student, Department of Periodontics, Mahe Institute of dental sciences and hospital.

Abstract

There is compelling epidemiological evidence, both from cross-sectional and longitudinal research, suggesting that smoking is associated with a significantly elevated risk of periodontal disease. The statistics derived from patients who give up smoking provide more support for this evidence. The risk levels of these patients are comparable to those of nonsmokers. Several investigations have been carried out to explore the possible pathways through which smoking tobacco could predispose to periodontal disease. The findings suggest that smoking may impact the vasculature, humoral immune system, cellular immune and inflammatory systems, as well as have effects across the cytokine as well as the adhesion molecule. This review article describes about the various treatment modalities that enhances the cessation of smoking and the positive results seen in periodontium in quitting smoking.

Keywords: Smoking, Periodontitis, Smoking Cessation, Periodontal Depth, Clinical Attachment Levels.

Introduction

Tobacco comes from a plant whose leaves go by the name *Nicotiana tabacum*. The earliest known use of tobacco is thought to date back to the first century before Christ, when the central American Mayan people smoked *Nicotiana* leaves for religious and ceremonial purposes.² However, tobacco intake has detrimental consequences on all living systems, regardless of the form it takes, as several research studies from around the globe have highlighted. Each year, tobacco smoke causes a staggering number of lives.² Results from cross-sectional and cohort studies indicate that smokers are more likely to get periodontitis that is more severe and extensive as a result of smoking. There is also a good chance that smoking and tooth loss are causally related. It is commonly recognized that smoking raises the risk of bone loss around dental implants and tooth loss related to periodontitis.³ Nicotine, one of the toxic ingredients in tobacco products, can damage gingival tissue, reduce blood flow to the gums, and weaken the immune system.⁴ A tobacco product that is used in ways other than smoking

is called smokeless tobacco. To utilize them, the product is either chewed, smelled, or wedged between your gums and your lip or cheek. A variety of smokeless tobacco products, including chewing tobacco, snuff, snus, and dissolvable tobacco products, are manufactured. About 80% of the world's usage of smokeless tobacco comes from South Asia, where it is extensively consumed. Since nicotine is an ingredient in all smokeless tobacco products, they are all very addictive.⁵

Types of smokers

Smokers are frequently divided into groups according to their pack-years, which is a measure of their average daily pack count and number of years of smoking. The chance of health problems increases with pack-year number. Examples of pack-year categories are as follows:

Corresponding Author: Dr. Vishnu Sri Priya J Mahe
Institute of Dental Sciences and Hospital, Chalakkara,
Palloor, India

Review began 09/16/2024
Review ended 09/24/2024
Published 09/29/2024

© Copyright 2024

M et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

DOI: 10.7759/cureus.70459

Antimicrobial Properties of Newer Calcium Silicate-Based Pulp-Capping Agents Against *Enterococcus Faecalis* and *Streptococcus Mutans*: An In-Vitro Evaluation

Niranjana M ¹, Sunil Jose ¹, George Thomas ¹, Arun Shyam ^{1, 2}, Aparna M ¹

1. Conservative Dentistry and Endodontics, Mahe Institute of Dental Sciences & Hospital, Mahe, IND 2. Conservative Dentistry and Endodontics, Kannur Dental College, Anjarakandy, IND

Corresponding author: Niranjana M, niranjanamadhhusoodanan@gmail.com

Abstract

Aim: This study aimed to evaluate the antibacterial activity of calcium silicate-based pulp-capping agents against *Enterococcus faecalis* and *Streptococcus mutans* using an agar diffusion test.

Methods and materials: The agar diffusion method was used to evaluate the antibacterial properties of pulp-capping agents. The materials used included Bio-C® Temp (Angelus, Brazil), Dia-Root™ Bio mineral trioxide aggregate (MTA) (Diadent Europe B.V., Almere, Netherlands), Biodentine™ (Septodont, Saint-Maur-des-Fossés, France), and TheraCal LC (Bisco Inc., Schaumburg, IL). Eighteen petri dishes, nine for *S. mutans* and nine for *E. faecalis*, were divided into four parts each (one for each agent), for a total sample size of 72. The bacterial suspensions were transferred to the petri dishes using a sterile swab. Four wells with a diameter of 4 mm were then punched in each petri dish. The wells were filled with the pulp-capping agents, which had been mixed according to the manufacturer's instructions, and the petri dishes were incubated. The zone of inhibition was measured at 24 and 48 hours to assess the pulp-capping agents' antimicrobial efficacy against *E. faecalis* and *S. mutans*. The readings were tabulated and subjected to statistical analysis.

Results: At 24 hours, the highest zone of inhibition was found in the Biodentine™ group (15.83 ± 0.79 mm), followed by Dia-Root™ Bio MTA (14.5 ± 0.88 mm), TheraCal LC® (12.56 ± 0.53 mm), and the shortest in the Bio-C Temp (9.61 ± 0.70 mm) against *S. mutans*. Analysis of variance (ANOVA) test showed a high statistical significance. After 48 hours, there was no statistically significant difference in the mean zone of inhibition.

At 24 hours, the highest zone of inhibition was found in the Biodentine™ group (20.56 ± 0.73 mm), followed by Dia-Root™ Bio MTA (20.06 ± 1.33 mm), TheraCal LC® (18.22 ± 0.97 mm), and the shortest in the Bio-C Temp (14.11 ± 0.78 mm) against *E. faecalis*. The ANOVA test indicated no statistically significant difference between the Biodentine™ and the Dia-Root™ Bio MTA groups. After 48 hours, there was no statistically significant difference in the mean zone of inhibition.

Conclusions: Biodentine™ has higher antibacterial efficacy against *S. mutans*, while Biodentine™ and Dia-Root™ Bio MTA have comparably high antibacterial activity against *S. mutans* and *E. faecalis* at 24 and 48 hours.

Categories: Dentistry

Keywords: bacteria, zone of inhibition, pulp capping agents, bioactive materials, antibacterial effects, agar diffusion test

Introduction

Dental caries is one of the oldest documented diseases of the human body. The primary reason for this predilection is the transformation in dietary habits from eating raw food to cooked and processed foods that have a high sugar content. A sugar-rich diet allows microorganisms in the oral cavity to multiply and overwhelm the host defense by producing acids that lead to the breakdown of calcified structures. Once tooth enamel is demineralized, the caries progress rapidly through dentine and reach the vicinity of the pulp. The microbes and their toxins elicit an inflammatory response in the pulp, leading to transient pulpal damage.

Upon identification of caries, the treatment of choice is eradication using mechanical and therapeutic methods before the pulp is further affected. However, such treatment options can fail when the residual microorganisms in dentine are not completely eradicated, which can lead to secondary caries and further pulpal damage. It is important to preserve the vitality of the pulp, as vital pulp tissue is capable of mounting defenses against microbial invasions. Thus, to maintain tooth vitality, pulp capping with appropriate agents below the restoration is important.

How to cite this article

M N, Jose S, Thomas G, et al. (September 29, 2024) Antimicrobial Properties of Newer Calcium Silicate-Based Pulp-Capping Agents Against *Enterococcus Faecalis* and *Streptococcus Mutans*: An In-Vitro Evaluation. Cureus 16(9): e70459. DOI 10.7759/cureus.70459

ORIGINAL ARTICLE

A Comparative Evaluation of Root Surface Roughness After Instrumentation with Gracey Curettes, Ultrasonic and Piezo-Surgery Driven Diamond Coated Tips: An *In-Vitro* SEM Study

Salma Arif*, Anil Melath, Subair Kayakool, Arjun M R, Nanditha Chandran, Vishnusripriya, Jilu Abraham, Hemalatha D M

Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, U.T of Pondicherry, India

*Corresponding author:

Dr. Salma Arif*, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, U.T of Pondicherry, India. Email ID: sals.arif@gmail.com

Received date: June 12, 2023; **Accepted date:** November 6, 2023; **Published date:** March 31, 2024



This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0](https://creativecommons.org/licenses/by-nc/4.0/).

Abstract

Background: To evaluate root surface roughness after instrumentation with Gracey curettes, Ultrasonic scaler and diamond coated piezo-surgery tips using scanning electron microscope (SEM).

Methods: Sixty-six mandibular premolar teeth indicated for extraction were collected, stored, mounted and analysed. These were divided randomly into three groups with 22 samples in each group. In Group A, instrumentation was done with Gracey curettes, Group B with ultrasonic scaler and Group C with piezo-surgery driven diamond coated tips. The samples were then subjected to SEM analysis at a magnification of 1500x. The collected data was analysed using both descriptive and inferential statistics. Chi-square test, t test, ANOVA and other necessary statistical tests were used. $P < 0.05$ was considered to be significant. The analysis of the data was carried out using SPSS version 20 software.

Results: Multiple comparisons of mean surface roughness scores showed no significant difference between Gracey curette and Ultrasonic scaler tip ($P=0.063$). No statistical significant difference was found between Gracey curette and Piezo surgical unit ($P=0.984$). However, there was a statistically significant difference between Ultrasonic scaler tip and Piezo surgical unit ($P < 0.004$). It can be inferred from the results that the surface roughness is different in both Ultrasonic scaler tip and Piezo surgical unit groups.

Conclusion: The use of diamond-coated tips tends to produce more surface roughness than routinely used ultrasonic scaler tips and manual instrumentation.

Keywords: Microtopography, Root surface roughness, Curettes, Diamond coated tips

Introduction

Periodontitis is a disease characterised by an interplay of infection by bacterial pathogens followed by inflammation. Several factors including genetic,

environmental, dietary elements play a major role in the etiopathogenesis of this disease. Of this, the local factors consisting plaque and calculus are the primary etiological factors as they act as a reservoir of micro-organisms that



AUTOLOGOUS BONE GRAFT IS STILL THE BOOM

Dr. Anil Melath¹ Mds Head Of The Department, Principal , Department Of Periodontology, Mahe Institute
Of Dental Science. Mahe

Dr. Arjun MR, Mds Reader Department Of Periodontology ,

Dr. Vishnusripriya Mds , Department Of Periodontology ,

Dr. Bhuvaneswari.M I Yr Post Graduate Department Of Periodontology
Lintamol Pk Final Year

Abstract: To improve the long-term prognosis of teeth, the treatment of periodontal diseases has evolved from resection to regeneration. Regeneration of the supporting structures of the teeth involves the use of a variety of materials of natural and synthetic origins. Bone grafting has over 100 years of successful clinical use. Despite the successes of autograft bone transplantation, complications of bone grafting are significant, mostly at the donor site, This article reviews the properties of bone grafts and the specific advantages and problems associated with autograft bone.

KEYWORDS: Autogenous graft, periodontics, regeneration

Introduction: A bone graft is defined as a living tissue capable of promoting bone healing, transplanted into a bony defect, either alone or in combination with other materials^[1]. Bone grafts and substitutes have been used in the medical field for centuries, with the first recorded use of bone grafts in 1682, where a cranial defect was successfully restored using a cranial bone graft from a deceased dog^[2]. Autogenous grafts are considered the gold standard as they retain the viability of cells and do not evoke any immunological response in the patient. These grafts contain live osteoblasts and osteoprogenitor stem cells and heal by osteogenesis. They constitute all the three components for tissue engineering, namely, scaffold, cells, and signaling molecules as an additional benefit. New bone is formed initially by the surviving cells in the graft and later on by the osteoinduction of the cells of the surrounding host bone. The area of new bone interdigitation and the quantity of donor bone that is resorbed are higher for cancellous bone grafts compared with cortical grafts^[3].

In Vitro Analysis of Shear Bond Strength in Repaired Cohesive and Adhesive Fractures of Conventional and DMLS Porcelain-fused-to-metal Crowns

Ragul Irissan¹, Abhinav Mohan², Cimmy Augustine³, Dipin Puthiya Parambath⁴, Ahnaf Abdulla⁵, Ankitha Thejus⁶

Received on: 30 August 2024; Accepted on: 04 November 2024; Published on: 26 November 2024

Abstr Act

Aim: Porcelain-fused-to-metal (PFM) restorations are essential in fixed prosthodontics for their strength and esthetics, but are prone to fractures due to material disparities and stress factors. This study evaluates the shear bond strength (SBS) of two porcelain repair systems for cohesive and adhesive fractures in conventional PFM and direct metal laser-sintered (DMLS) restorations, addressing clinical repair needs.

Materials and methods: Thirty metal-ceramic discs were fabricated and divided into two main groups based on the fabrication method: Conventional casting and DMLS. Each group had three subgroups: Conventional casting (A: Control, B: Cohesive defect, C: Adhesive defect) and DMLS (D: Control, E: Cohesive defect, F: Adhesive defect), each with 5 specimens. Shear bond strength was measured using a Universal Testing Machine (UTM) at 0.5 mm/min. Data were analyzed with a one-way ANOVA ($\alpha = 0.05$), and Tukey's *post hoc* test was used for significant differences. Student's *t*-tests compared SBS between control groups.

Results: A one-way ANOVA revealed significant differences in SBS among Conventional Casting subgroups ($p < 0.001$). Subgroup A (36.282 ± 1.692 MPa) had higher SBS than B (13.202 ± 1.336 MPa) and C (17.033 ± 1.634 MPa), with Tukey's test confirming significant differences ($p < 0.001$). For DMLS subgroups, subgroup D (37.768 ± 0.560 MPa) had higher SBS than E (22.381 ± 1.137 MPa) and F (13.245 ± 0.693 MPa), with Tukey's test showing significant differences ($p < 0.001$). No significant difference was found between subgroups A and D ($p = 0.10$). Subgroup E had a higher SBS than B ($p < 0.001$), and subgroup C had a higher SBS than F ($p = 0.001$).

Conclusion: This study offers insights into the performance of two porcelain repair systems, aiding clinicians in selecting effective materials and techniques for PFM restoration repairs.

Clinical significance: Understanding the bond strength of these repair systems can enhance clinical outcomes by guiding the selection of optimal repair materials and techniques, improving the longevity and durability of fractured PFM restorations.

Keywords: Adhesion, Ceramic coatings, Dental prosthesis, Fractures, Metal alloys, Porcelain, Stress, Shear strength.

The Journal of Contemporary Dental Practice (2024): 10.5005/jp-journals-10024-3750

Introduction

Porcelain-fused-to-metal (PFM) restorations have been a cornerstone of fixed prosthodontics due to their exceptional combination of strength, durability, and esthetic appeal. However, the inherent disparities in the mechanical properties of porcelain and metal render these restorations susceptible to fracture. The complex interplay of occlusal forces, thermal stresses, and material properties can lead to porcelain failures, necessitating repair to preserve the restoration.¹⁻³ Porcelain-fused-to-metal restorations have a failure rate of about 5% after ten years.^{4,5}

Feldspathic porcelain, commonly used, has only 40% of enamel's compressive strength.³ Fractures result from factors like occlusal forces, thermal expansion incompatibility, and design flaws.⁶ Adhesive interfaces are also vulnerable to saliva, fatigue, and temperature changes, leading to weakened ceramic-metal bonds. Porcelain fractures occur in 2.3–8% of cases, making them the second most common cause of restoration failure after caries.^{7,8}

Fractures are classified as simple (porcelain only), mixed (both metal and porcelain), or complex (significant metal exposure).³ Repairing a fractured retainer is often preferred over removal to avoid damaging the restoration or abutment teeth. While fractures do not always indicate overall failure, their replacement can be costly and time-consuming.⁹

¹⁻⁶Department of Prosthodontics, Crown and Bridge, Mahe Institute of Dental Sciences & Hospital, Mahe, Kerala, India

Corresponding Author: Ragul Irissan, Department of Prosthodontics, Crown and Bridge, Mahe Institute of Dental Sciences & Hospital, Mahe, Kerala, India, Phone: +91 9597176408, e-mail: ragul9796@gmail.com

How to cite this article: Irissan R, Mohan A, Augustine C, et al. *In Vitro Analysis of Shear Bond Strength in Repaired Cohesive and Adhesive Fractures of Conventional and DMLS Porcelain-fused-to-metal Crowns*. *J Contemp Dent Pract* 2024;25(8):726–731.

Source of support: Nil

Conflict of interest: None

Repair methods include indirect techniques, which involve laboratory ceramic repairs that are esthetically beneficial but costly and risky during removal, and direct techniques using composite materials for intraoral repairs, appropriate when there is good marginal adaptation.^{3,10} Surface treatments like diamond roughening enhance bonding, while silane coupling agents are essential for strong chemical bonds.^{11,12} Comparative studies of these repair techniques are vital for improving clinical outcomes and extending the lifespan of dental restorations.

To address the clinical need for effective and predictable repair of fractured PFMs, this study evaluated the shear bond



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

Y CHROMOSOME MICRODELETION AND POSSIBLE RISK FOR REPRODUCTIVE CANCER

**Sreeshma P Pillai¹, Thirumal Kumar D^{2*}, Jaiganesh I³, Kanchana S B¹, Aswathi R K¹,
Deepthi S¹, Renjith K R¹, Rasitha C H¹, Parvathy S¹, Dinesh Roy D^{4*}**

¹Research Scholar, Meenakshi Academy of Higher Education and Research (MAHER- Deemed to be University), West K.K Nagar, Chennai, Tamil Nadu, India.

²Assistant Professor & Assistant Registrar, Faculty of Allied Health Sciences, Meenakshi Academy of Higher Education and Research, Chennai, Tamil Nadu, India.

³Assistant Professor, Department of Pediatric Dentistry, Meenakshi Ammal Dental College & Hospital, Chennai, Tamil Nadu, India.

⁴CEO & Senior Cytogeneticist, Genetika, Centre for Advanced Genetic Studies, Thiruvananthapuram - 695024, Kerala, India.

**Corresponding Authors:*

Dr. Thirumal Kumar D & Dr. Dinesh Roy D

**E-mail:* ar@maher.ac.in & drdineshroyd@gmail.com

Phone no: 8056295915 & 9447074202

Orcid: 0009-0005-7124-148X & 0000-0002-5545-606X

Marginal Adaptation of BioRoot RCS, MTA-Fillapex, EpoxySeal, and Sealapex to Radicular Dentin: An In Vitro Study

Review began 07/04/2024
Review ended 07/08/2024
Published 07/12/2024

© Copyright 2024

Kirithiga et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

M Kirithiga ¹, George Thomas ¹, Sunil Jose ¹, Sona Joseph ¹, Manju Krishna ¹

¹. Department of Conservative Dentistry and Endodontics, Mahe Institute of Dental Sciences and Hospital, Puducherry, IND

Corresponding author: M Kirithiga, kirithiga97@gmail.com

Abstract

Introduction

The primary goal of endodontic therapy is to achieve a three-dimensional filling of the root canal. The sealer plays a crucial role in filling the residual gaps between the gutta-percha and the canal wall, which prevents fluids and bacteria from entering the canal and causing complications. This study evaluates and compares the sealing ability of four root canal sealers to the root dentin.

Methods and materials

In this study, forty single-rooted mandibular premolar teeth with fully-formed apices were collected. The teeth were decoronated and instrumented. Later, the teeth were randomly divided into four groups, each comprising ten specimens, based on the sealer used for obturation. The first group was obturated with BioRoot RCS (Septodont, Septodont Holding, Paris, France), the second group with MTA-Fillapex (Angelus, Angelus Indústria de Produtos Odontológicos S/A, Brazil), the third group with EpoxySeal (Safe Endo, SafeEndo Dental India Pvt. Ltd., Gujarat, India), and the fourth group with Sealapex (Kerr, Kerr Corporation, Brea, CA). Following obturation, the teeth were sectioned vertically using a diamond disc, and the marginal adaptation of these sealers to the root dentin was assessed using scanning electron microscopy (SEM). The values were then statistically analyzed.

Results

EpoxySeal showed the maximum amount of marginal adaptation (5.22 ± 0.47), followed by BioRoot RCS (5.48 ± 0.58) and MTA-Fillapex (8.24 ± 0.74), and the least amount of marginal adaptation was shown by Sealapex (11.64 ± 1.35). Based on the analysis of variance (ANOVA), a statistically significant difference ($p \leq 0.001$) was observed. According to Tukey's post hoc test, the mean difference between all groups showed statistical significance ($p \leq 0.05$) except between BioRoot RCS and EpoxySeal.

Conclusion

Within the limitations of this in vitro study, it is concluded that EpoxySeal and BioRoot RCS exhibited superior marginal adaptation to the root dentin. BioRoot RCS can be recommended as a sealer of choice owing to its additional properties, such as antimicrobial and hydrophilic affinity during setting.

Categories: Dentistry

Keywords: sealapex, mta fillapex, marginal adaptation, epoxy seal, bio root rcs

Introduction

The focus of endodontic treatment is to disinfect the root canal space and seal it with a three-dimensional filling material, thereby preventing reinfection. Often, this objective is not fulfilled due to the complex anatomical variations in the root canal and the resistance of microorganisms to conventional chemo-mechanical disinfection methods. The residual microorganisms in the untreated root canal space can lead to secondary infections and further inflammation of the periapical space [1].

An optimal root canal sealer should efficiently penetrate the untreated spaces within the root canal and establish a hermetic seal, effectively addressing any voids in conjunction with the primary core material [2]. Since gutta-percha offers little or no bond to root canal walls, the sealer can bond to root canal dentin, which becomes the most critical aspect in multidimensional obturation [3]. Hence, sealers play a crucial role in facilitating the binding, lubrication, and sealing of gutta-percha, as well as in the plugging of the lateral canal [4]. So an ideal sealer must form a strong interface with the substrate. This interface should remain dimensionally stable with minimal shrinkage or expansion [5].

How to cite this article

Kirithiga M, Thomas G, Jose S, et al. (July 12, 2024) Marginal Adaptation of BioRoot RCS, MTA-Fillapex, EpoxySeal, and Sealapex to Radicular Dentin: An In Vitro Study. Cureus 16(7): e64380. DOI 10.7759/cureus.64380



Original Article

Effect of Aligning Forces by Two Preadjusted Edgewise Techniques on a Buccally Positioned Maxillary Canine at Varying Vertical Displacements: A Finite Element Study

Steve Mathew, Puneet Batra, Nitin Arora, Ashish Kumar Singh, Sridhar Kannan, Aditya Talwar

Manav Rachna Dental College, Department of Orthodontics and Dentofacial Orthopedics, Faridabad, India

Cite this article as: Mathew S, Batra P, Arora N, Kumar Singh A, Kannan S, Talwar A. Effect of Aligning Forces by Two Preadjusted Edgewise Techniques on a Buccally Positioned Maxillary Canine at Varying Vertical Displacements: A Finite Element Study. *Turk J Orthod.* 2024; 37(2): 122-129

Main Points

- The most optimal displacement for engaging a vertically displaced canine in continuous mechanics is up to 4 mm from the occlusal plane.
- The piggyback method is more efficient with less counter effects on adjacent teeth compared to the continuous archwire.
- Maximum occlusal movement was observed at a 2 mm vertical displacement, which decreased progressively as the vertical displacement increased.

ABSTRACT

Objective: To evaluate the effect of continuous arch and piggyback mechanics in a straight wire appliance (SWA) for the alignment of buccal and variably vertically positioned maxillary canines.

Methods: A three-dimensional finite element model with near-normal occlusion and buccal and vertically displaced maxillary canines was used. Two groups were created to simulate two commonly used SWAs techniques, continuous archwire (Group 1) and piggyback models (Group 2). Each group had three subgroups with varying vertical displacement of the canine from 2 to 6 mm from the occlusal plane. The displacement and stress distribution were noted in each group.

Results: As the vertical displacement increased in Group 1, the concentration of von Mises stress increased progressively at the incisal third (0.36, 0.41 and 0.44 MPa) at 2, 4, and 6 mm, respectively, with decreased maximum occlusal movement in the vertical plane with respect to the canine. Group 2 exhibited a similar pattern but greater occlusal movement of the canine compared with Group 1.

Conclusion: A vertical displacement of 4 mm is the optimal level at which continuous arch mechanics should be considered. For displacements beyond 4 mm, the piggyback wire technique is a suitable alternative.

Keywords: Biomechanics, canine impaction, evidence-based practice, finite element analysis (FEM), force

INTRODUCTION

Ectopic, or vertically displaced teeth are one of the most commonly encountered orthodontic problems. This vertical displacement can occur in both anterior and posterior teeth; the most commonly occurring vertical displacement is in the permanent maxillary canine, with 1-2% prevalence in the general population.^{1,2} The

Corresponding author: Aditya Talwar, e-mail: dradityatalwar@gmail.com

Received: November 29, 2022 **Accepted:** April 27, 2023 **Publication Date:** June 30, 2024



Copyright© 2024 The Author. Published by Galenos Publishing House on behalf of Turkish Orthodontic Society. This is an open access article under the Creative Commons AttributionNonCommercial 4.0 International (CC BY-NC 4.0) License.

(VWLDPDWLRQ RI DHQWDO DJH LQ &KLOGUHQ XVLQJ ORGLILHG DHPLUMLDQ'V OHWKRG LQ ODKH 5HJLRQ

HDMDUD 0&¹, 5HQD (SKUDLP², APELOL AyLOOLDWK³, 5DPQHVK 3⁴,
OULGKXO 08⁵, 6UHHODNVKPL 5DMHQGUDQ⁶

HRw WR FLWH WKLV DUWLFOH:

+DMDUD 0&, 5HQD (SKUDLP, APELOL AyLOOLDWK *Ht DO*. Estimation of Dental age in Children using Modified Demirjian's Method in ODKH 5HJLRQ. ,QG -)RUHQVLF 2GRQWRO 2024;17(1):07–13.

AEVWUDFW

BDFNgrRunG: AJH HVWLPDWLRQ LV RQH RI PRVW LPSRUWDQW IDFWRUV HPSORyHG LQ HVWDEOLVKLQJ WKH LGHQWLWY RI DQ LQGLYLGXDO DQG LQ GHQWLVWUy.LW LV SHUIRUPHG WR GHWHUPLQH GHQWDO DJH RI FKLOG SDWLHQW ZKLFK LQ PDQy LQVWDQFHV LV GHODyHG RU DGYDQFHG LQ UHODWLRQ WR WKHLU FKURQRORJLFDO DJH. ZUWKRGRLWLF DQG OYRIXQFWLRQDO WUHDWPHQWV DUH SODQHG DV SHU GHQWDO DJH UDWKHU WKDQ FKURQRORJLFDO DJH RI FKLOG. *HPLUMLDQ'V PHWKRG RI DJH HVWLPDWLRQ ZDV IRXQG WR GLIHU LQ GLIHUHQW UHJLRQV DOO RYHU ZRUOG.

AiP: (YDOXDWH WKH DFFXUDFy RI GHQWDO DJH HVWLPDWLRQ LQ FKLOGUHQ DJHG 6-10 yHUV, XVLQJ PRGLILHG 'HPLUMLDQ'V OHWKRG LQ ODKH DQG WR GHWHUPLQH LWV DSSOLFDEOLWY LQ ODKH UHJLRQ.

ODWerIDOs & 0eWhRGRORgy: 6WXGy VDPQH FRQVLVWHG RI RUWKRSDQWRPRJUDPV RI 160 VXEWHFWV (80 ERYV DQG 80 JLUOV). 8VLQJ *HPLUMLDQ'V PHWKRG, PRGLILHG Ey AFKDUyD, DOO 23*V ZHUH DQDOyVHG, LQ ZKLFK HDFK WRRWK VWDJH ZDV UDWHG WR REWDLQ D WRWDO GHQWDO PDWXULWY VFRUH ZKLFK ZDV VXEVLWXWHG LQWR UHJUHVVLRQ IRUPXOD WR JHW GHQWDO DJH RI HDFK SDWLHQW. 5HVXOW ZDV WDEODWHG DQG VWDWLVLWLFDOOy DQDOyVHG. 7KH GLIHUHQFHV EHWZHHQ &A DQG 'A ZHUH DQDOyVHG Ey WKH SDLUHG VDPQH W-WHVW DQG 3HUVVRQ'V FRUHHODWLRQ DQDOyVLV.

ResuOWs: 7KH UHVXOWV RI VWXGy VKRZHG WKDW 'HPLUMLDQ'V WHFKQLTXH RYHUHVWLPDWHG &A Ey 2.8("2.1) yHUV DQG 2.6("1.9) yHUV LQ JLUOV DQG ERYV UHVSHFWLYHoY, LQ FKLOGUHQ RI ODKH. ODKH-VSHFLILF UHJUHVVLRQ IRUPXOD ZDV GHULYHG DV D FRUHFWRU IDFWRU.

&RnFousiRn: ORGLILHG *HPLUMLDQ'V PHWKRG LV DQ DUHD VSHFLILF PHWKRG RI GHQWDO DJH GHWHUPLQDWLRQ DQG ZLOO EH DSSOLFDEOH WR FKLOGUHQ RI ODKH RQOy Ey XVLQJ D ODKH VSHFLILF UHJUHVVLRQ IRUPXOD.

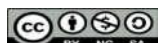
.HywRUGV: Modified Demirjian's Method; Chronological age; Dental age.

AXWKRU'V AILOLDWLRLQV: ¹3RVWJUDGXDW 6WXGHQW, ²3URIHVVRU & +2', ³3URIHVVRU, ⁴AVVLVWDQW 3URIHVVRU, 'HSDUWPHQW RI 3HGLDWULF DQG 3UHYHQWLYH *HQWLVWUy, ODKH ,QVLWXWH RI *HQD 6FLHQFHV DQG +RVSLWDO, ODKH 673310, .HUDOD, ,QGLD.

&RUUHVSRQGLQJ AXWKRU: 5DPQHVK 3, 3URIHVVRU, 'HSDUWPHQW RI 3HGLDWULF DQG 3UHYHQWLYH *HQWLVWUy, ODKH ,QVLWXWH RI *HQD 6FLHQFHV DQG +RVSLWDO, ODKH 673310, .HUDOD, ,QGLD.

(-PDLO: UDPQHVK710#JPDLO.FRP

5HFHLYHG RQ: 07.08.2024 AFFHSWHG RQ: 16.09.2024



This work is licensed under a Creative Commons
Attribution-NonCommercial-ShareAlike 4.0.

,1752D8&7,21

AJH HVWLPDWLRQ LV RQH RI WKH PRVW LPSRUWDQW IDFWRUV HPSORyHG LQ HVWDEOLVKLQJ WKH LGHQWLWY RI DQ LQGLYLGXDO DQG LW LV SHUIRUPHG IRU YDULRXV reasons such as mass disasters like fire accidents DQG FUDVKHV.¹ ,Q GHQWLVWUy DV LW LV SHUIRUPHG WR GHWHUPLQH WKH GHQWDO DJH RI WKH FKLOG SDWLHQW, ZKLFK LQ PDQy LQVWDQFHV LV GHODyHG RU DGYDQFHG LQ UHODWLRQ WR WKHLU FKURQRORJLFDO DJH. 7KH

<https://doi.org/10.48047/AFJBS.6.15.2024.12229-12235>



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

Prevalence of class III malocclusion and irreversible pulpitis in a known population and its treatment

Dr. Viswapurna Senguttuvan¹, Dr. Shefally garg², Dr. Ashwathi N³, Dr. Manas G⁴, Dr. Anushka yadav⁵, Dr. Neha verma⁶

¹Consultant Orthodontics, Oman Dental College, Muscat, Oman.

²Reader, Department of Conservative Dentistry and Endodontics, Desh Bhagat Dental College and Hospital Mandi Gobindgarh

³Reader, Department of Orthodontics Mahe institute of dental sciences and Hospital

⁴Senior lecturer, Department of Orthodontics, Mahe institute of dental sciences and hospital

⁵Associate professor, Department of Conservative Dentistry and Endodontics Rajasthan Dental college and Hospital, Jaipur, Rajasthan.

⁶Reader, Department of Pedodontics Rkdf dental college of dental sciences Bhopal

Corresponding author: Dr. Viswapurna Senguttuvan
Consultant Orthodontics
Oman Dental College, Muscat, Oman

Volume 6, Issue 15, Oct 2024

Received: 15 Aug 2024

Accepted: 25 Sep 2024

Published: 21 Oct 2024

doi: [10.48047/AFJBS.6.15.2024.12229-12235](https://doi.org/10.48047/AFJBS.6.15.2024.12229-12235)

Abstract

Background: This study was conducted to assess the prevalence of class III malocclusion and irreversible pulpitis in a known population and its treatment.

Material and methods: This study was conducted to assess the prevalence of class III malocclusion and irreversible pulpitis. This study comprised of 123 participants. The subjects had been explained about the procedure and were asked to give consent. 23 out of 100 subjects refused to provide consent and hence they had been excluded from the study. overall, 100 subjects had been included in the study. All the participants underwent oral clinical examination. The prevalence of class III malocclusion and irreversible pulpitis had been assessed. The findings were tabulated. For the subjects with class III malocclusion, various appliances had been fabricated for treatment, while amongst those with irreversible pulpitis, root canal treatment had been planned. Statistical analysis was conducted using SPSS software.

Results: In this study, there were total 100 subjects of which, 56 were male and 44 were female. The prevalence of class III malocclusion was 26%. The prevalence of irreversible pulpitis was 39%. For the treatment of class III malocclusion, Frankel III appliance was given in 13 subjects, chin cup was provided to 8 patients and reverse pull headgear was fabricated for 5 individuals. For the management of irreversible pulpitis, root canal treatment was done in all the subjects.

Conclusion: The prevalence of class III malocclusion and irreversible pulpitis in this study was 26% and 39%, respectively. For the treatment of class III malocclusion, appliances like reverse pull headgear, chin cup and Frankel III appliance were given. The subjects with irreversible pulpitis were scheduled for root canal treatment.

Keywords: Root canal treatment, Class III malocclusion, Treatment, Prevalence



Management of Cohesive and Adhesive Fractures of Porcelain Fused Metal Crowns Using Ceramic Repair Kit : A Case Report

Jobin joy¹, Ragul I¹, Prasad aravind¹, Lino paul², Harishini S², Jailaan murshitha², Peter S², Shabana²

^{1,2}Department of prosthodontics and crown and bridge, mahe institute of dental sciences and hospital, mahe, india

(Received: 04 February 2024

Revised: 11 March 2024

Accepted: 08 April 2024)

KEYWORDS

Ceramic Repair Kit, Cohesive And Adhesive Fractures, IVOCLAIR

ABSTRACT:

Since porcelain has an enhanced attractive look and the metal has strong strength properties, porcelain fused to metal restorations are among the most often utilized restorations in fixed prosthodontics. Despite all of its benefits, there are also drawbacks, such as the ceramic cracking or breaking, exposing the metal. There are two ways to fix it: direct chairside repair and indirect laboratory repair. However, the indirect technique increases the risk of abutment tooth failure when removing the restoration. This case report aimed to present an integrated planning related to functional, aesthetic and emotional requirements from the patients.

A 70-year-old male patient was presented with the chief complaint of chipping of ceramic layer when he bites. Upon investigation, it was discovered that the restoration was completed eight years prior, and there was a higher risk of abutment failure if the prosthesis was attempted to be removed. We intended to use the Ivoclar ceramic repair kit and did direct intraoral ceramic repair.

1. Introduction

Porcelain fused to metal restorations have been one of the most common restorations used in fixed Prosthodontics because of the high strength properties of the metal, casting accuracy, durability with added cosmetic appearance of porcelain [1]. Although porcelain or ceramic has been used extensively in dentistry, it has its own limitations and disadvantages [1]. Taking into considerations, the vast difference in modulus between metal and ceramic materials, there are high chances of mechanical failure of PFM system [2]. Clinically, such failures mostly began as porcelain fracture that may be caused by poor abutment preparation, inappropriate coping design, contamination, physical trauma, occlusal prematurity or technical errors [3]. In spite of the advancements of dental materials in the strength of the bonding of PFM restorations, there are 5% chances of failure after 10 years of cementation [4][5]. Therefore, failures in porcelain are fairly common and have been reported in the range of 2.3%– 8% and are said to be the second greatest cause of failure after caries [6][7]. These failures may be classified as: -

1) Simple (involving only porcelain body),

2) Mixed (associated with exposure of metal and porcelain)

3) Complex (with substantial metal exposure) [2]

It may be looked-for to repair a broken retainer of a fixed prosthesis rather than to remove it and taking risk as there is possibility that the entire restoration may get destroyed or the abutment teeth may get damaged [1]

Case report

A 70-year-old man came in with the main complaint of ceramic chipping off the PFM crown. Upon investigation, it was discovered that the patient had completed the prosthesis eight years prior. It was also discovered that the crown was a joint crown, and removing it would needlessly damage the abutment tooth. Subsequently the treatment plan was modified to use the IVOCLAIR intraoral ceramic repair kit to fix the prosthesis.

Assessment of Smear Layer Removal and Penetration Depth of Root Canal Irrigant Using Different Irrigation Activation Systems: A Comparative Study

Mohan D Pujari¹, Maneesha Das², Asutosh Das³, Dinesh G Kamath⁴, Junu Henry⁵, Arun Shyam⁶, Doaa M Alhaleis⁷

Received on: 30 December 2023; Accepted on: 29 January 2024; Published on: 14 June 2024

Abstract

Aim: The aim of the current study was to evaluate the penetration depth and smear layer removal of root canal irrigant using various irrigation activation techniques.

Materials and methods: In this investigation, sixty single-rooted premolars extracted for orthodontic purposes were chosen. Diamond burs were used to create an access cavity, and #10 K-file was used to determine the patency. About sixty samples were divided into the following three groups (20 samples in each group), group I: Irrigation with conventional needle, group II: Activation of EndoVac system, group III: Passive ultrasonic irrigation (PUI). The efficacy of the smear layer was assessed using a scanning electron microscopy at a $\times 2000$ magnification. One-way ANOVA was used to record and analyze the data. All statistical analyses were performed with a significance level of $p < 0.05$.

Results: At coronal third, the maximum smear layer was removed in group II (1.26 ± 0.02) followed by group III (1.84 ± 0.16) and group I (2.89 ± 0.21). At middle third, smear layer removal was maximum in group I (1.18 ± 0.10) followed by group III (1.72 ± 0.09) and group II (2.66 ± 0.18). At apical third, the more smear layer was removed in group II (1.02 ± 0.01) followed by group III (1.58 ± 0.08) and group I (2.38 ± 0.06). There was a highly significant difference found between the three different irrigation systems at all three levels ($p < 0.001$).

Conclusion: In conclusion, every irrigation device that was evaluated was successful in removing the smear layer from the root canal. However, the EndoVac system group removed a greater amount of smear layer compared with PUI and conventional needle group.

Clinical significance: With the goal of promoting cleaning that is beyond the ability of mechanical devices, irrigation is a crucial part of root canal therapy. If an efficient irrigation delivery system is used, the irrigants can reach the working length (WL). This type of distribution system needs to provide a suitable amount of irrigants up to the WL, as well as have enough flow and be effective at debriding the entire canal system.

Keywords: Irrigation systems, Root canal, Scanning electron microscopy, Smear layer.

The Journal of Contemporary Dental Practice (2024): 10.5005/jp-journals-10024-3626

Introduction

The goal of an endodontic treatment is to eradicate microorganisms from affected radicular canals by combining a biomechanical technique with an antibacterial therapy to induce periapical tissue repair. The purpose of instrumentation in clinical practice is to remove a portion of hard tissue from the root canal, make it easier for irrigants to reach the apical anatomy, and shape the canal system so that a permanent root filling can be placed in it. It is not possible to reliably eradicate the bacteria from infected root canals using mechanical instrumentation or saline irrigation alone; nevertheless, enough irrigation in conjunction with instrumentation is necessary to finish the cleaning process and lower the microbial load in the canal system.¹

The irrigants must reach the working length (WL) through an efficient irrigation delivery system. To effectively debride the entire canal system, such a delivery system must have sufficient flow and deliver a sufficient volume of irrigant all the way to WL. There have been reports that the smear layer and debris from the intricate anatomy of the root canal system could not be removed by hand irrigation.²

The traditional needle irrigation method is the one that is most frequently utilized. It entails changing and restocking the irrigant in the canal's apical third.³ Since this irrigating technique's effectiveness is not all that great, better cleaning especially in complex areas requires improved procedures. Over time, a number of additional methods have emerged, including ultrasonically

¹Department of Conservative Dentistry and Endodontics, Aditya Dental College, Beed (MUHS Nashik), Maharashtra, India

²Department of Conservative Dentistry and Endodontics, Institute of Dental Sciences, Siksha 'O' Anusandhan University, Bhubaneswar, Odisha, India

³Department of Oral and Maxillofacial Surgery, Kalinga Institute of Dental Sciences, KIIT Deemed to be University, Bhubaneswar, Odisha, India

⁴Department of Conservative Dentistry and Endodontics, Indira Gandhi Institute of Dental Sciences, Kothamangalam, Ernakulam, Kerala, India

⁵Department of Prosthodontics, Al-azhar Dental College, Thodupuzha, Kerala, India

⁶Department of Conservative Dentistry and Endodontics, Mahe Institute of Dental Sciences & Hospital, Chalakkara, U.T. of Puducherry, India

⁷Department of Operative and Restorative Dentistry, Dentistry Program, Batterjee Medical College, Jeddah, Saudi Arabia

Corresponding Author: Mohan D Pujari, Department of Conservative Dentistry and Endodontics, Aditya Dental College, Beed (MUHS Nashik), Maharashtra, India, Phone: +91 8149238157, e-mail: mohanpujari712@gmail.com

How to cite this article: Pujari MD, Das M, Das A, et al. Assessment of Smear Layer Removal and Penetration Depth of Root Canal Irrigant Using Different Irrigation Activation Systems: A Comparative Study. *J Contemp Dent Pract* 2024;25(4):331–334.



Prosthodontic Management of Severely Proclined and Mobile Dentition with Spacing Using Digital Smile Designing: A Case Report

Ragul I¹, Prasad aravind², Jobin joy², Peter S², Shabana², Kanakamani³

^{1,2} Department Of Prosthodontics And Crown And Bridge , Mahe Institute Of Dental Sciences And Hospital , Mahe , India.

³ Department Of Conservative Dentistry And Endodontics , Mahe Institute Of Dental Sciences And Hospital , Mahe , India.

(Received: 07 January 2024

Revised: 12 February 2024

Accepted: 06 March 2024)

KEYWORDS

Digital Smile Design, Exocad Software, White Aesthetics, Group Function Occlusion

ABSTRACT:

“A Captivating Smile Showing an even row of natural gleaming white teeth is a major factor in achieving that elusive dominant characteristic known as Personality – Dr. Charles Pincus”. An aesthetic smile has always been an attractive element and it plays a significant role in overall psychology and confidence level of an individual. The digital smile design (DSD) has been used as a tool for esthetic dentistry that improves predictability of rehabilitation procedures.

This case report aimed to present an integrated planning related to functional, esthetic and emotional requirements from the patients based on digital design parameters.

A 66 years old lady was presented with chief complaint of spacing in her upper and lower anterior teeth which were grade I mobile due to trauma from occlusion. A diagnostic scanning was done using fine intraoral scanner and digital smile designing was done using an Exocad software. Intentional RCT followed by tooth preparation from canine to canine both in maxillary and mandibular arch was done. Crown root ratio was changed to 1:1 to reduce the mobility and Group function occlusion was given on both the sides.

Final restoration was done using zirconia premium and cementation was done using resin cement.

1. Introduction

A beautiful smile and harmonic facial aesthetics are features that contribute to the well-being of any patient. Smile has always been an attractive element and it plays a significant role in overall psychology and confidence level of an individual. Smile aesthetics are prejudiced by the texture, form, color, and alignment of the anterior teeth as well as to intraoral soft tissues, facial esthetics and lips. The final outcome of an aesthetic procedure should be as close as to the patient's expectations, enhancing the patient's smile and facial aesthetics^{[1][2]}.

The digital smile design (DSD) has been utilized as a means for esthetic dentistry that enhances predictability of rehabilitation procedures. It is a digital planning tool for cosmetic dentistry that assesses the aesthetic link between the patient's teeth, smile, gingiva and face by

inserting lines and digital drawings onto facial and intraoral photographs. The practice of digital tools offers dentists and technicians a new viewpoint for diagnosis and treatment plan, that facilitate and improve the communication among dentist, technician, and patient^{[3][4]}.

2. Case Report

A 66-year-old female patient was reported with a chief complaint of spacing in her upper and lower anterior teeth. On intraoral examination, it was evident that 11,21,31 and 41 were having grade I mobility due to trauma from occlusion. There was diastema in maxillary and mandibular anterior teeth.

Original Research Article

Assessment of variations in upper and lower gonial angle in children with mouth breathing habit

Shemnidha Saleem, Dhanya Kamalakshan Belchada*, Ambili Ayilliath, Fazila Azhikoden

Department of Pediatric and Preventive Dentistry, Mahe Institute of Dental Science and Hospital, Chalakkara, Palloor, Mahe, Puducherry, India

Received: 13 August 2024

Revised: 18 October 2024

Accepted: 21 October 2024

*Correspondence:

Dr. Dhanya Kamalakshan Belchada,
E-mail: aqualibs983@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Mouth breathing is one of the most common deleterious oral habits in children. The habitual position of muscles inside and outside the mouth will affect dental development. Mouth breathing influences skeletal growth and thereby affects the cephalometric parameters. The present study aimed to assess if there is any variation in upper and lower gonial angles in children with mouth breathing habit.

Methods: The 33 patients in the age group of 8 to 12 years reporting to the Department of Pediatric and Preventive Dentistry with chief complaint of mouth breathing was selected for the study based on inclusion and exclusion criteria. Lateral cephalograms of these children were taken with a digital panoramic system under standard exposure factors, as recommended by the manufacturer. Upper and lower gonial angles were determined on the lateral cephalograms. The values obtained were tabulated and subjected to statistical evaluation.

Results: The mean upper and lower gonial angles were seen to increase from the normal in children with mouth breathing habit. However, independent sample t test showed no statistically significant difference in upper and lower gonial angles with a p value of 0.598 in upper gonial angle and 0.714 in lower gonial angle.

Conclusions: Early detection of the changes in the upper and lower gonial angles can help a pediatric dentist in effectively framing a treatment plan in children with mouth breathing habit, to prevent further deterioration in the dental and skeletal structures and be able to correct the already occurred unfavourable changes in them.

Keywords: Mouth breathing habit, Gonial angle, Upper gonial angle, Lower gonial angle

INTRODUCTION

Mouth breathing is one of the most common deleterious oral habits in children.¹ The function and morphology of the orofacial system are unified. The habitual position of muscles inside and outside the mouth will affect dental development. Malocclusion appears more frequently in mouth-breathing children than in nasal-breathing children. Children with normal breathing patterns keep their lips closed to form a sealed oral space. The tongue is positioned in contact with the palate and lingual side of maxillary dentition. A balanced muscle strength from the internal tongue and external lips and cheek is crucial for the development of a normal upper dental arch.²

About 25-30% of children breath through the mouth instead of the nose. Mouth breathing often occurs due to upper airway obstruction which reduces the nasal airflow and forces the air to enter completely or partially through oral cavity.³ According to the functional matrix theory established by Moss and Salentijn in 1969, normal respiratory function of the nose is essential for the balanced growth of craniofacial structures. When upper airway obstruction is not removed promptly, or when mouth breathing is still habitually present after the removal of obstruction, mouth breathing will have negative effects on not only the normal development and function of the dentofacial complex but also the general health of growing children.⁴

Review began 02/04/2024
Review ended 02/14/2024
Published 02/19/2024

© Copyright 2024
Nararyanan et al. This is an open access
article distributed under the terms of the
Creative Commons Attribution License CC-
BY 4.0., which permits unrestricted use,
distribution, and reproduction in any
medium, provided the original author and
source are credited.

Computer-Assisted Morphometric Comparative Analysis of Argyrophilic Nucleolar Organizer Regions (AgNORs) in Leukoplakia With Dysplasia and Oral Squamous Cell Carcinoma

Roshin C. Nararyanan ¹, Bastian T. Sebastian ¹, Suhana H. Sulaikha ¹, Cimmy Augustine ², Teenu Thomas ³, Anjali Sudhakaran ⁴

¹. Oral Pathology and Microbiology, Mahe Institute of Dental Sciences & Hospital, Mahe, IND ². Prosthodontics, Mahe Institute of Dental Sciences & Hospital, Mahe, IND ³. Public Health Dentistry, Mahe Institute of Dental Sciences & Hospital, Mahe, IND ⁴. Oral and Maxillofacial Surgery, Mahe Institute of Dental Sciences & Hospital, Mahe, IND

Corresponding author: Roshin C. Nararyanan, dr.roshincn@mahedentalcollege.org

Abstract

Background

Oral squamous cell carcinoma (OSCC) and oral leukoplakia (OL) with dysplasia are closely linked conditions in the oral cavity, with the latter often indicating precancerous changes, underscoring the urgency of early detection and intervention. Histopathological confirmation is crucial for accurate diagnosis. The nucleolar organizer region (NOR), specifically analyzed through silver-staining (argyrophilic NORs), provides insights into nuclear changes associated with the lesion. Computer-assisted morphometric analysis enhances precision and objectivity in evaluating AgNOR-related parameters.

Aim

To conduct a computer-assisted morphometric comparison of AgNORs using various NOR-related parameters in cases of OSCC and leukoplakia with dysplasia and to evaluate their diagnostic significance.

Materials and methods

A computer-assisted morphometric analysis was conducted using various NOR-related parameters, such as nuclear profile area, single AgNOR profile area per nucleus, total AgNOR profile area per nucleus, and number of AgNOR profiles per nucleus on a total sample of 90 specimens, which includes leukoplakia with dysplasia (30), OSCC (30), and a control group, including 30 samples of normal oral mucosa. A comparison was conducted on the morphometric values between the groups under investigation. Tukey's multiple comparison tests and ANOVA were used to analyze the data and determine the differences between the groups.

Results

The present investigation revealed a significant difference in all four AgNOR-related parameters between leukoplakia and OSCC in comparison to the control group (normal oral mucosa). Comparing OL (41.78 ± 0.46) and OSCC (62.78 ± 0.47) to the control group (35.93 ± 0.99), the mean value of nuclear profile area (A Nuc) was significantly greater. In comparison to the control group (3.40 ± 0.09), the mean value of a single AgNOR profile area per nucleus (A NOR) was found to be relatively lower in both research groups, OL (2.00 ± 0.02) and OSCC (1.39 ± 0.01). The total AgNOR profile area per nucleus (TA NOR) had a mean value of 10.61 ± 0.69 in OL and 12.05 ± 0.28 in OSCC, respectively, compared to 7.82 ± 0.38 in the control group. The study found that there was more number of profiles of AgNORs per nucleus (n NOR) in the study groups of OL (5.30 ± 0.29) and OSCC (8.69 ± 0.19) than in the control group (2.32 ± 0.11).

Conclusion

The parameters linked to the NOR are biologically informative and easy to check regularly in a pathology lab. Additionally, AgNORs give us important information that enables us to study the range of nuclear changes in malignant and potentially malignant lesions.

Categories: Pathology, Dentistry, Oncology

Keywords: profile area per nucleus, nuclear profile area, dysplasia, morphometric analysis, oscc, oral squamous cell carcinoma, leukoplakia, nucleolar organizer region, silver nitrate, agnor

Introduction

Oral squamous cell carcinoma (OSCC) is the most prevalent form of malignancy in the mouth, making up

How to cite this article

Nararyanan R C, Sebastian B T, Sulaikha S H, et al. (February 19, 2024) Computer-Assisted Morphometric Comparative Analysis of Argyrophilic Nucleolar Organizer Regions (AgNORs) in Leukoplakia With Dysplasia and Oral Squamous Cell Carcinoma. Cureus 16(2): e54471. DOI 10.7759/cureus.54471



Evaluation of Pulpal Temperature Changes in Response to Interproximal Reduction Using Oscillating System

Romario Jerie¹, Jithesh kumar², Panchami Marish³, Steve Mathew Jacob³, Manas³, Thrishna³

^{1,2,3}Department of orthodontics and Dentofacial orthopedics, Mahe institute of dental sciences and hospital, mahe, Puducherry.

(Received: 07 January 2024

Revised: 12 February 2024

Accepted: 06 March 2024)

KEYWORDS

Interproximal reduction,
Pulpal temperature,
Oscillating kit

ABSTRACT:

Background- Non extraction treatment protocol has gained a lot of popularity over extraction for orthodontic treatment. Interproximal reduction of enamel is one such procedure that helps to do orthodontic treatment without extraction. This procedure which can be done by various techniques causes rise in temperature in the pulp chamber. Temperature change in pulp chamber during interproximal reduction has been exhibited by various studies. Therefore, this study aimed to evaluate the temperature changes in the pulp chamber of the various teeth during interproximal enamel reduction using IPR kit.

Aim- To determine the amount of heat produced by IPR kit (oscillating kit) during interproximal reduction and to evaluate and compare the heat generated during the IPR procedures in different teeth.

Materials- 36 extracted teeth (upper Central incisor, upper lateral incisor, upper canines, upper 1st premolar, upper 2ND premolar and lower incisor) were collected. The extracted teeth were divided into 6 groups. The teeth which are subjected to determine heat generation were isolated. A k type thermocouple wire was used to measure the temperature in the pulp chamber and the wire was inserted into the pulp chamber which was attached to a data logger. After recording the baseline temperature, interproximal enamel reduction was performed on both mesial and distal sides of the tooth during which the changes in pulp temperature were recorded in degree Celsius (°C). The temperature of all 36 teeth were recorded using the same methodology, and the temperature change was then compared and the average of temperature readings on the mesial and distal sides was calculated by adding the mesial and distal temperature readings and then dividing it by 2. The resultant reading was then subtracted from the baseline temperature in order to calculate the temperature rise.

Results- This study clearly indicates that highest temperature rise observed in the upper 2ND premolars (group 5), followed by upper 1st premolar (group 4) and the least temperature rise in the upper central incisors (group 3).

Conclusion- IPR was found to be a safe adjunct procedure for orthodontic space gaining, with this study proving that the temperature rise due to the oscillating kits is safe on the dentition.

1. Introduction

In view of the current emphasis on non-extraction-based orthodontics, alternative space-gaining procedures including arch expansion, molar distalization and interproximal reduction are increasingly being explored. Interproximal enamel reduction is defined as the “clinical procedure that

requires the proximal enamel surfaces to be reduced, anatomically reconstructed for the correction of any inconsistency in the tooth shape”^[1]. The other common terms used for this procedure are “stripping”, “re-approximation”, “slenderization”, “coronoplastica”, “slicing”, “mesio-distal reduction”, “selective grinding”, and



Awareness and Attitude Regarding Hepatitis B Vaccine among Undergraduate Dental Students: An Institutional Study

¹Dr Megha B, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe, Puducherry

²Irfana Jabbar, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe, Puducherry

³K Srivaidhya, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe, Puducherry

⁴Hiba Hamza, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe, Puducherry

⁵Henna K, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe, Puducherry

⁶Ireen Babu, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe, Puducherry

Corresponding Author: Dr Megha B, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe, Puducherry.

How to citation this article: Dr Megha B, Irfana Jabbar, K Srivaidhya, Hiba Hamza, Henna K, Ireen Babu, “Awareness and Attitude Regarding Hepatitis B Vaccine among Undergraduate Dental Students: An Institutional Study”, IJMACR- November - 2024, Volume – 7, Issue - 6, P. No. 69 – 72.

Open Access Article: © 2024, Dr Megha B, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution license (<http://creativecommons.org/licenses/by/4.0>). Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Objectives: to evaluate awareness and attitude regarding hepatitis b vaccine among undergraduate dental students

Materials and Methods: A cross-sectional study was conducted to evaluate the knowledge regarding hepatitis B among dental students and interns. Participants were requested to fill the structured questionnaire.

Results: study included 370 undergraduate students. 273 participants had taken hepatitis B vaccine. 11% participants had checked the antibody titre after taking hepatitis B vaccine. 45% participants have no knowledge regarding post exposure prophylaxis for hepatitis B.

Conclusion: Participants had good knowledge regarding hepatitis B. There was certain gap in the knowledge as well which has to be filled.

Keywords: Hepatitis B, Vaccination, Viral infections

Introduction

Hepatitis B infection is a major public health issue worldwide and is a leading cause of mortality and morbidity. ¹WHO has set a goal of eliminating viral hepatitis as a major public health threat by 2030.² Since hepatitis B infection can be acquired through needle stick injury health care professionals are at high risk of attaining this infection. This makes it very important that all the health care professionals should be protected from this through immunization. This study aims at creating awareness among undergraduate dental students regarding hepatitis B.

Materials and method

Study design: Cross Sectional Questionnaire Study



Assessment of Knowledge and Awareness about Oral Manifestations of Diabetes among Diabetic Patients

¹Dr Megha B, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe

²Jincy Joseph, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe

³K. Naganandhini, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe

⁴Hiba Muhammad, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe

⁵Hridhya Ramesh, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe

Corresponding Author: Dr Megha B, Mahe Institute of Dental Sciences and Hospital, Chalakara, Mahe

How to citation this article: Dr Megha B, Jincy Joseph, K. Naganandhini, Hiba Muhammad, Hridhya Ramesh, “Assessment of Knowledge and Awareness about Oral Manifestations of Diabetes among Diabetic Patients”, IJMACR- December - 2024, Volume – 7, Issue - 6, P. No. 58 – 62.

Open Access Article: © 2024 Dr Megha B, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution license (<http://creativecommons.org/licenses/by/4.0>). Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: diabetes is a global epidemic which is associated with various complications. Association of oral health and diabetes is already proved. However, many patients are not aware of the oral diseases associated with diabetes.

Aims and objectives: To evaluate the awareness and attitude of patients regarding the same.

Materials and method: Study included 358 diabetic patients. Participants were asked fill the questionnaire which was evaluated. Participants were educated regarding the oral complications of diabetes.

Result: 67% patients in present study were male and rest were females. Most of the patients were unaware of the oral manifestations of diabetes mellitus. Conclusion: Though the knowledge regarding oral manifestation of diabetes was less, most of the patients had positive

attitude oral health and was keen to gain knowledge regarding the same

Keywords: Diabetes, Periodontitis, Periodontal Abscess, Xerostomia

Introduction

Diabetes mellitus is disease characterized by hyperglycemia. Diabetes effect various functions of the body. Diabetes associated with high mortality and morbidity.¹ Uncontrolled diabetes might be associated with various complications such as diabetic nephropathy, coronary artery diseases and stroke.² Effect of diabetes in oral cavity is well proved.³ According to International Diabetes Federation, diabetes might rise to 69.9 million by the year 2025 in India. Studies done in various countries had shown lack of knowledge regarding diabetes in patients.⁴ This study aims at assessing the awareness about oral manifestations of



RESEARCH ARTICLE

REVISED Investigating the link between frontal sinus morphology and craniofacial characteristics with sex: A 3D CBCT study on the South Indian population [version 2; peer review: 2 approved]

Ceena Denny ¹, Mohana Bhoraskar¹, Sabiha Abdul Aziz Shaikh¹, Bastian T S², Nanditha Sujir ¹, Srikant Natarajan ³

¹Oral Medicine and Radiology, Manipal College of Dental Sciences, Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka-575001, Mangalore, India

²Oral and Maxillofacial Pathology, MAHE Institute of Dental Sciences, Chalakara, Puducherry, 673010, India

³Oral and Maxillofacial Pathology, Manipal College of Dental Sciences, Mangalore Manipal Academy of Higher Education, Manipal, Karnataka.India-575001, Mangalore, India

v2 First published: 11 Jul 2023, **12**:811
<https://doi.org/10.12688/f1000research.137008.1>

Latest published: 11 Sep 2023, **12**:811
<https://doi.org/10.12688/f1000research.137008.2>

Abstract

Background: Measurement of craniofacial parameters plays an important role in sex determination in forensic science. The present study was done using cone beam computed tomography (CBCT) scans to evaluate the morphologic structure of the frontal sinuses and compare it with the width of nasal, cranial, maxillary and mandibular width which might help us in sex determination.

Methods: A cross-sectional retrospective study was conducted using 142 full field of view (FOV) scans of patients archived from the department. The width of the nose, cranium, maxilla, and mandibular width was measured and compared with the frontal sinus between the two sexes.

Results: A paired t-test was done to compare the linear measurements for both sexes' right and left frontal sinuses. The measurements were higher in males when compared to females. There was a statistically significant asymmetry (larger dimension on the left side) of the anteroposterior (p-value of 0.012) and superior-inferior dimensions in males (p-value of 0.135). Spearman's correlation showed that frontal sinus correlated with other craniofacial parameters like nasal, cranial, maxillary and mandibular width among both sexes. The frontal sinus, nasal, cranial, maxillary and mandibular widths were higher in males when compared to females (independent t-test). Discriminant function scores showed 66-68% accuracy to discriminate sex, using the anteroposterior dimension and mandibular width.

Open Peer Review

Approval Status

	1	2
version 2 (revision) 11 Sep 2023		 view
version 1 11 Jul 2023	 view	 view

1. **Sudeendra Prabhu**, Yenepoya (Deemed to be University), Mangalore, India

2. **Arvind Babu Rajendra Santosh** , The University of The West Indies, Kingston, Jamaica

Any reports and responses or comments on the article can be found at the end of the article.

Gingival Recession Revealed: Etiology Clinical Significance and Modern Treatments

¹Dr Arjun MR, Reader, Mahe institute of dental sciences and hospital, Mahe

²Dr Anil Melath, Professor and HOD, Mahe institute of dental sciences and hospital, Mahe

³Dr Nanditha Chandran, Reader, Mahe institute of dental sciences and hospital, Mahe

⁴Dr Paventhan Jolie Coeur, Post Graduate, Mahe institute of dental sciences and hospital, Mahe

⁵P R Aparna, Undergraduate, Mahe institute of dental sciences and hospital, Mahe

⁶Parvathi A K, Undergraduate, Mahe institute of dental sciences and hospital, Mahe

Corresponding Author: Dr Paventhan Jolie Coeur, Post Graduate, Mahe institute of dental sciences and hospital, Mahe.

Citation of this Article: Dr Arjun MR, Dr Anil Melath, Dr Nanditha Chandran, Dr Paventhan Jolie Coeur, P R Aparna, Parvathi A K, “Gingival Recession Revealed : Etiology Clinical Significance and Modern Treatments”, IJDSIR- July– 2024, Volume –7, Issue - 4, P. No. 244 – 251.

Copyright: © 2024, Dr Paventhan Jolie Coeur, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Gingival recession is a prevalent condition characterized by the apical migration of the gingival margin, exposing the root surface and leading to potential attachment loss, hypersensitivity, root caries, and aesthetic concerns. Its etiology is multifactorial, involving aging, anatomical factors, trauma, systemic diseases, and vitamin deficiencies. Pathogenesis can be either trauma-associated or plaque-associated. Classification systems, such as Miller’s, help in assessing the severity of recession. Evaluation involves measuring both vertical and horizontal dimensions of recession. Treatment approaches include non-surgical methods, like monitoring, use of desensitizing agents, and orthodontic corrections, and surgical methods, such as pedicle grafts, free grafts, and guided tissue regeneration. Effective

management requires addressing the underlying causes and employing appropriate therapeutic techniques to enhance patient outcomes and oral health.

Keywords: Hypersensitivity, Desensitizing agents, Clinical Significance, Root surface, Plaque-associated.

Introduction

Gingival recession is a common condition in which there is apical migration of the gingival margin, resulting in exposure of the root surface.^[1] It can result in attachment loss, hypersensitivity, and formation of root caries, and restorative challenges.^[2] The etiology is multifactorial leading to recession. Some of the factors including age, anatomic factors, trauma, and systemic diseases such as diabetes, osteoporosis, autoimmune disorders, and vitamin deficiency have been elaborated in this review article. Additionally, recession can lead to aesthetic

Content available at: <https://www.ipinnovative.com/open-access-journals>

IP Indian Journal of Conservative and Endodontics

Journal homepage: <https://www.ijce.in/>

Original Research Article

The effect of diode laser on the shear bond strength of one step self adhesive systems to human dentin: An in vitro study

Arjama Chaudhury^{1*}, George Thomas¹, Sunil Jose¹, Sona Joseph¹, Manju Krishna¹, Saicharan G¹¹Dept. of Conservative Dentistry and Endodontics, Mahe Institute of Dental Sciences & Hospital, Mahe, Puducherry, India

ARTICLE INFO

Article history:

Received 26-09-2024

Accepted 02-11-2024

Available online 03-12-2024

Keywords:

Shear bond strength

Photopolymerization

Diode laser

Dentin adhesives

8th-generation bonding agents

ABSTRACT

Background: Adhesives are integral to modern restorative dentistry for enhanced functional and esthetic outcomes. The use of lasers for improved bonding is on the rise and there is a need to understand the effect of lasers on adhesives.**Aim:** The study aims to evaluate the effect of diode laser irradiation on one-step self-etch adhesive before their polymerization on the shear bond strength between resin cement and dentin.**Materials and Methods:** Thirty extracted human teeth were collected and the buccal surface was grounded till dentin was exposed. A window of 3mm x 3mm was made on all the specimens that served as test sites and were randomly allocated to three groups (n = 10); Group 1: G-Premio bond without laser irradiation followed by photopolymerization; Group 2: G-Premio bond with laser irradiation without photopolymerization, and Group 3: G-Premio bond with laser irradiation followed by photopolymerization. The Shear Bond Strength (SBS) was determined using a Universal Testing Machine. One-way ANOVA followed by post hoc Tukey test was used with a level of significance at $P \leq 0.05$.**Results:** SBS was significantly highest among Group 3 followed by Group 1 and the least SBS was found in Group 2 ($P < 0.001$). A post hoc test revealed significant differences between all three groups ($P < 0.001$).**Conclusion:** G-Premio bond irradiated with a diode laser followed by photo-polymerization exhibited the highest SBS.This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](#), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.For reprints contact: reprint@ipinnovative.com

1. Introduction

The ideas underlying dental adhesion, the most well-known subspecialty of restorative dentistry, were first developed by Buonocore¹ and then by Nakabayashi.² With advances to improve the outcomes of restorative dentistry, retention to enamel was achieved with ease however, retention to dentin was still a challenge owing to its higher organic content, tubular structure, and formation of smear layer post tooth preparation.³ The smear layer is removed by using the total etch or etch and rinse approach which was considered the gold standard.⁴ To overcome the demerits of the total etch

approach viz: over- & under-etching and the need for a more simplified method, the self-etch (SE) technique was introduced.

These adhesive systems include single bottle systems which combine priming and bonding in one step SE priming systems, which combine conditioning and priming in one step, and SE adhesive systems which combine priming and bonding.⁵ Self-etch adhesive systems (6th, 7th, and 8th generation adhesives) seem to outperform etch and rinse adhesive systems in dentinal bonding.⁵⁻⁸ Bonding agents with strong and/or mild acid etchants are often associated with complications like nano-leakage,⁹ hypersensitivity,⁵ breakdown of collagen

* Corresponding author.

E-mail address: arjamachows@gmail.com (A. Chaudhury).

Endocrown: A Minimally Invasive Alternative to Conventional Fixed Prosthesis

M Kirthiga ¹, George Thomas ¹, Sunil Jose ¹, Arun Shyam ¹, Aparna M ¹

1. Conservative Dentistry and Endodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, IND

Corresponding author: M Kirthiga, kirthiga97@gmail.com

Review began 11/19/2024

Review ended 11/23/2024

Published 11/26/2024

© Copyright 2024

Kirthiga et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

DOI: 10.7759/cureus.74514

Abstract

Endodontically treated teeth with compromised coronal tooth structure often require core build-ups with the support of radicular posts. In certain cases, the traditional post and core approach may not be possible due to various anatomical and clinical contraindications. Such cases require more meticulous planning and alternative treatment approaches for successful outcomes. The endocrown technique offers a conservative and minimally invasive approach, providing functional and aesthetic rehabilitation while preserving tooth structure. In this clinical case report, we discuss an endocrown-type restoration made from lithium disilicate ceramic in a maxillary first molar with extensive coronal destruction.

Categories: Dentistry

Keywords: endocrown, endodontically treated teeth, lithium disilicate glass-ceramic, monoblock, post-endodontic restoration

Introduction

The art and science of endodontics have paved the way for the human species to retain their compromised dentition much longer, thereby contributing to the general health and wellness of the population. Even though successful endodontic treatment helps to preserve natural teeth, the complexities involved in the treatment process may make endodontically treated teeth weaker and more susceptible to fracture. Therefore, post-endodontic management becomes a critical aspect of maintaining the longevity and functionality of such teeth.

The type of post-endodontic management depends on various factors, such as remaining tooth structure, aesthetics, functionality, and economics. Traditional methods of rehabilitation include core build-ups, post and core build-ups, and fixed prostheses such as full crowns. However, these traditional methods can weaken the remaining tooth structure, further leading to less-than-optimal results [1].

The new era heralded the use of conservative and less intrusive restorative techniques such as onlays and overlays to restore endodontically treated teeth. These techniques utilize the entire pulp chamber space as a retentive core, creating a 'monoblock'. This concept led to the innovative technique called 'endocrown'. Pissis created the first endocrown in 1995 [2,3].

Endocrowns offer several advantages over traditional posts and cores with crowns. They are easier to prepare and apply; require fewer clinical visits; provide excellent aesthetics; offer better bonding to dental tissues, thereby minimizing the chances of microleakage; and enhance the overall efficacy of endodontic treatment [4]. This case report describes the successful management of a tooth with a severely compromised structure using the endodontic treatment and an endocrown as post-endodontic rehabilitation.

Case Presentation

A 13-year-old male patient reported a chief complaint of decay in the left upper first maxillary molar. Clinical examination revealed that the tooth had suffered significant damage to its coronal structure due to caries. Based on the available clinical (Figure 1A) and radiographic findings (Figure 1B), the tooth was categorized as badly mutilated, and the treatment options considered included unconventional and complex modalities. There was insufficient crown height with compromised interocclusal space, negating the use of conventional post, core, and crown techniques. We, therefore, narrowed the treatment plan down to a root canal (Figure 1C) followed by IPS-e.Max Press endocrown fabrication and cementation.

How to cite this article

Kirthiga M, Thomas G, Jose S, et al. (November 26, 2024) Endocrown: A Minimally Invasive Alternative to Conventional Fixed Prosthesis. Cureus 16(11): e74514. DOI 10.7759/cureus.74514



Research Article

THE EFFECT OF ND:YAG, ER: YAG AND DIODE LASER IRRADIATION ON SHEAR BOND STRENGTH OF ONE STEP SELF ETCH ADHESIVE SYSTEM TO ENAMEL

Arjama Chaudhury, George Thomas, Sunil Jose, Saicharan G, Kanakamani R

Topex Apartment, Chalakkara, Mahe, Puducherry-673310

ARTICLE INFO

Article History:

Received 15th October, 2024Received in revised form 28th October, 2024Accepted 24th November, 2024Published online 28th November, 2024

Key words:

Diode laser, Nd: YAG laser, Er: YAG laser, self-etch bonding agent, shear bond strength

ABSTRACT

Objectives: To evaluate the shear bond strength of one-step, self-etch adhesive to human enamel surface treated with Nd: YAG, Er:YAG, and Diode Lasers. **Methods:** A total of 40 freshly extracted premolars were collected and after cleaning were randomly divided into 4 groups (N = 10). Group 1 (C), one step, self-etch adhesive was applied as per manufacturer instructions, without using laser system served as the control group; Group 2, the adhesive was irradiated using Er-YAG laser (E) (2940 nm, 10, Hz, 0.4w, 40 mJ), Group 3, the adhesive was irradiated using Nd: YAG laser (N), and Group 4, the adhesive was irradiated using Diode laser (D). Post irradiation, composite build-up was done and samples were stored for 24 hours in 37°C distilled water. The shear bond strength was measured using the Universal Testing Machine and data were analyzed using one-way ANOVA and post hoc Tukey test. **Result:** Group 4 (Diode laser) had the highest shear bond strength of 34.79 Mpa followed by Group 3 (Nd: YAG laser) with a shear bond strength of 24.41 Mpa. Group 2 (Er: YAG laser) had the lowest shear bond strength of 9.347 Mpa respectively. **Conclusion:** Irradiating one-step, self-etch adhesive with a Diode laser or Nd:YAG Laser before curing with LED can improve the shear bond strength.

Copyright© The author(s) 2024, This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The concept of dental adhesion was introduced by Buonocore and later by Nakabayashi about 7 decades ago. ⁽¹⁾ Adhesion to dental tissues is still a challenge for modern day researchers. Clinically, the success of restorations is dependent on the durability and quality of the bonding interface i.e. the restoration tooth interface. ⁽²⁾

To improve the bond strength between the resin and the tooth, a well-known simplified etch-and-rinse system was developed comprising two steps: total etching and washing/drying, followed by the application of a primer/bond. To further reduce the number of clinical steps more versatile adhesive systems were developed: the etch-and-rinse system (two steps), and the self-etching system (one step or two steps). The self-etch systems outperformed the etch-and-rinse system ^(3, 4) and were immediately accepted for clinical use due to reduced steps as well as the reduction of human errors during their application. ^(5, 6) The simplification has significantly enhanced

the efficiency of dental procedures, offering practitioners a more straightforward and time-saving application process due to the lower level of technical sensitivity of self-etch systems, ^(7, 8)

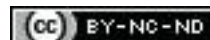
The incorporation and use of lasers in restorative dentistry have shown promising outcomes in various domains. CO₂ laser, Nd: YAG (Neodymium: Yttrium-Aluminum-Garnet), Er: YAG (Erbium: Yttrium-Aluminum-Garnet) and Diode lasers are some types of laser systems currently used in dentistry. ⁽⁹⁾ Lasers have found their way into cavity preparations, cavity tissue removal, decontamination of the oral cavity, and etching of enamel respectively. ⁽¹⁰⁾ Lasers continue to exert their influence owing to advantages like their utility in surface processing, control over light frequency, a broad range of frequencies, high energy density, and the capability to focus light precisely onto a point.

The application of laser energy to bonding agents before the curing process has been studied before. It has been theorized that this approach may enhance bond penetration, ⁽¹¹⁾ facilitate solvent evaporation, elevate the degree of conversion ⁽¹²⁾, and increase the modulus of elasticity of the hybrid layer. ⁽¹³⁾ In addition, studies have confirmed improvement in mechanical properties and adhesion of resin-based materials when heated using lasers. ⁽¹⁴⁾ Given the inherent challenges in achieving

*Corresponding author: Arjama Chaudhury

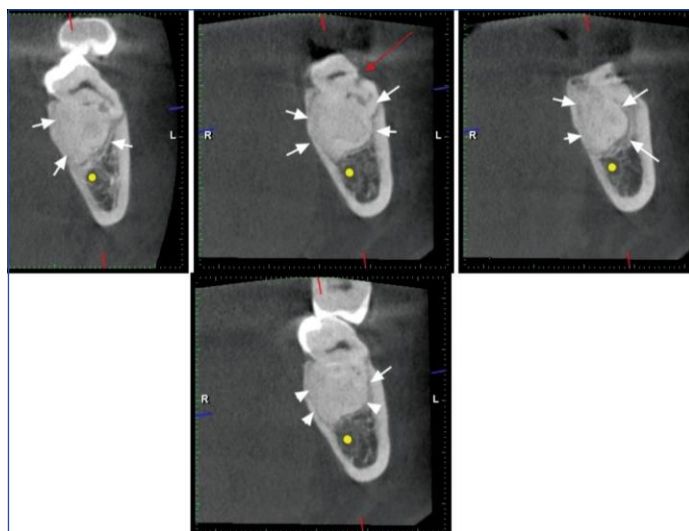
Topex Apartment, Chalakkara, Mahe, Puducherry-673310

Images of Complex Extraction of Hypercementosed Molar

P Rilna¹, a anRooP², V Chythanniya³, S anJali⁴, S RathESha⁵**Keywords:** Alveolar bone damage, Cementum, Hypercementosis, Radiopaque

A 49-year-old male presented to the Department of Oral and Maxillofacial Surgery with a chief complaint of moderately severe pain in the lower left back tooth region and difficulty chewing for two weeks. An intraoral examination revealed that tooth 38 was mesially and lingually angulated, and tooth 37 was clinically missing. A Cone Beam Computed Tomography (CBCT) scan showed that the crown of tooth 38 was oriented towards the lingual cortex, with the roots displaced above the alveolar crest.

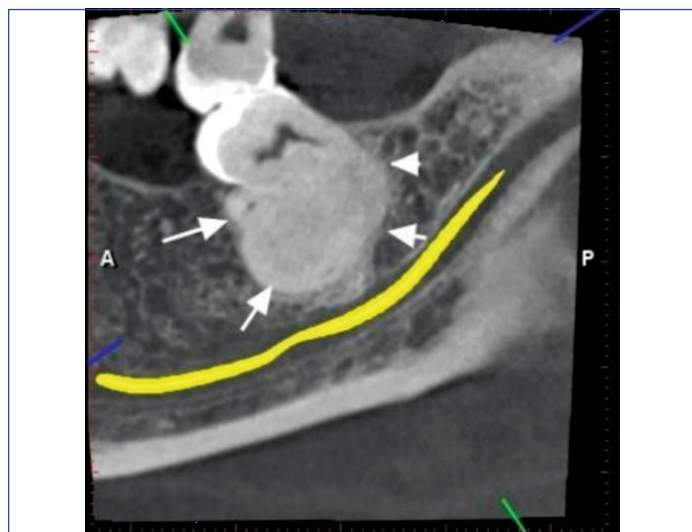
A well-defined, markedly radiopaque mass has a rounded appearance around the mesial and distal roots of tooth 38, mainly overlying and obliterating the mesial root. This radiopacity has a radiolucent peripheral rim and measures 13×16×14 mm in dimensions (superoinferiorly, mesiodistally, and buccolingually) [Table/Fig-1]. The radiopaque mass extends from the alveolar crest to 1 mm above the superior cortex of the inferior alveolar nerve canal and 12 mm above the inferior border of the mandible superoinferiorly. The buccal and lingual aspects of the radiopaque mass are in contact with the buccal and lingual cortices, respectively. The mesial and distal aspects of the radiopaque mass face the alveolar bone. The inferior aspect of the radiopacity is located 1 mm above the superior cortex of the inferior alveolar nerve canal [Table/Fig-2]. There is thinning of the buccal and lingual cortices, but no signs of buccal or lingual cortical expansion or erosion are noted. A well-defined radiolucency was observed at the cervical third of the distal aspect of the distal root, involving the cementum, dentin, and pulp, suggestive of deep dentinal caries (root caries). The apical third of the buccal side of the distal root was observed along the buccal cortex [Table/Fig-2]. The provisional diagnosis was made as cementoblastoma associated with tooth 38, with a differential diagnosis of severe hypercementosis. The planned treatment was the extraction of tooth 38. The extraction procedure involved administering local anaesthesia, creating a mucoperiosteal flap, and removing the bone over the buccal aspect of the tooth [Table/Fig-3].



[Table/Fig-2]: Coronal sections showing radiopaque mass w.r.t 38. Deep dentinal caries was also noted (red big arrow).



[Table/Fig-3]: Mucoperiosteal flap elevation and removal of bone in the buccal aspect of 38.



[Table/Fig-1]: Sagittal section showing radiopaque mass w.r.t to 38.

The tooth was removed, and the mass was sectioned to facilitate removal [Table/Fig-4]. Notably, the extracted root had a bulbous deposition of cementum. The site was then irrigated, the flap repositioned, and sutured, and postoperative care instructions were provided. The procedure was completed successfully, and a three-month follow-up showed significant healing of the extracted site. The extracted tooth and the sectioned mass were sent for histopathological examination. The findings confirmed hypercementosis associated with tooth 38. Hypercementosis is a non neoplastic condition involving excessive cementum deposition along the normal root cementum, with the premolars being the most affected teeth [1].

Some cases of hypercementosis are idiopathic, other aetiological factors include: The loss of an antagonist tooth, which can cause



Classifications of Gingival Recession- A Review

Dr. Hemalatha. D.M ¹, Dr. Vishnu Sri Priya ², Dr. Jilu Jessy Abraham³, Dua Fathima⁴, E. Sneha ⁵

¹(Assistant Professor, Department of Periodontology, Mahe Institute of Dental sciences and Hospital, Mahe, India)

²(Assistant Professor, Department of Periodontology, Mahe Institute of Dental sciences and Hospital, Mahe, India)

³ (Reader, Department of Periodontology, Mahe Institute of Dental sciences and Hospital, Mahe, India)

⁴(Final year student, Department of Periodontology, Mahe Institute of Dental sciences and Hospital, Mahe, India)

⁵(Final year student, Department of Periodontology, Mahe Institute of Dental sciences and Hospital, Mahe, India)

Abstract: Gingival recession is defined as “displacement of marginal tissue apical to the Cementoenamel junction(CEJ) [1]. Various classification has been proposed to classify gingival recession Classification of gingival recession is an important factor for correct understanding and determining of diagnosis, prognosis, and treatment planning for root coverage of the exposed root surface. Recent evidence has raised many questions on the use of currently popular classification system[2]. The purpose of this systemic review is to assess various classification systems in the light of the current scientific literature[2]. The occurrence and severity of the gingival recession present considerable differences between populations[3] . To prevent gingival recessions from occurring, it is essential to detect the underlying etiology[3] This is fairly common clinical condition, research indicates it present in at least one or more tooth surfaces in 23% of U.S adults between 30 to 90 years of age . This paper reviews various causes and classification based on their clinical presentation. The prevalence, extent, severity of gingival recession increase with age, and this condition is more prevalent among males. The severity of recession is determined by the actual position of the gingiva and not by its apparent position From 1985 to till date, Miller's classification system is the most frequently used and popular classification system[2]. This paper reviews etiology, classification and conclusion.

Keywords – *Cementoenamel junction, etiology, classification, gingival recession, mucogingival junction*

I. INTRODUCTION

It is the apical migration of the gingival margin to the cementoenamel junction which exposes the root surfaces.[4] It is frequently observed in adult subjects. Gingival recession is the subjection of the root surface due to the gingival margin's advancement to the cementoenamel junction .Recession is probably multifactorial in etiology[3]. Gingival recession can be related to abrasion and/or cervical wear, decay due to the subjection of the root region to the oral surroundings, increased accumulation dental plaque and dental hypersensitivity. Recession

Ligapplants -A future endeavour

ABSTRACT

Implant dentistry has been transformed by the Introduction of periodontal tissue engineering. Based on the modality, ligapplants have been recently introduced to overcome the shortcomings of conventional implants. The majority of the studies related to the ligapplants, done on animals have shown successful results but still more achievable and practical way of procuring the periodontal ligament attached implants needs to be introduced. Also, more human studies need to be done to evaluate the successful outcome of this strategy.

Keywords: Dental implants, ligapplants, periodontal ligament, tissue engineering

INTRODUCTION

In the past few decades, the replacement for missing teeth has been done by dental implants which are also called oral or endosseous implants. Due to their high success rate and high predictability, these are revolutionary as well as extremely important additions to dentistry. Implants assimilate to the surrounding tissues, upon which their success rate depends. Assimilation of dental implants depends on numerous factors such as quantity and quality of bone, material of the implant as well as the loading condition. Neighboring soft and hard tissues around the implants are known as peri-implant tissues.^[1] There should be an intimate relationship between the surface of the implant and the surrounding bone, and this relationship is called osseointegration.^[2] Before placement of the implant, local bone defects and general poor bone quality necessitate bone reconstruction. Besides this, localized bone loss around the implant fixture represents a clinical challenge, especially in the case of gingival recession, which requires further surgical interventions. With the loss of natural teeth, periodontal ligaments (PDLs) are lost as well. Therefore, these cells cannot participate in wound healing around endosseous implants which are inserted for the replacement of lost teeth.^[3]

Date of Submission: 31 January 2024,

Date of Acceptance: 07 June 2024,

Date of Web Publication: 12 October 2024

Till now, the most widely used implants are the osseointegrated implants because of their long-term survival rate.^[3] These problems could be resolved if an implant with PDL could be developed which could be achieved by ligapplants, a combination of PDL cells with implant biomaterial. Because osseointegrated implants are “ankylosed” and do not have the same mobility as natural teeth with a PDL, efforts have been made for years to compensate for this obvious difference by “shock-absorbing systems” built into the implant or its superstructure.^[4]

ETHICAL APPLICATIONS

Ligapplants are a new treatment modality, which are being clinically tried *in vivo* and *in vitro*. Moreover, in animal studies, they have shown good results, although *in vivo* results are yet to be correlated. Several successful experiments have been conducted to devise “implant supported by the

Anil Melath, Arjun Machingal Raveendran, Sindhuja Stephenraj, N. Prakash, V. Sayoojya, Shakoufa Nazir

Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Puducherry, India

Address for correspondence: Dr. Arjun Machingal Raveendran, Mahe Institute of Dental Sciences, Chalakkara, Pallor Post, Mahe, Puducherry - 673 310, India.
E-mail: arjunjai2002@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Melath A, Raveendran AM, Stephenraj S, Prakash N, Sayoojya V, Nazir S. Ligapplants -A future endeavour. Int J Prev Clin Dent Res 2024;11:5-9.

Access this article online	
Website: www.ijpcdr.org	Quick Response Code 
DOI: 10.4103/ijpcdr.ijpcdr_2_24	



"Bone Breakers: The Osteoclasts That Shape Our Skeletons"

DR ANIL MELATH, DR ARJUN MR, DR SWATHI S, ABHIRAMI SANTHOSH, SAGAR
HEAD OF THE DEPARTMENT, READER, POST GRADUATE, UNDER GRADUATE,
UNDER GRADUATE
PONDICHERRY

Abstract: Osteoclasts are specialized, multinucleated cells responsible for bone resorption, playing a crucial role in bone remodeling and calcium homeostasis. Derived from the monocyte/macrophage lineage, these cells adhere to the bone matrix, creating an acidic microenvironment that facilitates the dissolution of mineral components and degradation of the organic matrix, primarily through the secretion of enzymes such as tartrate-resistant acid phosphatase (TRAP) and cathepsin K. The regulation of osteoclast differentiation and activity is mediated by various signaling pathways, including the receptor activator of nuclear factor kappa-B ligand (RANKL) and its decoy receptor osteoprotegerin (OPG). Dysregulation in osteoclast activity is implicated in several bone disorders, such as osteoporosis, where increased bone resorption leads to reduced bone mass and increased fracture risk. This abstract reviews the current understanding of osteoclast biology, emphasizing the molecular mechanisms governing their formation and function, as well as their role in pathological conditions. Further research into osteoclast regulation offers potential therapeutic targets for treating bone-related diseases.

"Bone Breakers: The Osteoclasts That Shape Our Skeletons"

Introduction

Osteoclast is the primary cell responsible for bone resorption. With two to one hundred nuclei per cell, it is a multinucleated giant cell.

Its size ranges up to 100 micro meter in diameter and is located on the periosteal surface on the periosteum. Osteoclasts are usually seen attached to surface of bone(1). Originating from haematopoietic cells, osteoclasts belong to the monocyte-macrophage lineage. The mononuclear cells that first adhere to the surface of the bone contain nonspecific esterase, and as they develop, tartrate-resistant acid phosphatase—a hallmark enzyme of osteoclasts—is produced, according to Baron and colleagues in TRAP. Eventually, these enzymes became multinucleated osteoclasts and lost their nonspecific esterase activity (2). Burger et al. determined that a monocytic lineage cell served as the progenitor for these osteoclasts.

Multinucleation, which results from the fusing of mononuclear osteoclasts, is the defining trait of osteoclasts. The fusion process between osteoclast cells is thought to be crucial for the reorganisation of the cytoskeleton, as demonstrated by the actin-ring and ruffled border, which seal the resorbing area and secrete protons, respectively, to

Expression of P53 in Oral Squamous Cell Carcinoma – an IHC Study; Deep Insight into P53

Lakshmi P. Das¹, Bastian T.S.², Selvamani M², Manoj S. Nair¹, Roopan Prakash¹, Karthika PS¹

Abstract

Background: Oral squamous cell carcinoma (OSCC) entails quite noteworthy morbidity and mortality rates instead of immense amount of research and advances. Mutation in the TP53 gene is the most common genetic change found in oral squamous cell carcinoma (OSCC). Once activated, the p53 protein can induce the growth arrest, as well as cell death. Mutation and subsequent inactivation of a tumor suppressor gene causes 'loss of function'. This can damage its deoxyribonucleic acid (DNA) binding properties and transcription factor function, thus, inhibiting its normal function in cell cycle control and in cell proliferation.

Aim: A comparative study of P53 expression in oral squamous cell carcinoma using immunohistochemical techniques.

Materials and Methods: To study the relationship between histological grades of oral squamous cell carcinoma and P53 protein expression and also to compare along with normal mucosa, a total of 40 cases of histologically diagnosed OSCC were considered for the study group and 10 paraffin embedded normal mucosal tissue blocks were collected. The analysis of p53 positive cells was performed on IHC stained sections. Only staining of nucleus of epithelial cells was observed. Nuclei with clear brown colour regardless of staining intensity were considered as p53 positive. Counting of cells was done with graticule eyepiece. All these cases were reviewed and classified according to modified Anneroths histological malignancy grading system.

Results: When p53 expression was compared between the two groups i.e control and study groups. The expression of p53 was nil in normal oral mucosal tissue (control), while study group i.e OSCC expressed about 47.49% with Std.Dev of $\pm 35.83\%$. And it was found to be a statistically significant ($p < 0.001$).

Conclusion: The present study concludes a positive correlation between the histopathological grades of OSCC and immunohistochemistry (p53 expression). Expression of p53 above the basal layer is an early event in oral carcinogenesis and an indicator of a developing carcinoma preceding morphological tissue alterations. However, since immunohistochemistry cannot always detect changes in p53 expression in premalignant/malignant lesions, it is strongly recommended that p53 immunohistochemistry be used in conjugation with routine histology to increase the sensitivity of detection of cases that eventually progress to malignancy.

Keywords: OSCC, IHC, TP53

Introduction

Cancer is older than humanity S.U. Williston, in early 1920's, found a bone tumor on skeleton of dinosaur in Wyoming¹. Oral cancer includes a group of neoplasms affecting any region of the oral cavity, pharyngeal regions and salivary glands. However this term tends to be used interchangeably with oral squamous cell carcinoma (OSCC), which represents most frequent of all oral neoplasms². The quantitative study of P53 suggested their aberrant expression in oral cancer. P53 over expression was also detected in 15-19% of oral-premalignant lesions, including lesions with mild dysplasia in head and neck cancer patients³.

P53 protein was first described by Levine, Crawford, and Lane in 1979. TP53 (tumor protein 53) is a tumor suppressor gene (TSG) which is located on the short arm (p) of chromosome 17. TSGs encode proteins that typically transduce the negative growth regulatory signals. These are involved in cell

¹Department Oral Pathology and Microbiology, Sri Sankara Dental College, Varkala, Trivandrum; ²Department Oral Pathology and Microbiology, Mahe Institute of Dental Sciences and Hospital, Mahe.

Corresponding author: Bastian T.S, Department of Oral Pathology and Microbiology Mahe Institute of Dental Sciences and Hospital, Mahe, Mail id: bastians@gmail.com

How to cite the article: Das PL, Bastian T.S, Selvamani M, Nair MS, Prakash R, Karthika PS. Expression of P53 in Oral Squamous Cell Carcinoma – an IHC Study; Deep Insight into P53. Oral Maxillofac Pathol J 2024; 15(1). Page number 61-69.

Source of support: Nil

Conflict of interest: None

cycle arrest and apoptosis. Mutation and subsequent inactivation of TSGs cause damage in their deoxyribonucleic acid (DNA) binding properties and transcription factor function,

[https://doi.org/ 10.33472/AFJBS.6.9.2024.4210-4217](https://doi.org/10.33472/AFJBS.6.9.2024.4210-4217)



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

In-Vitro Evolution of Microleakage of Different Restorative Material

Dr. Ruchi Gulati, Senior Resident, Department of Dentistry, Atal Bihari Vajpayee Government

Medical College, Vidisha, Madhya Pradesh

Dr. Shivani Mishra, BDS, MDS, (Periodontology), Bonded Medical Officer, District hospital,

Barwani, Madhya Pradesh

Dr. Puja Saha, Assistant Professor MDS, Department of Orthodontics & Dentofacial

Orthopaedics, Mithila Minority Dental College & Hospital, Darbhanga, Bihar

Dr. Shubham Tripathi, MDS, (Conservative Dentistry and Endodontics), Medical Officer,

District Bhoj Hospital, Dhar, Indore, Madhya Pradesh, India

Dr. Indhuja R, Junior Resident, Department of Public Health Dentistry, Mahe Institute of

Dental Sciences and Hospital, Chalakkara, Pallor P.O, Mahe, Kerala-673310

Dr. Pratik Surana, Senior Lecturer, Department of Pedodontics and Preventive Dentistry,

Maitri College of Dentistry and Research Centre, Durg, Chhattisgarh.

Dr. Kanika Singh Dhull, Professor, Department of Pedodontics and Preventive Dentistry,

Kalinga Institute of Dental Sciences, KIIT Deemed to be University, Bhubaneswar.

Corresponding author: Dr. Puja Saha



REVIEW ARTICLE

Candidiasis and Oral Health

C N Roshin^{1*}, Hiba Hamza², H S Suhana³, T S Bastian⁴, Anjali Sudhakaran⁵,
Manickam Selvamani⁴

¹ Associate Professor, Department of Oral Pathology & Microbiology, Mahe Institute of Dental Sciences & Hospital, Mahe, 673310, U.T of Puducherry, India

² 4th year BDS Student, Mahe Institute of Dental Sciences & Hospital, Mahe, 673310, U.T of Puducherry, India

³ Assistant Professor, Department of Oral Pathology & Microbiology, Mahe Institute of Dental Sciences & Hospital, Mahe, 673310, U.T of Puducherry, India

⁴ Professor, Department of Oral Pathology & Microbiology, Mahe Institute of Dental Sciences & Hospital, Mahe, 673310, U.T of Puducherry, India

⁵ Assistant Professor, Department of Oral & Maxillofacial Surgery, Mahe Institute of Dental Sciences & Hospital, Mahe, 673310, U.T of Puducherry, India

ARTICLE INFO

Article history:

Received 11.03.2024

Accepted 06.05.2024

Published 22.07.2024

* Corresponding author.

C N Roshin

dr.roshincn@mahedentalcollege.org

[https://doi.org/](https://doi.org/10.38138/JMDR/v10i1.24.5)

10.38138/JMDR/v10i1.24.5

ABSTRACT

Candidiasis, primarily caused by *Candida albicans*, poses significant oral health concerns. This review highlights its clinical manifestations, diagnostics, and management strategies. Predisposing factors include poor oral hygiene and systemic conditions like HIV/AIDS and diabetes. Clinical presentation varies from asymptomatic colonization to symptomatic mucosal infections, with complications such as denture stomatitis. Diagnostics encompass clinical examination and various laboratory methods, guiding tailored treatment with topical or systemic antifungals. Prevention strategies targeting modifiable risk factors are crucial. Despite challenges like antifungal resistance, interdisciplinary collaboration among healthcare providers is essential for the effective management of oral candidiasis and its impact on overall health.

Keywords: Candidiasis; *Candida albicans*; Oral health; Diagnostics; Antifungals; Prevention strategies

1 INTRODUCTION

Oral candidiasis, a mycosis primarily caused by the *Candida albicans* poses a health concern as it can affect individuals of all age groups. Other species that can also cause this infection include *Candida krusei*, *Candida glabrata*, *Candida parapsilosis*, *Candida tropicalis*, *Candida dubliniensis*, *Candida kefyr*, *Candida pseudotropicalis*. Culturing methods have identified 20 different genera and 80 species from the samples. Understanding the various facets of this condition, from its causes to its clinical diagnosis and management, is essential for both healthcare professionals and patients alike. The general symptoms experienced include a burning sensation and soreness in the mucosa which occurs due to the damage caused. In addition to this, progressive periodontal diseases and dentinal caries can be seen due

to additional yeast colonization. Chronic mucocutaneous candidiasis is a type of candidiasis that is often found in connection, with oral cancer. This occurs due to the production of aldehyde⁽¹⁾.

Individuals with compromised systems can serve as a fount for *Candida* infection⁽²⁾. Many local and systemic factors cause *Candidal* infection, the use of dentures, xerostomia, and corticosteroid inhalers are a few local factors while immunosuppressed conditions like infection with human immunodeficiency virus (HIV), malnutrition, diabetic patients, patients undergoing systemic chemotherapy and radiotherapy are few systemic factors. Recent studies have shown that psoriasis is also a factor that causes oral candidiasis⁽³⁾.

The increase in temperature of the oral cavity makes it easier for the pseudohyphal invasion of *Candida*. The

Antimicrobial efficacy of calcium silicate-based bioceramic sealers against *Enterococcus faecalis* and *Staphylococcus aureus* – An *in vitro* study

M. Kirthiga, George Thomas, Sunil Jose, V. J. Adarsh, Saron Nair

Department of Conservative Dentistry and Endodontics, Mahe Institute of Dental Sciences and Hospital, Puducherry, India

Abstract

Context: The main objective of endodontic therapy is to achieve a sterile environment and three-dimensional filling of the root canals. Endodontic sealers play an important role in the obturation of the root canal system as they may provide a seal, which prevents the penetration of bacteria. Sealers are meant to entomb residual bacteria, prevent leakage of nutrients, and ideally possess antibacterial properties.

Aim: The aim of the study was to evaluate and compare the antimicrobial effectiveness of calcium silicate-based bioceramic root canal sealers against *Enterococcus faecalis* and *Staphylococcus aureus* using the agar diffusion method.

Materials and Methods: The materials were divided into four groups of nine samples each for both *E. faecalis* and *S. aureus*. Group I (control group) – MTA-Fillapex (Angelus), Group II – BioRoot RCS (Septodont), Group III – Bio-C Sealer (Angelus), and Group IV – Dia-Root Bio Sealer (Diadent). To evaluate the antibacterial activity of the samples, the agar diffusion method was utilized. To begin, a bacterial suspension was evenly spread onto sterile Petri dishes using sterile swabs. Four wells of 4 mm diameter were then punched, and the sealers were mixed following the manufacturer's instructions and placed onto the prepared wells. The Petri dishes were then incubated at 37°C for 72 h. After incubation, the zones of inhibition around each well were measured at 24 h, 48 h, and 72 h, and the resulting values were statistically analyzed.

Statistical Analysis Used: The data were analyzed using the ANOVA and *post hoc* Tukey's test.

Results: Calcium silicate-based root canal sealers showed significantly better efficacy than the control group. BioRoot RCS (3.44 ± 1.13 mm) showed maximum antibacterial effect against *E. faecalis* at 24 h, 48 h, and 72 h time intervals. Bio-C Sealer (16.44 ± 1.42 mm) showed maximum antibacterial effect against *S. aureus* at 24 h, 48 h, and 72 h time intervals. The effectiveness of root canal sealants eventually decreased over a period. Based on analysis using the ANOVA test, a statistically significant difference ($P \leq 0.05$) was observed between the mean values of antimicrobial efficacy of sealers against both *E. faecalis* and *S. aureus*.

Conclusions: The study's findings lead to the conclusion that BioRoot RCS showed a maximum antibacterial effect against *E. faecalis* and Bio-C Sealer showed maximum antibacterial effect against *S. aureus* at 24 h, 48 h, and 72 h.

Keywords: Antimicrobial efficacy; bioceramic sealers; calcium silicate; *Enterococcus faecalis*; *Staphylococcus aureus*

Address for correspondence:

Dr. M. Kirthiga,
Department of Conservative Dentistry and Endodontics, Mahe
Institute of Dental Sciences and Hospital, Chalakkara, Pallor Post,
Mahe, Puducherry - 673 310, India.
E-mail: kirthiga97@gmail.com

Date of submission : 17.04.2024

Review completed : 04.05.2024

Date of acceptance : 23.05.2024

Published : 08.07.2024

Access this article online

Quick Response Code:



Website:

<https://journals.lww.com/jcde>

DOI:

10.4103/JCDE.JCDE_215_24

INTRODUCTION

The primary goal of endodontic treatment is to meticulously eliminate all bacteria and their by-products from the root canal system to ensure complete prevention of any potential

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Kirthiga M, Thomas G, Jose S, Adarsh VJ, Nair S. Antimicrobial efficacy of calcium silicate-based bioceramic sealers against *Enterococcus faecalis* and *Staphylococcus aureus* – An *in vitro* study. J Conserv Dent Endod 2024;27:737-42.

Significance of Radiography in Forensic Dentistry

Dr. Jeena¹, Dr. Raj AC², Agalya Baluswamy³, Albin Job⁴

ABSTRACT

The identification of human remains has grown to rely heavily on the use of dental evidence in forensic medicine. The identification of victims in mass disasters, criminal investigations, ethnic study, and the identification of deteriorated and twisted bodies have all markedly increased the importance of this discipline in recent years. Based on distinctive dental characteristics, dental examinations enable accurate identification of individual identities. Radiographs, photographic examinations, rugoscopy, cheiloscopy, tooth imprints, and molecular techniques are some of the forensic medicine techniques used in dentistry. In forensic odontology, radiography can be crucial, mostly for establishing identification. An exact comparison of antemortem and postmortem radiographs could be one way to do this. A minor victim's age can also be ascertained via radiographs, which can also be used to identify the victim's sex and ethnicity. In the event of a mass calamity, comparable radiographs are crucial for confirming identification. This article clearly highlights the various radiographic techniques, its procedure and further more its application in forensic dentistry.

Keywords: Dental Radiographs, Forensic Science , Ante Mortem, Postmortem Radiographs

INTRODUCTION

The forensic sciences have a lengthy history of using forensic radiology. Conrad Roentgen developed the first radiograph in 1895, marking the beginning of its history. Postmortem radiography examination was first used in 1898, three years later. But lately, forensic radiology has relied almost entirely on X-rays and a static image obtained from the roetgenogram.(1) In clinical practice, radiographs are widely employed, and both intra-oral and extra-oral X-ray examinations are essential for diagnosis and therapy planning. The resulting pictures are included in the patient record along with textual documents and dental charts. Comparing two sets of records is a major component of forensic dentistry analysis, and radiological pictures that depict the condition of the facial and dental tissues at a particular moment are essential to this process.(2) This article primarily emphasizes the importance of dental radiography in human identification based on different dental prosthesis and rehabilitation procedures, various medicolegal compliances, the cause of death, radiographic techniques, and the issues encountered that require this procedure to be made easier.

APPLICATION AND UTILISATIONS OF RADIOGRAPHS IN FORENSIC DENTISTRY:

The identification process in forensic radiology is defined by the use of suitable methods and techniques to ascertain identity. These methods can be created by qualified technicians or professionals with specialized knowledge in particular biological fields and with suitable methods to accomplish human identification.

Comparing antemortem and postmortem radiographs allows for identification. Signs of bone resorption from periodontal disease, bone pathology, diastemas, dental cavities, endodontic treatment, interradicular and intracoronary posts, implants, extraction sockets, dental prostheses, attrition, abrasion, coronal fracture, supernumerary teeth, missing and present teeth, and tooth shape can all be identified using anatomical details.

Point-by-point comparison of a set of intraoral radiographs—up to 18 or 21 images is necessary for accurate forensic dental identification.(3)

DENTAL IDENTIFICATION

When a person's body is found in a burned or decomposed form, dental remnants—such as prosthetics, restorations, and any missing or present teeth—are crucial in identifying the deceased. Dental restorations (acrylic 540°C, gold and amalgam 870°C, porcelain 1100°C) and teeth (maximum 1000°C) are useful for identification since they are resistant to fire damage. The process of dental identification involves comparing and excluding radiographs taken before death (antemortem) from those taken after death (postmortem). A number of criteria are taken into consideration when evaluating this data, including the presence or absence of teeth, crown structure, root morphology, pulp architecture, occlusion, tooth structure wear and tear, disease, various treatment methods, etc. Successful identification is the result of properly comparing and interpreting these factors.(4) In general, two methods are used to identify teeth. The first step is to review the deceased person's prior dental records and search for these traits in the deceased person to ensure they

ROLE OF ANXIETY IN TEMPAROMANDIBULAR DISORDERS

Dr. Nikhilraj, Raj A.C¹

Dr. Jeena Sebastian²

Dr. Megha.B³

Dr. Aswini Tharayil⁴

ABSTRACT

This is a review article that deals with the relationship of TMJ disorders with mental illness such as anxiety, depression, stress, tension etc. Nowadays in new era most of the people are suffering from this mental illness. In TMJ disorders there will be pain while opening the mouth, restricted opening, even it can affect the masticatory muscles. This association can vary among gender; it is more commonly seen among women. The COVID 19 pandemic has led people into loneliness and depression at its peak, so this could have also led to a cause of mental illness.

KEYWORDS:

Anxiety, depression, Temporomandibular disorders, stress

ARTIFICIAL INTELLIGENCE IN DENTISTRY

Dr. Nikhilraj, Raj A.C¹
Dr. Jeena Sebastian²
Dr. Megha.B³
Dr. Dharshika⁴

ABSTRACT

Artificial intelligence (AI) usually mimics the intelligence of human and tackles certain challenges in a wide range of sectors, including dentistry. Probably AI has begun to provide convenience to human's lives.

When it comes to dentistry, in all dental disciplines AI has been adopted that is prosthodontics, operative dentistry, orthodontics, and periodontics, oral and maxillofacial surgery. It can be used in multiple stages of clinical stages to assist dentist as another valuable tool. Dental education can go with the introduction of clinical artificial intelligence arrangements by fostering advanced education in the future dental workforce.

KEYWORDS:

Artificial intelligence, future, dentistry, innovation, CNN

Cephalometric Evaluation of the Pre- and Posttreatment Changes after the Correction of Class II Division 1 Malocclusion with Twin Block Appliance in Mixed Dentition

BR Bimalrag¹, Rena Ephraim², Ambili Ayilliath³, Sameer Punathil⁴, Jeswin James⁵, Jipsa Venugopal⁶

Abstract

Aim and objective: To evaluate the pretreatment cephalometric records on the dental, skeletal, soft tissue, and incisor relationship with a twin block functional appliance in class II malocclusion patients in and around Mahe; evaluate the posttreatment cephalometric records on the dental, skeletal, soft tissue, and incisor relationship with a twin block functional appliance in class II malocclusion patients in these children; and to compare cephalometrically certain dental, skeletal, and soft tissue points in pretreatment and posttreatment cephalograms in them.

Materials and methods: This study was conducted on 20 class II patients in the mixed dentition period, who were treated with twin block therapy. Each had to meet the following criteria—(1) skeletal class II malocclusion with retrognathic mandible; (2) full cusp class II molar relationship; and (3) an angle of ANB of 50 or greater at the start of treatment. All patients wore the appliance 24 hours/day. The pretreatment cephalometric head films for the group were taken using standard cephalometric X-ray equipment. The length of time required to achieve a class I molar relationship was assessed. Appointments during the twin block phase were scheduled at intervals of 8 weeks. Lateral head films were obtained again at the posttreatment follow-up stage.

Results: There was a significant increase in effective mandibular length, ramus height, SNB, ANB, overjet, overbite, and I to NA (mm and degrees) after twin block therapy. The maxillary incisor position showed a decrease in its value by 4° in five cases.

Conclusion: Thus, in the present study, evidence of skeletal and dentoalveolar changes leading to the correction of class II division 1 malocclusion with the twin block functional appliance has been established. However, further studies with a longer period of follow-up and a larger sample are required to substantiate the results of the present investigation.

Keywords: Cephalometric landmark, Mixed dentition, Orthodontic appliance, Twin block.

International Journal of Clinical Pediatric Dentistry (2024): 10.5005/jp-journals-10005-2943

Introduction

Class II malocclusion can be defined as a condition in which the mandibular first molars occlude distal to the normal relationship with the maxillary first molars. Two sections can be distinguished—section 1 is the protrusion of the upper incisors, and section 2 is the retroclination and proclination of the upper posterior teeth. The classification of angle is in line with this. The British Dental Institute, on the contrary, defined class II in 1983 as a situation where there is an increase in overjet and the lower incisors lie behind the proclined or averagely inclined upper incisor cingulum plateau.^{1,2}

Class II malocclusion can be caused by a variety of skeletal, soft tissue, dental, and habitual factors. Angle reports that class II is highly prevalent, at roughly 27%.

For tooth movement and skeletal growth modification, class II functional appliances are indicated. They help in the correction of mandibular deficiencies by allowing mandibular postural changes through holding the mandible forward and/or downward. Both fixed and removable class II functional appliances are used to improve class II malocclusions. Since the success with removable appliances largely depends on the patient's compliance, using a more tolerable appliance can increase the chances of a favorable outcome.^{3,4}

Class II malocclusions can present with a range of skeletal and dental configurations. Anteroposterior jaw position deficiencies affect the majority of class II patients. The use of functional

^{1,4-6}Department of Pedodontics, Sree Anjaneya Institute of Dental Science, Kozhikode, Kerala, India

^{2,3}Department of Pedodontics and Preventive Dentistry, Mahe Institute of Dental Sciences and Hospital, Pudukcherry, India

Corresponding Author: Bimalrag BR, Department of Pedodontics, Sree Anjaneya Institute of Dental Science, Kozhikode, Kerala, India, Phone: +91 8075102081, e-mail: brbimalrag@gmail.com

How to cite this article: Bimalrag BR, Ephraim R, Ayilliath A, et al. Cephalometric Evaluation of the Pre- and Posttreatment Changes after the Correction of Class II Division 1 Malocclusion with Twin Block Appliance in Mixed Dentition. *Int J Clin Pediatr Dent* 2024;17(7): 783–789.

Source of support: Nil

Conflict of interest: None

appliance therapy to treat class II malocclusion is growing in popularity. For many years, a number of functional appliance types, including Herbst, Bionator, FR-2 of Frankel, and twin block, have been used to treat class II division 1 malocclusions and correct skeletal imbalances.^{5,6}

Scottish orthodontist William Clark created the twin block appliance, a useful orthopedic appliance, in 1977. It is made up of distinct upper and lower parts that fit snugly into the alveolus or tooth socket and supporting tissues. The appliance guides the



RESEARCH ARTICLE

Oral Health Status of the Institutionalized Elderly in Mangalore City, Karnataka, South India: Extents, Insights and Action

Teenu Thomas^{1,*}, M Aparna², Sharanya Sreekumar³, Vijaya Hegde⁴

¹Assistant Professor, Department of Public Health Dentistry, Mahe Institute of Dental Sciences, Mahe, 673310, UT of Pondicherry, India

²Assistant Professor, Department of Public Health Dentistry, KMCT Dental College, Calicut, India

³General Practitioner, Medline Medical Centre, Abu Dhabi, United Arab Emirates

⁴Professor and Head, Department of Public Health Dentistry, AJ Institute of Dental Sciences, Mangalore, Karnataka, India

ARTICLE INFO

Article history:

Received 19-03-2024

Accepted 14-06-2024

Published 17.07.2024

* Corresponding author.

Teenu Thomas

teenuthomas1992@gmail.com

<https://doi.org/>

[10.38138/JMDR/v10i1.24.7](https://doi.org/10.38138/JMDR/v10i1.24.7)

ABSTRACT

Oral diseases are progressive and cumulative across the life span and due to this reason, the oral health of the institutionalized elderly is of concern within the realm of geriatric care. An improvement in oral health among the institutionalized elderly will boost their social life, self-confidence, mastication and nutritional status, thereby bringing a positive outlook. To assess the periodontal status, dental caries experience, prosthetic status, and prosthetic need of institutionalized elderly in Mangalore. A cross-sectional study was conducted to assess the dental caries experience, periodontal status, prosthetic status, and prosthetic needs of 143 elderly individuals living in geriatric homes in Mangalore city. The demographic data, periodontal status, prosthetic status, and prosthetic need was obtained using the WHO Oral Health Assessment Form 1997. Dental caries experience was recorded according to the WHO modified DMFT Index. Descriptive statistics was obtained using SPSS version 16. The mean dental caries experience of the study subjects was 8.80. The presence of supra or sub gingival calculus was noted in 44.8 % of the subjects and the presence of a pathological pocket of 4 mm or more was seen in 32 %. About 33 of the subjects did not require any kind of prosthesis in the upper & lower arch. From this survey of the institutionalized elderly population, it was evident that, half of them had supra or subgingival calculus deposits and more than 76.9 % have one or the other need for a prosthesis.

Keywords: Edentulousness; Elderly inmates; Old age homes; Oral health

1 INTRODUCTION

Ages nearing or surpassing the average life span of human beings is considered as old age.⁽¹⁾ 600 million people globally are aged 60 years and above and this will double by 2025.⁽²⁾ In India, the proportion of older people has crossed 100 million mark and the number is expected to increase to 323 million constituting 20% of the total population of 2050, posing the greatest challenge to provide affordable, accessible, and equitable health care to this population.⁽¹⁾ The increasing population of elderly individuals residing in long term care facilities and nursing homes has drawn attention to the complex issues of oral health in this demographic.

Homes for the older age people serve as an alternate to home care, to ensure social and financial stability and to

provide rehabilitation.⁽¹⁾ The residential home environment has several unique features ever since, as it serves frailer population who are at greater risk for illness and functional loss. Their vulnerability arising from their various physical, economic, financial, and emotional turmoil makes them the only demographic which remain relatively unchanged. Apart from this, limited access to dental care, varying medications, certain dietary restrictions, lack of awareness totals the scenario. A recent study conducted among 142 institutionalized elderly in Mangalore showed a staggering 47.8% afflicted with depression⁽³⁾. Various sequelae of tooth loss like - difficulty in articulation and expression, which hampers communication and social interaction as well as the struggles in chewing and swallowing food resulting in malnourishment, markedly reduce their positive attitude towards life. Thus, to promote the oral as well as



IS THERE A GENDER BIAS IN ORAL MUCOSAL LESIONS?

Dental Science

Dr Megha B*

Mds *Corresponding Author

Dr Raj Ac

Mds

ABSTRACT

Gender equity is a worldwide motto in the current scenario and is the need of the century. But there are certain natural factors that may seem to show gender inequality. It is interesting to study those aspects of gender bias related to human diseases. This helps in better diagnosis and early treatment plan for diseases that show gender inequality. This article aims to discuss about the various factors that contributes to the 'gender bias' by nature.

KEYWORDS

Autoimmune diseases, Gender, Oral mucosal lesions

INTRODUCTION

Autoimmune diseases are conditions in which host immune system attack its own cells.

There are over 100 types of autoimmune diseases that predominantly affect women. Approximately 80% of all patients diagnosed with autoimmune diseases are women.¹ It is interesting to understand the reason behind this as it can lead to development of better treatment modalities, thereby providing better quality of life and reduced morbidity rate in patients affected by autoimmune diseases.

Immune System

Immunological response is different in males and females. Females have stronger immune reactivity, but it acts as a double edged sword. On one side it decreases the chance of development of infectious disease and on the other side it increases the susceptibility of developing autoimmune diseases.² It was hypothesised that B cell activation and antibody production is more in females compared to males.³ CD4+ T-cell counts is found to be higher in females compared to males. Females also show elevated plasma IgM and T-helper 1 (Th1) cytokine production.⁴ The gender bias in autoimmunity could be due to the difference in immune system in males and females. There are certain factors which are responsible for the difference in immune reactivity in males and females. Role of these factors are discussed below.

Role Of Hormones

Female hormones play a major role in creating a gender bias in development of autoimmune diseases. Females undergo major endocrine transitions in their life time compared to males. There are major fluctuations in hormone levels during puberty, pregnancy, lactation and menopause.^{5, 6} Difference in severity of autoimmune disease during these endocrine transitions clearly indicates the role of hormones in development and progression of these autoimmune diseases. Many sex hormone receptors are found to be present on immune cells; also there are cytokine receptors on hormone producing tissues. Sex hormones affect autoimmunity by their effect of gene transcription.⁷ Studies had shown that estrogen makes females more susceptible to autoimmune diseases while androgen plays protective mechanism against autoimmune diseases.⁸ Estrogen affects the expression of intracellular Toll like receptors (TLRs). Studies have shown that the production of proinflammatory cytokines increases significantly in presence of estrogen.⁷

Estrogen increase B-cell activation and enhances antibody production while testosterone and progesterone have immunosuppressive effect. Androgen helps in CD8 + cell activation. Androgen causes increase in anti-inflammatory cytokines and decrease in proinflammatory cytokines. It also decreases NK cell activation.⁹

Pregnancy

Pregnancy involves many physiological changes. Change in various hormone levels are seen in pregnancy.¹⁰ Change in severity of autoimmune disease is seen during pregnancy when level of estrogen and progesterone reaches its peak.¹¹ Hormones may not have same impact on different autoimmune diseases. Effect of pregnancy is contrasting in inflammatory autoimmune diseases and antibody mediated autoimmune diseases. For example, remission is seen in case

of inflammatory autoimmune diseases such as multiple sclerosis (MS) and rheumatoid arthritis (RA) and increase in severity seen in antibody mediated autoimmune diseases such as systemic lupus erythematosus (SLE).¹² There is a shift in activity of type 1 helper T cells (Th1) to type 2 helper T (Th2) cells during pregnancy. There is increased Th2-related and reduced Th1-related activities. Therefore during pregnancy the severity of Th1-mediated diseases decreases while severity of Th2-mediated diseases increases. This may be the cause of remission seen in case of rheumatoid arthritis during pregnancy.^{13,14} Microchimerism is another factor associated with pregnancy which contributes to susceptibility to autoimmune diseases.¹⁰ Microchimerism is the phenomenon of persistence of fetal cells in maternal circulation even after pregnancy.¹⁵ Studies had shown microchimerism to be associated with autoimmune thyroid disease and systemic sclerosis. Various studies regarding the effect of microchimerism in development of autoimmunity had shown conflicting results.¹

Lactation

Level of pregnancy hormone decreases after pregnancy but the increased level of prolactin and oxytocin is present during lactation period. Main action of prolactin is on mammary gland. Prolactin receptors are seen in T lymphocytes and monocytes.¹⁶ Prolactin favours antibody production.⁹

Menopause

During menopause level of estrogen and progesterone reduces and FSH level increases. Also many immunological changes happens during menopause which include increased production and response to pro-inflammatory cytokines, decreased secretion of anti-inflammatory cytokines, decreased lymphocyte levels, and decreased activity of NK cells.^{16,17}

All these factors together may contribute to increased incidence of autoimmune diseases during menopause. There are conflicting reports about the effects of menopause on various autoimmune diseases. Reduction in frequency of flares-ups is reported in case of SLE. In contrast physical disability score is found to be higher in postmenopausal women with RA.¹⁰

Chromosomes

The major differentiating factor between the two genders is the sex chromosome. Males have XY chromosome while females have XX chromosome.¹⁸ X chromosome is larger than Y chromosome which means there is more number of genes on X chromosomes. There are 800-900 genes on X chromosome and 50-60 genes on Y chromosome. Also greater number of immune related genes is present on X chromosomes. Since females have two X chromosome this obviously puts females at greater risk of developing autoimmune diseases.¹⁸

X Chromosome Inactivation

Since there are two X chromosomes in females, one of the X chromosomes gets silenced during embryogenesis to prevent over expression of X chromosome-derived proteins. During this process some of the genes escape the inactivation. This leads to overexpression of certain genes.⁹ Inactivation of X chromosome is usually random in all cells. Either the X chromosome from mother gets inactivated or X chromosome from father can get inactivated. There is equal chance of both. But in certain cases X chromosome inactivation gets skewed and

Revolutionizing Dentistry: The Impact of 3-Dimensional Printing Technology

Paventhan Jolie Coeur¹, Anil Melath², Subair K³, Arjun M R⁴

ABSTRACT

Additive manufacturing, or Three-Dimensional (3D) printing, involves creating objects layer by layer using materials like resins, metals, and ceramics. In dentistry, 3D printing integrates with digital technologies such as computer aided design / computer aided manufacturing (CAD/CAM) to enhance the production of crowns, bridges, orthodontic appliances, and custom surgical guides. This integration has revolutionized dental restoration and orthodontics by improving precision, speed, and patient comfort. 3D printing has also advanced implant dentistry, with technologies like selective laser melting producing custom titanium implants and surgical guides with high accuracy. While materials like zirconia and novel resins show promise, further research is needed to optimize their properties for long-term durability and accuracy.

Recent developments focus on improving 3D printable materials, enhancing resin properties, and refining ceramic printing techniques. Innovations like robocasting and direct inkjet printing are promising for creating complex dental structures. The future of 3D printing in dentistry hinges on continued advancements in material science and high-quality printing technology, potentially reshaping traditional methods and improving patient outcomes through greater precision, efficiency, and customization in dental treatments.

Keywords: 3D printing, Additive manufacturing, CAD/CAM dentistry, Selective laser sintering (SLS), Stereolithography (SLA), Digital dentistry

Introduction

Additive manufacturing, known as three-dimensional (3D) printing, involves creating objects by depositing successive layers of material. 3D printers, machines capable of producing object representations, can generate designs from computer-aided design (CAD) programs or 3D scans.¹ Unlike traditional printing, which reproduces text and images on paper with ink, 3D printing fabricates physical items. Various methods, including selective laser sintering (SLS), stereolithography, fused deposition modeling, and laminated object manufacturing, are utilized in dentistry to produce different dental components. These materials, certified for applications such as individual

impression trays, orthodontic models, and prosthetic

objects, can achieve flexural strengths exceeding 80

MPa.² By integrating oral scanning, 3D printing, and CAD/CAM design, dental laboratories can efficiently manufacture crowns, bridges, stone models, and orthodontic appliances.

The integration of digital technology and 3D printing has significantly enhanced the success rates of dental implantology by enabling the creation of custom surgical guides and improving the precision and quality of dental work.² In the past three decades, 3D printing and prototyping have gained widespread acceptance among dental professionals and patients. This technology has revolutionized dental restoration processes, orthodontics, surgical techniques, etc., providing dentists with greater comfort and higher-quality

¹Postgraduate student, ²Professor and Head, ³Professor, ⁴Reader, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, India. Corresponding Author: Dr Paventhan Jolie Coeur, E-mail: paventhanjoliecoeur.pjc27@gmail.com



An Insight on Herbal Mouthwashes

Vishnu Sripriya J^{1*}, Anil Melath², Hemalatha DM³, Fathima Shamna⁴ and Farhana Sherin⁴

^{1*}Senior Lecturer, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, UT of Puducherry, India

²Professor & Head of the Department, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, UT of Puducherry, India

³Reader, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, UT of Puducherry, India

⁴Fourth Year BDS Students, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, UT of Puducherry, India.

Corresponding author: Vishnu Sripriya J, Senior Lecturer, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, UT of Puducherry, India, Tel: 9944697009; E-mail: vishnusripriya.j@gmail.com

Abstract

An oral rinse or mouthwash is a liquid solution used to clean teeth, gums, and the entire mouth. It contains antiseptics to prevent harmful bacteria and improve oral health by freshening breath, reducing tooth decay with sodium fluoride, and shielding against gum disease. There are various types of mouthwash, including antiseptic, analgesic, antibiotic, anticavity, steroid, and herbal (ayurvedic) mouthwashes. Herbal mouthwashes, formulated using extracts from various herbs, offer a natural alternative to chemically prepared mouthwashes. They are gentle, non-irritating, and alcohol-free, making them a safer and more natural choice for oral care. Herbal mouthwashes eliminate bad breath, reduce plaque and gingivitis, and prevent caries, promoting overall oral health and wellness.

Keywords: Mouthwash, Antiseptic, Antiplaque, Herbal mouthwash, Herbal extracts

INTRODUCTION

Herbal remedies have been used for centuries in traditional medicine, drawing from systems like Ayurveda, Unani, and Siddha. In India, over 2,500 plant species are used by healers, with around 100 species being consistent sources of medicine. Recently, there has been a global interest in studying medicinal plants and their traditional applications. For centuries, herbal medicines have been used in dentistry to combat microorganisms, reduce inflammation, soothe irritations, and alleviate pain. Recent studies have shown that herbal mouthwashes have shown promising results in controlling plaque and gingivitis. These mouthwashes are formulated with extracts and essential oils from plants, containing active compounds like catechins, tannins, and sterols. They offer gentle therapeutic effects and anti-inflammatory and antioxidant properties, unlike synthetic chemicals. Essential oil mouthwashes are the most extensively researched and widely marketed oral antiseptic solutions [1-3].

TYPES OF MOUTHWASHES

1. Fluoride mouthwash: Protects teeth from cavities, but be cautious not to ingest too much fluoride.
2. Antiseptic mouthwash: Alcohol-based, prevents bacterial growth, freshens breath.
3. Cosmetic mouthwash: Masks bad breath, lacks oral health benefits.
4. Natural mouthwash: Safer, gentler, maintains oral hygiene, freshens breath, and soothes mouth sores.

INDICATION [4]

1. Gingivitis
2. Mucositis
3. Halitosis
4. Periodontal disease
5. Xerostomia
6. To clean septic sockets
7. To control plaque
8. To relieve pain
9. To effectively delivered fluoride to prevent dental caries
10. Reduce inflammation

ADVANTAGES [18-20]

1. **Freshens breath:** Leaves your mouth feeling clean and fresh.
2. **Prevents tooth decay:** Contains sodium fluoride to strengthen tooth enamel and prevent decay.

Received: March 08, 2025; **Revised:** March 28, 2025; **Accepted:** March 31, 2025

Citation: Sripriya VJ, Melath A, Hemalatha DM, Shamna F & Sherin F. (2025) An Insight on Herbal Mouthwashes. J Oral Health Dent Res, 5(1): 1-8.

Copyright: ©2025 Sripriya VJ, Melath A, Hemalatha DM, Shamna F & Sherin F. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

A Comprehensive Review on Bruxism

Vishnusripriya J¹, Anil Melath², Akash S Biju³, Adithya Ramesh⁴

¹Senior Lecturer, Department of Periodontics, Mahe Institute of dental sciences and hospital.

²Professor, Department of Periodontics, Mahe Institute of dental sciences and hospital.

³Final Year BDS Student, Department of Periodontics, Mahe Institute of dental sciences and hospital.

⁴Final Year BDS Student, Department of Periodontics, Mahe Institute of dental sciences and hospital.

Abstract

Bruxism is a habitual grinding of teeth when not chewing or swallowing, which can lead to tooth damage, headaches, and temporomandibular disorder. It can occur during wakefulness or sleep, with sleep bruxism being a semivoluntary activity during daytime. Bruxism is a sleep-related disorder, with psychosocial factors like stress playing little role in its etiology. There are no reliable methods for assessing bruxism in clinics, and tooth wear can also result from attrition, abrasion, and erosion. Devices like miniature self-contained EMG detector analyzers have potential if scientifically verified in large populations. In the absence of definitive evidence, bruxism can be managed through occlusal appliances, counseling, lifestyle changes, and pharmacological interventions.

Introduction

Bruxism is defined as habitual grinding of teeth when an individual is not chewing or swallowing. Tooth grinding is an activity particularly important to the dentist because of breakage of dental restorations, tooth damage, induction of temporal headache and temporomandibular disorder.[1,2]. Bruxism can occur during wakefulness or during sleep. Bruxism during daytime is commonly a semivoluntary 'clenching' activity during night is termed as 'sleep bruxism'. [3] According to American Academy of orofacial pain [4]: Bruxism is Defined as diurnal or nocturnal para-functional activity including clenching, bracing, gnashing and grinding of the teeth. The ICSD-R states that 90% of the general population grind their teeth to a degree at some point during their life, although only 5% will develop a clinical condition. Studies have reported that awake bruxism affects females more commonly than males while in sleep bruxism, males are equally affected as females.[5,6]

Etiology

Bruxism may be exhibited due to various factors, including local, systemic, physiological, and occupational factors. Local factors involve unconscious attempts to place teeth in contact during the transition from deciduous to permanent dentition and individual tooth planes. Systemic factors include gastrointestinal disturbances, nutritional

deficiencies, allergies, and endocrine disturbances. Physiological factors include anxiety, fear, stress, and emotional tension, while occupational factors include watchmakers and habitual chewers of tobacco, gum, tooth picks, or pencil. [7]

Clinical Features

Bruxism can cause tooth wear, fracture, periodontal and muscle pain, and tooth mobility. Clinical evaluation is complex due to nocturnal para functional activity in both bruxers and normal individuals. Dental enamel is affected, with abnormal tooth wear being the most common. Bruxism can cause changes in the stomatognathic system structure, friction, inflammation, pulpal necrosis, and tooth mobility. It can also cause posture problems and affect masticatory and posture muscles of the cervical spine, potentially leading to chronic and permanent changes.[11]

***Corresponding Author:** Dr. Vishnu Sri Priya J, Mahe Institute of Dental Sciences and Hospital, Chalakkara, Palloor, Mahe - 673310.



Original Research Article

A comparative evaluation of the microtopographic changes on the enamel surface using three different polishing systems at varying time interval by scanning electron microscope: An invitro study

Vishnu Sri Priya Jeevanandam^{1*}, Anil Melath¹, Subair Kayakool¹, Arjun Machingal Ravindran¹, Saicharan G²

¹Dept. of Periodontics, Mahe Institute of Dental Sciences & Hospital, Mahe, UT of Puducherry, India

²Dept. of Conservative Dentistry and Endodontics, Mahe Institute of Dental Sciences & Hospital, Mahe, UT of Puducherry, India

Abstract

Background: The rational for professional polishing is to remove stains and to leave a smooth, slippery clean tooth surfaces that is minimally plaque retentive.

Aims and Objectives: This study aims to evaluate and compare the micro topographic changes of the enamel surfaces subjected to polishing using three different methods at varying time interval by scanning electron microscopy.

Materials and Methods: A total of 70 premolar tooth samples indicated for extraction as a part of orthodontic treatment were collected, stored, and were divided randomly into 4 groups: Group A, Group B, Group C and Group D. Tooth samples in Group A were not polished. Polishing was carried out with bristle brush in group B, rubber cup in Group C, air polisher in Group D. Further the tooth samples were sectioned and processed for SEM analysis at 1500 magnification. The photomicrographs were assessed on the basis of their surface condition and scored according to the enamel roughness criteria. The observations were tabulated and analysed statistically using Chi square test and Fisher's exact test.

Results: Air polisher polishing of the tooth sample for 20 sec caused 90% score 1 enamel surface roughness which was a significant outcome when compared to the other polishing system at 20 sec.

Conclusion: Air polisher and rubber cup are the most efficacious methods in producing smooth enamel surface when compared with a bristle brush, wherein air polisher device produced best results after 20 seconds of polishing and rubber cup device produced best results after 10 seconds polishing.

Keywords: Polishing, Bristle brush, Rubber Cup, Air Polisher, SEM analysis

Received: 24-01-2025; **Accepted:** 28-02-2025; **Available Online:** 25-04-2025

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

The rational for professional polishing is to remove stains and to leave a smooth, slippery clean tooth surfaces that is minimally plaque retentive. Polishing is traditionally employed in prophylaxis procedure by dental clinicians. However, overzealous use of polishing procedure would cause wearing of the superficial tooth structure. This would lead to more accumulation of plaque and stains.¹ Limitations of each polishing procedure should be analysed before its clinical application. Present study aims to estimate and compare the micro topographic changes of the enamel surfaces subjected to polishing using three different methods at varying time interval of 0 seconds, 10 seconds and 20

seconds by scanning electron microscopy and to establish most efficacious time interval and polishing method by intergroup analysis of enamel surface roughness.

2. Materials and Methods

Source of the study were selected from the Out patients from Department of Orthodontics, Mahe institute of dental science and hospital. A total of 70 premolar tooth samples indicated for extraction as a part of orthodontic treatment were extracted, collected, stored, sectioned and analysed. The Inclusion criteria were premolar indicated for extraction as a part of orthodontic treatment plan and the Exclusion criteria were presence of caries & teeth with erosion and abrasion. Collected samples were washed in running water for 30

*Corresponding author: Vishnu Sri Priya Jeevanandam
Email: drvsprio@gmail.com

Comparative Evaluation of Regenerative Potential of Platelet-rich Fibrin and Bioactive Calcium Phosphosilicate Putty in Human Periodontal Infrabony Defects

Nanditha Chandran¹, Suchetha Aghanashini², Koduru Sravani³, Sapna N⁴, Anupama Aradya⁵, Darshan B Mundinamane⁶

Received on: 11 April 2025; Accepted on: 16 May 2025; Published on: 20 June 2025

Abstract

Aim: To evaluate and compare the efficacy of bioactive calcium phosphosilicate putty (NovaBone) with platelet-rich fibrin (PRF) and bioactive calcium phosphosilicate putty (NovaBone) alone in periodontal endosseous defects.

Materials and methods: About 20 surgical sites were identified and were randomly divided into two groups. Group I ($n = 10$ defects) included sites treated with bioactive glass (NovaBone® putty) only, and group II ($n = 10$ defects) included sites treated with a combination of PRF and bioactive glass (NovaBone® putty). Clinical parameters like plaque index, gingival index, probing pocket depth (PPD), relative attachment level (RAL), and gingival recession (GR), and radiographic parameters like depth of the defect (DOD) were recorded preoperatively at baseline and repeated at 3, 6, and 9 months postoperatively. Statistical analysis was carried out using Student *t*-test.

Results: The results of the study proved that PPD, RAL, and defect fill were slightly higher in group II (NovaBone putty) than in group I (PRF and NovaBone putty). However, there was no statistically significant difference in any of the abovementioned parameters between the two graft materials.

Conclusion: It can be concluded that both the regenerative bone graft (BG) materials were efficient in improving the clinical parameters as well as radiographic bone fill (BL). However, NovaBone putty showed superior results over PRF when used in the treatment of periodontal infrabony defects.

Clinical significance: Use of NovaBone putty offers a viable alternative to traditional grafting materials. PRF enhances wound healing and tissue regeneration. Both the graft materials are minimally invasive, and PRF is a cost-effective treatment option that is easy to prepare. It enhances bone formation and promotes regeneration in periodontal defects. PRF is a novel regenerative material that is combined with NovaBone putty to evaluate any added benefit over PRF alone in periodontal infrabony defects.

Keywords: Chronic periodontitis, NovaBone putty, Platelet-rich fibrin, Probing pocket depth.

World Journal of Dentistry (2025): 10.5005/jp-journals-10015-2628

Introduction

Periodontitis is an inflammatory disease of the supporting structures of the tooth that results in gingival inflammation, periodontal pocket formation, and loss of connective tissue attachment and alveolar bone around the affected teeth.^{1,2} Periodontal surgical procedures have aimed at reducing and eliminating hard and soft tissue defects, including probing depths and osseous defects, by regenerating new attachment.³ Regeneration of lost periodontal tissues can be obtained by use of bone grafts (BG) alone and its combination with barrier membranes that has shown significant improvement in the attachment levels and bone fill (BL).⁴

Alloplasts are synthetic bone substitutes that are used in regeneration procedures. The main advantages of alloplastic bone substitutes involve their biological stability and volume maintenance that allow cell infiltration and remodeling. They exhibit biocompatibility, osteoinduction, and osteoconduction properties.

NovaBone® Putty is an alloplast, a premixed composite of bioactive calcium phosphosilicate particulate and a synthetic, absorbable binder. The bioactive particulate is composed solely of elements that exist naturally in normal bone (Ca, P, Na, Si, O).^{5,6}

¹Department of Periodontology, Mahe Institute of Dental Sciences and Hospital, Puducherry, India

^{2,4,6}Department of Periodontology, DA Pandu Memorial RV Dental College, Bengaluru, Karnataka, India

³Department of Periodontology, Dayananda Sagar College of Dental Sciences, Bengaluru, Karnataka, India

⁵Department of Prosthodontics, JSS Dental College and Hospital, JSS Academy of Higher Education and Research, Mysuru, Karnataka, India

Corresponding Author: Anupama Aradya, Department of Prosthodontics, JSS Dental College and Hospital, JSS Academy of Higher Education and Research, Mysuru, Karnataka, India, Phone: +91 9379463612, e-mail: dranupamavenu@gmail.com

How to cite this article: Chandran N, Aghanashini S, Sravani K, et al. Comparative Evaluation of Regenerative Potential of Platelet-rich Fibrin and Bioactive Calcium Phosphosilicate Putty in Human Periodontal Infrabony Defects. World J Dent 2025;16(4):342–350.

Source of support: Nil

Conflict of interest: None

Review Article

Open Access

The Hidden Danger - Understanding Periodontal Pocket

Jilu Jessy Abraham^{1*}, Anil Melath², Arjun MR¹, Swarnamalya G³ and Suhail³

¹Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

²Principal & HOD, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

³Final Year Student, Mahe Institute of Dental Sciences, Chalakkara, India

ABSTRACT

The conversion of junctional epithelium to pocket epithelium is regarded as a hallmark in the development of periodontitis. Knowledge of factors contributing to the initiation and progression of pocket formation is important. It may result in the development of better preventive measures and improved healing outcomes after therapeutic interventions. Destruction of the structural integrity of the junctional epithelium, which includes disruption of cell-to-cell contacts and detachment from the tooth surface, consequently leading to pocket formation, disequilibrates this delicate defense system. One of the main variables used to evaluate the clinical success of periodontal therapy is periodontal pocket depth reduction. Therefore, reflecting on how the periodontal pocket process's role has helped guide how we perform and interpret periodontal research is important. A full understanding of periodontal pocket etiology is required to design a more precise treatment strategy and avoid the advancement of periodontal disorders.

*Corresponding author

Jilu Jessy Abraham, Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India.

Received: October 01, 2024; **Accepted:** October 09, 2024; **Published:** October 16, 2024

Keywords: Periodontal Pocket, Pathogenesis, Periodontal Therapy, Histology

Introduction

The periodontal pocket is defined as a pathologically deepened gingival sulcus around a tooth at the gingival margin. Accordingly, the space between the pathologically detached gingiva and the tooth is called a pocket. A gingival sulcus depth of up to 0.5 mm may be considered clinically healthy. Different classification types of pockets exist [1,2]. To establish better preventive measures and therapeutic outcomes for the treatment of this disease process, this article gives a comprehensive insight into the development and advancement of periodontal pockets.

Classification

Periodontal pocket classified into true gingival pockets and periodontal pockets the former being related to gingivitis, whereas the latter is found in periodontitis. Detachment of junctional epithelial cells and inflammation is part of both gingival and periodontal pockets. In a gingival pocket there is, in contrast to a pseudo pocket, inflammation and destruction of the underlying periodontal tissues together with coronal detachment of junctional epithelial cells but without bone destruction. In a periodontal pocket, bone destruction by osteoclastic resorption is a characteristic feature beyond inflammation, tissue destruction and detachment of junctional epithelium [2,3]. Two types of periodontal pockets exist: suprabony pockets; and intrabony pockets. In a suprabony (supracrestal or supra-alveolar) pocket, the bottom of the pocket is coronal to the alveolar crest. When the bottom of the pocket is apical to the alveolar crest, which means

that bone is present lateral to the pocket wall, the pocket is called an intrabony (infrabony, subcrestal or intra-alveolar) pocket [2-4]. Another type of classification takes into consideration the pocket morphology according to the number of surfaces involved. A simple pocket involves one tooth surface only, a compound pocket involves more than one surface and a complex (or spiral) pocket means that the base of the pocket is not in direct communication with the gingival margin. Finally, depending on the disease activity, there are active and inactive pockets.

Pathogenesis

The conversion of junctional epithelium to pocket epithelium is regarded as a hallmark in the development of periodontitis, the potential factors contributing to the initiation of pocket formation need to be critically analyzed. Microorganisms are the primary etiologic cause of periodontal disease and there is good evidence that pocket formation is related to bacterial colonization of the subgingival tooth surface. Nevertheless, there is a lack of experiments evaluating the mechanisms of pocket formation. Previous discussions on the initiation of pocket development centered around whether: (i) the epithelial cells first recede and later, as a consequence of this, biofilm can migrate apically; or (ii) bacterial products force the epithelial cells to migrate apically. Degenerative changes, such as loss of cellular continuity and detachment from the tooth, are first observed in the coronal-most portion of the junctional epithelium (i.e. at the sulcus bottom) [5-7]. Several possibilities have been proposed to explain intra-epithelial cleavage in the junctional epithelium. With increasing degree of inflammation, an increase in both migration of polymorphonuclear neutrophils and passage of gingival crevicular



Antioxidants and Optimal Health

Jilu Jessy Abraham^{1*}, Anil Melath², Subair K¹, Afna fathima³ and Adla Nadeer³

¹Reader, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe

²Principal and HOD Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe

³Final Year Student, Mahe institute of Dental Sciences, Chalakkara, Mahe

***Corresponding Author:** Jilu Jessy Abraham, Reader, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe.

Received: October 03, 2024

Published: October 26, 2024

© All rights are reserved by
Jilu Jessy Abraham., et al.

Abstract

The presence of free radicals in biological materials was first time discovered about 70 years ago. Since then numerous studies have been done and the benefits of free radicals was introduced. Today we know that antioxidant are by products of the enzymatic reactions taking place in an organism. Antigen are biological macromolecules with immune regulation. Anti-aging, anti-radiation, anti-fatigue, anti-inflammation effects [6].

Overproduction of free radicals causes, oxidative stress, aging processes and various diseases like cancer, rheumatoid arthritis, neurodegenerative disease like Alzheimer and Parkinson, atherosclerosis, pulmonary diseases and DNA damage [12].

Hence, compounds with antioxidants are very important these days because they keep in balance between the production of free radical and the speed of their neutralization the body.

Keywords: Oxygen; Antioxidants; Physiological

Introduction

Antioxidants are substances that prevents oxidation of other compounds. Antioxidants has become a necessity in food products to prevent food degradation. Widely used synthetic anti-oxidants are BHA, BHT, TBHQ. Now there is a increased demand for natural compounds showing anti -oxidant activity. This include plants, eg:- fruits, vegetables, spices etc. Aloe vera contains anti-oxidant which is used in the cosmetic, pharmaceutical, food industry. It has increased shelf life and nutritional value of food [4].

Antioxidants have many medicinal purposes. eg: flavonoids which helps to reduce the risk of mortality from coronary heart diseases and myocardial infarction. Also long term consumption of plant polyphenols can protect as from a range of diseases such as cancers, cardiovascular diseases, osteoporosis and diabetes [6].

General health and degenerative diseases of aging can be improved by consuming recommended amount of fruits and vegetables containing anti-oxidants. The powerful action of anti-oxidants

in preventing premature lipid oxidation in food suggests that the same compound when consumed with the daily diet, could unfold anti -oxidative and anti- aging effects in human body. Therefore it has been hypothesized that anti-oxidants are helpful in preventing various diseases [9].

Antioxidants are also widely being used in general clinical practices. This is due to the increased role of free radicle oxidative damage of human diseases which shows potential in dental practices [10].

History

In the late 19th and early 20th century, extensive study was devoted to the uses of antioxidants in important industrial processes such as the prevention of metal corrosion the vulcanization of rubber, and the polymerization of fuels in the fouling of combustion engines.

Review Article

Open Access

Periodontal Instrumentation: Best Practices for Enhancing Clinical Outcomes

Subair K¹, Jilu Jessy Abraham^{2*}, Nanditha Chandran², Snehal Shajith³ and Shana³

¹Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe, India

²Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe, India

³Final year student, Mahe Institute of Dental Sciences, Chalakkara, Mahe, India

ABSTRACT

Periodontal instrumentation involves various tools essential for effective treatment of periodontal disease. Key instruments include scalers and curettes, designed for plaque and calculus removal, as well as ultrasonic devices that enhance efficiency. Hand instruments offer tactile feedback, while powered tools reduce operator fatigue and improve access to difficult areas. The choice of tools ultimately affects the quality of periodontal care and patient comfort, emphasizing the need for practitioners to be skilled in utilizing both hand and powered instruments to achieve optimal outcomes.

*Corresponding author

Jilu Jessy Abraham, MDS, Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe, India.

Received: November 05, 2024; **Accepted:** November 12, 2024; **Published:** November 19, 2024

Introduction

Periodontal instruments are intended for explicit purposes, for example, eliminating math, planning root surfaces, curetting the gingiva, and eliminating unhealthy tissue. On first examination, the range of instruments accessible for comparable purposes seem confounding. With experience, notwithstanding, clinicians select a generally little set that satisfies all necessities [1].

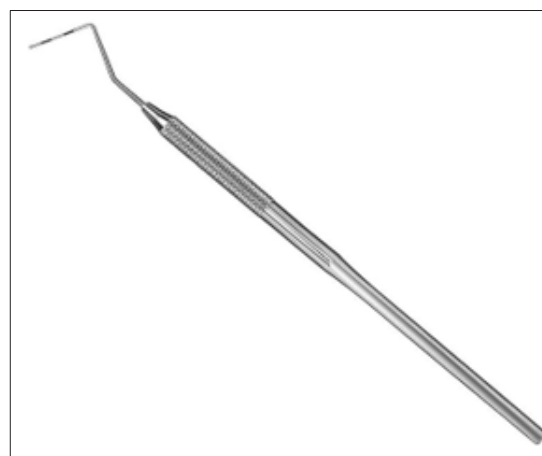
Classification of Periodontal Instruments

1. Periodontal probes are used to locate, measure, and mark pockets, as well as determine their course on individual tooth surfaces.
2. Explorers are used to locate calculus deposits and caries.
3. Scaling, root-planing, and curettage instruments are used for removal of biofilm and calcified deposits from the crown and root of a tooth, removal of altered cementum from the subgingival root surface, and debridement of the soft tissue lining the pocket. Scaling and curettage instruments are classified as follows
 - Sickle scalers are heavy instruments used to remove supragingival calculus.
 - Curettes are fine instruments used for subgingival scaling, root planing, and removal of the soft tissue lining the pocket.
 - Hoe, chisel, and file scalers are used to remove tenacious subgingival calculus and altered cementum. Their use is limited compared with that of curettes.
 - Ultrasonic and sonic instruments are used for scaling and cleansing tooth surfaces and curetting the soft tissue wall of the periodontal pocket.
4. Periodontal endoscopes are used to visualize deeply into subgingival pockets and furcation's, allowing the detection of deposits.

5. Cleansing and polishing instruments, such as rubber cups, brushes, and dental tape, are used to clean and polish tooth surfaces. Also available are air-powder abrasive systems for tooth polishing [1].

Periodontal Probes

Measurements of pocket depth and pocket configuration are made with periodontal probes. To produce a pressure that indicates the approximate depth of probing, probe tips with a diameter of 0.6 mm and a force of 0.20 grammes (50 N/cm²) is exerted on the bottom of the pocket [1].



Explorer

An assessment tool with a flexible wire like working end is called an explorer. The condition of the periodontal tissues, the structure of the teeth, and the texture of the tooth surfaces are assessed using equipment such as periodontal probes and explorers. When the explorer is moved across abnormalities in the tooth surface [2].

Understanding Curettes in Periodontal Therapy: A Comprehensive Review

Jilu Jessy Abraham^{1*}, Anil Melath², Nanditha Chandran¹, Fathimathu Safah³ and Keerthana S³

¹Reader, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe, India

²Principal & HOD, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe, India

³Final year student, Mahe institute of Dental Sciences, Chalakkara, Mahe, India

ABSTRACT

This article gives a detailed description of the periodontal curettes. The curettes are mainly used for the subgingival removal of calculus. These curettes are classified into the universal curettes and area specific curettes. Universal curettes seem to be used for all surfaces, while the area specific curettes are used for specific areas. We also go through the parts of instruments. Knowing the parts of instrument is really needed for the clinician to know about the hand grips. This article also dealt with the classification of instruments to show under which category the curette comes. Then we move on to the detailed description of the curettes both area specific and the universal curette. Their clinical uses are also explained very well so that we could get a specific knowledge about them. The designing of curettes are given so that why they are given specific function can be identified. They are differentiated from the scalers to know about specificity of the instrument.

*Corresponding author

Jilu Jessy Abraham, M.D.S., Reader, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310, India.

Received: May 21, 2025; **Accepted:** May 27, 2025; **Published:** June 27, 2025

Keywords : Subgingival- below the Gingiva, Supragingival- above the Gingiva

Introduction

The main objective of periodontal treatment is the re-establishment and maintenance of periodontal health. The major factors for periodontal disease progression, is the local factors like plaque and calculus. To achieve the periodontal health, it is mandatory to remove these local factors to obtain clean surface. Therefore; to achieve those goals periodontal instrument has been designed specifically.

Instruments

Periodontal instruments are used for specialized functions and have specific design. Removing calculus, planning root surfaces, curetting the gingiva and removing the diseased tissue are some of the specific purposes for which periodontal instruments are designed. For the removal of subgingival and supragingival presently; there is a large number of instrument available which includes ultrasonic devices, sickles, chisels, curettes and hoes. For appropriate use of these instruments, it is mandatory to have a thorough knowledge of instruments.

Parts of Instruments

First, we have handle of the instrument. The handle of the instrument used for grasping. They are purchasable in various heights, diameters and texture at present. The amount of pinch force or pressure needed to hold the instrument is influenced by

ergonomically designed instrument handle [the whether they are round, straight or angular]. Other factors are material used for handle which include stainless steel, plastic/resin and silicone. The amount of force applied can also be determined by the texture of the handle.

The next part is shank. The working end is connected to the handle using the shank. They can be functional or terminal. The functional shank differs in length and angle. Extending from the blade to the first bend in the shank is the terminal shank. To provide a visual hint to the base of the pocket the terminal shank should be positioned parallel. For patients with deep periodontal pockets and/or clinical attachment loss extended is more favourable. In patients with shallow pockets, supragingival calculus, and little or no attachment shorter shank can be chosen. The position of the blade and the flexibility to the surface being scaled will decide the angle of the terminal shank. Another feature of shank design is the flexibility and thickness of the instrument. Shanks vary from flexible, moderately flexible, rigid and extra-rigid.

At least we have working end. It is also known as blade. It is made of several components such as face, cutting edge, back and toe, whereas a pointed working end is called the tip. The range of the blade begins from long to short [standard, mini and micro-mini bladed]. With horizontal and vertical strokes, the large quantity of calculus on surface can efficiently be broken or removed using longer blade.

Research Article

Open Access

Junctional Epithelium: The Key of Understanding Periodontal Attachment and Disease

Jilu Jessy Abraham^{1*}, Nanditha Chandran¹, Hemalatha², Zahira Khanum³ and Yuvasree V³

¹Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe, India

²Assistant Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe, India

³Final Year student, Mahe Institute of Dental Sciences, Chalakkara, Mahe, India

ABSTRACT

A crucial element located at the nexus of the periodontal connective tissues that need to be protected from bacterial exposure and the gingival sulcus, which is home to a varied microbial community, is the junctional epithelium. This specialized epithelial layer serves as a vital barrier, protecting the delicate connective tissues from the constant onslaught of microbial threats. Junctional epithelium is uniquely equipped to handle this formidable challenge, possessing a remarkable array of antimicrobial defense mechanisms. However, despite these robust protective measures, gingival and periodontal lesions can still develop, often signaling the onset of more severe oral health complications. Of particular interest to researchers is the transformation of the junctional epithelium into the pocket epithelium, a transition that is recognized as a crucial indicator of disease progression. This structural and functional shift is a crucial focus of ongoing investigations, as it holds the key to understanding the pathogenesis of various periodontal conditions.

Recent studies have stressed the role of the junctional epithelial cells in innate defense mechanisms, suggesting that these cells play a more active and dynamic part than previously believed. These cells have been found to produce specialized virulence factors, which can disrupt the intricate cell-to-cell contacts that are essential for maintaining the structural and functional integrity of the junctional epithelium.

We will briefly examine the structural makeup of the junctional epithelium in this thorough examination, as well as the various roles that its constituent cells play. By enhancing our understanding of the junctional epithelium's complex role in oral health, we can pave the way for the development of more effective diagnostic and therapeutic strategies to combat the periodontal diseases.

*Corresponding author

Jilu Jessy Abraham, Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe, India.

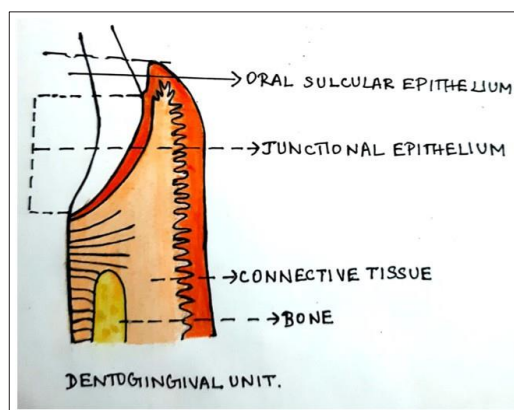
Received: November 05, 2024; **Accepted:** November 12, 2024; **Published:** November 19, 2024

Introduction

In this article we will be discussing about the key role of junctional epithelium. The junctional epithelium is an epithelial component of the dento-gingival unit that connects to the tooth's surface [1]. It is important in keeping out foreign substances and actively participates in the body's defense system [2]. The junctional epithelium's basal layer is composed of two parts

- The internal basal layer attaching with the tooth surface and
- The external basal layer which connects to the underlying tissues [3].

Besides, the junctional epithelium also produces a variety of substances that attack bacteria and their products [1].



From Womb to Wellness: The Hidden Link between Periodontal Health and Reproduction

Jilu Jessy Abraham^{1*}, Anil Melath², Nanditha Chandran¹, Sona Rachel Jose³ and Shireen Shahana³

¹Reader, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310, India

²Principal & HOD, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310, India

³Final year student, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310, India

ABSTRACT

This article review explores the hidden link between periodontal health and reproduction, analyzing recent studies that highlight the impact of gum disease on fertility, pregnancy outcomes, and overall reproductive health. Research suggests that chronic periodontal infections contribute to systemic inflammation, hormonal imbalances, and increased risks of complications such as preterm birth and reduced sperm quality. The review critically examines this relationship's biological mechanisms, including inflammatory mediators and microbiome alterations. By assessing current findings and their implications, this article underscores the importance of oral health in reproductive medicine and calls for further interdisciplinary research. Recent studies have revealed a significant but often overlooked connection between periodontal health and reproductive outcomes. This article review examines current research on how periodontal diseases, particularly periodontitis, can influence fertility, pregnancy, and overall reproductive health in both men and women. Chronic inflammation caused by periodontal infections triggers systemic effects, including increased levels of pro-inflammatory cytokines, oxidative stress, and hormonal imbalances, which may contribute to complications such as infertility, miscarriage, preterm birth, and low birth weight. Additionally, evidence suggests that poor periodontal health is associated with lower sperm quality, erectile dysfunction, and hormonal disruptions in men.

This review critically analyzes the biological mechanisms linking oral and reproductive health, with a focus on inflammatory pathways, microbial translocation, and immune system responses. It also evaluates clinical studies that investigate the impact of periodontal treatment on improving reproductive outcomes. By synthesizing these findings, the review highlights the need for greater awareness among healthcare professionals and calls for an integrated approach that includes oral health as a key component in reproductive healthcare. Further interdisciplinary research is necessary to establish more definitive causal relationships and develop effective preventive and therapeutic strategies.

*Corresponding author

Jilu Jessy Abraham, M.D.S., Reader, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310, India.

Received: May 30, 2025; **Accepted:** June 03, 2025; **Published:** June 27, 2025

Introduction

This study examines the relationship between periodontitis (gum disease) and preeclampsia, a serious pregnancy complication characterized by high blood pressure and organ damage. By analyzing 30 studies (6 cohort and 24 case-control studies), the researchers found a strong association between periodontal disease and preeclampsia, with an overall odds ratio (OR) of 3.18. The link was even more significant in lower-middle-income countries (OR 6.70), suggesting that socio-economic factors and access to dental care may play a role. The study highlights systemic inflammation and bacterial infections from the gums as possible biological mechanisms contributing to preeclampsia. The findings emphasize the importance of oral health care during pregnancy and suggest that preventing and treating periodontal disease may help reduce the risk of preeclampsia [1].

Numerous systemic diseases and disorders, including cancer, autoimmune, respiratory, endocrine, renal, cardiovascular, and neurological diseases, have been connected to periodontal disease. It is debatable to what extent this link is causative. Future research must

unravel the intricate networks that drive the biological processes that transform physiological entities into pathological ones to better understand the relationships that connect different states [2].

This article examines the link between periodontitis and hypertension, suggesting that individuals with periodontitis may have higher blood pressure compared to those without the condition. The findings underscore the importance of periodontal health in managing hypertension [3].

Periodontal diseases, primarily gingivitis and periodontitis, are chronic inflammatory conditions affecting the supporting structures of the teeth. While traditionally linked to oral health and systemic diseases such as cardiovascular disease and diabetes, recent findings suggest a potential influence on reproductive health. Periodontitis has been associated with systemic conditions, including diabetes, hypertension, and adverse pregnancy outcomes, due to its inflammatory nature and ability to contribute to systemic immune dysregulation [4].



Gingival Enlargement

Jilu Jessy Abraham¹, Arjun Machingal Raveendran^{1*}, Nanditha Chandran¹,
Indrajith D², Devika M³, Nahida Nazeer³

¹Reader, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

²Post Graduate, Mahe Institute of Dental Sciences and Hospital, Chalakkara, Mahe, India

³Student, Mahe Institute of Dental Sciences and Hospital, Chalakkara, Mahe, India

***Corresponding Author:** Arjun Machingal Raveendran, Reader, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India.

DOI: 10.31080/ASDS.2024.08.1869

Received: May 10, 2024

Published: June 27, 2024

© All rights are reserved by

**Arjun Machingal Raveendran.,
et al.**

Abstract

One of the common characteristic of gingival disease is gingival enlargement. Nevertheless because of the variety of ways in which these entities present, diagnosing these entities can be difficult for the clinician. They can be classified according to their etiopathogenesis, location, size, extend etc. With the help of current practice and clinical experience a differential diagnosis can be created. After thorough investigation the clinician arrives at a final diagnosis also known as diagnosis of exclusion. An accurate diagnosis is crucial because it determines how to treat these lesions and prevent them from recurring, in addition certain situations, gingival enlargement may be primary indicator of potentially fatal systemic disease.

Keywords: Decision Tree; Gingival Disease; Differential Diagnosis; Gingival Hyperplasia; Gingival Over Growth; Differential Diagnosis

Introduction

Gingival enlargement, also known as gingival overgrowth is a common feature of gingival disease that is characterized by an increase in the size of the gingiva. The key to timely management is accurately diagnosing the cause of the enlargement, but this can be challenging given the variety of gingival enlargement that can be classified as inflammatory, drug-induced, associated with systemic condition or disease, neoplastic or false enlargements based on their etiopathogenesis. They can also be classified as marginal, papillary, or diffuse and their distribution can be localised or generalised. Localised enlargement can be further classified in to three subtypes isolated, discrete regional. Discrete lesions are isolated sessile and pedunculated tumour like enlargement. Regional enlargement refers to the involvement of gingiva around three or more tooth in one or multiple areas of the mouth. Generalised enlargement refers to involvement of gingiva adjacent to almost all teeth present [1].

Classification [2,3]

Inflammatory enlargement

- Acute
- Chronic

Drug-induced gingival enlargement

- Anticonvulsants
- Immunosuppressant
- Calcium channel blockers

Enlargements associated with systemic conditions and disease

- Conditioned enlargement
- Pregnancy
- Puberty
- Vitamin C deficiency
- Plasma cell gingivitis
- Non-specific conditioned enlargement

Cementum Proteins: The Foundation of Dental Health

Arjun MR, Subair K, Swathi S*, Geethika and Rohith

Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Pondicherry University, India

***Corresponding Author:** Swathi S, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Pondicherry University, India.

Received: September 11, 2024; **Published:** September 24, 2024

Abstract

Destruction of the periodontium is normally associated with periodontal disease, although many other factors, such as trauma, aging, infections, orthodontic tooth movement and systemic and genetic diseases, can contribute to this process. Strategies (such as guided tissue regeneration) have been developed to guide and control regeneration using bioresorbable membranes and bone grafts. Although effective to a certain point, these strategies have the problem that they are not predictable and do not completely restore the architecture of the original periodontium. To achieve complete repair and regeneration it is necessary to recapitulate the developmental process with complete formation of cementum, bone and periodontal ligament fibers. Detailed knowledge of the biology of cementum is key for understanding how the periodontium functions, identifying pathological issues and for developing successful therapies for repair and regeneration of damaged periodontal tissue. It is the purpose of this review to focus on the role of cementum and its specific components in the formation, repair and regeneration of the periodontium. As cementum is a matrix rich in growth factors that could influence the activities of various periodontal cell types, this review will examine the characteristics of cementum, its composition and the role of cementum components, especially the cementum protein-1, during the process of cementogenesis, and their potential usefulness for regeneration of the periodontal structures in a predictable therapeutic manner.

Keywords: *Cementum Proteins; Dental Health; Cementogenesis*

Introduction

Cementum, a crucial component of the tooth's anatomy, plays a significant role in dental health. Cementum is characterized as calcified, mesenchymal tissue with few or no blood vessels that shapes the external covering of the physical root [1]. Understanding the proteins present in cementum is vital for comprehending its functions in dentistry.

This review will focus on several key cementum proteins: Cementum attachment protein (CAP), Cementum-derived growth factors (CGFs), Cementum protein 1 (CEMP1), Osteonectin, bone sialoprotein (BSP), and Osteopontin (OPN) and glycosaminoglycans.

Composition of cementum

The significant natural part of cementum is collagen [2]. The major kind of collagen is type I collagen, which represents 90% of all collagens and assumes an underlying part during the bio-mineralization process, filling in as a repository for hydroxyapatite nucleation, which progressively forms into intrafibrillar apatite crystals [3]. Type III collagen, which coats type I collagen fibrils, is additionally present, albeit in extensively lower amounts [5]. In addition to collagens, carboxylated and sulfated mucopolysaccharides (glycosaminoglycans) are available in human cementum [4].



A Comprehensive Review on Indices of Gingival Enlargement

Hemalatha DM^{1*}, Nanditha Chandran², Jilu Jessy Abraham²,
Vishwapriya S³, Yamuna D³ and Penumaka Liza³

¹Assistant Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

²Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

³Final Year Student, Mahe Institute of Dental Sciences, Chalakkara, India

***Corresponding Author:** Hemalatha DM, Assistant Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India.

Received: July 19, 2024

Published: July 31, 2024

© All rights are reserved by Hemalatha DM, et al.

Abstract

Gingival enlargement is the common featuring gingival diseases. A perfect diagnosis enables to rule out the differential diagnosis based on their presentations. Quantitative measurement of disease is based on indices system. An efficient index should be quick and easy to use, with minimal instrumentation. There are numerous aetiologies for gingival overgrowth or gingival enlargement which affect. Hence we need to know various methodologies to measure all the parameters for a successful means of treatment. Most common method of assessment of the gingival enlargement is with a suitable index. This paper reviews the commonly used indices for diagnosing gingival enlargement.

Keywords: Gingival Overgrowth; Indices; Gingival Enlargement

Introduction

Gingival enlargement is the proliferation and intensification of the gingiva which is an important feature of a gingival disease. An index is a numerical value describing the relative status of the population on a scale with definite upper and lower limits. Various mechanisms have been described by the investigators in the etiopathogenesis of gingival overgrowth. In inflammatory gingival overgrowth, the microorganisms produces certain toxic substances like collagenases, hyaluronidase, chondroitin sulphate, proteases etc which cause damage to the epithelium & connective tissue along with intercellular components leading to widening of small capillaries and venules with formation of capillary loops between rete pegs. Gingival enlargement or gingival hyperplasia is an abnormal overgrowth or increase in the size of the gingival tissues. Gingival enlargement is classified into different types according to their etiologic cause. To measure the intensity of the presenting clinical signs and symptoms which differs from persons to persons indices have been proposed.

The clinical features can be assessed invasively and non – invasively.

Gingival indices

Angelopoulos and Goaz index (1972)

Described an index for measuring the vertical component of gingiva. Three grades based on the enlargement covering the clinical crown were described as.

Seymour index (1985)

Seymour graded gingival enlargement on the study casts. He divided upper and lower anterior segments 5 gingival units each both buccally and lingually. The degree of gingival enlargement and their encroachment upon adjacent teeth were recorded.



The Unsung Hero: Unraveling the Wonders of the Periodontal Ligament

¹Dr Arjun Machingal Raveendran, Reader, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

²Dr Marjana Shukoor, Post Graduate Resident, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

³Rahfa Ismail, 4th Year Undergraduate, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

⁴Prithima .R, 4th Year Undergraduate, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

Corresponding Author: Dr Marjana Shukoor, Post Graduate Resident, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

Citation of this Article: Dr Arjun Machingal Raveendran, Dr Marjana Shukoor, Rahfa Ismail, Prithima .R, “The Unsung Hero: Unraveling the Wonders of the Periodontal Ligament”, IJDSIR- September – 2024, Volume –7, Issue - 5, P. No. 87 – 96.

Copyright: © 2024, Dr Marjana Shukoor, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

Type of Publication: Review Article

Conflicts of Interest: Nil

Abstract

The periodontal ligament (PDL) is a specialized connective tissue critical for the support, maintenance, and function of teeth. Situated between the cementum of the tooth root and the alveolar bone, the PDL plays a vital role in securing teeth within the jaw, absorbing occlusal forces, and facilitating the sensory feedback necessary for proper mastication. This dynamic tissue is composed of a complex matrix of collagen fibers, cells, and extracellular components that contribute to its unique biomechanical properties. Recent research has highlighted the PDL's regenerative capabilities and its potential role in periodontal therapy and dental

regeneration. This review aims to elucidate the structural characteristics, biological functions, and clinical significance of the periodontal ligament, with a focus on its role in maintaining periodontal health and its implications for advanced periodontal treatments.

Keywords: Periodontal Ligament, Oral Cavity, Alveolar Bone, Collagen Fibers.

Introduction

The periodontal ligament (PDL) is an aligned fibrous network anchored firmly to the root cementum of the teeth on the one side and to the alveolar bone of the jaws on the other side. It provides mechanical stability and acts as a shock absorber to protect the tooth and alveolar

To splint or not to splint - A review

¹Dr. Hemalatha D.M, M.D.S., Assistant Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe- 673310

²Dr. Anil M, M.D.S., Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe- 673310

³Dr.Nanditha Chandran, M.D.S., Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe- 673310

⁴Basim Shad K K, Fourth Year Student, Mahe Institute of Dental Sciences, Chalakkara, Mahe - 673310

⁵Balaraman G, Fourth Year Student, Mahe Institute of Dental Sciences, Chalakkara, Mahe- 673310

Corresponding Author: Dr. Hemalatha D.M, M.D.S., Assistant Professor, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe- 673310

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

The various stages of periodontitis may require individual treatment for periodontal tooth mobility, ranging from simple occlusal therapy through splinting and non-surgical phase therapy to surgical phase therapy. The treatment of the periodontitis normally includes nonsurgical and careful periodontal medicines. However, at times might be restricted to just the nonsurgical periodontal treatment. Splinting serves two purposes: first, it stabilizes the teeth so that they can be treated with surgery in the future. Chalifoux expressed that supporting recoveries a critical number of versatile teeth however requires a serious level of clinical ability and demonstrative skill. Indications, contraindications, classification , merits, demerits and various splinting materials are all covered in this article. [1]

Keywords: Stabilisation, tooth mobility, appliance, splinting, periodontium.

Introduction

Splinting is required in cases with traumatically displaced teeth, transplanted teeth, and fractured roots, as well as in cases where support has been diminished or destroyed as a result of apicectomy, external resorption, or periodontal damage. [1] A dental splint is defined as “a rigid or flexible device or compound used to support, position, or immobilize teeth that have been loosened, replanted, fractured, or subjected to certain endodontic surgical procedures” by the American Association of periodontics. Dental splinting has two purposes: [11]

- It protects the attachment apparatus so that the periodontal fibres can renew.
- It stabilises the tooth for as long as necessary to prevent additional damage.

Unmasking P. Gingivalis: The Oral Health Enemy Within

¹Dr Subair Kayakool, Professor, Department of Periodontics, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India-673310

²Dr Arjun Machingal Raveendran, Reader, Department of Periodontics, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India-673310

³Dr Anil Melath, Professor and HOD, Department of Periodontics, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India-673310

⁴Dr Swathi S, Post Graduate Resident, Department of Periodontics, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India-673310

⁵Pemmadi Gova Lakshmi, Final year Undergraduate, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India-673310

⁶Anju A Babu, Final year Undergraduate, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India-673310

Corresponding Author: Dr Swathi S, Post Graduate Resident, Department of Periodontics, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India-673310.

Citation of this Article: Dr Subair Kayakool, Dr Arjun Machingal Raveendran, Dr Anil Melath, Dr Swathi S, Pemmadi Gova Lakshmi, Anju A Babu, “Unmasking P. Gingivalis: The Oral Health Enemy Within”, IJDSIR- June – 2024, Volume –7, Issue - 3, P. No. 62 – 67.

Copyright: © 2024, Dr Swathi S, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

Type of Publication: Review Article

Conflicts of Interest: Nil

Abstract

Porphyromonas gingivalis is a gram negative oral anaerobe that is involved in the pathogenesis of Periodontics, an inflammatory disease that destroys the tissues supporting the tooth, eventually leading to tooth loss. *Porphyromonas gingivalis* has can locally invade periodontal tissues and evade the host defence mechanisms. It utilizes a panel of virulence factors that cause deregulation of the innate immune and inflammatory responses. Moreover, the role of *P. gingivalis* as a keystone biofilm species in orchestrating a host response is highlighted.

Keywords: *Porphyromonas Gingivalis* Periodontitis.

Introduction

Porphyromonas gingivalis is the species most highly associated with the chronic form of periodontitis and can be detected in up to 85% of the disease sites.¹ The presence of *p. gingivalis* in a periodontal pocket may predict imminent disease prognosis.²

This species possesses a number of potential virulence factor such as cysteine, proteinases lipopolysaccharides, capsule and fimbriae.³



“A REVIEW ON STUDY DESIGNS IN RESEARCH ”

**Dr.Hemalatha. D.M, Dr.Anil Melath, Dr.Jilu Jessy Abraham, Shanmathy.S, Shahana
Kathoon.V.K**

**Assistant Professor, Professor and HoD, Reader, Third year student, Third year student
Department of Periodontics, Mahe institute of Dental Sciences and Hospital,**

Chalakkara, Mahe- 673310

Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310

INTRODUCTION:

Study designs act as the foundation for gathering and analyzing data pertinent to particular research inquiries. They encompass a variety of approaches, each with its own set of advantages and constraints. The selection of a study design is guided by factors such as the essence of the research question, the objectives of the study, and available resources. Recognizing that the choice of design can significantly impact the validity of study outcomes underscores the importance of comprehending the diverse range of study designs along with their respective strengths and limitations.[1]

In clinical research, our objective is to craft a study capable of yielding valid and significant scientific conclusions through the application of suitable statistical methodologies, with results that are translatable to real-world settings.[2]

All these study designs share common elements, which align with the PICO framework:

- ☐ A specified population (P) from which cohorts of subjects are examined.
- ☐ Measurable outcomes (O).
- ☐ In the case of experimental and analytical observational studies, interventions (I) or exposures (E) are administered to distinct groups of subjects.

Our initial categorization revolves around whether the study is analytical or non-analytical. A non-analytical or descriptive study aims to provide an overview of occurrences within a population without quantifying relationships. Examples include case reports, case series, qualitative studies, and cross-sectional surveys,



The Hidden Impact of Medications: Unveiling Drug-Induced Gingival Overgrowth

**DR ANIL MELATH, DR SUBAIR K, DR SWATHI S, NEHLA NAJEEB,
NAVYAKEERTHI**

**HEAD OF THE DEPARTMENT, PROFESSOR, POST GRADUATE, UNDER
GRADUATE, UNDER GRADUATE**

PONDICHERRY

ABSTRACT

Drug-induced gingival enlargement (DIGO), previously termed drug-induced gingival hyperplasia, occurs as a side effect of certain systemic drugs. These drugs, primarily used for non-dental treatments, include anticonvulsants, immunosuppressants, and calcium channel blockers. DIGO manifests as firm, painless, nodular enlargements of the gingiva, particularly affecting the interdental papilla and can interfere with speech, chewing, and aesthetics. The pathophysiology involves inhibited calcium ion influx at the cellular level, with plaque-induced inflammation exacerbating the condition. Common causative drugs include phenytoin, cyclosporine, and nifedipine, each presenting distinct histological patterns. Phenytoin, for instance, is associated with a more fibrotic response, whereas cyclosporine triggers a more inflamed, vascular response. The condition is most prevalent in male children and adolescents, particularly in the anterior region.

Effective treatment includes improving oral hygiene, considering medication substitution, and in some cases, surgical intervention. Alternative medications such as tacrolimus for cyclosporine or diltiazem for nifedipine are recommended due to lower associated rates of gingival overgrowth. Non-steroidal anti-inflammatory drugs,

Maneuvering Abscesses Management

Hemalatha DM^{1*}, Arjun MR², Jilu Jessy Abraham³, Balamanikandan⁴ and Azza Fathima⁵

¹Assistant Professor, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe, India

²Reader, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe, India

³Reader, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe, India

⁴Mahe institute of Dental Sciences, Chalakkara, Mahe, India

⁵Mahe institute of Dental Sciences, Chalakkara, Mahe, India

*Corresponding author

Hemalatha DM, MDS, Assistant Professor, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe, India.

Received: August 01, 2024; **Accepted:** August 08, 2024; **Published:** August 12, 2024

ABSTRACT

Dental abscess is a localized collection of pus, which can result from a number of reasons including dental caries, trauma or failed dental root canal treatment. According to the tissues affected, they can be classified into gingival abscess, periodontal abscess and pericoronal abscess. Correlation of history, clinical and radiographic findings are required for the correct diagnosis and differentiation of the different abscesses. If left untreated these abscesses can cause significant risk for the patient. The management and disposition should be carefully done so that it does not lead to any further complications. The fate of the infection depends upon the virulence of the bacteria, host resistance factors and regional anatomy.

Keywords: Gingival Abscess, Periodontal Abscess, Pericoronal Abscess, Management

Introduction

Dental Abscess

Dental abscess is a term used to describe localized collection of pus in the gingiva, alveolar bone at the root apex of the tooth [1]. It typically arises secondary to dental caries, trauma, or failed dental root canal treatment. Left untreated these infections can be not only extremely painful but also pose a significant risk of descending into the deep neck space or ascending to intracranial sinuses [2].

Classification

It has been classified into three diagnostic groups [3]:

- Gingival abscess
- Periodontal abscess
- Peri-coronal abscess

Gingival Abscess

It is defined as a localized purulent infection that involves the marginal gingiva or interdental papilla. The infection may spread into surrounding tissue, and can progress, damaging the supporting structure of the teeth [3].

Etiology

Acute inflammatory lesion that may arise from a variety of sources, including microbial plaque infection, trauma and foreign body impaction. It is a red, smooth, fluctuant swelling that is confined to gingiva. If the abscess has progressed into the periodontal structure, the periodontal ligament attachment will be lost and the loosening of the teeth takes place [4].

Histopathology

It consists of a purulent focus in a connective tissue surrounded by a diffuse infiltration of polymorphonuclear leukocytes, edematous tissue and vascular engorgement. The surface epithelium has varying degrees of intracellular or extracellular edema, invasion by leukocytes and sometimes ulceration [4].



PERIODONTAL PROBE- EYE OF A PERIODONTIST

BY

Dr.Hemalatha. D.M¹, Dr.Subair.K², Dr.Nanditha Chandran³, Fidha Fathima⁴, Fathima Nashva⁵

¹Assistant Professor Department of Periodontics, Mahe Institute of Dental Science and Hospital, Chalakkara, Mahe-673310.

²Professor Department of Periodontics, Mahe Institute of Dental Science and Hospital, Chalakkara, Mahe-673310.

³Associate Professor Department of Periodontics, Mahe Institute of Dental Science and Hospital, Chalakkara, Mahe-673310.

⁴Third year BDS student Department of Periodontics, Mahe Institute of Dental Science and Hospital, Chalakkara, Mahe-673310.

⁵Third year BDS student Department of Periodontics, Mahe Institute of Dental Science and Hospital, Chalakkara, Mahe-673310.



Article History

Received: 01/08/2024

Accepted: 08/08/2024

Published: 10/08/2024

Vol – 1 Issue – 8

PP: -01-04

Abstract

Success of a treatment solely relies on the exact diagnosis of the underlying illness. In periodontics, diagnosis starts with an accurate examination of periodontal pocket. Periodontal probes which are the essential and first line of diagnostic instrument are of immense importance. A diagnostic tray is incomplete without a periodontal probe. Assessment by probing helps in education of bleeding of probing, pocket determination, clinical attachment loss, etc. These handy instruments play a vital role in a periodontist assessment skills. This review highlights on the history, classification, and an overall view on these instruments.

KEYWORDS: Probes, probing, periodontal pocket, assessment

INTRODUCTION

Periodontal probe is the primary tool used to evaluate the condition of the periodontium, either for screening purpose or to evaluate periodontal changes through the treatment process. Handle, Shank and calibrated working ends are main parts of periodontal probe⁽¹⁾. The main motive of this article is to give a brief description about periodontal probes, its generation, and different methodology of probing. As our understanding of periodontal diseases are grown, the probes have advanced from the conventional unidimensional manual shape to the most complex computerized instrument. Probes are classified into different generation based on its development. First generation includes the conventional probes, whereas second and third generation includes the pressure sensitive probes and computerized probes respectively. Fourth and fifth-generation probes includes three-dimensional probes which is under development⁽²⁾. There are many probing technique such as walking stroke, probing proximal root surface, probing technique on anterior and posterior teeth⁽³⁾

HISTORY

The Latin word "probo" which means "to test" is where the

term probes originates⁽⁴⁾. Initially, John M Riggs in 1882 described probes as a diagnostic instrument. F.V. Simmoton of the University of California, ST Francisco in 1925 first described periodontal probe and its uses. In 1958 Orban described periodontal probe as a "eye of the operator" beneath the gingival periphery. Glickman specified that "probe is an instrument with a tapered rod-like blade which has a blunt and rounded tip". Ramfjord in 1959 a round probe with a tip diameter of 0.4mm was designed and it is the most commonly used probe today⁽⁵⁾. The pressure probe with a standardized insertion pressure upto 30gmwas introduced by Vander Veiden and De Vries(1978).A new computerized probe known as Florida probe was introduced by Gibbs et.al (1988)⁽²⁾. The first classification of periodontal probes was given by B.L Philstrom in 1992 {first to third generation} Classification was extended by Watts including fourth and fifth generation of probes in 2000.⁽⁶⁾

BASIC DESCRIPTION OF PROBES

A standard probe is an instrument that resembles a tapered rod and is measured in millimeters, with blunt, rounded tip⁽¹⁾. It consists of three parts;





CHLORHEXIDINE- A CHEMICAL CONSORT

¹Dr.Hemalatha.D.M, ²Dr.Arjun.M.R, ³Dr.NandithaChandran, ⁴Ashitha.A, ⁵Aswathy.T.L

¹Assistant Professor, ²Reader, ³Reader, ^{4,5}Fourth Year student,
Department of Periodontics,

¹Mahe Institute of Dental Sciences and Hospital, Chalakkara, Pallor, Mahe, India-673310.

Abstract : Periodontitis is an inflammatory disease of gums that causes the supporting structure of teeth to be disrupted due to periodontal ligament degeneration, formation of periodontal pockets, and resorption of alveolar bone. The adjunctive use of local drug delivery along with mechanical cleansing is therapeutically beneficial in treating periodontal pockets in chronic periodontitis. The technique of administering drugs locally is a simple and minimally invasive process. This treatment offers a significant advantage as it ensures that the drug concentration after application exceeds the minimum inhibitory concentration (MIC) and remains effective for several weeks. Chlorhexidine (CHX) is a highly effective local antimicrobial agent that is extensively used for treating periodontitis. This article aimed to provide a narrative review of the currently available local administration of chlorhexidine in the treatment of periodontitis.

IndexTerms - Periodontitis, Chlorhexidine, Antimicrobial activity, Perio-chip.

INTRODUCTION

Mechanical scaling / root planning which is traditional method of non-surgical treatment of periodontitis, do not assure the complete absolution of disease.^[1] Locally delivered antimicrobial drugs are useful in overcoming this issue since they not only have antibacterial benefits but also reduce the potential of systemic toxicity with higher concentrations within the periodontal pockets.^[2] The scientific reasoning behind the inclusion of locally applied anti-infective agents in SRP is that certain broad-spectrum antimicrobial agents have the potential to reduce the number of sub-gingival bacteria that remain after SRP, thus mitigating the likelihood of re-colonization and formation of a new biofilm.^[3] Local delivery of chlorhexidine in periodontitis involves antimicrobial therapy placed directly in periodontal pockets.

IMPORTANCE OF CHLORHEXIDINE

Chlorhexidine is currently considered the "gold standard" antiseptic for periodontal therapy.^[3] Chlorhexidine (CHX) is a highly effective antiseptic that has been used in dental practice for over 50 years due to its long-lasting and broad-spectrum antibacterial activity.^[4] The antimicrobial activity can be attributed to an elevation in the permeability of cellular membranes, leading to the coagulation of intracellular cytoplasmic macro molecules.^[5] In addition, it has been observed to modify the micro-flora of the periodontal pocket while also exhibiting inhibitory properties against microbial proteases produced by potent periodontal pathogens.^[6,7] Multiple clinical trials have demonstrated the efficacy of chlorhexidine (CHX) for the treatment of dental plaque, gingival inflammation, and associated bleeding.^[8,9]

MECHANISM OF ACTION:

The process commences with the prompt attraction of a cationic chlorhexidine (CHX) molecule towards the surface of a bacterial cell that carries negatively charged phosphate and sulphate groups.^[10,11] This process strongly adsorbs to phosphate-containing components on the bacterial cell surface, enabling effective analysis of its constituents. Penetration through the bacterial cell wall takes place via passive diffusion, which subsequently attracts towards the cytoplasmic membrane of the cell and causes damage, thereby compromising its integrity. ^[11]

CHX can infiltrate the cell membrane, increasing permeability. This leads to the outflow of molecules and cytoplasmic components, inhibiting some enzyme activity associated with the membrane. ^[11, 12] Currently, the antimicrobial action of Chlorhexidine (CHX) is in the bacteriostatic phase, which can be reversed in the event of CHX elimination. Nonetheless, it is worth noting that if the concentration of CHX remains stable or increases, it may lead to irreversible cell damage, resulting in a bacteriocidal phase.

USES OF CHLORHEXIDINE: ^[15]

- Periodontitis patients can benefit from a variety of techniques employed during supportive periodontal care, which can effectively manage inflammation in the gingival tissues surrounding the teeth and can reduce the incidence of bleeding while brushing.^[13]



Host Modulation Therapy

¹Dr Athul Kanmani, Post Graduate, Resident, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry

²Dr Subair Kayakool, Professor, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry

³Dr Anil Melath, Professor and HOD, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry

⁴Dr Arjun MR, Reader, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry

⁵Hannah Thomas, Final Year Undergraduate, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry

⁶Goutham, Final Year Undergraduate, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry

Corresponding Author: Dr Athul Kanmani, Post Graduate, Resident, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry

Citation of this Article: Dr Athul Kanmani, Dr Subair Kayakool, Dr Anil Melath, Dr Arjun MR, Hannah Thomas, Goutham, “Host Modulation Therapy”, IJDSIR- September – 2024, Volume –7, Issue - 5, P. No. 289 – 297.

Copyright: © 2024, Dr Athul Kanmani, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Host modulation therapy (HMT) represents a significant advancement in the management of periodontal diseases, focusing on altering the host response to reduce tissue destruction and enhance repair mechanisms. Traditional periodontal treatments primarily target bacterial pathogens, but the recognition that host factors play a critical role in disease progression has shifted attention towards modulating the inflammatory response and bone metabolism. HMT involves the use of pharmacological agents such as non-steroidal anti-inflammatory drugs (NSAIDs), sub-antimicrobial dose doxycycline (SDD), and bisphosphonates to manage the host's immune response and inflammatory mediators. Emerging

therapies also include biologics and synthetic matrix metalloproteinase inhibitors. These agents aim to reduce the production of pro-inflammatory cytokines, inhibit collagenase activity, and promote bone formation. Clinical studies have demonstrated that HMT, when used adjunctively with conventional mechanical therapies, can improve clinical outcomes, reduce periodontal pocket depths, and support alveolar bone preservation. Despite its potential, HMT poses challenges such as patient compliance, long-term safety, and cost considerations. Continued research and development are essential to optimize these therapies, ensure their efficacy, and integrate them into comprehensive periodontal treatment protocols. Host

Review Article

Open Access

Enhancing Periodontal Health with Oral Irrigation Devices: A Review

Jilu Jessy Abraham^{1*}, Anil Melath², Nanditha Chandran¹, Shameema Afrah³ and Shamini R³

¹Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

²Principal & HOD, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

³Final Year Student, Mahe Institute of Dental Sciences, Chalakkara, India

ABSTRACT

Oral irrigation devices are mostly used for oral physiotherapy in homes & dental clinics all over the world. The broad perspective in the use of oral irrigation devices has been the possibility of injury to the sulcular epithelium & underlying tissue. The existing oral irrigation devices exerts immense pressure on the sulcular epithelium. The patient found the procedure pleasant & neither injuries nor staining were noted. The technique may be useful in patients whose interdental areas can't be assessed properly. This study focuses on reduction on plaque, gingival bleeding & may therefore, be an adjunct to normal oral hygiene.

*Corresponding author

Dr. Jilu Jessy Abraham, Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India.

Received: October 01, 2024; **Accepted:** October 09, 2024; **Published:** October 16, 2024

Keywords: Irrigators, Water flosser, Chlorhexidine Supra, Subgingival Irrigator

Introduction

The body of evidence on the oral irrigators also called water flosser & dental water jet consistently has been shown to significantly reduce gingivitis bleeding on probing, and periodontal pathogens [1].

These oral health improvements have been demonstrated with the use of either water or an antimicrobial agent [1]. The evidence indicates the oral irrigators effectively remove biofilm and are more effective than dental floss when added to tooth brushing [1-5].

Biofilms are often affected by brushing techniques thereby preventing the development of dental caries. Whereas toothbrushes are inaccessible to inter- proximal areas of tooth. Therefore, supplementary aids such as interdental floss & brushes are introduced [6-8].

Plaque biofilm is seen as the starting point of periodontal disease [9,10].



Figure 1: Oral irrigator

History

Dr. CD Matterson developed oral irrigator device for the 1st time in the year 1950. His main intention was to clean the teeth & gums, instead of hand syringes after every meal. Its directly attached to sink's faucet & have a mechanical valve to control water pressure [1,2].

In the 1960s, oral irrigators (OIs) were introduced to the public with the aim of removing soft debris and unattached plaque using a pulsating water stream [11].

Invention of Water Flosser

C. D Matterson began working on his device named hydraulic dental syringe [1]. The device is designed in such a way that it is attached to faucet & then faucets water pressure is used in between gum line & tooth [1]. It is believed to be the 1st invention of water flossing, but didn't become a success at first [1,2].

Invention of Water Pik

Until 1962, oral irrigators were not developed [1]. Another dentist, Dr. Gerald Moyer, he came up with an electric device which could pump water between gums and tooth to clean the debris deposited [1]. Then he took help from another dentist, named Dr. Thomas W. Bennet helped him providing financial backing [1]. On 146th attempt, they got prototype oral irrigator working, but it is produced pulsating flow of water, beside this, Moyer pushed & tested device on his parents, He received excellent positive feedback [1,2].



HABITS THAT INFLUENCE THE PERIODONTIUM- A REVIEW

BY

Dr Nanditha Chandran^{1*}, Dr Hemalatha DM², Dr Arjun MR³, Anuvudhya Sujayan⁴, Archana A C⁵

^{1,2,3,4,5}Department of Periodontics and Implantology, Mahe institute of Dental sciences and Hospital, India



Article History

Received: 22/12/2024

Accepted: 28/12/2024

Published: 31/12/2024

Vol – 1 Issue – 12

PP: -06-10

Abstract

Periodontitis is one of the most common oral disease affecting worldwide. It is characterized by breakdown of supporting structures of the teeth. Bruxism, tongue thrusting, mouth breathing are known major risk factors of periodontitis. Habits and behaviors to life circumstances affect the immune system and thereby systemic and oral health. Assessment of such risk factors and their management should be a vital part of periodontal therapy.

Keywords: Habits, Periodontitis, Bruxism, Tongue thrusting, Mouth breathing.

INTRODUCTION

Periodontitis is one of the most common oral disease affecting worldwide ¹. Genetics and environmental and behavioral factors involved in the development of periodontitis. Severe periodontitis lead to tooth loss in adults ².

Bruxism, tongue thrusting and mouth breathing are the functional habits causing periodontitis.

HABITS

Definition

Dorland(1957): Habit can be defined as a fixed or constant practice established by frequent repetition.³

Classification³ -Table :1

Obsessive(Deep rooted)	
A.Intentional or meaningful	Nail biting Digit sucking Lip biting
B.Masochistic or self inflicting injurious habits	Gingival stripping
Non obsessive (Easily learned and dropped)	
A.Unintentional or empty	Abnormal pillowing Chin propping

B.Functional habits

Bruxism

Tongue Thrusting
Mouth Breathing

Table 1: Classification of Habits

Habits are actions that are triggered automatically in response to contextual cues that have been associated with their performance ⁴. Various health impairing behavior which affects periodontitis are discussed in this review article ;

-Mouth breathing

-Bruxism

-Tongue thrusting

PERIODONTITIS

Periodontitis affects the tissues surrounding the tooth structures. All the cases of gingivitis do not progress into cases of periodontitis as its depends on the host response.⁵

1. Mouth breathing

Definition

Sassouni (1971): Defined mouth breathing as habitual respiration through the mouth instead of the nose. Merle (1980) suggested the term oronasal breathing instead of mouth breathing³.

Classification

Fin(1987) has classified mouth breathing into:

A. Anatomic

The anatomic mouth breather is the one whose short upper lip does not permit complete closure without undue effort.



FOOD IMPACTION-A REVIEW

¹Dr Nanditha Chandran ²Dr Jilu Jessy Abraham ³Dr Subair K ⁴Belma Jiju ⁵Benny Sally

¹Associate Professor, ²Associate Professor, ³Professor, ^{4,5}Third year BDS Student

¹Department of Periodontics,

¹Mahe Institute of Dental Sciences and Hospital, Chalakkara (PO), Palloor, Mahe-673310, UT of Puducherry.

Abstract: The forceful wedging of food into the periodontium by occlusal forces is called as food impaction. Various factors such as uneven occlusal wear, opening of contact points as a result of loss of proximal support or from extrusion, congenital morphological abnormalities, improperly constructed restorations etc., can all cause food impaction. Food impaction can cause carious lesions, periodontal abscesses, and localized periodontitis. Impaction can result from even the smallest deviation in an occlusal pattern. Therefore, it is crucial for the clinicians to assess the condition accurately before relieving it.

Key Words - Food impaction, pain, proximal contact

INTRODUCTION

The forceful wedging of food debris into the periodontium is called as food impaction ^{[1][9]}. This is caused due to various reasons which include open tooth contact, plunger cusp effect, improperly constructed restorations, uneven occlusal wear and congenital morphological abnormalities ^[4]. Food particles that get lodged in the gums can cause irritation to the surrounding tissue, which can result in a number of oral health issues, including gingivitis, periodontitis, proximal caries, and periodontal atrophy ^[3]. Common foods that are usually associated with food impaction include popcorn, seeds, legumes and nuts ^[7]. The location or inclination of the tooth may be a factor that predispose to the susceptibility of the periodontium to the built-up of plaque and subsequent loss of attachment ^[8].

WHAT IS FOOD IMPACTION?

Food impaction is the result of food being pushed firmly into the periodontium. "The forcing of food interproximally by tongue or cheek pressure or the forceful wedging of food into the interproximal space by masticatory pressure" is the definition given by the index of periodontal words ^[1]. It is the process of food pieces or fibers becoming lodged in the gap between neighboring teeth while chewing as a result of gingival retreat or occlusal pressure. An intact, firm proximal contact precludes the forceful wedging of food into the interproximal embrasure spaces. An optimal cervico-occlusal location for posterior contact is at the longest mesiodistal diameter of tooth which is found apical to the crest of marginal ridge. When treating food impaction, it is important to determine the underlying cause of the impaction and then tailor the treatment to address that reason. The normal contact connection should be reestablished and the appropriate filling or repair technique should be chosen based on the particulars of the case if there is caries present on the adjacent surface ^[2].

CLASSIFICATION OF FOOD IMPACTION

Food impaction can be classified as vertical food impaction and lateral food impaction.

Vertical food impaction is caused due to shift in tooth position and occlusal wear and plunger cusp. Plunger cusp is the cusp which forcefully wedge food into the interproximal region of opposing teeth.

Horizontal or lateral food impaction is caused due to periodontal disease, which can lead to tissue destruction or gingival recession. This makes the gingival embrasure to widen added with the lateral pressure from the lips, tongue and cheek causing interproximal food impaction.

Sewing your gingiva - A Review on periodontal suturing techniques

¹Dr Nanditha Chandran, Associate Professor, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Pondicherry, India

²Dr Arjun MR, Associate Professor, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Pondicherry, India

³Dr Anil Melath, Professor & Head of the Department, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Pondicherry, India

⁴Jenna Parveen, Final Year BDS, Mahe Institute of Dental Sciences and Hospital, Pondicherry, India

⁵Jananie B, Final Year BDS, Mahe Institute of Dental Sciences and Hospital, Pondicherry, India

Corresponding Author: Dr Nanditha Chandran, Associate Professor, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Pondicherry, India

Citation of this Article: Dr Nanditha Chandran, Dr Arjun MR, Dr Anil Melath, Jenna Parveen, Jananie B, “Sewing your gingiva - A Review on periodontal suturing techniques”, IJDSIR- June – 2024, Volume – 7, Issue - 3, P. No. 44 – 50.

Copyright: © 2024, Dr Nanditha Chandran, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

Type of Publication: Review Article

Conflicts of Interest: Nil

Introduction

Wound Healing is an important factor that needs to be achieved after any surgical procedure. It helps to stabilize and sleeve the tissues in their desired location and thereby helping in wound healing. In dental and medical surgical specialties they have a unique method for wound closure. Suturing is considered as a tedious process of surgical procedure. So the operators have proposed various techniques to eliminate suturing altogether.⁽¹⁾ Some basic principles and techniques of suturing is applied to make the suture more efficient and improves surgical result. This review article deals the principles and various techniques for applying suture in surgical procedure.

Suture

Sutures are materials used to approximate the wound edges with stitches. They are made up of either natural or synthetic material. Compared to synthetic suture materials, natural materials have higher inflammatory reaction and more uneven distribution of strength.⁽²⁾ Sutures are best described by their physical properties which include their configuration, composition, color, coating, surface and ability to degenerate over time.⁽³⁾

Parts of a Suture

It is composed of three components:

1. Loop
2. Knot

Review Article

Diabetes mellitus and periodontitis-a conundrum resolved

Nanditha Chandran*, Anil Melath, Arjun Machingal Raman,
Miran Abdul Khader, Mirdhula Krishnamoorthy

Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

Received: 12 June 2024

Revised: 24 June 2024

Accepted: 25 June 2024

*Correspondence:

Dr. Nanditha Chandran,

E-mail: nandithachandran88@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Periodontitis is an inflammatory and infectious disease affecting the supporting structures of the tooth resulting in alveolar bone loss and tooth loss. Systemic diseases like diabetes have an intimate relation with periodontitis as they share common mechanisms in pathogenesis. Advanced Glycation Endproducts (AGEs) seen in diabetes patients binds with collagen and decreases the turnover. In the presence of preexisting periodontal inflammation, this collagen breaks down leading to periodontitis. On the other hand, inflammatory mediators in periodontitis can lead to tissue resistance to insulin, eventually increasing the blood glucose level, increasing the susceptibility to diabetes. Understanding the exact etiology of both diabetes and periodontitis helps clinician to educate and motivate their patients in managing their glycemic levels as well as to take proper precautions in treating and managing the periodontitis.

Keywords: AGEs, Diabetes, Periodontitis

INTRODUCTION

A common condition affecting a vast majority of population is dental disorders. This vastness of the disease can be attributed to factors like poor oral hygiene, age, adverse habits, etc. Periodontal diseases are one such group of diseases affecting the oral cavity. This inflammatory condition is found to affect the periodontium of the body.¹ Periodontitis is the chronic inflammation of soft and hard tissues surrounding the teeth in response to plaque.²

There has been ongoing research and conflicts regarding the relationship between periodontitis and diabetes, which is a multi-organ disease, for over several years.³ Periodontitis is considered to be a complication of this chronic disease.⁴

Non-surgical treatment of periodontitis is shown to have significant impact on glycemic control in patients with

and without diabetes. Management of Diabetes mellitus has also shown to be of significance in periodontitis with lessening of severity of its symptoms.¹ This correlation between periodontitis and diabetes is effectively studied in the following sections.

PERIODONTITIS

Periodontitis is a disease affecting the periodontal ligament and the alveolar bone resulting in their destruction and loss.⁵ The periodontal diseases include gingivitis, which is the reversible inflammation of soft tissues surrounding the teeth in response to dental plaque.¹

When left untreated, gingivitis may lead to its severe form, periodontitis. Gingivitis is a condition that can be reversed by introducing good oral hygiene practices, whereas periodontitis is a chronic, irreversible and destructive condition.⁶



ISSN Print: 2394-7500

ISSN Online: 2394-5869

Impact Factor (RJIF): 8.4

IJAR 2024; 10(7): 167-170

www.allresearchjournal.com

Received: 08-05-2024

Accepted: 12-06-2024

Dr. Nanditha Chandran

Associate Professor
Department of Periodontics
Mahe Institute of Dental
Sciences and Hospital, Kerala,
India

Dr. Arjun MR

Associate Professor
Department of Periodontics
Mahe Institute of Dental
Sciences and Hospital, Kerala,
India

Dr. Hemalatha DM

Senior Lecturer
Department of Periodontics
Mahe Institute of Dental
Sciences and Hospital, Kerala,
India

Dr. Jilu Jessy Abraham

Associate Professor
Department of Periodontics
Mahe Institute of Dental
Sciences and Hospital, Kerala,
India

Archana Rajeev

Final year BDS Student,
Mahe Institute of Dental
Sciences and Hospital, Kerala,
India

Charumathy L

Final year BDS Student,
Mahe Institute of Dental
Sciences and Hospital, Kerala,
India

Corresponding Author:

Dr. Nanditha Chandran

Associate Professor
Department of Periodontics
Mahe Institute of Dental
Sciences and Hospital, Kerala,
India

Periodontal flap: An outline

Dr. Nanditha Chandran, Dr. Arjun MR, Dr. Hemalatha DM, Dr. Jilu Jessy Abraham, Archana Rajeev and Charumathy L

Abstract

Periodontal disease includes infectious and inflammatory disease that damages the gingiva, periodontal ligament and alveolar bone and if left untreated can lead to tooth loss. Non-surgical therapies are often effective in managing early-stage periodontal disease, more advanced cases may require surgical intervention, and periodontal flap surgery is a common approach.

The primary goal of periodontal flap surgery is to obtain access to the root surfaces and underlying structures to remove bacterial deposits, calculus, and diseased tissue.

Several flap designs and techniques are employed in periodontal flap surgery, including full-thickness flaps, partial-thickness flaps, and modified flap approaches. The present review gives an outline on indications and contraindications of flap, various flap designs, incisions and steps in flap surgery.

Keywords: Periodontitis, periodontal flap, incisions, debridement

Introduction

The primary function of a periodontal flap is to provide access to the root surfaces of the teeth and the underlying bone for various surgical procedures. Aimed at creating and managing periodontal diseases and other dental issues. Periodontal flaps allow dental professionals to access the root surfaces of the teeth, which is crucial for the thorough removal of dental plaque, calculus (tartar), and infected or inflamed tissue during scaling and root planning procedures used to access the underlying bone and tooth roots for surgical procedures such as bone grafting, guided tissue regeneration, and crown lengthening. These surgeries help in repairing and regenerating damaged or lost bone and soft tissues ^[1]. Well approximated flaps help in protecting and stabilizing the surgical site during the healing process, minimizing complications and promoting optimal tissue regeneration. Appropriate diagnosis and treatment plays a crucial role in the overall maintenance of oral health by addressing gum diseases, preventing further damage to the teeth and supporting structures, and improving esthetics ^[2].

Definition

Periodontal flap is a section of gingiva and / or mucosa that is surgically separated from the underlying tissues to provide visibility and access to the bone and root surface ^[1].

Indications of periodontal flap

1. Persistent moderate to deep pockets present (more than 5 mm) even after thorough phase I therapy.
2. Osseous defects.
3. Furcation involvement.
4. Gingival overgrowth and asymmetry.
5. To regenerate the periodontal tissues by the bone grafts and membrane ^[3, 4].

Contraindications of periodontal flap

1. Medically compromised patients
2. Patient with poor oral hygiene and who are non-compliant.
3. Teeth with hopeless prognosis
4. When optimal results can be obtained by non-surgical periodontal therapy.
5. When surgery is likely to result in extreme esthetic disfigurement ^[1, 5, 6].

Guardian of Oral Cavity- Mechanism of Gingival Defense

Dr Nanditha Chandran¹, Dr Jilu Jessy Abraham², Dr Arjun MR³, Madhuvandhi⁴, KrishnaPriya K S⁵

^{1,2,3}Associate Professor, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

^{4,5}Final year student, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

ABSTRACT

Defense is the ability to fend off an attack. The oral cavity has several defense systems that can fend off different types of injuries. A variety of mechanical, chemical, and antigenic stresses are continuously applied to gingiva; some of these challenges are temporary, while others are ongoing. This study will go over various defense mechanisms the gingiva uses to protect and prepare itself from the harsh environment. Defense is the ability to withstand the attack; the mouth cavity has many defense systems that protect it from injuries. A vast range of mechanical, chemical, and antigenic obstacles are continuously faced by gingiva. This study will go over the several defense mechanisms how gingiva will protect from the harsh environment.

ARTICLE DETAILS

Published On:
08 October 2024

Available on:
<https://ijmscr.org/>

INTRODUCTION

Gingival Crevicular Fluid is an exudate derived by inflammation by periodontal. The gingival tissue is subjected to bacterial and mechanical aggressions. The saliva, epithelial surface and initial stage of inflammatory response provide resistance to such action. Therefore, it has been proposed that a crucial role for the interaction between periodontopathogenic bacteria and epithelial cells in the early stages of periodontal disease. As a medication that prevents stomach ulcers, isogladine maleate operates on the gastric mucosal epithelium. Additionally, it has been demonstrated that amphotericin B modifies the host's immunological responses to fungus infections.²

GINGIVAL CERVICULAR FLUID:

- It is an exudate that is inflammatory and comes from the periodontal tissues.² It is made up of serum and locally produced substances such as inflammatory mediators, and antibodies against dental plaque bacteria.¹
- Its constituents are derived from a number of sources, including serum, connective tissue, and epithelium through which GCF plays a special part in maintaining the structure of junctional epithelium and the antimicrobial defense of periodontium.¹ It has been established by numerous researchers that GCF is a complex mixture of materials originating

from oral bacteria, leukocytes, and periodontium structural cells.³

FORMATION

There are 2 theories that suggest the formation of GCF.

- Theory-From the work of Alfano (1974) and from the hypothesis postulated by Pashley (1976) the initial fluid produced could simply represent interstitial fluid which appears in the crevice as a result of an osmotic gradient.³
- The macromolecular by products of the bacteria in dental plaque create this osmotic gradient by permeating the gingival crevicular epithelium and the basement membrane, so blocking additional penetration. The flow of fluid capillaries into the tissues (capillary filtrate) and the lymphatic system's evacuation of the fluid (lymphatic uptake) control GCF production, according to the Pashley (1976) model.²

FUNCTION:

- The gingival margin is accessible to GCF, inflammatory cells, and elements of the immune system's host defence because the junctional epithelium is firmly linked to the tooth, creating an epithelium barrier against plaque bacteria.²
- Additionally, its quick turnover helps maintain the balance between the host and the parasite and speeds up the healing of injured tissues.¹



Optimizing Implant Surface for Osseointegration - A Review

Nanditha Chandran^{1*}, Anil Melath², Hemalatha DM³, Shifa Hamza⁴ and Shifana R⁴

¹Associate Professor, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Pondicherry UT, India

²Professor and Head of the Department, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Pondicherry UT, India

³Senior Lecturer, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Pondicherry UT, India

⁴Third Year BDS, Mahe Institute of Dental Sciences and Hospital, Pondicherry UT, India

***Corresponding Author:** Nanditha Chandran, Associate Professor, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Pondicherry UT, India.

DOI: 10.31080/ASDS.2024.08.1917

Received: August 28, 2024

Published: September 27, 2024

© All rights are reserved by

Nanditha Chandran., et al.

Abstract

Dental implants play an important role in replacing the missing teeth. This discussion deals with various surface treatment of dental implant using various processes like additive and subtractive process which will improve the surface characteristics and thus improve the efficiency of dental implants. The attachment between bone and implant is explained based on the concept of osseointegration. To improve the process of osseointegration, we are modifying the surface features of implant like roughness, topography and energy, so that they can lead to long success of the implant. In day to day life dental implants plays an important role so that the topic is of great relevance.

Keywords: Dental Implants; Osseointegration

Introduction

Nowadays, Dental implants are commonly used for rehabilitation of partially and completely edentulous arches. Dental implants are much better since they preserve the alveolar bone and esthetics as well as durability of prosthesis. Titanium implants provide good Anchorage with alveolar bone called as osseointegration. By changing surface characteristics by physical, chemical or mechanical means, osseointegration of the titanium implants can be enhanced. Increased surface energy from surface modification causes an increase in cell and growth factor proliferation, which in turn speeds up the osseointegration process. A study found that an increase in surface area resulting from rougher implant surfaces will eventually lead to higher cell growth and proliferation. Titanium was determined to be the preferred material for dental implants due to its exceptional biocompatibility, strong corrosion resistance, low modulus of elasticity, and great strength. Basically

surface treatment is done to promote bonding between alveolar bone and implant material. A roughness over the surface, surface charge, the composition of the material etc led to better osseointegration.

Dental implants Definition

Dental implant is defined as a prosthetic device made of alloplastic Materials is implanted into the oral tissues beneath the mucosal and /or periosteal layer and on or within the bone to provide retention and support for a fixed or removable dental prosthesis. GPT- [9].

For more than 50 years, dental implants have been used to restore lost teeth with high success rate.¹ The degree to which the implant material can meld with the surrounding tissue will determine



Periodontitis and Cardiovascular Diseases- An Enigma Resolved

Nanditha Chandran*, Anil Melath, Jilu Jessy Abraham, Mohanarangan Alias Vidyadhar. S and Muhammed Aseem

Associate Professor, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

***Corresponding Author:** Nanditha Chandran, Associate Professor, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

Received: November 27, 2024

Published: December 06, 2024

© All rights are reserved by
Nanditha Chandran., et al.

Abstract

Cardiovascular disease is one of the most common diseases which are more prevalent in India. CVD cases are rising day by day. Periodontitis is one of the inflammatory conditions which is strongly associated with CVD. This article summarizes and gives the overall idea about the relationship status between CVD and periodontitis.

Keywords: Periodontitis; Cardiovascular Diseases; Enigma Resolved

Introduction

Oral health offers suggestions about general health. Periodontal disease is an infection and chronic inflammation of the gum tissues and bone that hold your teeth in place. The early sign of periodontal disease is called gingivitis. If not managed with proper diurnal oral care, it may worsen and become periodontitis. Periodontitis is a disease that involves connective tissue destruction, loss of bone, and ultimate tooth loss. Recent studies have suggested that chronic inflammatory conditions can increase the risk of cardiovascular disease. In this article, we will be analyzing the correlation between periodontal disease and cardiovascular disease.

Cardiovascular disease

One of the major causes of death occurring in the world is due to cardiovascular diseases (1/3rd of global death) [1]. The major etiologies of CVD are obesity and diabetes [1]. Major cardiovascular diseases include coronary artery disease, stroke, atrial infiltration, and atherosclerosis [2]. Gene functional annotation and pathway enrichment analysis [1] shows medical etiology between CVD and periodontitis. Other factors include increased age, male when compared to female, Africans and Asians, Native Americans, Alas-

kan natives, dyslipidemia, hypertension, and abnormal fluctuating glucose metabolism [3]. Atherosclerosis is a common condition where all other cardiovascular complication arises [4].

Classification of CVD

Lesion type	Description
1	An initial lesion with foam cells (intimal xanthoma or fatty streak)
2	Fatty streak with multiple foam cell layers
3	Pre-atheroma with extracellular lipid pools
4	Atheroma with a confluent extracellular lipid core
5	Fibro-atheroma
6	Complex plaque with possible surface defect or hemorrhage or thrombus or some combination
7	Calcified plaque
	Fibrotic plaque without lipid core [5].

Table 1

RESEARCH ARTICLE

BONE LOSS PATTERNS IN PERIODONTITIS-AN OVERVIEW

¹*Dr. Nanditha Chandran, ²Dr. Anil Melath, ³Dr. Subair K., ⁴Devi Priya A. and ⁵Abhirami, A.B.

¹Associate Professor, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India; ²Professor and Head of Department, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India; ³Professor, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India; ⁴Final year student, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India; ⁵Final year student, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

ARTICLE INFO

Article History

Received 20th August, 2024
Received in revised form
16th September, 2024
Accepted 27th October, 2024
Published online 30th November, 2024

Keywords:

Periodontitis, Bone loss, Inflammation.

*Corresponding author: Dr. Nanditha

ABSTRACT

Periodontal disease is an inflammatory condition that affects the supporting structures of the teeth which eventually lead to bone loss, tooth mobility and tooth loss if left untreated. Bone loss in periodontal disease is a hall mark and the patterns of bone loss is based on the type of periodontal destruction present. A number of factors contribute to bone loss in periodontitis like bacterial derived factors, antigens that stimulate a local inflammatory response and activation of innate immune system. The present review gives us an overview of classification of bone defects, bone loss patterns specific to each periodontal condition and factors influencing bone loss.

Copyright©2024, Nanditha et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Dr. Nanditha Chandran, Dr. Anil Melath, Dr. Subair K., Devi Priya A. and Abhirami, A.B. 2024. "Bone loss patterns in periodontitis-an overview.", International Journal of Recent Advances in Multidisciplinary Research, 11, (11), 10423-10426.

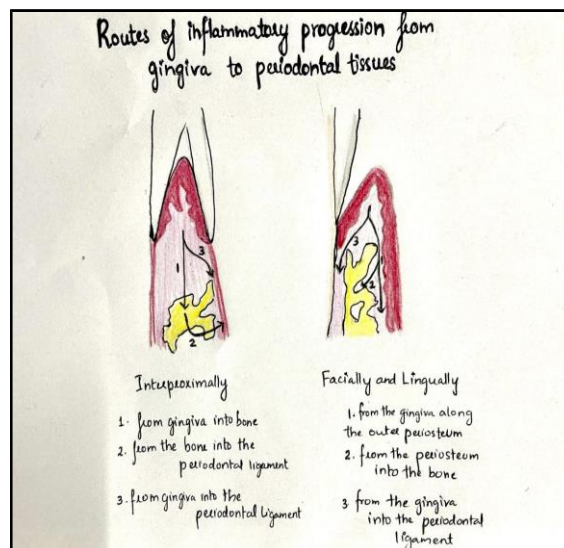
INTRODUCTION

Alveolar bone is the bony portion of the maxilla and the mandible in which roots of the teeth are held by fibers of periodontal ligament. [GPT -8]¹ "Periodontitis is a bacterial-induced inflammatory condition that affects the teeth's supporting structures, leading to damage and potential tooth loss."² Changes that occur in bone which are responsible for tooth loss is a crucial factor, as the destruction of bone occurs due to periodontitis. Periodontal disease changes the morphological features of the bone along with reduction in bone height. Hence the present review focused on the pathogenesis, classification and patterns of bone loss in periodontitis.³

Pathway of spread of inflammation in periodontitis

Gingivitis progresses along the collagen fibers and blood vessels, infiltrating the surrounding loose tissue and eventually reaching the alveolar bone.⁴ Although the primary site of inflammation is in the marginal periodontium, the response is more widespread, often affecting the bone and triggering a reaction before any visible signs of crestal resorption or attachment loss appear.⁵ In the upper molar region, the inflammation can spread to the maxillary sinus, leading to thickening of the sinus membrane.⁶ In the areas between teeth, inflammation propagates through the loose connective tissue surrounding blood vessels, along fiber bundles, and into the bone via vascular channels that penetrate the interdental septum at various points, including the center, sides, or angles of the crest. Moreover, inflammation can enter the bone through multiple channels. Less

commonly, the inflammation spreads directly from the gingiva into the periodontal ligament and then into the interdental septum. On both the facial and lingual aspects, the inflammatory response from the gingiva propagates along the outer surface of the bone, following the periosteum, and enters the marrow spaces through vascular channels in the outer cortical layer of the bone.⁸



Review Article

Open Access

A Comprehensive Review on SDD and its Role in Host Modulation

Nanditha Chandran^{1*}, Arjun MR¹, Jilu Jessy Abraham¹, Priyadharrshini C² and Kaviyapriya S²

¹Associate Professor, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

²Final year student, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India

ABSTRACT

Periodontitis is a serious gum infection characterized by inflammation, followed by the destruction of the supporting structures of the tooth, including bone loss. Etiology of Periodontal disease is multifactorial which involves the role of host immunoinflammatory response and bacterial virulence factors. Host modulation therapy aims at downregulating or altering the destructive aspects of host response. Subantimicrobial Dose Doxycycline (SDD) is one such host modulatory agent that exerts its effects primarily through the inhibition of matrix metalloproteinases (MMPs) enzymes responsible for the degradation of extracellular matrix components, such as collagen, within the periodontal tissues. SDD is given as an adjunct to scaling and root planning. The present review focuses on SDD, its mechanism of action and application in host modulation therapy.

*Corresponding author

Nanditha Chandran, Associate Professor, Department of Periodontics and Implantology, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry, India.

Received: February 18, 2025; **Accepted:** February 27, 2025; **Published:** March 06, 2025

Keywords: Sub Antimicrobial Dose Doxycycline, Host Modulation, Periodontitis

Introduction

Chronic periodontitis is a progressive inflammatory disease characterized by the destruction of the supporting structures of the teeth, including the periodontal ligament and alveolar bone. The etiology is multifactorial, involving a complex interplay between pathogenic bacteria and the host's immune-inflammatory response, influenced by environmental and genetic factors. Traditionally, the management of chronic periodontitis has focused on mechanical debridement through scaling and root planing (SRP), aimed at reducing the microbial load. However, mechanical therapy alone may not adequately control the host-mediated tissue destruction that continues even after bacterial reduction.

Advancements in periodontal therapy emphasize the importance of modulating the host response in conjunction with traditional mechanical approaches. This shift has led to the exploration of adjunctive therapies targeting the biochemical pathways involved in tissue degradation.

The concept of HMT was introduced in dentistry by "Williams and Golub" et al. [1].

Subantimicrobial Dose Doxycycline

Subantimicrobial Dose Doxycycline (SDD), an FDA-approved formulation of doxycycline (20 mg), known commercially as Periostat [1]. Unlike conventional antibiotic doses, SDD exerts its effects primarily through the inhibition of Matrix Metalloproteinases (MMPs)—enzymes responsible for the degradation of extracellular matrix components, such as collagen, within the periodontal tissues.

Mechanism of Action

SDD involves taking doxycycline at a low dose (20 mg twice daily), which is below the typical antimicrobial threshold [2-5].

- **Inhibition of Active MMPs:** Doxycycline chelates metal ions like calcium (Ca^{2+}) and zinc (Zn^{2+}), essential for the activity of matrix metalloproteinases (MMPs). This chelation inhibits the enzymatic activity of MMPs directly, reducing their ability to degrade collagen in the periodontal tissues.
- **Inhibition of Oxidative Activation of Latent MMPs:** SDD prevents the conversion of inactive (latent) MMPs into their active form by inhibiting oxidative processes, which are usually mediated by reactive oxygen species (ROS).
- **Down regulation of Inflammatory Cytokines:** SDD reduces the expression of key inflammatory cytokines such as interleukin-1 (IL-1), interleukin-6 (IL-6), and tumor necrosis factor-alpha (TNF- α), which play a significant role in the inflammatory response and tissue destruction in periodontitis.
- **Reduction of Prostaglandin E2 (PGE2) Levels:** SDD decreases the levels of PGE2, a pro-inflammatory mediator associated with bone resorption and increased inflammation in periodontal disease.
- **Scavenging Reactive Oxygen Species (ROS):** By neutralizing ROS produced by neutrophils, SDD reduces oxidative stress in periodontal tissues, helping protect against further tissue damage.
- **Protection of α 1-Proteinase Inhibitor:** By reducing oxidative stress, SDD protects α 1-proteinase inhibitor, which prevents excessive tissue proteinase activity and subsequent tissue degradation.
- **Reduction of Tissue Proteinase Activity:** With decreased MMP activity and protected α 1-proteinase inhibitor, the overall proteinase activity in periodontal tissues is reduced, slowing down the breakdown of connective tissue.

Anesthetic Potential of Anterior Middle Superior Alveolar Nerve Block vs Local Infiltration on Crown Lengthening in Maxilla - A Comparative Study

Abstract

Introduction: Trepidation towards dental procedures is commonly seen in the adult population and is one of the major reasons for avoiding dental treatments. **Aim:** To evaluate and compare the anesthetic potential of anterior middle superior alveolar (AMSA) nerve block versus local infiltration during crown lengthening in the maxilla, using a pain assessment tool. **Materials and Methods:** Outpatients visiting the Department of Periodontics at Mahe Institute of Dental Sciences and Hospital were selected for the study. A total of 60 patients indicated for crown lengthening, has been included in the study with the age group between 18 and 65 years, and divided into two groups: Group A (AMSA) and Group B (local infiltration). **Results:** AMSA shows promising results when compared to local infiltration.

Keywords: AMSA, computer-controlled drug delivery, local infiltration, various anesthetic techniques

Introduction

Trepidation to dental procedures is most commonly seen in the adult population and is one of the major reasons for avoiding dental treatments.^[1,2] The target of truly pain-free administration of local anesthesia has not yet been achieved. Periodontal procedures require adequate anesthesia to ensure patient comfort, enhance the operator's performance, and minimize chair time. Currently, to obtain adequate and optimal anesthesia in the maxilla, from the central incisor to the second premolar region, a technique called the Anterior Middle Superior Alveolar (AMSA) nerve block is used. This highly predictable block injection simplifies maxillary teeth anesthesia and significantly impacts clinical procedures and patient comfort. This was first described by Friedman and Hochman in 1997.^[3] The main advantage of AMSA over other injection techniques is that it requires a reduced dose of local anesthesia (LA) with a wide area of action, including both palatal and buccal soft tissues. This study was designed to evaluate the anesthetic potential of the AMSA nerve block compared to infiltration of LA in anterior crown lengthening procedures.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

Materials and Method

Outpatients visiting the Department of Periodontics, were selected for the study. Ethical Committee clearance (MINDS/PG-ETHICAL/022/2023-24) was obtained from the research ethical committee of Mahe Institute of Dental Sciences and Hospital. Written informed consent was obtained from each subject after an explanation of the study design, treatment outcomes, potential risks, and benefits.

Inclusion criteria included systemically and periodontally healthy patients, endodontically treated teeth with inadequate crown length requiring a full crown, short clinical crown length with adequate root length and phase I periodontal therapy completed by the patients. Exclusion criteria included inadequate attached gingiva, nonrestorable dentition, unfavourable crown-root ratio and orthodontic intrusions. Sixty patients who satisfied the inclusion criteria were selected for the study which has been divided into two groups. The Armamentarium for local anesthetic delivery is shown in Figure 1. Group A: Surgical crown lengthening in 30 subjects with AMSA nerve block. Group B: Surgical crown lengthening in 30 subjects using infiltration with 2 ml of Lignox 2% with adrenaline 1:80000 LA.

How to cite this article: Prakash N, Melath A, Kayakool S, Murugesan HD, Karunanithi A, Thavithavakar D. Anesthetic potential of anterior middle superior alveolar nerve block vs local infiltration on crown lengthening in maxilla - A comparative study. Indian J Dent Res 2024;35:403-5.

**Prakash N,
Anil Melath,
Subair Kayakool,
Hemalatha
Doraisamy
Murugesan,
Arunagiri
Karunanithi¹,
Thavithavakar D²**

Department of Periodontics,
Mahe Institute of Dental
Sciences, Mahe, Puducherry,
¹Department of Periodontics,
Mahatma Gandhi Post Graduate
Institute of Dental Sciences,
Gorimedu, Puducherry,
²Department of Periodontics,
Dr Thavi's Health Care,
Puducherry, India

Address for correspondence:

Dr. Prakash N,
Post Graduate Resident,
Department of Periodontics,
Mahe Institute of
Dental Sciences, Mahe,
Pondicherry - 673 310, India.
E-mail: Prakashash007a@gmail.com

Received : 24-09-2023

Revised : 04-04-2024

Accepted : 12-09-2024

Published : 04-01-2025

Access this article online

Website:

<https://journals.lww.com/ijdr>

DOI: 10.4103/ijdr.ijdr_803_23

Quick Response Code:



Periodontitis and Associated Syndrome -A Review

Hemalatha DM^{1*}, Anil Melath², Subair K³, Elna Rajesh⁴ and Fathima Nesmi⁴¹Associate Professor, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe, India²Professor and Head, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe, India³Professor, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe, India⁴Fourth year student, Mahe institute of Dental Sciences, Chalakkara, Mahe, India***Corresponding author**

Hemalatha DM, Hemalatha.D.M, M.D.S., Associate Professor, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe, India.

Received: March 21, 2025; **Accepted:** April 02, 2025; **Published:** April 07, 2025**ABSTRACT**

Periodontal disease, though primarily induced by bacteria in dental plaque, often manifests as a feature of various syndromes and genetic disorders. These syndromes may either predispose individuals to periodontal conditions or exacerbate pre-existing periodontal issues. Alterations in immune function or structural integrity of periodontal tissues are common in such syndromes, increasing vulnerability to gingival inflammation, attachment loss, and bone resorption. The multifactorial aetiology of periodontal diseases and their association with systemic and genetic syndromes, such as Gottlieb syndrome (aggressive periodontitis), highlight the polygenic and polymicrobial nature of these conditions. While non-surgical, antimicrobial, and surgical therapies remain the standard treatment approaches, their effectiveness in preserving natural teeth in patients with syndromic associations is uncertain. By reviewing syndromes linked to periodontal findings, this study aims to provide clinicians with a clearer understanding of differential diagnoses and case management. Comprehensive, long-term research on these associations is limited, making the identification and management of periodontal syndromes a continuing challenge in clinical practice. This article underscores the importance of a multidisciplinary approach to understanding and treating periodontal diseases in syndromic contexts.

Keywords: Periodontitis, Syndromes, Immunity, Inflammation**Introduction**

Periodontitis, a chronic inflammatory condition of microbial origin, primarily affects the supporting structures of teeth, including the gingiva, periodontal ligament, and alveolar bone. Characterized by gingival inflammation, pocket formation, attachment loss, and eventual tooth loss, periodontitis is a significant public health concern globally. Beyond its oral manifestations, periodontitis has profound systemic implications, contributing to a growing body of evidence linking it to various syndromes and systemic diseases.

Syndromes associated with periodontitis often exhibit immune dysregulation, genetic predispositions, or structural abnormalities, making individuals more susceptible to periodontal destruction. These include metabolic syndrome, aggressive periodontitis (referred to as Gottlieb syndrome), and other genetic disorders that exacerbate the inflammatory response. Additionally, systemic conditions like diabetes,

cardiovascular diseases, and neurodegenerative disorders often show bidirectional relationships with periodontal disease, complicating its clinical presentation and management [1].

Understanding the interplay between periodontitis and systemic syndromes is critical, as it not only aids in differential diagnosis but also enables comprehensive management strategies. With its multifactorial etiology, periodontitis serves as a paradigm of the complex connections between oral and systemic health, underscoring the need for an integrated approach in clinical practice and research [2].

Pathophysiology of Periodontitis in Systemic Manifestation

The pathogenesis of periodontitis extends beyond local tissue destruction, influencing systemic health through complex mechanisms. The ulcerated gingival epithelium, a hallmark of advanced periodontitis, facilitates the entry of periodontal pathogens and their toxins into systemic circulation. These pathogens trigger an immune response, leading to the release of inflammatory mediators like cytokines and prostaglandins. This

A Review On Chairside Diagnostic Test In Periodontics

Authors

1. Dr.Hemalatha. D.M, M.D.S., Associate Professor, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310
2. Dr.Nanditha Chandran, M.D.S., Associate Professor, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310
3. Dr.Vishnusri Priya, M.D.S., Assistant Professor, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310
4. Daisy.C , Fourth year student, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310
5. Asha.M, Fourth year student, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310

Corresponding author: Dr.Hemalatha.D.M, M.D.S., Associate Professor, Department of Periodontics, Mahe institute of Dental Sciences, Chalakkara, Mahe- 673310.
drhemalatha.uk@gmail.com

Date of Submission: 24-04-2025

Date of Acceptance: 04-05-2025

I. Introduction

Periodontal diseases are a group of chronic inflammatory conditions affecting the supporting structures of teeth, including the gingiva, periodontal ligament, cementum, and alveolar bone. The primary cause is microbial dysbiosis within dental plaque, which triggers an immune response leading to progressive tissue destruction. With nearly half of the global adult population affected, periodontal diseases pose a significant threat due to their potential to cause tooth loss and contribute to systemic conditions like cardiovascular disease and diabetes.

Traditional diagnostic methods rely on clinical examination and radiographic evaluation, assessing parameters such as probing pocket depth (PPD), clinical attachment loss (CAL), and bleeding on probing (BOP). However, these approaches often detect periodontal disease at later stages, when irreversible tissue damage has already occurred. (1)

Recently, there has been an increasing focus on developing earlier and more precise diagnostic techniques to identify active disease processes before significant tissue destruction occurs. The introduction of chairside diagnostic tools has transformed periodontal care by enabling real-time, molecular-level insights into the disease status. These innovative methods, such as enzymatic assays, immunological markers, and advanced molecular techniques like Polymerase Chain Reaction (PCR), provide non-invasive, rapid, and accurate assessments of periodontal health. This review explores the current landscape of chairside diagnostic techniques in periodontics, their clinical applications, and their potential to enhance periodontal diagnosis and treatment planning

II. DIAGNOSIS: The Crucial Role In Periodontics

Accurate diagnosis is fundamental in managing periodontitis, as it enables the early detection and identification of active disease processes. Given that periodontal diseases are complex and multifactorial, a precise diagnosis helps uncover the underlying microbial and host-related factors driving tissue destruction. This understanding is critical for developing a targeted treatment plan, monitoring the progression of the disease, and evaluating the response to therapy. Early and accurate diagnosis not only improves the chances of successful treatment but also helps prevent severe complications and potential systemic health issues associated with advanced periodontal disease

III. Features Of Ideal Diagnostic Test Kit

For periodontal diagnosis, the ideal diagnostic test should be [2]:

Bone Seeking Agents In Periodontics - An Overview

Nanditha Chandran¹, Subair K², Hemalatha D M³, Nima Nihala P K⁴, Shahna T⁴

ABSTRACT

Periodontitis is a serious gum infection characterized by inflammation, followed by the destruction of the supporting structures of the tooth, including bone loss. Bisphosphonates are a class of medications used to treat conditions like osteoporosis and have been studied for their potential effects on periodontitis. These drugs work by inhibiting the activity of osteoclasts responsible for bone resorption, which can help to maintain bone density around the teeth. Host modulation refers to the strategy of altering the host's response to disease. Bisphosphonates play an important role in reducing inflammatory conditions,

thereby promoting a healthier periodontal environment. This review article discusses the implications of bisphosphonate therapy in patients with periodontitis, highlighting both benefits and potential risks associated with their use.

Keywords: Periodontitis, Bisphosphonates, Host modulation, Host, Microbe.

Introduction

Periodontitis is defined as an inflammatory disease of the supporting tissues of the tooth caused by specific microorganism or groups of specific microorganisms resulting in progressive destruction of periodontal ligament and alveolar bone with pocket formation, recession or both. The etiology of periodontitis is characterized by an intricate interplay between pathogenic microorganisms and the host's immune-inflammatory response. Conventional therapeutic strategies have primarily focused on mechanical debridement via scaling and root planing to reduce microbial loads. Nevertheless, emerging evidence suggests that adjunctive therapies aimed at modulating the host response and targeting biochemical pathways involved in tissue degradation.

Bisphosphonates are widely recognized drugs used in clinical practice. Structurally they have a central carbon atom bonded to two phosphate groups and two

organic side chains. These compounds are structurally analogous to pyrophosphate, as they have a carbon atom substituting for oxygen in the p-o-p linkage. Bisphosphonates are well established as an effective antiresorptive agent and studies have demonstrated that these drugs possess anti-collagenase properties also. The efficacy of bisphosphonates to inhibit the osteoclastic bone resorption has led to their use in the management of periodontal diseases as a host modulating agent to prevent alveolar bone loss.⁵

Pathogenesis of Periodontal Disease

The host immune response plays an important role in the development and progression of the periodontal diseases. Pathogenic bacteria present in the dental plaque are the trigger factors which causes inflammatory response and it leads to gingivitis and periodontitis. Understanding the role of host and microbes helps in proper diagnosis and treatment planning of periodontal disease. Kornman's model (Figure

¹Associate Professor, ²Professor, ³Assistant Professor, ⁴Final BDS Student, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, India. Corresponding Author: Dr Nanditha Chandran E-mail: dr.nanditha@mahedentalcollege.org

Nonsurgical periodontal therapy

ABSTRACT

Nonsurgical periodontal therapy (NSPT) aims to eliminate both living bacteria in the microbial film and calcified biofilm microorganisms from the tooth and adjacent soft tissues. It has traditionally been carried out using hand and powered instruments; it is less invasive, more cost-effective, and easily applied in different clinical settings. It generally includes scaling, root planing, antimicrobial therapy, laser therapy, and gum line therapy. Hence, NSPT is the gold standard against which other treatment options are compared.

Keywords: Antimicrobial therapy, cost-effective, gum line therapy, laser therapy, less invasive, root planing, scaling

INTRODUCTION

Periodontitis is an inflammatory disease affecting the supporting tissues of the teeth, caused by specific microorganisms or groups of microorganisms. This disease leads to the destruction of the periodontal ligament and alveolar bone, resulting in the formation of pockets.^[1]

Nonsurgical periodontal therapy (NSPT) is the recommended first choice for controlling periodontal infection. It is also known as Phase 1 therapy, "Cause-related therapy," etiotrophic therapy, or the initial phase. Recently, there has been a lot of attention given to the application of lasers, photodynamic therapy, and hyperbaric oxygen therapy in NSPT.^[2]

PATIENT EDUCATION, MOTIVATION, AND HABIT COUNSELING

The importance of educating people is to make them realize that good oral health gives them a good smile and a good smile makes for a good day. The process of changing lifelong habits begins by educating the patient about periodontal health and disease, developing an acceptable plaque control strategy, and reinforcing positive changes in behavior.^[3]

Date of Submission: 06 June 2024,

Date of Acceptance: 15 August 2024,

Date of Web Publication: 12 October 2024

Access this article online

Access this article online	
Website: www.ijpcdr.org	Quick Response Code 
DOI: 10.4103/ijpcdr.ijpcdr_8_24	

MOTIVATION FOR EFFECTIVE PLAQUE CONTROL

Motivating patients to perform effective plaque control is one of the most critical and difficult elements in the success of periodontal therapy. However, adopting new habits and returning for office visits are not an impossible task. To be successful, the patient must understand the concept of pathogenesis, treatment, and prevention of periodontal disease and must be able to change their habits of life.^[4]

HABIT COUNSELING

Instructions on how to clean the teeth should include a thorough chairside demonstration on the use of a toothbrush. Tooth brushing should be demonstrated in the patient's mouth while the patient observes in the mirror. Then, the

Anil Melath¹, Arjun Machingal Raveendran², Deepith Kelotte³, K. Anuragha Priya⁴, R. Anuja⁴

¹Professor and Head, ²Reader, ³Third-Year Post-Graduate Resident, ⁴Final Year BDS Student, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Puducherry, India

Address for correspondence: Dr. Deepith Kelotte, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, Mahe, Puducherry - 673 310, India. E-mail: deepithchdk@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Melath A, Raveendran AM, Kelotte D, Priya KA, Anuja R. Nonsurgical periodontal therapy. Int J Prev Clin Dent Res 2024;11:16-9.

Review Article

Open Access

Achieve a Brighter Smile: Essential Brushing Techniques

Anil Melath¹, Jilu Jessy Abraham^{2*}, Arjun MR², Akhila B³ and Akhila Surendran³

¹MDS, Principal & HOD Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe- 673310, India

²MDS, Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe- 673310, India

³Final Year Student, Mahe Institute of Dental Sciences, Chalakkara, Mahe- 673310, India

ABSTRACT

Brushing is the process used to remove plaque and debris by an individual. It is the duty of a dentist to teach and aid the patient about proper brushing techniques that is suitable for that individual and also the patient should be aware about each brushing techniques and how to do each technique. Nowadays patients are more concerned about their oral health so having a good knowledge about each brushing techniques will make use of it. This article aims to evaluate the different brushing techniques such as The Bass method, Modified Bass method, Modified Stillman's technique, Fones method, Vertical method, Charter's method, Scrub brush method, Roll technique, Physiologic-smith method. It also includes objectives of tooth brushing, types and parts of tooth brush, time and frequency of brushing, ill effects of improper brushing, maintenance and replacement of toothbrush [1].

*Corresponding author

Jilu Jessy Abraham, MDS, Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, Mahe- 673310, India.

Received: May 23, 2024; **Accepted:** June 03, 2024; **Published:** June 20, 2024

Introduction

The main method of prevention of caries, periodontal diseases, and other oral diseases is by the effective removal of plaque from the interproximal and gingival areas. The majority of people are unaware of how to remove plaque from all tooth surfaces [2]. The effectiveness of tooth brushing depends on the design of tooth brush, duration of brushing, parental involvement in case of children, manipulative skill and proper brushing method [1].

History of Tooth Brushing

They were first introduced in China as early as 1600 B.C. and was introduced into the western world in 1640 [3]. Different cultures across the world have used various materials for brushing like: twigs of 'neem' and 'miswak', bird feathers and pig hair. China made "chewing sticks" from aromatic tree twigs for oral care fresh breath. In 1938 nylon came into use in the construction of toothbrush. Powered toothbrushes were actively promoted after 1960.

ADA Specifications of a Tooth Brush [4]

Brushing Surface

- 1-1.25 inches in length
- 5/16 to 3/8 inches in width
- 2 to 4 rows of bristles
- 5 to 12 tufts/row

Objectives of Tooth Brushing [5]

- To clean teeth and interdental spaces of food remnants, debris and stain etc.
- To prevent plaque formation
- To disturb and remove plaque
- To stimulate and massage gingival tissue

- To clean the tongue

Types of Toothbrushes [6]

- Manual toothbrush
- Powered toothbrush
- Interdental brush
- Ecological toothbrushes
- Sonic toothbrush
- Ultrasonic toothbrush
- Ionic toothbrush

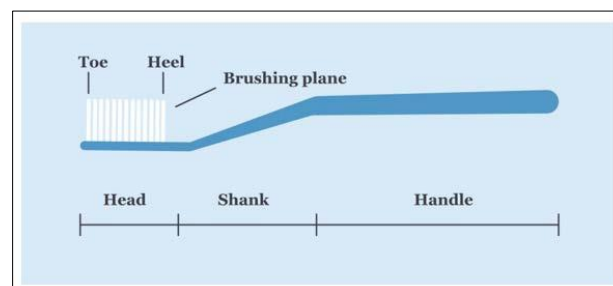


Figure 1: Parts of Tooth Brush

Tooth Brushing Force

Manual tooth brush requires more brushing force than sonic tooth brushes. Patients having severe tooth wear, exposed and eroded dentin surfaces use sonic tooth brushes to reduce abrasion. Patients having erosive lesion confined to enamel do not require sonic tooth brushes. Medium bristle tooth brush has higher abrasive force than soft bristle toothbrush.

Principles of Instrumentation in Periodontics

Anil Melath¹, Jilu Jessy Abraham^{2*}, Hemalatha³, Sruthy KS⁴ and Sonal Suresh⁴

¹Principal & HOD, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

²Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

³Senior Lecture Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India

⁴Final Year Student, Mahe Institute of Dental Sciences, Chalakkara, India

ABSTRACT

Instrumentation in periodontics plays a crucial role in the effective management of periodontal diseases. This article explores the fundamental principles guiding instrumentation techniques used in periodontal therapy. The primary objectives include achieving optimal biofilm removal, root surface detoxification, and creating a conducive environment for tissue healing. Various instruments, such as scalers, curettes, and ultrasonic devices, are discussed in terms of their indications, advantages, and limitations. Additionally, the importance of ergonomic considerations and operator proficiency in enhancing treatment outcomes is emphasized. Understanding these principles is essential for dental practitioners to deliver comprehensive periodontal care that promotes long-term oral health and patient satisfaction.

*Corresponding author

Jilu Jessy Abraham, Reader, Department of Periodontics, Mahe Institute of Dental Sciences, Chalakkara, India.

Received: October 01, 2024; **Accepted:** October 09, 2024; **Published:** October 17, 2024

Principles of Periodontal Instrumentation

- Accessibility: Position of Patient & Operator Visibility, Illumination & Retraction.
- Condition & Sharpness of Instruments.
- Maintaining A Clean Field.
- Instrument Stabilization.
- Instrument Activation.

Accessibility

- Accessibility means to access accessibility facilitates thoroughness of instrumentation.
- Position of patient & operator should provide maximal accessibility.
- Inadequate accessibility impedes through instrumentation, prematurely tires the operator diminishes effectiveness of clinician.
- Clinician should be seated comfortably on an operating stool, so that clinicians' feet are on the floor the thighs parallel to the floor.
- Be in a straight and head erect position.
- Patient should be in supine position & placed so that the mouth closed to the resting elbow of the clinician for instrumentation of maxillary arch patient chin should be rise slightly.
- For mandible arch, ask the patient to lower the chin until the mandible is parallel to floor.

Visibility, Illumination and Retraction

- **Visibility:** Visibility means to see.
- **Illumination:** Illumination means light. Direct vision is with direct illumination from dental light. Indirect vision is by

using a mouth mirror.

- **Retraction:** Retraction means to retract. Retraction provides visibility, accessibility and illumination. Mirror is also used for retraction of cheeks and tongue. Index finger is also used for retraction. When retracting, care should be taken to avoid irritation to the angle of mouth. Careful retraction is especially important for patients with the history of recurrent herpes labialis, because these patients may easily develop herpetic lesions after instrumentation.

Conditioning and Sharpness of Instrument

- Clinician should make sure that instruments are clean, sterile and in good condition.
- Working end of the pointed or bladed instrument must be sharp to be effective. Sharp instruments enhance tactile sensitivity and allow the clinician to work more efficiently.
- Dull instruments may lead to incomplete calculus removal and unnecessary trauma because of excess force usually applies to compensate for their ineffectiveness.

Maintaining a Clean Field

Despite good visibility, illumination and retraction instrumentation can be hampered if the operative field is obscured by saliva blood and debris.

The pooling of saliva interferes with visibility during instrumentation & impedes control because a firm finger rest cannot be established on wet slippery tooth surface adequate suction is essential & can be achieved with saliva ejector.

Basal vs. Conventional Implants: The Battle for Better Bone Integration

Arjun Machingal Raveendran¹, Subair Kayakool², Marjana Shukoor^{3*}, Zaina Kaliparambu Haris⁴ and Viswavinodini R⁴

¹Reader, Department of Periodontics, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India

²Professor, Department of Periodontics, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India

³Post Graduate Resident, Department of Periodontics, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India

⁴3rd Year Undergraduate, Department of Periodontics, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India

***Corresponding Author:** Marjana Shukoor, Post Graduate Resident, Department of Periodontics, Mahe Institute of Dental Science and Hospital, Mahe, Puducherry, India.

Received: September 25, 2024; **Published:** December 01, 2024

Abstract

Dental implants are widely used to restore missing teeth, with conventional crestal implants being the most common. However, conventional implants require sufficient bone volume, often necessitating bone augmentation, which increases treatment complexity, risk, and cost. Basal implants, developed to address the limitations of conventional implants, are particularly effective in atrophied jaws with inadequate bone. Unlike conventional implants that rely on the crestal bone, basal implants utilize the basal cortical bone, which is more resistant to resorption and infection. Basal implants also allow for immediate loading, reducing treatment time and improving patient outcomes. Although basal implants offer several advantages, such as reduced surgical complications and suitability for compromised bone conditions, they also have limitations, including patient discomfort and technique sensitivity. Further clinical studies are necessary to validate the long-term efficacy and safety of basal implants as a viable alternative to conventional implantology.

Keywords: Basal Implants; Implants; Osseointegration; Inadequate Bone; BOI

Introduction

Osseointegration is the structural and functional connection between the bone and load carrying surface of an implant. Initially the term was associated with titanium metal implants but now it has been applied to all biomaterials that have ability to Osseo integrate [1].

Dental implants are devices that is inserted into jawbones which act as roots of the missing teeth. metallic implants are most commonly used implants but they have disadvantages of corrosion, and other toxicity. To overcome the problems associated with atrophied jaws [2].

The conventional crestal implants is used when sufficient vertical and horizontal bone is available and if not, this is not efficient and augmentation is carried out, Augmentation steps elevate the risk as well as cost of the implant treatment. in order to prevent this the