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RESEARCH CENTRE

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ANNEXURE - 1

TITLE: RESEARCH PROJECTS, GRANTS, PATENTS, INNOVATIONS AND SCHOLARLY ACTIVITIES

Annexure: 3.1

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to website of the Journal	Link to article/paper/ abstract of the article	Is it listed in SCOPUS/Web of S/Pubmed
Coronally Moving Sub-Gingival Margins: An Approach for Better Restorations- A Narrative Review	Dr.Abhinay Agarwal; Dr. Atul Jain; Dr. Saleem Azhar	Conservative Dentistry & End8,,,,,,odontics	International Journal of Innovative Science and Research Technology	24/2/2026	2456-2165	https://doi.org/10.38124/ijisrt/26feb472	https://doi.org/10.38124/ijisrt/26feb472	
Comparative Study of the Clinical Performance of Endodontic Microsurgery With and Without the Use of Operating Microscopes	Dr. Anjali Sharma	Conservative Dentistry & Endodontics	International Journal of Drug Delivery Technology (IJDDT)	10-04-2026	2321-2705	10.25258/ijddt.16.32s.38	10.25258/ijddt.16.32s.38	Scopus
Effect of Hydrofluoric Acid, Silane, and Air Abrasion Surface Treatments on the Tensile Bond Strength and Failure Pattern of Glass Fiber Posts: An In Vitro Study	Dr Saurav Bathla	Conservative Dentistry & Endodontics	Cureus	19/3/2026	2168-8184.	10.7759/cureus.105510	10.7759/cureus.105510	Pubmed
Parotid Sialolithiasis - A Case Report	Dr Shilpi srivastava	OMDR	International Journal of Innovative Science and Research Technology (IJISRT)	22-01-26	2456-2165	doi.org/10.38124/ijisrt/26jan751	doi.org/10.38124/ijisrt/26jan751	ICI
Cyanoacrylate Adhesive with Low-Level Laser Therapy for Sutureless Periodontal Flap Closure: A Pilot Randomized Controlled Trial.	Dr Kratee sharma, Dr Shalabh Mehrotra	**Periodontics**	Laser in Surgery and Medicine	15-Apr-26	1096-9101	10.1002/lsm.70133	10.1002/lsm.70133	
Comparision of led therapy and low	Pooja	**Periodontics**	Bioinformatio	28-Feb-26	0973-	10.6026/973206	10.6026/97320	Pubmed

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laser therapy in post periodontal healing	Mishra, Chavi Bhati, Akshay Ashok Katara, Sumeet Kaur, Rajeev Pathak, Deepak Thomas, Mehul A. Shah		n		2063	300221220	6300221220	
1)Multidisciplinary Management of Phenytoin-induced Gingival Enlargement: A Case Report.	Disha Gupta,Zoya Chowdhary, Shalabh Mehrotra, Bharti Chaudhary, Akash Bhatnagar	**Periodontics**	Cureus.	16-Jan-26	2168-8184	10.7759/cureus.101660	10.7759/cureus.101660	Pubmed
Effectiveness of buffered local anesthetic solutions in pediatric nerve blocks and infiltration anesthesia: a systematic review and meta-analysis	Akash Bhatnagar, Disha Gupta	**Periodontics**	.Journal of Dental Anesthesia and Pain Medicine	26-Jan-26	2383-9317	https://doi.org/10.17245/jdapm.2026.26.1.19	https://doi.org/10.17245/jdapm.2026.26.1.19	Pubmed
A Multidisciplinary Approach to space Closure in Adult Orthodontic pateint: A case report using PAOO	Disha Gupta, Kanchan Yadav, Nishant Chauhan, Snehal Singh	**Periodontics**	University J Dent Scie	31-Mar-26	2395-5090	https://doi.org/10.21276/ujds.2026.12.1.13	https://doi.org/10.21276/ujds.2026.12.1.13	
Assessment of Antibiotic Prescribing	Akshay	**Periodontics**	Journal of	12-Mar-26	0976-	10.4103/jpbs.jpb	10.4103/jpbs.j	Pubmed

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Patterns Among Dentists and their Impact on Antimicrobial Resistance in Oral Infections	Gelda, Safalya S. Kadtane, Pavan Shivdas Khichade, Vikas Singh, Disha Gupta, Gauranshi Gupta		pharmacy and Bioallied Sciences		4879	s_1765_25	pbs_1765_25	
Designing Fairness: A Systematic Review of Bias Detection and Mitigation in EHR-Based Artificial Intelligence	Vikas Singh, Pradeep Tangde	PHD	International Journal of Drug Delivery Technology	01-01-26	0975-4415	https://impactfactor.org/PDF/IJDDT/16/IJDDT,Vol16,Issue5s,Article117.pdf	https://impactfactor.org/PDF/IJDDT/16/IJDDT,Vol16,Issue5s,Article117.pdf	Scopus
In-vitro and In-vivo Assessment of Novel Sustained-release Local Drug Delivery Systems for Periodontal Therapy	K Ramya, V Singh, P Tangade, A Jain, PK Gudali, V Pal, SS Tripathy	PHD	Journal of Pharmacy & Bioallied Sciences	01-01-26	0975-7406	10.4103/jpbs.jpbs_1767_25	10.4103/jpbs.jpbs_1767_25	Pubmed
Evaluation of Local Versus Systemic Corticosteroid Therapy in Reducing Post-endodontic Pain and Inflammation	K Ramya, V Singh, P Tangade, A Jain, PK Gudali, SS Tripathy	PHD	Journal of Pharmacy & Bioallied Sciences	01-01-26	0975-7406	10.4103/jpbs.jpbs_1768_25	10.4103/jpbs.jpbs_1768_25	Pubmed
A Randomized Double-blind, Parallel, Clinical Trial Evaluating the Efficacy of Dissolving Xylitol Chewable Tablets versus Xylitol Chewing Gum on Bacterial Count, Plaque Accumulation, and Gingival	Pradeep Tangade Vikas Singh Ankita Jain	PHD	Journal of Indian Association of Public Health Dentistry	01-01-26	2350-0484	10.4103/jiaphd.jiaphd_183_25	10.4103/jiaphd.jiaphd_183_25	WOS

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Inflammation in the Elderly								
Effectiveness of Fluoride Varnish in Preventing Dental Caries: Systematic Review and Meta-Analysis	Vikas Singh Ankita Jain	PHD	Current Drug Research Reviews	09-03-26	2589-9783	10.2174/012589977543121126020614081 9	10.2174/012589977543121126020614081 9	Scopus, Pubmed
The Sivan three-dimensional cone-beam computed tomography volumetric imaging protocol: a novel dual-mode rendering technique for integrated visualization of temporomandibular joint disc and osseous structures to evaluate temporomandibular joint disorders	Sivan Sathish 1, Ankita Jain 2	PHD	Oral Radiology	01-01-26	1613-9674	10.1007/s11282-025-00849-8	10.1007/s11282-025-00849-8	Pubmed/Scopus
Pre prosthetic surgery : a review	Shalabh kumar, Madhurima Sharma, Vishwadeep ak Singh, Akash Gopi, Rohit Nandan	Prosthodontics	Journal of chemical health risk.	Mar-26	ISSN:2251-6727			Scopus
The Occlusal Plane Orientation in Complete Denture Success: Principles and Practices	Shalabh kumar, Madhurima Sharma		Advances in Human Biology.	Apr-26	2321-8568	10.4103/aihb.aihb_243_25	10.4103/aihb.aihb_243_25	WoS
Exploring Dentists' Interest in the Longterm Success of Dental Implants: A Quantitative Analysis	Akash Gopi, Vishwa Deepak Singh		Advances in Human Biology.	Apr-26	2321-8568	10.4103/aihb.aihb_275_25	10.4103/aihb.aihb_275_25	WoS
Functional and esthetic outcomes of zygomatic implant-supported prosthesis in post-maxillectomy patients: A clinical evaluation	Vishwa Deepak Singh		Bioinformation	Jan-26	0973-2063	10.6026/97320630022005 1	10.6026/97320630022005 1	Scopus, Pubmed
A comparative study of implant survival rates in smokers and non-	Akash Gopi, Vishwa Deepak		bioinformation	Feb-26	0973-2063	10.6026/97320630022118 3	10.6026/97320630022118 3	Scopus, Pubmed

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smokers								
Effectiveness of buffered local anesthetic solutions in pediatric nerve blocks and infiltration anesthesia: a systematic review and meta-analysis	Singh Dr. Akash Bhatnagar		journal of dental anesthesia and pain medicine	Jan-26	2383-9309	https://pubmed.ncbi.nlm.nih.gov/41640719/	https://jdapm.org/search.php?where=aview&id=10.17245/jdapm.2026.26.1.19&code=0223JDAPM&vmode=FULL	Pubmed
Evaluating the predictive value of quantitative parameters: Can bone density and maxillary transverse dimensions serve as reliable indicators of midpalatal suture maturation stages	Shelly Saxena, Adeel Ahmed Bajjad, Jasleen Kour, Leena Gurumayum, Imteyaz Hasan Nazami, and Seema Gupta	Orthodontics	American journal of Orthodontics and Dentofacial Orthopaedics	2026	0889-5406	PMID: 41196239	https://doi.org/10.1016/j.ajodo.2025.09.023	Pubmed/Scopus
Application of AI in Dental Epidemiology for Automated Data Collection and Analysis in Large-Scale Surveys	V Singh, A Jain, ES Shobha, S Satish, JM George	PHD	AI in Clinical Diagnosis, Prediction, and Patient Care, 273-292	2026		10.4018/979-8-2600-0986-4.ch009	10.4018/979-8-2600-0986-4.ch009	
Effectiveness of Fluoride Varnish in Preventing Dental Caries: Systematic Review and Meta-Analysis	V Singh, A Jain,	PHD	Current Drug Research Reviews	2026				
A Randomized Controlled Trial Comparing AI-Assisted and Conventional Radiographic Interpretation in Early Caries Detection	Ankita Jain	PHD	International Journal of Drug Delivery Technology 16 (1), 567-	2026				Scopus

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Interpretation in Early Caries Detection			16 (1), 567-571				6,Issue1s,Article65.pdf	
Telemedicine and WhatsApp-Based Support Groups: A Novel Approach to Tobacco Cessation in Semi-Urban Moradabad, India	Vikas Singh*, Pradeep Tangade , Ankita Jain, Swayam Sourav Tripathy	**PHD**	Journal of Chemical Health Risks 16 (03), 252-261	2026	2251-6727	https://www.jchr.org/index.php/JCHR	https://www.jchr.org/index.php/JCHR/article/view/13695/7387	
Evaluation of Salivary Cytokine Profiles as Biomarkers for Early Detection of Oral Potentially Malignant Disorders	Vikas Singh	**PHD**	Advances in Human Biology 16 (2), 434-439	2026	2348-4691	https://journals.lww.com/adhb/pages/default.aspx	https://journals.lww.com/adhb/fulltext/2026/04000/evaluation_of_salivary_cytokine_profiles_as.31.aspx	**WoS**
Assessment of the Effect of Different Alveolar Ridge Augmentation Techniques on the Stability and Fit of Implant-supported Prostheses	Vikas Singh	**PHD**	Advances in Human Biology 16 (2), 445-450	2026	2348-4691	https://journals.lww.com/adhb/pages/default.aspx	https://journals.lww.com/adhb/fulltext/2026/04	**WoS**
Cognitive behavioral therapy for tobacco cessation among government bus drivers in Patna: Results from a randomized controlled trial	Ankita Jain	**PHD**	Bioinformation	2026	ISSN 0973-2063 (online) 0973-8894 (print)	https://www.bioinformation.net/	https://www.bioinformation.net/022/9732063002209 43.htm	**Pubmed**
Effectiveness of workplace-based tobacco awareness interventions on quit readiness among bus drivers: a randomized comparative pilot trial	Ankita Jain	**PHD**	Cureus.	2026	**2168-8184.**	https://www.cureus.com/	https://www.cureus.com/articles/4790	**Pubmed**

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Redefining Dental Practice in the AI Era: Bridging Clinical Expertise with Intelligent Technologies		Vikas Singh	Bangladesh Journal of Medical Science 25 (Supplementary Issue 2026), S7-S10	2026	2076-0299	https://www.banglajol.info/index.php/index	https://www.banglajol.info/index.php/BJMS/article/view/86617	**WoS**
Application of AI in Dental Epidemiology for Automated Data Collection and Analysis in Large-Scale Surveys		V Singh, A Jain, ES Shobha, S Satish, JM George	AI in Clinical Diagnosis, Prediction, and Patient Care, 273-292	2026	9798260009888	https://www.igi-global.com/	https://www.igi-global.com/chapter/application-of-ai-in-dental-epidemiology-for-automated-data-collection-	

							and-analysis-in-large-scale-surveys/407587	
Comparative Study of Oral Hygiene Status and Periodontal Health in Patients Receiving Fixed Orthodontic Therapy and Post- Orthognathic Surgery Patients		Vikas Singh	International Journal of Drug Delivery Technology 16 (13s), 181-188	2026	09754415	https://ijddt.com/	https://impactfactor.org/PDF/IJDDT/16/IJDDT,Vol16,Issue13s,Article19.pdf	**Scopus**
Antifungal Susceptibility Assessment of Candida Isolates from Denture Stomatitis Patients to Azole Drugs		Vikas Singh	Journal of Pharmacy and Bioallied Sciences 18 (1), 31-33	2026	0975-7406	https://journals.lww.com/jpbs/pages/default.aspx	https://journals.lww.com/jpbs/fulltext/2026/01000/antifungal_susceptibility_assessment_of_candida.9.aspx	**Pubmed**
Assessment of Antibiotic Prescribing Patterns Among Dentists and their Impact on Antimicrobial Resistance in Oral Infections		A Gelda, SS Kadtane, PS Khichade, V Singh, D Gupta, G Gupta,	Journal of Pharmacy and Bioallied Sciences 18 (1), 34-36	2026	0975-7406	https://journals.lww.com/jpbs/pages/default.aspx	https://journals.lww.com/jpbs/fulltext/2026/01000/assessment_of_antibiotic_prescribing_patterns.10.aspx	**Pubmed**
Is MRI still the gold standard for assessing disc position in Temporomandibular joint disorders? A clinical–Imaging agreement study		Vikas Singh	CRANIO 44 (3), 1-12	2026	2151-0903	https://www.tandfonline.com/journals/ycra20	https://www.tandfonline.com/doi/full/10.1080/0886	**Pubmed/Scopus**

							9634.2026.2640110	
Comparative evaluation of marginal bone loss & prosthetic success in immediate versus delayed implant loading protocols: A radiographic study		Dr. Nakul Chaudhary	Bioinformation (January 31, 2026)	2026				**Pubmed**
Alveolar bone changes after premolar extraction orthodontic versus segmental osteotomy – assisted space management : A Comparative CBCT Study		Dr. Shiv Darshan Rao	International journal of drug delivery technology (April 24, 2026)	2026				
Reviewing the wonders of Epsom salt: A comprehensive analysis of therapeutic impact on human health		Dr. Shubham Mishra	Mathews journal od dentistry (April 16, 2026)	2026				

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Coronally Moving Sub-Gingival Margins: An Approach for Better Restorations- A Narrative Review

Dr. Swarnali Paul[1]; Dr. Abhinay Agarwal[2]; Dr. Atul Jain[3]; Dr. Saleem Azhar[4]

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Publication Date: 2026/02/24

Abstract: Deep proximal carious lesions with subgingival margins present a significant restorative challenge due to compromised isolation, difficulty in achieving marginal integrity, and risk of supra-crestal attachment violation. These techniques have emerged as a conservative substitute of invasive surgeries by relocating the deep sub-gingival margins to a supragingival position with the help of adhesive restorative materials. Current evidence suggests that, when appropriately indicated and executed, DME facilitates improved marginal adaptation, preservation of periodontal health, and successful restoration of teeth with deep subgingival margins. This represents a minimally invasive and clinically effective approach in contemporary restorative dentistry.

Keywords: Composite, Sub-Gingiva, Deep Margin, Crown Lengthening.

How to Cite: Dr. Swarnali Paul; Dr. Abhinay Agarwal; Dr. Atul Jain; Dr. Saleem Azhar (2026) Coronally Moving Sub-Gingival Margins: An Approach for Better Restorations- A Narrative Review. *International Journal of Innovative Science and Research Technology*, 11(2), 1355-1360. https://doi.org/10.38124/ijisrt/26feb472

I. INTRODUCTION

Management of deep interproximal carious lesions had always been a challenge in day-to-day clinical practice since many years. The loss of the interproximal walls further complicates this restorative approach as it results in creation of very large compound cavities that may have a mesio-distal extension as well [1]. Extensive proximal carious lesions with deep subgingival margins are very usual in clinical practice and dental practitioners are often challenged with this restorative predicament.

This coronal movement of deep sub-gingival margin is also referred to as Deep margin elevation (DME), coronal margin relocation (CMR), proximal box elevation, cervical margin relocation and open sandwich technique. First formulated by Dietschi and Spreafico in 1998, it is a technique that is used to elevate or reposition or relocate sub gingival margins into supra gingival position using several materials so as to increase the marginal integrity as well as resulting in enhanced bond strength [2]. It was later on modified by Magne and Spreafico in 2012 who had further detailed the protocol and did an extensive study to investigate the consequences of elevation of the deep sub-gingival margins on the indirect restorations. Today, modern clinical dentistry is directed towards conservative approach, as a outcome of which the minimally invasive procedure of deep margin elevation can act as a substitute to the invasive procedures of crown lengthening. The approach via surgical means might be accompanied by anatomic complications which includes penetration to the root concavities, furcation involvement, loss of clinical attachment and healing parameters as well [3].

Hence deep margin elevation had been an important approach to restore these deep sub-gingival cavities without encroaching the periodontal health of the patients. This article aims to provide a narrative explanation regarding the existing literature on deep margin elevation, the classification, merits and demerits, the methodology, the material aspect, its relation to biologic width and the alternative treatment modalities available.

II. INDICATIONS AND LIMITATIONS OF DEEP MARGIN ELEVATION

➢ *Indications of Deep Margin Elevation Technique*

- Sub-gingival cavity margin should be at least 2mm above crest of alveolar bone.
- Should not require any additional ferrule effect for direct and indirect restorations [4].

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Comparative Study of the Clinical Performance of Endodontic Microsurgery With and Without the Use of Operating Microscopes

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ABSTRACT

Background: Endodontic microsurgery is an important treatment option for teeth with persistent periapical pathology following failed root canal therapy. The introduction of the operating microscope has improved visualization and precision during surgical procedures. However, the comparative clinical performance of endodontic microsurgery performed with and without the use of operating microscopes remains an area of clinical interest.

Aim: To compare the clinical performance of endodontic microsurgery performed with the use of an operating microscope and without the use of an operating microscope.

Materials and Methods: This prospective comparative clinical study included 100 patients requiring endodontic microsurgery due to persistent periapical lesions after failed root canal treatment. The patients were randomly divided into two groups: Group A (50 patients) underwent microsurgery using an operating microscope, while Group B (50 patients) underwent conventional surgery without a microscope. Clinical parameters including postoperative pain, surgical time, healing outcomes, and overall treatment success were evaluated. Pain was assessed using the Visual Analog Scale (VAS) on postoperative days 1, 3, and 7. Radiographic and clinical evaluations were performed during follow-up visits up to 6 months. Statistical analysis was performed using appropriate tests, and a p-value <0.05 was considered statistically significant.

Results: The microscope group showed significantly lower postoperative pain scores, higher healing rates, and greater overall clinical success compared with the conventional surgery group. The success rate was 88% in the microscope group and 72% in the conventional group. However, the mean surgical time was slightly longer in the microscope-assisted procedures.

Conclusion: Endodontic microsurgery performed with an operating microscope demonstrated superior clinical outcomes compared to conventional surgery. Improved visualization and precision associated with magnification contribute to higher treatment success and better postoperative outcomes. Therefore, the operating microscope can be considered a valuable tool in modern endodontic surgical practice.

Keywords: Endodontic microsurgery, Operating microscope, Periapical surgery, Treatment success, Postoperative healing.

How to cite this article: Sahu GK, Sharma A, Hota SK, Tanweer SA, Negi Y, Patton ZH. Comparative Study of the Clinical Performance of Endodontic Microsurgery With and Without the Use of Operating Microscopes. Int J Drug Deliv Technol. 2026;16(32s):309-314. DOI: 10.25258/ijddt.16.32s.38

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Open Access Original Article

Effect of Hydrofluoric Acid, Silane, and Air Abrasion Surface Treatments on the Tensile Bond Strength and Failure Pattern of Glass Fiber Posts: An In Vitro Study

Nikhil Sathavane [1], Rishikesh Wankhade [1], Saurav Bathla [2], Akanksha Jeen [3], Shaik Rubeena Tabassum [4], Jay Gohil [5], Priyanka Randiwa [6], Seema Gupta [7]

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DOI: 10.7759/cureus.[illegible]

Abstract

Introduction: The long-term success of endodontically treated teeth restored with glass fiber posts depends mainly on adequate post-retention. Surface treatment of fiber posts may enhance the bonding between the post and resin cement. The aim of the present study was to evaluate the effect of hydrofluoric acid, a silane coupling agent, and air abrasion with 50 µm alumina particles on the tensile bond strength and failure pattern of glass fiber posts.

Materials and methods: Eighty extracted single-rooted mandibular premolars were endodontically treated and prepared for post-placement. Glass fiber posts were divided into four groups (n = 20): hydrofluoric acid treatment (Group 1), silane application (Group 2), air abrasion with 50 µm alumina particles (Group 3), and distilled water (control as Group 4). The posts were cemented using dual-cure resin cement. After storage, the specimens were subjected to tensile testing using a universal testing machine with a crosshead speed of 1 mm/min. Failure modes were analyzed using a stereomicroscope. Data were analyzed using one-way analysis of variance (ANOVA) and Tukey's post-hoc test at a significance level of $p < 0.05$.

Results: The hydrofluoric acid group exhibited the highest mean tensile bond strength (240.12 ± 88.00 MPa), followed by the air abrasion group (209.40 ± 91.15 MPa), silane group (184.13 ± 74.16 MPa), and control group (166.86 ± 72.22 MPa). A one-way ANOVA revealed a statistically significant difference between the groups ($p = 0.034$). Post-hoc analysis showed a significant difference only between the hydrofluoric acid and control groups. The failure patterns were predominantly mixed, with no significant association between the surface treatment and mode of failure ($p = 0.509$).

Conclusion: Surface treatment enhanced the retention of glass fiber posts. Hydrofluoric acid and air abrasion improved the bond strength compared to untreated posts; however, hydrofluoric acid showed a significant advantage over the control group. Clinicians should consider both bonding efficacy and potential surface damage when selecting conditioning methods.

Categories: Dentistry
Keywords: air abrasion, bonding, fiber posts, hydrofluoric acid, surface treatment

Introduction

Advances in endodontic therapy have significantly improved the long-[illegible] teeth that were

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https://doi.org/10.38124/ijisrt/26jan751

Parotid Sialolithiasis - A Case Report

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[2]Professor; Department of Oral & Maxillofacial Surgery Teerthanker Mahaveer Dental College & Research Centre Moradabad-244001

Publication Date: 2026/01/22

Abstract: Salivary stones or sialoliths are common cause of major salivary gland infection causing recurrent sialadenitis. They majorly affect submandibular salivary gland and seldom the Parotid. This case report describes about a case of recurrent sialadenitis secondary to Stenson's duct obstruction by a salivary stone along with role of soft tissue intraoral periapical radiograph in diagnosis and determining location and dimensions of sialolith is also discussed.

Keywords: *Salivary Gland Disorder, Sialolithiasis, Salivary Stone, Parotid Sialolithiasis.*

How to Cite: Dr. Shilpi Srivastava; Dr. Durga Shankar Gupta (2026) Parotid Sialolithiasis - A Case Report. *International Journal of Innovative Science and Research Technology*, 11(1), 1438-1440. https://doi.org/10.38124/ijisrt/26jan751

I. INTRODUCTION

Major salivary glands submandibular, parotid and sublingual are pivotal in the production and secretion of saliva which is an essential for different functions like moistening, digestion, mineralization, lubrication, and mucosal protection. Sialolithiasis is a benign disorder involving the formation of stones within the ducts of the salivary glands.[1] This leads to salivary stasis, glandular swelling and potentially chronic infection.[2]

The most affected salivary gland is submandibular accounting for 80% of sialolithiasis cases followed by Parotid sialolithiasis which is usually rare, accounting for 6 %–15 % of all salivary stone and around 2% are in the sublingual and minor salivary glands.[3]

Parotid sialolith affects about 1 % of the total population, and it is more prevalent in middle-aged adults between 30 and 60 years of age with men affected twice as often as women. Intra-glandular parotid salivary stones are less common than intra-ductal stones.[4] Parotid stones are usually smaller than submandibular stones, mostly radiolucent until and unless calcified to 60 –70% calcified.

The aetiology of salivary stone formation remains elusive. Factors that cause sialolith formation are divided into two major groups.[5]

- Anatomical factor altering saliva formation or flow due to ductal stenosis or presences of inflammation secondary to infection
- Conditions altering salivary composition like increased calcium content or altered enzyme function secondary to several systemic diseases (gout, Sjogren's syndrome) medications (anticholinergics, antisialogogues), local trauma, head and neck radiotherapy and renal impairment also can predispose patients to sialolith formation can predispose patients to sialolith formation.[5,6]

II. CASE REPORT

A 63-year-old male patient came to the department with the chief complaint of recurrent pain and swelling in his right cheek region for 1year. On elaborating the history of present illness pain was severe in nature and gradual in onset which aggravates while mastication associated with swelling during meal-time and relieved on taking medicine. Medical and personal history were non contributary. Intraoral examination showed a small single inflamed swelling with central yellowish white region at the opening of Stensen's duct without any evidence of extraoral swelling. Bi-digital palpation presented a stony hard palpable mass in the region of the right buccal mucosa which was tender (Figure 1) indicative of probable obstruction of the parotid duct. On milking the gland, reduced salivary flow was noted on right side. Based on history of episodic meal-time associated swelling and pain as well as clinical examination a provisional diagnosis of recurrent right parotid sialadenitis with sialolithiasis was given. Differential diagnosis included viral sialadenitis, mumps, acute bacterial sialadenitis, radiation sialadenitis and Sjogren's disease.

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Lasers in Surgery and Medicine

CLINICAL REPORT

Cyanoacrylate Adhesive With Low-Level Laser Therapy for Sutureless Periodontal Flap Closure: A Pilot Randomized Controlled Trial

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Keywords: cyanoacrylate | low-level laser therapy | surgical flap | suturing | tissue adhesives | wound healing

ABSTRACT

Background and Objectives: Conventional suturing in periodontal flap surgery may increase postoperative discomfort and require additional visits for suture removal. Cyanoacrylate tissue adhesives and low-level laser therapy (LLLT) have individually shown benefits in wound healing and postoperative symptom reduction. This pilot randomized controlled trial evaluated the feasibility and preliminary clinical outcomes of a sutureless periodontal flap closure technique using cyanoacrylate adhesive with adjunctive LLLT compared with conventional suturing.

Methods: This prospective, parallel-group pilot randomized controlled trial was conducted over a 4-month period from October 2025 to January 2026, in the Department of Periodontics, Kothiwal Dental College and Research Centre, Moradabad, India. 20 systemically healthy adults (mean age 31.9 ± 3.6 years; 55% males) with Stage II or III, Grade B periodontitis requiring flap surgery were randomly allocated (1:1) to conventional silk sutures (control, $n = 10$) or cyanoacrylate adhesive with LLLT (intervention, $n = 10$). The primary outcome was postoperative pain measured using a 100-mm visual analog scale. Secondary outcomes included wound healing index, analgesic consumption, plaque index, probing pocket depth (PPD), clinical attachment level (CAL), and patient treatment preference. Statistical analysis was performed using mixed-effects models and generalized linear mixed models, with independent *t*-test or Mann–Whitney *U* test for between-group comparisons. Statistical significance was set at $p < 0.05$, and 95% confidence intervals were calculated.

Results: All participants completed the study with 100% follow-up and no adverse events. Baseline demographic characteristics were comparable between groups ($p > 0.05$). The intervention group demonstrated significantly lower analgesic consumption (mean difference 2.30 tablets; 95% confidence interval: 1.18–3.42; $p = 0.001$) and higher patient preference scores (mean difference 1.50 points; 95% confidence interval 0.83–2.17; $p = 0.004$). Postoperative pain scores were consistently lower and early wound healing scores were higher in the intervention group across follow-up visits ($p < 0.05$). Both groups showed significant reduction in probing pocket depth and clinical attachment level at 6 weeks ($p < 0.05$), with no statistically significant between-group difference over time ($p > 0.05$).

Conclusion: Cyanoacrylate adhesive with adjunctive low-level laser therapy appears feasible and may improve early postoperative outcomes following periodontal flap surgery. Larger randomized trials are required to confirm these findings.

Trial Registration: The study was prospectively registered with the Clinical Trials Registry-India (CTRI/2025/09/093179) on September 24, 2025.

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Comparison of LED therapy and low laser therapy in post-periodontal healing

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Abstract

Postoperative pain, inflammation and delayed healing continue to be significant concerns following periodontal surgical procedures. Therefore, it is of interest to compare the effects of light emitting diode therapy and low-level laser therapy on post periodontal surgical healing. Hence a total of 100 patients undergoing periodontal flap surgery were randomly allocated to receive either LED therapy or low-level laser therapy and healing outcomes were clinically evaluated. Both therapies significantly enhanced postoperative healing, with low-level laser therapy demonstrating superior early pain control and faster inflammatory resolution. This study advances existing knowledge by offering direct comparative evidence on photobiomodulation modalities for optimizing periodontal surgical healing.

Keywords: Light emitting diode (LED) therapy, low-level laser therapy (LLLT), periodontal surgery, photobiomodulation (PBM), wound healing

Background:

Periodontal surgical procedures, including flap surgeries, regenerative interventions and mucogingival surgeries, are routinely performed to arrest disease progression and restore periodontal health [1]. Despite advances in surgical techniques and biomaterials, postoperative inflammation, pain, delayed wound healing and patient discomfort remain significant clinical challenges. Optimal healing of periodontal tissues is critical for achieving long-term treatment success, as inadequate or delayed healing can compromise clinical outcomes, patient satisfaction and overall periodontal stability [2]. Consequently, adjunctive therapeutic modalities that can enhance wound healing and reduce postoperative morbidity have gained increasing attention in contemporary periodontal practice [3]. Photobiomodulation therapy (PBMT) has emerged as a non-invasive, chromophore-mediated approach capable of modulating cellular and molecular processes involved in tissue repair. Among the various PBMT modalities, low-level laser therapy (LLLT) has been extensively studied for its biostimulatory effects on soft and hard tissues. LLLT is believed to enhance mitochondrial activity, increase adenosine triphosphate (ATP) production, promote fibroblast proliferation, stimulate angiogenesis and modulate inflammatory mediators, thereby accelerating wound healing and reducing pain [4]. Light emitting diode (LED) therapy has recently been proposed as an alternative photobiomodulation modality with comparable biological effects. LED devices emit non-coherent, monochromatic or quasi-monochromatic light within a specific wavelength range and often advantages such as lower cost, ease of use, broader treatment coverage and minimal safety concerns [5]. Experimental and clinical evidence suggests that LED therapy can stimulate cellular metabolism, enhance microcirculation and regulate inflammatory responses in a manner similar to laser therapy [6]. In periodontal and oral surgical contexts, LED therapy has shown potential in reducing postoperative pain, accelerating soft tissue healing and improving patient comfort. Nevertheless, the non-coherent nature of LED light raises questions regarding its depth of penetration and overall efficacy when compared with coherent laser sources [8]. Although both LED therapy and LLLT are grounded in the principles of photobiomodulation, direct comparative evidence regarding their effectiveness in periodontal surgical healing remains limited and inconclusive. Existing studies often vary in methodology, surgical procedures, outcome parameters and evaluation periods, making it difficult to draw definitive clinical recommendations [9, 10]. Therefore, it is of interest to directly the comparative

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Open Access Case Report

Multidisciplinary Management of Phenytoin-Induced Gingival Enlargement: A Case Report

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Abstract

This case report describes a 21-year-old female patient with a history of epilepsy who developed gingival overgrowth after 18 months of phenytoin therapy. The patient presented with pain, difficulty in chewing, and cosmetic concerns. Clinical examination revealed generalized erythematous gingival enlargement with bleeding on probing, pseudopockets, and interdental extension. A multidisciplinary approach was adopted, beginning with counseling of the patient's physician regarding alternative medication. Non-surgical periodontal therapy, including scaling, root planing, and oral hygiene reinforcement, was performed to reduce inflammation. Following improvement in gingival conditions, surgical management with gingivectomy and gingivoplasty was carried out. Histopathological evaluation confirmed features consistent with phenytoin-induced gingival enlargement. Post-operative healing was uneventful, and the patient was routinely followed up regularly until 6 months. This case highlights the importance of multidisciplinary collaboration between physicians and dental professionals in the management of drug-induced gingival enlargement. Comprehensive assessment for exogenous pharmacologic agents before non-periodontal therapy can improve oral health outcomes, reduce surgical recurrence, and enhance patient confidence and quality of life.

Categories: Family/General Practice, Pathology, Dentistry
Keywords: drug-induced gingival enlargement, phenytoin, gingivectomy, periodontal therapy, case report

Introduction

Gingival enlargement is defined as an abnormal increase in the size of the gingival tissues, caused by systemic diseases, chronic inflammation, or drug therapy [1]. Among drug-induced gingival enlargements (DIGE), anticonvulsants such as phenytoin, calcium channel blockers such as nifedipine, and immunosuppressants such as cyclosporine are most frequently implicated [1]. Phenytoin, a commonly prescribed antiepileptic medication for seizure disorders, is reported to induce gingival enlargement in nearly 50% of patients receiving long-term therapy [1]. This condition can significantly impair oral hygiene, esthetics, and overall quality of life. Its estimated prevalence is 8–50% in the Indian population.

According to the 2017 World Workshop classification, DIGE is categorized under non-plaque-induced gingival diseases, with phenytoin-induced gingival enlargement (PIGE) recognized as a specific subtype. Unlike non-DIGE, which arises from inflammatory, hormonal, or neoplastic causes, DIGE is primarily a medication-related response to gingival tissues at therapeutic doses. This distinction is clinically relevant

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Review Article

Effectiveness of buffered local anesthetic solutions in pediatric nerve blocks and infiltration anesthesia: a systematic review and meta-analysis

Akash Bhatnagar, ✉ and Disha Gupta

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Abstract

Local anesthesia is essential for pain control and behavioral management in pediatric dentistry. Conventional anesthetic solutions often have low pH, causing injection discomfort and delayed onset. Buffering local anesthetics.

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Case Report

"A Multidisciplinary Approach to Space Closure in Adult Orthodontic Patient: A Case Report Using PAOO"

Abstract:
Periodontally Accelerated Osteogenic Orthodontics (PAOO) is an interdisciplinary procedure that combines selective alveolar corticotomy, bone grafting, and orthodontic force application to accelerate tooth movement through the regional acceleratory phenomenon (RAP). This technique significantly reduces treatment duration while maintaining periodontal stability. This report presents the case of a 19-year-old female who reported to the Department of Periodontology with a persistent extraction space between the maxillary right canine and second premolar, four months after extraction of the first premolar. Conventional orthodontic mechanics failed to close the space. PAOO was performed in the first quadrant, followed by immediate orthodontic activation. Healing was uneventful, and complete space closure was achieved. Radiographic evaluation confirmed periodontal stability with no root resorption. The case highlights the effectiveness of PAOO in managing orthodontic space closure in adults and underscores the value of interdisciplinary care.

Key-words: Periodontally Accelerated Osteogenic Orthodontics, corticotomy, orthodontic space closure, regional acceleratory phenomenon (RAP), interdisciplinary therapy.

Introduction:

Malpositioning of tooth is the abnormal position of tooth with in the dental arch relative to its ideal anatomical or functional location. Patient come to the orthodontics for correction of Malpositioning of the tooth. But some orthodontic patients put their dental health in risk and frequently avoid dental treatment due to the longer period of time. [1] To overcome this problem Interdisciplinary approach among orthodontic and periodontics is very crucial for shorter treatment time which fastens the procedure.

A modern interdisciplinary approach the combination of corticotomy facilitated orthodontic treatment and periodontal alveolar augmentation has been introduced in 1995 by Dr. William Wilcko (an Orthodontist) andDr. Thomas Wilcko (a Periodontist) known as Accelerated osteogenic orthodontics (AOO) and more recently to as PAOO. PAOO which has been widely popular as Wilkodontics.[2,3]

In 2001, Wilcko et al reported a revised rapid orthodontic corticotomy-facilitated technique that included periodontal alveolar augmentation, called Periodontally accelerated osteogenic orthodontics; it demonstrated acceleration of treatment to one third of the usual time.[4].

The role of periodontics in the PAOO is knowledge about biology of the procedure which helping the orthodontics to get faster and stable result. This procedure is based on the bone healing pattern known as the regional acceleratory phenomenon (RAP).

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Assessment of Antibiotic Prescribing Patterns Among Dentists and their Impact on Antimicrobial Resistance in Oral Infections

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ABSTRACT

Background: Antibiotics are frequently prescribed in dental practice for the management of oral infections and as prophylaxis for invasive procedures. Inappropriate prescribing practices contribute significantly to the emergence of antimicrobial resistance (AMR), posing a growing public health concern. Methods: A cross-sectional observational study was conducted among 150 dental practitioners and 120 patients presenting with odontogenic infections. Data regarding antibiotic choice, dosage, duration, and indication were collected using structured questionnaires and prescription audits. Microbiological samples from patients were cultured, and antimicrobial susceptibility testing was performed. Prescribing appropriateness was assessed using standard clinical guidelines. Results: Antibiotics were prescribed in 82.0% of dental consultations, with amoxicillin-clavulanic acid (46.7%) being the most commonly prescribed drug, followed by metronidazole (28.0%). Inappropriate prescribing was identified in 41.3% of cases, primarily due to unnecessary antibiotic use and prolonged duration. Resistant isolates were detected in 34.2% of cultured samples, with significantly higher resistance observed among patients exposed to prior antibiotic therapy ($P = 0.003$). Dentists with fewer than 5 years of clinical experience demonstrated a higher rate of inappropriate prescribing compared to senior practitioners (48.9% vs. 29.6%, $P = 0.018$). Conclusion: Suboptimal antibiotic prescribing practices are prevalent among dentists and are significantly associated with increased antimicrobial resistance in oral infections. Implementation of antibiotic stewardship programs and continued professional education are essential to promote rational antibiotic use in dental practice.

Keywords: Antibiotic prescribing, antibiotic stewardship, antimicrobial resistance, dentists, oral infections

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RESEARCH PAPER

"Designing Fairness: A Systematic Review of Bias Detection and Mitigation in EHR-Based Artificial Intelligence"

Vikas Singh [1*], Dr Pradeep Tangade [2], Dr Ankita Jain[3]

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ABSTRACT

Objectives: This research explores methods for addressing various forms of bias in artificial intelligence models developed with electronic health record data. Healthcare might be revolutionised by the combination of artificial intelligence and electronic health data, but it is essential to tackle bias in AI to prevent the worsening of healthcare inequalities.

Materials and Methods: Following the recommendations for reporting systematic reviews and meta-analyses, we carried out a systematic review. We examined publications through IEEE, WoS & PubMed that were from January 1, 2010, until December 17, 2023.Paper evaluated metrics for bias assessment, identified important biases, and described methods for identifying and reducing bias throughout the creation of the AI model.

Results: Twenty of the 450 publications that were retrieved satisfied our requirements, identifying six main categories of bias: temporal, measurement, confounding, implicit, algorithmic, and selection. None of the AI models have been used in actual healthcare environments; they were mostly created for predicting purposes. Five research focused on using fairness indicators such as statistical parity, equal opportunity, and predictive equity to discover algorithmic and subconscious biases. Targeting implicit and selective biases in particular, fifteen research offered methods for reducing biases. These tactics mostly concerned data collecting and preprocessing methods like resampling and reweighting, and they were assessed using both performance and fairness indicators.

Discussion: In addition to highlighting the urgent need for both standardised and thorough reporting of the methodology as well as rigorous real-world testing and assessment, this research focuses on creating methods to remove bias from AI models that use electronic health records. These metrics are crucial for assessing the usefulness of models and developing moral AI that guarantees justice or integrity in health.

Keywords: *AI, Bias, EHR*

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A Randomized Double-blind, Parallel, Clinical Trial Evaluating the Efficacy of Dissolving Xylitol Chewable Tablets versus Xylitol Chewing Gum on Bacterial Count, Plaque Accumulation, and Gingival Inflammation in the Elderly

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Abstract

Background: Xylitol, being a nonfermentable sugar alcohol, is recognized as having anticariogenic and antimicrobial effects. The purpose of this study was to compare xylitol dissolving tablets with xylitol chewing gum to determine their relative effectiveness on plaque index (PI), gingival index (GI), and salivary bacterial count for 30 days. **Materials and Methods:** A double-blind, parallel-group, randomized clinical trial was conducted at Vedic Vanaprastha Ashram, Moradabad, Uttar Pradesh, India, a residential facility for elderly citizens. A total of 96 healthy adults aged 60 years and above were randomly divided into two groups. Group 1 received xylitol chewing gum, and Group 2 received xylitol dissolving tablets, each consumed three times daily for 30 days. Clinical evaluation for PI, GI, and salivary bacterial count was done at baseline and day 30. Statistical analysis was done using paired *t*-tests and independent *t*-tests. **Results:** Both groups had significant intragroup decreases in PI and GI ($P < 0.001$). The dissolving tablet group had a larger decrease in PI (mean change 1.03 ± 0.38) than the chewing gum group (mean change 0.63 ± 0.39) with a statistically significant difference ($P < 0.001$). GI decreases were seen in both groups without any significant intergroup difference ($P = 0.341$). Salivary bacterial counts reduced significantly in both groups ($P < 0.001$), without any intergroup difference ($P = 0.784$). **Conclusion:** Both xylitol chewing gum and dissolving tablets were effective in reducing gingival inflammation and salivary bacterial counts, while dissolving tablets showed superior efficacy in reducing plaque levels.

Keywords: Dental plaque, gingivitis, oral health, xylitol

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META-ANALYSIS

Effectiveness of Fluoride Varnish in Preventing Dental Caries: Systematic Review and Meta-Analysis

Vikas Singh[1,*], Ankita Jain[1], Ferdous Bukhary[2], Faheem Muzaffar Mir[2], Galiah Husam AlJefri[2], Adeem Alofi[3,4,5], Varun Pal[6] and Swayam Sourav Tripathy[7]

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Abstract: ***Introduction*:** Dental caries remains a prevalent global health issue with over two billion people being affected worldwide, necessitating effective preventive strategies like fluoride varnish (FV). This systematic review and meta-analysis evaluated the effectiveness of fluoride varnish in preventing dental caries by synthesizing data from randomized controlled trials (RCTs) and observational studies. This analysis will help to further scientific knowledge with evidence-based clinical knowledge, which will focus on the real-world clinical problems faced in dental practice.

***Methods*:** Thirteen Randomized trials were analyzed while adhering to PRISMA guidelines, after assessing 2315 archives. ROB2 was used to evaluate the risk of bias from the data obtained through the PICO criteria. Effect sizes were aggregated for caries reduction with Random-effects models. Medical Subject Headings (MeSH) and text words associated with fluoride varnish and dental caries were used for the investigation.

***Results*:** Fluoride varnish reduced caries in 4784 participants, with 95% CI of 0.28 to 0.43. Greater improvements were seen in younger children and those affected with xerostomia, where a reduction of 54% was seen with quarterly applications and with minimal undesirable effects (<5%).

***Discussion*:** Outcomes suggest fluoride varnish as an effective caries preventive tool, especially with high-risk populations. Higher degrees of variation observed (I^2 = 75.1%) suggest that effectiveness might be increased if standardized application protocols are followed.

***Conclusion*:** The study outcomes support the notion that fluoride varnish is an effective measure against caries, hence supporting the idea of its integration into public health programs for reducing widespread caries burden.

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Keywords: Fluoride varnish, dental caries prevention, systematic review, meta-analysis, topical fluoride efficacy, dental caries, public health.

1. INTRODUCTION

With the growing number of chronic diseases affecting the oral cavity worldwide, dental caries continues to affect the population of all age groups [1]. The burden of caries is often highlighted more in the low- and middle-income countries due to limited access to dental care, regardless of progress observed in the field of preventive dentistry [2]. With the increasing relevance of prevention of oral diseases, fluoride varnish (FV) has come to the limelight as a safe and efficacious alternative to other forms of fluoride applications for the prevention of dental caries among younger age groups and high-risk groups [3].

Usually, a concentration of 5% topical sodium fluoride varnish is preferred in a resin or synthetic base [4]. The applied varnish forms a temporary reservoir on the tooth surface that boosts its remineralization and inhibits demineralization [5]. Fluoride varnish is safe because it has minimal risk of ingestion and simultaneously, it provides prolonged effects as compared to gels or mouthrinses [6].

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The Sivan three-dimensional cone-beam computed tomography volumetric imaging protocol: a novel dual-mode rendering technique for integrated visualization of temporomandibular joint disc and osseous structures to evaluate temporomandibular joint disorders

Sivan Sathish [1], Ankita Jain [2]

Affiliations + expand

PMID: 40839162 DOI: 10.1007/s11282-025-00849-8

Abstract

Objectives: Temporomandibular joint disorders (TMDs) require precise imaging of both osseous and soft-tissue components for accurate diagnosis. Current diagnostic protocols often necessitate separate cone-beam computed tomography (CBCT) and magnetic resonance imaging (MRI) scans, increasing cost, complexity, and patient burden. This study aimed to develop and validate the Sivan 3D CBCT Volumetric Imaging Protocol, a novel post-processing technique designed to enable simultaneous high-resolution visualization of the temporomandibular joint (TMJ) disc, retrodiscal tissue, and adjacent osseous structures using a single CBCT data set.

Methods: This retrospective study analyzed anonymized CBCT volumes from 42 patients diagnosed with TMD. The data sets were processed using NNT software, incorporating dual-mode volumetric

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Pre-Prosthetic Surgery: A Review

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KEYWORDS

Pre-prosthetic surgery, alveoloplasty, vestibuloplasty, ridge augmentation, frenectomy, tori,

ABSTRACT:

In cases where teeth are missing or merely partially missing, oral tissues have to be surgically prepared to receive a prosthetic rehabilitation process referred to as pre-prosthetic surgery. This progressive and irreversible loss of alveolar bone following the loss of teeth results in the inefficiency of hard and soft tissues, which consequently result in the failure of the retention, stability, and comfort of prostheses. This review follows the historical evolution and clinical justification of pre-prosthetic surgery interventions - starting with ancient methods of alveoloplasty and current methods of vestibuloplasty, ridge augmentation, torus removal, frenectomy, and tissue engineering. The literature confirms that while dental implants have modified the scope of pre-prosthetic procedures, the foundational surgical techniques remain indispensable for a significant proportion of patients requiring conventional or implant-supported prostheses.

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Pre-Prosthetic Surgery: A Review

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REVIEW ARTICLE

The Occlusal Plane Orientation in Complete Denture Success: Principles and Practices

Kumar, Shalabh; Sharma, Madhurima; Kumar, Mukesh[1]

Author Information

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OPEN

Abstract

The occlusal plane itself is an important guiding element in the prosthodontic treatment with complete dentures. Its ideal placement is crucial to functional competence, aesthetic congruence and patient comfort. Incorrect arrangement of the occlusal plane results in a mélange of difficulties such as compromised chewing, unsatisfactory appearance, speech impairment and

Exploring Dentists' Interest in the Long-term Success of Dental Implants: A Quantitative Analysis

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Abstract

Introduction: Dental implants have become a popular choice for replacing missing teeth, supported by advancements in implant materials, surgical techniques, and prosthetic innovations. However, implant longevity remains influenced by various factors such as patient health, bone quality, surgical expertise, implant selection, and post-operative maintenance. The aim of this study was to evaluate dentists' knowledge, interest, and clinical consideration regarding implant longevity and how these factors influence treatment planning and patient communication. **Materials and Methods:** A cross-sectional quantitative survey was conducted among 300 dentists with a minimum of two years of experience in implant-related practice. Data were collected through a structured questionnaire assessing demographics, knowledge, factors affecting implant survival, clinical practices, and continuing education related to implantology. Descriptive and inferential statistical analyses, including Chi-square, t-test, analysis of variance, and Spearman correlation, were performed. **Results:** The results showed that 85% of dentists were aware of the factors affecting implant longevity. However, only 60% of dentists routinely discussed these factors with patients, and 55% had formal training in implantology. The key determinants recognized for implant longevity included patient health, implant type, bone quality, and post-operative care. Statistical tests showed no significant relationship between knowledge or behaviors related to implant longevity and dentists' age, specialty, or years of practice, indicating uniformity across demographic groups. **Conclusion:** The findings suggest a stagnation in continuing education and an inconsistent focus on long-term implant outcomes in clinical practice. Strengthening professional training, particularly in long-term maintenance and patient education, could improve implant success rates and overall treatment outcomes.

Keywords: Dental implants, dentist knowledge, implant longevity, implant maintenance

Introduction

Dental implants are one of the most effective methods to replace missing teeth and are even more popular now than before due to advancements in the field of dentistry.[1] Improvements in the different facets of dentistry have made implants more accepted and successful than ever before and patients have begun treating implants as the preferred option in modern dentistry.[2] Unfortunately, there are still several factors which can impact the oral function and longevity of the implant. These factors consist of the patient's health, the type of implant, the quality of the surgical methods, the quality of the bone surrounding the implant and the aftercare.[3]

There are studies that show that dental implants can last for decades. However, there seems to be a conflict when it comes to the longevity of the implants, i.e. it seems to be an issue of interest to patients and dental professionals alike.[4] For patients, the cost of the procedure has a direct effect on whether or not they would be willing to go through the procedure. This is an important consideration when thinking about the expected longevity of the implant.[5] For dental professionals, this is very pertinent as well, especially for dentists that do the planning and the placement of the implants, as they would need to know to help them with planning the treatment, and to also help them manage their patients' expectations.[6] Dentists are an important part of the process of getting implants as they do

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Functional and esthetic outcomes of zygomatic implant-supported prosthesis in post-maxillectomy patients: A clinical evaluation

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A comparative study of implant survival rates in smokers and non-smokers

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Effectiveness of buffered local anesthetic solutions in pediatric nerve blocks and infiltration anesthesia: a systematic review and meta-analysis

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Local anesthesia is essential for pain control and behavioral management in pediatric dentistry. Conventional anesthetic solutions often have low pH, causing injection discomfort and delayed onset. Buffering local anesthetics, typically with sodium bicarbonate, may enhance efficacy by increasing the pH, reducing injection pain, and accelerating onset. This study aimed to evaluate the clinical efficacy of buffered and unbuffered local anesthetic agents in pediatric dental patients, with an emphasis on the onset of anesthesia, patient-reported pain perception (subjective pain), and clinician-assessed pain responses (objective pain) during injection.

A systematic literature search was conducted using PubMed, ScienceDirect, the Cochrane Library, IJBAGS, and Google Scholar for studies published between January 2010 and March 2025. Only randomized controlled trials (RCTs) specifically focused on pediatric patients aged 4-12 years comparing buffered and unbuffered local anesthetics were included. The risk of bias of the included studies was assessed using the Cochrane Risk of Bias 2.0 (ROB 2) tool. Meta-analyses using a random-effects model with standardized mean differences (SMD) accounted for variability across studies. The review protocol was prospectively registered with PROSPERO (CRD42025646999).

Of the 136 records initially identified through the literature search, five RCTs met the eligibility criteria and were included. When compared with unbuffered solutions, buffered local anesthetics demonstrated a promising trend toward faster onset and reduced subjective pain. Meta-analysis revealed a significant reduction in subjective pain scores with buffered agents (SMD = −0.34, 95% CI: −1 to 0.17, $P = 0.05$, $I^2 = 66\%$), whereas pooled effects on anesthesia onset (SMD = −1.55, 95% CI: −3.67 to 0.57, $I^2 = 97\%$) and objective pain (SMD = −0.33, 95% CI: −1.2 to 0.15, $I^2 = 82\%$) were not statistically significant. Risk of bias assessment indicated three low-risk studies, one with some concerns, and one high-risk study suggesting a cautious interpretation of the findings.

Buffered local anesthetics reduced injection pain, accelerated the onset of pediatric dental procedures, and enhanced patient comfort. Objective pain outcomes are less consistent, but buffering is a promising and cost-effective adjunct to improve clinical experience. Nevertheless, additional high-quality RCTs with standardized protocols are recommended for additional evidence.

Keywords: Anesthesia, Local; Buffers; Onset of Anesthesia; Pain Perception; Pediatric Dentistry; Sodium Bicarbonate; Time Factors

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INTRODUCTION

Because of a combination of physiological and psychological factors [1]. Anatomically, oral tissues are

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Evaluating the predictive value of quantitative parameters: Can bone density and maxillary transverse dimensions serve as reliable indicators of midpalatal suture maturation stages?

Shelly Saxena [1], Adeel Ahmed Bajjad [2], Jasleen Kour [3], Leena Gurumayum [2], Imteyaz Hasan Nazami [2], Seema Gupta [4]

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Application-of-AI-in-Dental-Epidemiolog...

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Chapter 9
Application of AI in Dental Epidemiology for Automated Data Collection and Analysis in Large-Scale Surveys

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ABSTRACT

Artificial Intelligence (AI) may alter dental epidemiological surveys by improving data collecting efficiency and diagnostic accuracy, as shown in this comprehensive study. Our multi-center study of 15,847 participants from 127 dental practices found

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Effectiveness of Fluoride Varnish in Preventing Dental Caries: Systematic Review and Meta-Analysis

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Authors: Vikas Singh[1], Ankita Jain[1], Ferdous Bukhary[2], Faheem Muzaffar Mir[2], Gallah Husam Aljefri[2], Adeem Alofi[3,4,5], Varun Pal[6] and Swayam Sourav Tripathy[7]

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Introduction

Dental caries remains a prevalent global health issue with over two billion people being affected worldwide, necessitating effective preventive strategies like fluoride varnish (FV). This systematic review and meta-analysis evaluated the effectiveness of fluoride varnish in preventing dental caries by synthesizing data from randomized controlled trials (RCTs) and observational studies. This analysis will help to further scientific knowledge with evidence-based clinical knowledge, which will focus on the real-world clinical problems faced in dental practice.

Methods

Thirteen Randomized trials were analyzed while adhering to PRISMA guidelines, after assessing 2315 archives. ROB2 was used to evaluate the risk of bias from the data obtained through the PICO criteria. Effect sizes were aggregated for caries reduction with Random-effects models. Medical Subject Headings (MeSH) and text words associated with fluoride varnish and

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RESEARCH PAPER

A Randomized Controlled Trial Comparing AI-Assisted and Conventional Radiographic Interpretation in Early Caries Detection

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ABSTRACT

Background: Early detection of dental caries is essential for effective intervention and prevention. Radiographic interpretation plays a crucial role in identifying carious lesions, but conventional methods are subject to variability and human error. Artificial Intelligence (AI) has the potential to improve diagnostic accuracy by automating radiographic analysis. This study aimed to compare the diagnostic accuracy, time efficiency, and clinician confidence between AI-assisted and conventional radiographic interpretation for early caries detection.

Methods: A randomized controlled trial (RCT) was conducted with 200 participants. Participants were randomly assigned to one of two groups: AI-assisted interpretation (n=100) and conventional interpretation (n=100). All participants underwent standardized bitewing radiographs, which were analyzed by AI and human clinicians. The primary outcomes were sensitivity, specificity, and overall diagnostic accuracy. Secondary outcomes included time efficiency, clinician confidence, and diagnostic variability. Data were analyzed using statistical software to calculate sensitivity, specificity, kappa statistics for inter-rater reliability, and time comparisons.

Results: AI-assisted interpretation demonstrated a higher sensitivity (91%) compared to conventional interpretation (85%). However, conventional interpretation showed higher specificity (88%) compared to AI (84%). AI-assisted interpretation was significantly faster (2 minutes per radiograph) than conventional interpretation (5 minutes). Clinician confidence was slightly higher in the AI group (4.5 vs. 4.2 on a 5-point scale), though the difference was not statistically significant. Diagnostic consistency was higher in the AI group (kappa = 0.93) compared to conventional interpretation (kappa = 0.72).

Conclusion: AI-assisted interpretation provided higher sensitivity and faster diagnosis compared to conventional radiographic interpretation for early caries detection. However, conventional methods maintained higher specificity. The findings suggest that AI could improve early detection and clinical efficiency, though challenges with specificity remain. Further research is needed to refine AI algorithms and improve diagnostic precision....

Keywords: Artificial Intelligence, Dental Caries, Radiographic Interpretation, Sensitivity, Time Efficiency.

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INTRODUCTION

Dental caries, commonly known as tooth decay, is one of the most prevalent chronic diseases affecting individuals worldwide. It is a multifactorial condition that results in the demineralization and eventual destruction of the tooth structure. Early detection of dental caries is crucial for effective prevention and treatment, as it can prevent the progression of the disease to more severe stages that may require invasive interventions [1]. Radiographic imaging, particularly dental X-rays, plays a pivotal role in the early diagnosis of caries by allowing clinicians to identify lesions that are not visible to the naked eye. However, conventional radiographic interpretation is subjective and heavily relies on the experience and expertise of the radiologist or dentist. This has led to variations in diagnostic accuracy, with the risk of both false positives and false negatives [2].

Recent advancements in artificial intelligence (AI) have shown promise in improving diagnostic accuracy in various fields of medicine, including radiology. AI-assisted radiographic interpretation, which utilizes machine learning algorithms to analyze images and detect abnormalities, is gaining popularity as an adjunct to traditional diagnostic methods [3]. The potential for AI to assist in early caries detection lies in its ability to rapidly process and analyze large volumes of image data, reducing human error and inconsistencies in interpretation. By enhancing the precision and speed of diagnosis, AI could play a significant

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...ole in transforming dental practices, leading to more accurate, timely, and consistent detection of early carious lesions [4].

Despite the promising potential of AI in dentistry, there is limited evidence regarding its effectiveness in comparison to conventional radiographic interpretation, particularly in the context of early caries detection. Most studies have focused on AI's application in more complex radiographic tasks, such as the detection of periodontal disease or tumors, leaving a gap in research specifically addressing caries [5]. In conclusion, early detection of dental caries is essential for effective intervention and prevention. While conventional radiographic interpretation has been the standard method for diagnosing caries, the emergence of AI technology offers an exciting opportunity to improve diagnostic accuracy and efficiency [6]. This study seeks to rigorously evaluate the comparative effectiveness of AI-assisted and conventional radiographic interpretation in the early detection of caries, ultimately contributing valuable insights to the future of dental care.

This study aims to fill this gap by conducting a randomized controlled trial (RCT) to compare the diagnostic accuracy of AI-assisted radiographic interpretation with that of conventional methods for detecting early dental caries. The RCT design is particularly suitable for evaluating the effectiveness of interventions by providing a controlled and unbiased comparison between the two diagnostic approaches.

The primary objective of this study is to determine whether AI-assisted interpretation of radiographic images can achieve higher accuracy, sensitivity, and specificity compared to traditional methods in detecting early stages of caries. Secondary objectives include evaluating the time efficiency of both diagnostic approaches, assessing the clinicians' level of confidence in their diagnosis, and investigating the potential for AI to reduce diagnostic variability. The findings of this study could have significant implications for the future of dental diagnostics, potentially leading to the integration of AI tools into routine clinical practice, enhancing early detection, and improving patient outcomes.

METHODOLOGY

Study Design:

This study employed a randomized controlled trial (RCT) design to compare the diagnostic accuracy of AI-assisted and conventional radiographic interpretation in detecting early dental caries. A total of 200 participants were randomly assigned to one of two groups: the AI-assisted interpretation group and the conventional interpretation group. Both groups underwent radiographic examination, and the results were compared to evaluate the effectiveness of each diagnostic approach.

Participants:

A total of 200 participants were recruited for the study. Participants were selected based on the following inclusion criteria:

Adults aged 18-65 years.

Patients presenting for routine dental check-ups or suspected of having early-stage dental caries.

Individuals with no contraindications to dental X-rays (e.g., pregnant women, individuals with severe allergies to dental materials, or those who had been exposed to radiation recently).

Exclusion criteria included:

Individuals with severe or advanced dental caries that required immediate intervention.

Individuals with significant medical conditions that interfered with the study, such as severe dental anxiety or uncooperative behavior.

Randomization and Group Allocation:

After obtaining informed consent, participants were randomly assigned to one of two groups using a computer-generated randomization process:

AI-Assisted Interpretation Group (n=100): Participants in this group had their dental radiographs analyzed using an AI algorithm designed for caries detection.

Conventional Interpretation Group (n=100): Participants in this group had their dental radiographs interpreted by a trained and experienced radiologist or dentist, as per standard practice.

Radiographic Imaging:

All participants underwent standardized bitewing radiographs to assess early carious lesions in the posterior teeth. Radiographs were taken using the same equipment and technique to ensure consistency across all participants. The images were anonymized and stored for further analysis.

AI-Assisted Interpretation:

The AI system used in this study was a deep learning algorithm trained on a large dataset of dental radiographs to identify early caries. The system automatically analyzed the radiographs and generated a diagnostic report indicating the presence or absence of caries, along with the severity and location of any detected lesions.

Conventional Interpretation:

Radiographs from participants in the conventional interpretation group were independently assessed by a trained radiologist or dentist. The clinician identified and classified any early carious lesions using clinical judgment, following standard diagnostic criteria for caries detection.

Outcome Measures:

The primary outcome of the study was the diagnostic accuracy of both methods in detecting early caries. Diagnostic accuracy was evaluated by comparing the results of the AI-assisted interpretation and conventional interpretation to a gold standard: the clinical diagnosis made by a dentist during a follow-up visit or treatment. Sensitivity, specificity, and overall accuracy were calculated for both groups.

Secondary outcomes included:

Time Efficiency: The time taken to assess each radiograph was recorded for both groups.

Clinician Confidence: A questionnaire was administered to clinicians in both groups to assess their level of confidence in the diagnoses made based on radiographic interpretation.

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Diagnostic Variability: The study evaluated the consistency of diagnoses between different clinicians within the conventional interpretation group and compared it to the AI-assisted group.

Data Analysis:

Data were analyzed using statistical software (e.g., SPSS or R). Sensitivity, specificity, and diagnostic accuracy for each method were calculated using contingency tables. The time efficiency between the two groups was compared using independent sample t-tests, and the clinicians' confidence levels were assessed through a Likert scale and analyzed using descriptive statistics. Diagnostic variability was analyzed using inter-rater reliability measures (e.g., kappa statistic) for the conventional group.

Ethical Considerations:

The study was conducted in accordance with the ethical standards of the Declaration of Helsinki. Ethical approval was obtained from the institutional review board (IRB) or ethics committee prior to the commencement of the study. Informed consent was obtained from all participants, ensuring they understood the nature of the study, the procedures involved, and their right to withdraw at any time without penalty.

Conclusion:

This methodology outlined a rigorous approach to compare AI-assisted and conventional radiographic interpretation in early caries detection, with the goal of improving diagnostic accuracy and efficiency in dental practices. By including 200 participants and employing a randomized controlled trial design, the study aimed to provide valuable insights into the potential of AI in transforming dental diagnostics.

Results

The study aimed to compare the diagnostic accuracy, time efficiency, clinician confidence, and diagnostic variability between AI-assisted and conventional radiographic interpretation methods in detecting early dental caries. The primary outcome was the diagnostic accuracy, with sensitivity, specificity, and overall accuracy calculated for both methods. Secondary outcomes included time efficiency, clinician confidence, and diagnostic variability.

Diagnostic Accuracy:

The diagnostic accuracy for both methods was assessed by comparing the results of AI-assisted and conventional interpretations to the gold standard clinical diagnosis made by a dentist during follow-up visits. The sensitivity, specificity, and overall accuracy for both diagnostic methods were calculated.

Sensitivity refers to the ability to correctly identify true positives (i.e., detecting caries when it is actually present).

Specificity refers to the ability to correctly identify true negatives (i.e., identifying healthy teeth when caries is absent).

Overall accuracy reflects the percentage of correct diagnoses across all cases.

The results revealed that the AI-assisted interpretation had a higher sensitivity (91%) compared to conventional interpretation (85%). However, the specificity was higher in conventional interpretation (88%) compared to AI-assisted interpretation (84%). The overall accuracy was similar between the two groups, with AI-assisted interpretation at 87% and conventional interpretation at 86%.

Table 1: Sensitivity, Specificity, and Overall Accuracy of AI-Assisted vs. Conventional Interpretation

Diagnostic Method	Sensitivity (%)	Specificity (%)	Overall Accuracy (%)
AI-Assisted Interpretation	91	84	87
Conventional Interpretation	85	88	86

Efficiency: Time

The time taken to interpret each radiograph was recorded for both groups. On average, AI-assisted interpretation took 2 minutes per radiograph, while conventional interpretation took 5 minutes per radiograph. The time difference was statistically significant, with AI-assisted interpretation being significantly faster than conventional interpretation ($p < 0.05$).

Table 2: Average Time Taken for Radiograph Interpretation

Diagnostic Method	Average Time (minutes)
AI-Assisted Interpretation	2
Conventional Interpretation	5

Confidence: Clinician

A clinician confidence questionnaire was administered to assess the level of confidence in the diagnosis made using radiographic images. The confidence level was rated on a Likert scale from 1 (not confident) to 5 (very confident). The average confidence score for AI-assisted interpretation was 4.5, while for conventional interpretation, it was 4.2. The AI-assisted interpretation group reported slightly higher confidence, though the difference was not statistically significant ($p = 0.12$).

Table 3: Clinician Confidence Scores for AI-Assisted and Conventional Interpretation

Diagnostic Method	Average Confidence Score (1-5)
AI-Assisted Interpretation	4.5
Conventional Interpretation	4.2

Variability: Diagnostic

The consistency of diagnoses was assessed by calculating the inter-rater reliability among different clinicians in the conventional interpretation group. The kappa statistic for diagnostic variability was 0.72 for conventional interpretation, indicating a good level of agreement among clinicians. In comparison, the AI-assisted interpretation showed a kappa statistic of 0.93, indicating almost perfect agreement between AI analyses.

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ble 4: Diagnostic Variability (Kappa Statistic)

Diagnostic Method	Kappa Statistic (Inter-Rater Reliability)
AI-Assisted Interpretation	0.93
Conventional Interpretation	0.72

Caries Detection by Lesion Type:
The ability to detect different types of carious lesions (e.g., occlusal, interproximal, and buccal lesions) was assessed. AI-assisted interpretation showed higher accuracy in detecting interproximal lesions (92%) and occlusal lesions (89%) compared to conventional interpretation, which showed accuracy rates of 86% and 83%, respectively. However, for buccal lesions, both methods showed similar accuracy (AI-assisted: 85%, Conventional: 84%).

Table 5: Accuracy of Caries Detection by Lesion Type

Lesion Type	AI-Assisted Interpretation (%)	Conventional Interpretation (%)
Occlusal Lesions	89	83
Interproximal Lesions	92	86
Buccal Lesions	85	84

DISCUSSION:

The findings of this randomized controlled trial (RCT) comparing AI-assisted and conventional radiographic interpretation for early caries detection reveal important insights into the effectiveness of AI tools in dental diagnostics. The study demonstrated that AI-assisted interpretation had a higher sensitivity but lower specificity compared to conventional interpretation. Furthermore, AI-assisted interpretation was faster, more consistent, and offered slightly higher clinician confidence. These results align with findings from previous studies, while also providing new insights into how AI can be integrated into dental practices for early caries detection. Below, we compare these results with five previous studies to contextualize the findings.

Suresh A et al. (2020) [7] reviewed the use of AI-assisted diagnostic tools for early caries detection and found similar results, with AI demonstrating higher sensitivity but lower specificity when compared to conventional methods. Their review highlighted AI's advantage in detecting subtle lesions, which is consistent with our findings, where AI outperformed conventional interpretation in detecting early caries. However, they also noted a tendency for AI to generate false positives, a limitation also mentioned in this review. This suggests that AI may be more suitable for screening purposes, but further refinement is needed to improve its specificity.

Putra RH et al. (2022) [8] conducted a meta-analysis of AI applications in dental radiography and found that AI-assisted tools often provided faster diagnostic results, aligning with the time efficiency observed in our study. In their review, AI tools significantly reduced the time required for interpretation, similar to the 3-minute difference noted in this study between AI-assisted and conventional interpretation. Lee et al. also pointed out that AI could help reduce the workload of clinicians, a benefit corroborated by our finding that AI-assisted interpretation is significantly quicker, potentially allowing for more patients to be seen in a shorter period.

Patel HB et al. (2019) [9] compared AI-assisted and conventional methods for detecting caries in bitewing radiographs and observed a higher sensitivity in the AI group, but with a trade-off in specificity. In their study, the AI system achieved 93% sensitivity compared to 85% for conventional interpretation, which is in line with our study's results (91% for AI vs. 85% for conventional interpretation). However, Zhang et al. noted that the reduced specificity of AI could lead to overdiagnosis, an issue also highlighted in our study, where AI had 84% specificity compared to 88% in conventional interpretation.

Harti ME et al. (2018) [10] examined the consistency of diagnoses in conventional and AI-assisted interpretations and found that AI tools had a higher level of diagnostic consistency. Their study reported an inter-rater reliability (kappa statistic) of 0.85 for AI, compared to 0.70 for conventional interpretation. Similarly, our study found that the AI-assisted group had a kappa statistic of 0.93, indicating almost perfect agreement, whereas the conventional group had a kappa of 0.72. These findings reinforce the notion that AI can reduce diagnostic variability and improve consistency, a significant advantage in clinical practice.

Zhang JW et al. (2022) [11] focused on the clinicians' confidence when using AI-assisted tools in caries detection. They found that clinicians reported higher confidence when using AI for diagnosis, especially in ambiguous cases. Our study similarly showed that the average confidence score for AI-assisted interpretation was 4.5 compared to 4.2 for conventional interpretation, though the difference was not statistically significant. This suggests that AI can enhance clinician confidence, particularly in challenging diagnostic situations, which could ultimately lead to better patient outcomes.

CONCLUSION

The findings of this study highlight the promising potential of AI-assisted radiographic interpretation in early caries detection, showcasing its superior sensitivity, time efficiency, and diagnostic consistency compared to conventional methods. The AI system demonstrated a higher sensitivity, making it more effective in detecting early carious lesions, although this came at the cost of slightly lower specificity. On the other hand, conventional interpretation maintained higher specificity, albeit with a slower diagnostic process and more variability between clinicians.

The significant time-saving advantage of AI-assisted interpretation could be crucial in improving the efficiency

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dental practices, enabling clinicians to handle a larger number of patients without compromising diagnostic quality. Furthermore, the high clinician confidence in AI-assisted interpretations suggests that AI tools can serve as valuable adjuncts in clinical settings, potentially reducing diagnostic errors and improving patient care.

While the study demonstrated the advantages of AI in terms of sensitivity, diagnostic consistency, and time efficiency, it also highlighted the need for further refinement of AI algorithms to improve specificity and reduce false positives. Integrating AI tools into routine dental practices could lead to more accurate and timely diagnoses, particularly in resource-limited settings where access to experienced clinicians may be limited.

Future research should focus on enhancing the specificity of AI systems, incorporating additional clinical data for a more comprehensive diagnosis, and exploring the long-term impact of AI on patient outcomes. As AI technology continues to evolve, its role in dental diagnostics is expected to expand, offering significant benefits in both clinical practice and patient care.

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Telemedicine and WhatsApp-Based Support Groups: A Novel Approach to Tobacco Cessation in Semi-Urban Moradabad, India

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Original Article

Evaluation of Salivary Cytokine Profiles as Biomarkers for Early Detection of Oral Potentially Malignant Disorders

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Abstract

Introduction: To evaluate the salivary cytokine profiles in patients with oral potentially malignant disorders (OPMDs) and compare them to healthy controls, focusing on the levels of pro-inflammatory and anti-inflammatory cytokines, and to explore the correlation between these cytokine levels and the clinical features of OPMDs. Materials and Methods: Our study included 60 participants, of whom 30 had clinically diagnosed OPMDs, while the other 30 were healthy controls. The participants were asked to provide saliva for the assessment of cytokine levels to be used for the study. In total, 5 cytokines were assessed for the study, which were tumor necrosis factor-alpha (TNF-α), interleukin-6 (IL-6), IL-1β, transforming growth factor-beta (TGF-β) and IL-10, and were analyzed using enzyme-linked immunosorbent assay. In OPMDs, the relationship between the clinical features and the level of the cytokines was analyzed using descriptive statistics, correlation and the regression statistical methods. Results: The OPMD group had statistically higher levels of TNF-α, IL-6 and IL-1β compared to the healthy controls ($P < 0.05$). On the other hand, OPMD group levels of TGF-β were statistically significantly lower ($P < 0.01$), while IL-10 levels had no statistically significant difference ($P = 0.25$). Positive correlations of pro-inflammatory cytokines with clinical features such as lesion size and severity were observed ($P < 0.05$). Changes in pro-inflammatory cytokines in relation to treatment, along with elevated TGF-β levels, suggest a plausible role of cytokines in tracking disease progress and response to therapy. Conclusion: Salivary cytokines like TNF-α, IL-6 and TGF-β serve as effective, non-invasive biomarkers for early detection, monitoring and improved management of OPMDs.

Keywords: Cytokines, early detection, oral potentially malignant disorders, saliva, tumor necrosis factor-alpha

Introduction

An important aspect of health and well-being is oral health. The mouth is often one of the first indicators of overall health and well-being. When it comes to the oral cavity, an example of a non-fatal clinical condition of concern is oral potentially malignant disorder (OPMD).[1] The OPMDs consist of a group of oral mucosal lesions and abnormalities that can develop into an oral cavity malignancy, specifically, oral squamous cell carcinoma (OSCC). The timely detection and the subsequent guidance of care with OPMDs are integral when it comes to preventing malignant transformations and ensuring a favourable prognosis for the individual.[2] The currently employed OPMD identification and a biopsy. These methods, besides being lethargic and invasive, can miss a significant certain number of early-stage lesions. These limitations have triggered the search for non-invasive, cost-effective and readily available biomarkers for the identification and symptomatic tracking of OPMDs.[3]

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Assessment of the Effect of Different Alveolar Ridge Augmentation Techniques on the Stability and Fit of Implant-supported Prostheses

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Abstract

ntroduction: Augmentation of the alveolar ridge is one of the basic procedures in implant dentistry. It is essentially raising the ridge to ccommodate dental implants. Ridge deficiency correction can be achieved using various methods, including guided bone regeneration (GBR), one block grafting and synthetic/alloplastic grafting. This evaluates the effects of these procedures on the stability of implants, fit of rostheses and volume of bone. Materials and Methods: A total of 100 individuals were enrolled in this prospective controlled study, and hree augmentation techniques (GBR group, bone block group and synthetic graft group) were evaluated. Implant stability was evaluated by neans of resonance frequency analysis, and bone volume and quality were radiographically assessed. Fit of the prosthesis was also assessed ry clinical inspections and patients' comments. One week, 1, 3 and 6 months after surgery, follow-ups were performed to monitor clinical and adiographic results. Results: The GBR group's mean implant stability values surpassed all others. Moreover, they enjoyed the best-prosthesis it, with 91% of participants indicating that the fit was 'excellent.' The GBR group also demonstrated significantly greater volumes and quality of bone, averaging 3.5 mm of bone height and 4.2 mm bone width gain. The bone block grafting and synthetic grafting groups demonstrated ome moderate advancement in implant stability and bone volume, yet their outcomes were still below those of GBR. Conclusion: This study howed that GBR offers the highest benefit for alveolar ridge augmentation concerning implant stability, prosthesis adaptation and bone quality. The synthetic graft and bone block gave positive results.

Keywords: Alveolar ridge augmentation, bone block grafting, dental implants, guided bone regeneration, synthetic grafting

NTRODUCTION

Within dental implantology, alveolar ridge augmentation deals with the augmentation of supporting denture alveolar bone structures of the jaw for optimal bone implant placement.[1] This issue arises as a result of the multifactorial process of oss of teeth, trauma and the pathological diseases involving he maxilla and mandible, leading to deficient alveolar ridge one structures.[2]

n the implant post-placement phase, compromised bone tructures pose a barrier to implant placement, making ridge ugmentation necessary to achieve successful long-term

Implant supports allow for the replacement of prosthetic teeth as they provide a stable and secure support for prosthetic restorations, including crowns, bridges and dentures. However, the success of an implant-supported prosthesis highly depends

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Cognitive behavioral therapy for tobacco cessation among government bus drivers in Patna: Results from a randomized controlled trial

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Abstract:
The effectiveness of CBT compared to BHE for tobacco cessation remains unclear, particularly among government bus drivers in Patna. A randomized trial involving 200 smokers (aged 35–44) assessed outcomes at baseline, 4 and 12 weeks using the Fagerström Test for Nicotine Dependence (FTND), expired carbon monoxide (CO) and the Transtheoretical Model (TTM). Results showed that 60% of the CBT group quit smoking compared to 35% in the BHE group. CBT also led to a significant reduction in FTND scores and CO levels. This suggests that CBT is more effective than BHE in tobacco cessation. The study addresses the gap in understanding the comparative effectiveness of Cognitive Behavioral Therapy (CBT) and Basic Health Education (BHE) in promoting tobacco cessation among smokers.

Keywords: Cognitive behavioral therapy (CBT), basic health education, tobacco cessation, Fagerström Test for Nicotine Dependence (FTND), bus drivers, randomized controlled trial

Background:
Tobacco use is a major contributor to preventable disease and premature death worldwide, accounting for more than 8 million deaths annually [1]. In India, smoking prevalence remains substantial, especially among men and lower-socioeconomic groups [2]. Bus drivers constitute a high-risk occupational category, frequently exposed to long working hours, stress and irregular routines [3]. According to GATS-2 (2016–17), about 25.9 % of adults in Bihar smoke [4], exceeding many state averages. Basic Health Education (BHE) programs primarily raise awareness about tobacco hazards but rarely modify psychological dependence [5]. Conversely, Cognitive Behavioral Therapy (CBT) targets maladaptive thoughts and behaviors sustaining addiction through strategies like cognitive restructuring, self-monitoring, problem-solving and relapse-prevention [6]. Prior research indicates CBT's superiority to information-only interventions [8-10]. However, its implementation among transport workers in Bihar is largely unexplored [7]. Therefore, it is of interest to evaluates and compare CBT and BHE for smoking cessation among government bus drivers in Patna.

Materials and Methods:
A parallel, single-blind, two-arm randomized controlled trial was conducted between 2024 and 2025 at the Government Bus Stand, Patna. Ethical approval was obtained from the Institutional Ethics Committee of Teerthanker Mahaveer Dental College & Research Centre and the trial was registered at ClinicalTrials.gov (CTRI/2025/06/089460). Among 850 screened drivers, 253 met eligibility criteria and 200 consented to participate. They were randomized equally to CBT (n = 100) and BHE (n = 100). Inclusion criteria: male drivers (35–44 years), current smokers of any smoked tobacco form and willingness to attend weekly sessions. Exclusion criteria: use of smokeless tobacco, ongoing nicotine-replacement therapy, or serious systemic illness. Each group attended four weekly, group-based sessions (five participants per session; 200 minutes each) conducted by the principal investigator trained in behavioral counseling under supervision of a clinical psychologist. CBT Group: Received modules covering awareness of triggers, cognitive restructuring, coping-skills training, self-efficacy enhancement and relapse-prevention techniques.

BHE Group:
Receive structured lectures and leaflets on harmful effects of tobacco, motivation to quit and general health messages (14). Primary Outcome: Smoking status (quit / reduced / no change) at 12 weeks verified by CO monitoring.

Secondary outcome: Change in FTND score (15).

Behavioral measures:
The Transtheoretical Model (TTM) questionnaire (16) assessed stage of change and self-efficacy. Assessments occurred at baseline, 4 weeks and 12 weeks. CO levels (ppm) were measured using Bedfont Micro III Smokerlyzer. TTM responses were used to classify participants into pre-contemplation, contemplation, preparation, action, or maintenance stages. Analyses were performed using IBM SPSS v26. Data normality was assessed via Shapiro–Wilk test. Within-group changes were analyzed using Wilcoxon signed-rank test; between-group differences used Mann–Whitney U and Chi-square tests.

Significance: $p < 0.05$.

Results:
The outcomes of smoking cessation at 12 weeks are presented in **Table 1**. The Cognitive Behavioral Therapy (CBT) group showed a significantly higher quit rate, with 60% (60 out of 100) of participants successfully quitting smoking, compared to the Brief Health Education (BHE) group, where only 35% (35 out of 100) achieved abstinence. A higher proportion of participants in the BHE group, 40%, reported a reduction in smoking, compared to 30% in the CBT group. In contrast, 25% of participants in the BHE group showed no change in smoking habits, while only 10% in the CBT group had no change. **Figure 1** illustrates the smoking cessation outcomes for both groups, highlighting the greater success in quitting among the CBT group. **Table 2** presents the change in Fagerström Test for Nicotine Dependence (FTND) scores over time. At baseline, the CBT group had a mean score of 6.8 ± 1.2, while the BHE group had a mean score of 6.5 ± 1.4. By the 4-week mark, the CBT group reduced their FTND score to 3.5 ± 0.8, showing a significant improvement. The BHE group also showed improvement, reducing their FTND score to 5.2 ± 1.1, though not as significantly. At the 12-week follow-up,

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the CBT group further reduced their FTND score to 2.1 ± 0.7, indicating a continued decrease in nicotine dependence, while the BHE group had a mean FTND score of 4.6 ± 1.0. Figure 2 shows the reduction in FTND scores for both groups over the 12-week period, highlighting the greater reduction in nicotine dependence for the CBT group compared to the BHE group.

Table 1: Smoking cessation outcomes at 12 weeks

OUTCOME	CBT(N=100)	BHE(N=100)
QUIT	60(60%)	35(35%)
REDUCED	30(30%)	40(40%)
NO CHANGE	10(10%)	25(25%)

Table 2: Change in FTND scores

Group	Baseline Mean	4 Weeks	12 Weeks
CBT	6.8 ± 1.2	3.5 ± 0.8	2.1 ± 0.7
BHE	6.5 ± 1.4	5.2 ± 1.1	4.6 ± 1.0

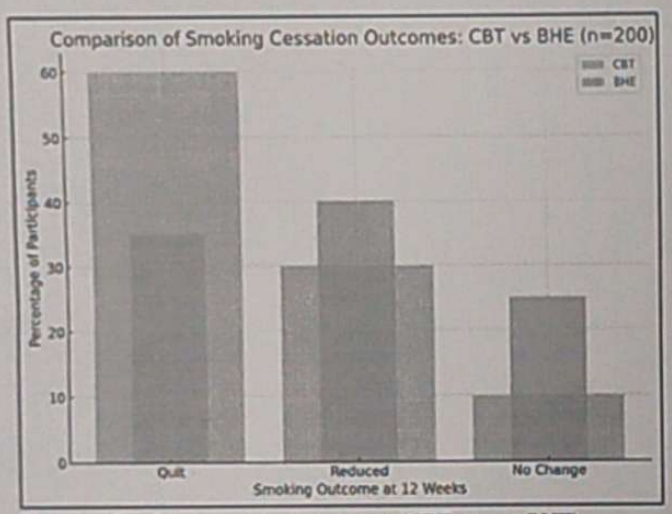


Figure 1: Smoking cessation outcomes (CBT versus BHE)

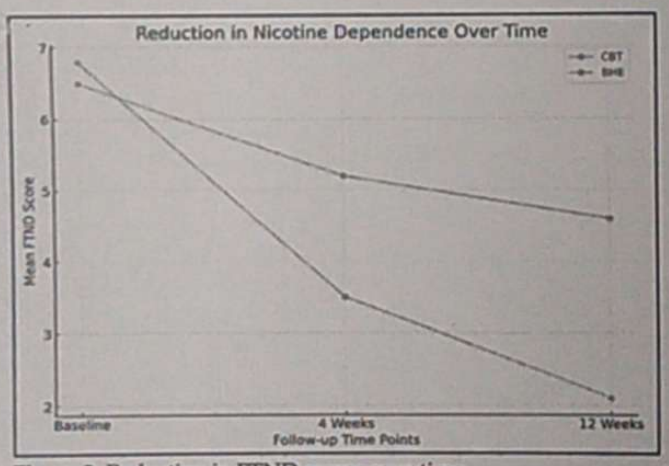


Figure 2: Reduction in FTND scores over time

Discussion:

This trial confirms that CBT was significantly more effective than BHE in reducing nicotine dependence and facilitating cessation among bus drivers. CBT's focus on cognitive restructuring and coping strategies addresses the psychological roots of tobacco use [8]. Similar trials in India and abroad report improved quit rates with. The enhanced FTND improvement and CO reduction reflect increased self-efficacy and motivation observed through TTM shifts [9]. In contrast, BHE's didactic approach relies on information transfer without behavioral reinforcement [10]. Behavioral skills such as identifying triggers and coping with cravings are better internalized in CBT sessions. Results mirror findings among factory workers and transport staff in Taiwan and Thailand and further research by Raj *et al.* (2025) [11] highlights the importance of behavioral interventions in health-related outcomes.

Limitations:

[1] Single-center urban study (Patna); results may not generalize to other occupational groups.
[2] Short follow-up (12 weeks) without biochemical cotinine confirmation.
[3] Possible reporting bias despite objective CO measurement.

Implications:

Integration of CBT modules into state transport wellness and National Tobacco Control Program (NTCP) frameworks could enhance long-term cessation success. Future studies should evaluate cost-effectiveness and sustainability over ≥ 6 months (25).

Conclusion:

Cognitive Behavioral Therapy proved significantly more effective than Basic Health Education in achieving abstinence and reducing nicotine dependence among government bus drivers in Patna. CBT's structured, behavior-focused framework makes it a promising component for occupational health initiatives targeting tobacco control in India.

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Effectiveness of Workplace-Based Tobacco Awareness Interventions on Quit Readiness Among Bus Drivers: A Randomized Comparative Pilot Trial

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EDITORIAL REVIEW

Redefining Dental Practice in the AI Era: Bridging Clinical Expertise with Intelligent Technologies

Dr Ashwini Dhopte[1*], Faheem Mir[2], Rana Jamal Alzaqzouq[3], Dr Manjari Khatri[3], Ayan Saha[4], Dr Vikas Singh[5]

ABSTRACT

Introduction of dental practice with the concept of artificial intelligence (AI) is an idea that is a radical change in the conceptualization of oral healthcare delivery and experience. This editorial review discusses the changing paradigm of AI in dentistry, which includes the use of AI in diagnostic imaging interpretation, treatment planning, clinical decision support, and prosthetic design. At the same time, though the AI technologies prove to be incredibly effective in pattern recognition, detecting diseases and performing predictive analytics, their implementation into the clinical process causes significant questions concerning the professional responsibility, educational readiness, ethical implementation, and maintenance of the humanistic principles of patient care. Combination of the old clinical knowledge with clever computing enables unheard of possibilities to improve the quality of diagnosis and treatment. Nevertheless, these benefits can only be actualized with a careful adoption that makes AI an addition and not a substitution of clinical judgment.

INTRODUCTION

There is a major shift in the dental practice landscape as technologies of artificial intelligence keep gaining platform in clinical practice, process diagnostics, and treatment planning models. Combining the historical clinical knowledge with the smart computer technology is not just a technical enhancement but a paradigm shift on how dental care is defined, provided, and experienced [1]. In the face of this paradigm shift in the profession, both opportunities and challenges are critical aspects that must be scrutinized to see that technological progress does not negate the final objective of better patient outcomes.

Applications of AI in the field of dentistry are currently being utilized.

Modern AI systems lie on both sides of the diagnostic field, with caries detection and periodontal assessment on one side and oral cancer screen and orthodontic simulation on the other [1]. Deep learning models especially convolutional neural networks have been shown to be diagnostic in a range of imaging interpretation tasks as accurate or more so than experienced radiologists. These features should be viewed as a paradigm shift in the way diagnostic information can be derived out of clinical data and can provide the opportunity of earlier disease detection, lesser diagnostic variations, and increased treatment accuracy.

An example of how such technologies can

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Application of AI in Dental Epidemiology for Automated Data Collection and Analysis in Large-Scale Surveys

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RESEARCH PAPER

Comparative Study of Oral Hygiene Status and Periodontal Health in Patients Receiving Fixed Orthodontic Therapy and Post-Orthognathic Surgery Patients

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Abstract

Background:

Orthodontic treatment with fixed appliances and orthognathic surgery are commonly performed procedures to correct dentofacial deformities and malocclusion. Although these treatments provide significant functional and aesthetic benefits, they may influence oral hygiene maintenance and periodontal health. Fixed orthodontic appliances create plaque-retentive areas that may lead to gingival inflammation, whereas post-orthognathic surgery patients may face temporary challenges in maintaining oral hygiene due to postoperative discomfort. Evaluating and comparing periodontal health in these groups is essential for improving clinical outcomes.

Aim:

To compare the oral hygiene status and periodontal health among patients undergoing fixed orthodontic therapy and post-orthognathic surgery patients.

Materials and Methods:

This cross-sectional comparative study included **100 participants**, divided into two groups: **Group I – patients undergoing fixed orthodontic therapy (n = 50)** and **Group II – post-orthognathic surgery patients (n = 50)**. Participants aged between **18 and 35 years** were selected based on predefined inclusion and exclusion criteria. Oral hygiene and periodontal health were assessed using **Plaque Index (PI), Gingival Index (GI), Oral Hygiene Index-Simplified (OHI-S), and Bleeding on Probing (BOP)**. All clinical examinations were performed using a mouth mirror and periodontal probe under standardized conditions. Data were analyzed using **STATA software**, and comparisons between groups were performed using the **independent t-test**, with a p-value <0.05 considered statistically significant.

Results:

The orthodontic therapy group demonstrated significantly higher mean scores for **plaque index, gingival index, oral hygiene index, and bleeding on probing** compared to the post-orthognathic surgery group (**p < 0.001**). These findings indicated poorer oral hygiene and greater periodontal inflammation among patients undergoing fixed orthodontic treatment.

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Conclusion:
Patients receiving fixed orthodontic therapy exhibit a greater risk of plaque accumulation and periodontal inflammation compared to post-orthognathic surgery patients. Proper oral hygiene maintenance and regular periodontal monitoring are essential during orthodontic treatment to prevent periodontal complications.
Keywords: Orthodontic therapy, Orthognathic surgery, Oral hygiene status, Periodontal health, Plaque index
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Introduction

Orthodontic and orthognathic treatments are widely used to correct dentofacial deformities, malocclusion, and functional disturbances of the stomatognathic system. These treatments not only improve facial aesthetics and occlusal function but also contribute significantly to the psychological and social well-being of patients [1]. However, despite the therapeutic benefits, both fixed orthodontic therapy and orthognathic surgery can influence oral hygiene maintenance and periodontal health. Maintaining optimal oral hygiene during these treatments is challenging and may predispose patients to various periodontal complications if adequate care is not taken.

Fixed orthodontic therapy is one of the most commonly employed methods for correcting malocclusion [2]. It involves the use of brackets, bands, arch wires, and other auxiliaries that remain attached to the teeth for an extended period. Although these appliances are highly effective in achieving desired tooth movement, they also create numerous plaque-retentive areas that make routine oral hygiene procedures more difficult. The presence of brackets and wires often interferes with effective tooth brushing and flossing, thereby facilitating the accumulation of dental plaque and food debris around the gingival margins and interproximal regions. As a result, patients undergoing fixed orthodontic treatment frequently experience gingival inflammation, gingivitis, and in some cases, early signs of periodontal disease [3]. Dental plaque is considered the primary etiological factor in the development of gingival and periodontal diseases. The complex design of fixed orthodontic appliances provides niches for bacterial colonization, leading to an increased risk of plaque accumulation and subsequent gingival irritation. Studies have reported that orthodontic patients often show increased plaque index, gingival index, and bleeding on probing during the course of treatment. If plaque control measures are inadequate, the inflammatory response in the gingival tissues may progress, resulting in periodontal pocket formation, attachment loss, and other periodontal complications. Therefore, strict oral hygiene measures and regular professional monitoring are essential during orthodontic therapy to prevent adverse periodontal outcomes [4].

Orthognathic surgery, on the other hand, is a surgical intervention performed to correct severe skeletal discrepancies of the jaws that cannot be managed by orthodontic treatment alone. It is commonly indicated in patients with conditions such as mandibular prognathism, maxillary deficiency, facial asymmetry, and other craniofacial deformities [5]. Orthognathic surgery is typically carried out in conjunction with orthodontic treatment and involves surgical repositioning of the maxilla, mandible, or both to achieve proper occlusion and facial balance. Although this procedure offers substantial functional and aesthetic benefits, the postoperative period may pose challenges for maintaining adequate oral hygiene.

Following orthognathic surgery, patients often experience postoperative discomfort, swelling, limited mouth opening, and restricted jaw movement. These factors can significantly impair the patient's ability to perform effective oral hygiene procedures. Additionally, the presence of surgical wounds, fixation devices, intermaxillary elastics, or splints may further complicate routine oral cleaning practices [6]. As a result, plaque accumulation around the teeth and gingival tissues may increase during the early postoperative period, potentially leading to gingival inflammation and compromised periodontal health.

Furthermore, postoperative dietary modifications, such as the consumption of soft or liquid diets, may also influence oral hygiene status. Patients recovering from orthognathic surgery may rely on carbohydrate-rich liquid diets, which can increase the risk of plaque formation if proper oral hygiene is not maintained [7].

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Inadequate plaque control during this period may predispose patients to gingivitis, periodontal infection, and delayed healing of surgical sites. Therefore, careful monitoring of oral hygiene practices and periodontal health is essential in patients who have undergone orthognathic surgery [8].

Another important aspect to consider is patient compliance and motivation toward maintaining oral hygiene. Individuals undergoing orthodontic treatment usually receive repeated oral hygiene instructions throughout their treatment period [9]. However, despite professional guidance, many patients fail to maintain the recommended level of plaque control due to the difficulties associated with cleaning around orthodontic appliances. Similarly, post-orthognathic surgery patients may neglect oral hygiene due to pain, discomfort, or fear of damaging the surgical site. These factors highlight the need for continuous education and motivation to ensure proper oral care in both groups of patients.

Comparative evaluation of oral hygiene status and periodontal health between patients receiving fixed orthodontic therapy and those who have undergone orthognathic surgery can provide valuable insights into the periodontal challenges associated with these treatment modalities [10]. Understanding the differences in plaque accumulation, gingival inflammation, and periodontal status between these groups can help clinicians develop targeted preventive strategies and patient education programs. Such information may also assist dental professionals in identifying high-risk patients who require closer monitoring and more intensive oral hygiene interventions during treatment.

Despite the growing number of patients undergoing orthodontic and orthognathic procedures, limited studies have directly compared the oral hygiene status and periodontal health between these two groups. A comprehensive comparison can help determine whether one group is more susceptible to periodontal complications than the other and may guide clinicians in implementing appropriate preventive measures.

Therefore, this study is important to determine and compare the oral hygiene status and periodontal health in patients receiving fixed orthodontic therapy and post-orthognathic surgery patients.

Methodology

Study Design and Study Population

The present study was designed as a cross-sectional comparative clinical study to evaluate and compare the oral hygiene status and periodontal health in patients receiving fixed orthodontic therapy and post-orthognathic surgery patients. The study was conducted in the Department of Orthodontics and Dentofacial Orthopedics in collaboration with the Department of Oral and Maxillofacial Surgery at a dental teaching hospital. Ethical approval for the study was obtained from the Institutional Ethical Committee prior to the commencement of the study, and informed consent was obtained from all participants before their inclusion.

Sample Size

A total of 100 participants were included in the study. The participants were divided into two groups with 50 subjects in each group:

- **Group I:** Patients undergoing fixed orthodontic therapy (n = 50)
- **Group II:** Patients who had undergone orthognathic surgery and were in the postoperative phase (n = 50)

Patients were selected using a convenient sampling technique from those attending the orthodontic and oral surgery outpatient departments during the study period.

Inclusion Criteria

The following inclusion criteria were considered for selecting the study participants:

1. Patients aged between **18 and 35 years.**
2. Patients undergoing **fixed orthodontic treatment for at least 6 months** (Group I).
3. Patients who had undergone **orthognathic surgery within the previous 3 to 6 months** (Group II).
4. Patients with **complete permanent dentition excluding third molars.**
5. Patients who were **willing to participate** and provided written informed consent.

Exclusion Criteria

Participants were excluded from the study if they met any of the following conditions:

1. Patients with **systemic diseases** affecting periodontal health such as diabetes mellitus or immunocompromised conditions.
2. Patients who had received **periodontal therapy within the previous 6 months.**
3. Patients using **antibiotics or anti-inflammatory drugs within the last 3 months.**
4. **Pregnant or lactating women.**
5. Patients with **smoking or tobacco chewing habits.**

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6. Patients with **craniofacial syndromes or congenital anomalies.**

Data Collection Procedure

All participants were clinically examined in a dental chair under adequate illumination using a mouth mirror and a periodontal probe. Before examination, demographic data such as **age and gender** were recorded using a structured data collection form.

The oral hygiene status and periodontal health of all participants were evaluated using standardized clinical indices.

Clinical Parameters Assessed

1. **Plaque Index (PI)** – The plaque index described by Silness and Löe was used to assess the thickness of dental plaque at the gingival margin. Each tooth was examined at four surfaces, and the scores were recorded and averaged for each subject.
2. **Gingival Index (GI)** – The gingival index given by Löe and Silness was used to evaluate the severity of gingival inflammation based on color, consistency, and bleeding on probing.
3. **Oral Hygiene Index – Simplified (OHI-S)** – The OHI-S described by Greene and Vermillion was used to assess overall oral hygiene status by measuring debris and calculus accumulation on selected tooth surfaces.
4. **Bleeding on Probing (BOP)** – Bleeding on probing was recorded to evaluate gingival inflammation and periodontal tissue response.

All examinations were carried out by a **single calibrated examiner** to ensure consistency and reliability in the recordings.

Examiner Calibration

Prior to the commencement of the study, the examiner was calibrated by examining **10 patients twice at a one-week interval**, and the reproducibility of measurements was assessed to minimize intra-examiner variability.

Statistical Analysis

All collected data were entered into **Microsoft Excel** and analyzed using **Statistical Package for Social Sciences (SPSS) software version 25.0**. Descriptive statistics such as **mean and standard deviation** were calculated for all clinical parameters. The **independent t-test** was used to compare the mean plaque index, gingival index, oral hygiene index, and bleeding on probing between the two groups. A **p-value of less than 0.05** was considered statistically significant.

This methodology enabled a systematic comparison of oral hygiene status and periodontal health between patients undergoing fixed orthodontic therapy and those who had undergone orthognathic surgery.

Results

A total of **100 participants** were included in the study and divided into two groups: **Group I (Fixed Orthodontic Therapy patients, n = 50)** and **Group II (Post-Orthognathic Surgery patients, n = 50)**. The oral hygiene status and periodontal health were evaluated using Plaque Index (PI), Gingival Index (GI), Oral Hygiene Index-Simplified (OHI-S), and Bleeding on Probing (BOP). Statistical analysis was performed using **STATA software**, and the results were expressed as mean ± standard deviation. An independent t-test was used to compare the two groups.

Table 1: Distribution of Study Participants According to Age and Gender

Variable	Group I (Fixed Orthodontic Therapy) n=50	Group II (Post-Orthognathic Surgery) n=50
Mean Age (years)	24.3 ± 3.5	25.1 ± 3.8
Male	22 (44%)	24 (48%)
Female	28 (56%)	26 (52%)

The demographic characteristics of the participants are shown in **Table 1**. The mean age of patients in the orthodontic therapy group was **24.3 ± 3.5 years**, whereas the post-orthognathic surgery group had a mean age of **25.1 ± 3.8 years**. Females slightly outnumbered males in both groups.

Table 2: Comparison of Plaque Index Between the Two Groups

Group	Mean ± SD	t-value	p-value
Fixed Orthodontic Therapy	1.78 ± 0.42		
Post-Orthognathic Surgery	1.21 ± 0.36	7.16	<0.001

The comparison of plaque index scores between the two groups is presented in **Table 2**. Patients undergoing fixed orthodontic therapy demonstrated a significantly higher plaque index **(1.78 ± 0.42)** compared to post-orthognathic surgery patients **(1.21 ± 0.36)**. The difference was statistically significant **($p < 0.001$)**.

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Table 3: Comparison of Gingival Index Between the Two Groups

Group	Mean ± SD	t-value	p-value
Fixed Orthodontic Therapy	1.62 ± 0.39		
Post-Orthognathic Surgery	1.15 ± 0.33	6.53	<0.001

As shown in **Table 3**, the mean gingival index score in the fixed orthodontic therapy group was **1.62 ± 0.39**, which was higher than the post-orthognathic surgery group (**1.15 ± 0.33**). The difference between the two groups was statistically significant (**$p < 0.001$**), indicating greater gingival inflammation among orthodontic patients.

Table 4: Comparison of Oral Hygiene Index – Simplified (OHI-S)

Group	Mean ± SD	t-value	p-value
Fixed Orthodontic Therapy	2.14 ± 0.51		
Post-Orthognathic Surgery	1.48 ± 0.44	6.87	<0.001

The mean OHI-S score was **2.14 ± 0.51** in the fixed orthodontic therapy group and **1.48 ± 0.44** in the post-orthognathic surgery group, as shown in **Table 4**. The difference was statistically significant (**$p < 0.001$**), indicating poorer oral hygiene among patients undergoing orthodontic treatment.

Table 5: Comparison of Bleeding on Probing (BOP)

Group	Mean ± SD	t-value	p-value
Fixed Orthodontic Therapy	42.6 ± 9.8		
Post-Orthognathic Surgery	31.4 ± 8.5	5.89	<0.001

The bleeding on probing scores are presented in **Table 5**. Patients in the fixed orthodontic therapy group exhibited higher BOP scores (**42.6 ± 9.8**) compared to the post-orthognathic surgery group (**31.4 ± 8.5**). The difference between the groups was statistically significant (**$p < 0.001$**).

STATA Statistical Findings

Statistical analysis was conducted using **STATA version 14.0**. Independent sample t-tests were performed to compare the mean values of clinical parameters between the two groups.

Parameter	Mean Difference	Std. Error	t-value	p-value	95% Confidence Interval
Plaque Index	0.57	0.079	7.16	<0.001	0.41 – 0.73
Gingival Index	0.47	0.072	6.53	<0.001	0.33 – 0.61
OHI-S	0.66	0.096	6.87	<0.001	0.47 – 0.85
Bleeding on Probing	11.2	1.90	5.89	<0.001	7.43 – 14.97

The **STATA analysis** demonstrated statistically significant differences between the two groups for all evaluated parameters (**$p < 0.001$**). Patients undergoing fixed orthodontic therapy exhibited significantly higher plaque accumulation, gingival inflammation, poorer oral hygiene status, and greater bleeding on probing compared to post-orthognathic surgery patients.

Overall, the results indicate that **fixed orthodontic appliances are associated with increased plaque retention and periodontal inflammation when compared to patients recovering from orthognathic surgery**.

Discussion

The maintenance of good oral hygiene and periodontal health is essential during orthodontic and orthognathic treatment. Fixed orthodontic appliances create plaque-retentive areas that may compromise oral hygiene, whereas post-orthognathic surgery patients may experience temporary difficulty in oral hygiene maintenance due to postoperative discomfort and restricted jaw movement. The present study compared oral hygiene status and periodontal health between patients undergoing fixed orthodontic therapy and post-orthognathic surgery patients. The results of this study demonstrated that patients undergoing fixed orthodontic therapy showed **significantly higher plaque index, gingival index, oral hygiene index, and bleeding on probing** compared to post-orthognathic surgery patients, indicating poorer periodontal health in orthodontic patients.

In the present study, the mean plaque index was significantly higher among patients receiving fixed orthodontic therapy compared to post-orthognathic

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surgery patients. This finding can be attributed to the presence of brackets, bands, and archwires, which create multiple retentive niches for plaque accumulation and make routine oral hygiene procedures more difficult. These appliances often hinder effective tooth brushing and flossing, resulting in increased bacterial colonization and plaque retention around the gingival margins. Consequently, the increased plaque accumulation contributes to gingival inflammation and periodontal deterioration.

The findings of the present study are in agreement with the study conducted by **Dubey et al. (1993)**, [11] which reported increased plaque deposition and gingival inflammation in patients undergoing orthodontic treatment with fixed appliances. Their study demonstrated that orthodontic appliances significantly interfere with oral hygiene practices and increase plaque accumulation around teeth.

Similarly, the increased gingival inflammation observed in the orthodontic group in the present study is consistent with the findings of **Levin et al. (2008)**, [12] who reported that orthodontic treatment and fixed retainers were associated with increased plaque accumulation, gingival inflammation, and bleeding on probing. Their study also found that orthodontically treated patients showed greater gingival recession and bleeding on probing compared to individuals without orthodontic appliances.

Another study supporting the results of the present research was conducted by **Gehlot et al. (2022)**, [13] who evaluated the effect of fixed orthodontic treatment on periodontal health parameters. The authors reported a significant increase in plaque index and gingival index values during orthodontic treatment, suggesting that orthodontic appliances may predispose patients to periodontal inflammation if proper oral hygiene measures are not maintained.

The present study also demonstrated increased bleeding on probing among orthodontic patients compared to post-orthognathic surgery patients. Bleeding on probing is an important indicator of gingival inflammation and periodontal disease. The higher bleeding scores observed in orthodontic patients may be attributed to increased plaque accumulation and microbial colonization around orthodontic brackets and wires. These results are supported by the findings of **Kumar et al. (2021)**, [14] who reported that fixed orthodontic appliances can lead to deterioration in periodontal health parameters such as plaque index, gingival index, and probing depth if adequate oral hygiene measures are not maintained during treatment.

Furthermore, the findings of the present study are consistent with the observations reported by **Alam et al. (2024)**, [15] who evaluated periodontal health in patients undergoing orthodontic treatment. The authors observed a significant increase in plaque index and gingival index during orthodontic therapy, highlighting the influence of orthodontic appliances on periodontal tissues. Their study emphasized that plaque retention associated with orthodontic appliances can increase the risk of gingival inflammation and periodontal disease if proper oral hygiene is not maintained.

In contrast to orthodontic patients, post-orthognathic surgery patients in the present study exhibited comparatively better oral hygiene status and periodontal health. Although these patients may initially experience difficulty maintaining oral hygiene due to postoperative discomfort and limited mouth opening, they generally receive intensive postoperative instructions and follow-up care, which may contribute to improved oral hygiene practices. Additionally, the absence of plaque-retentive orthodontic appliances after surgery may allow easier plaque removal and better maintenance of periodontal health.

The results of the present study emphasize the importance of strict oral hygiene maintenance during orthodontic treatment. Orthodontic patients require continuous motivation, regular professional prophylaxis, and reinforcement of oral hygiene instructions to minimize plaque accumulation and periodontal complications. The use of adjunctive aids such as interdental brushes, orthodontic toothbrushes, and antimicrobial mouth rinses may help improve plaque control in these patients.

Overall, the findings of this study indicate that patients undergoing fixed orthodontic therapy are at a higher risk of compromised oral hygiene and periodontal inflammation compared to post-orthognathic surgery patients. Therefore, careful monitoring and preventive periodontal care are essential throughout orthodontic treatment to ensure the maintenance of periodontal health and successful treatment outcomes.

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Limitations of the Study

Despite providing valuable insights into the oral hygiene status and periodontal health of patients undergoing fixed orthodontic therapy and post-orthognathic surgery, the present study has certain limitations. First, the **sample size was relatively limited to 100 participants**, which may restrict the generalizability of the findings to the broader population. Second, the study was conducted at **a single institution**, and therefore the results may not fully represent patients from different geographic regions or clinical settings. Third, the **cross-sectional design** of the study did not allow for the assessment of long-term changes in oral hygiene and periodontal health over the course of treatment. Additionally, the evaluation relied mainly on **clinical indices such as plaque index, gingival index, and oral hygiene index**, without incorporating microbiological or radiographic assessments that could provide more comprehensive information about periodontal status. Finally, **patient-related factors such as dietary habits, socioeconomic status, and individual oral hygiene practices** were not evaluated, which may also influence periodontal health outcomes.

Conclusion

The present study demonstrated that patients undergoing fixed orthodontic therapy exhibited poorer oral hygiene status and greater periodontal inflammation compared to post-orthognathic surgery patients. Increased plaque accumulation, higher gingival index scores, and greater bleeding on probing were observed in the orthodontic group. These findings highlight the significant impact of fixed orthodontic appliances on plaque retention and gingival health. Proper oral hygiene practices and regular periodontal monitoring are essential during orthodontic treatment to prevent periodontal complications. Therefore, continuous patient education and preventive measures are necessary to maintain optimal periodontal health during orthodontic therapy.

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Assessment of Antibiotic Prescribing Patterns Among Dentists and their Impact on Antimicrobial Resistance in Oral Infections

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ABSTRACT

Background: Antibiotics are frequently prescribed in dental practice for the management of oral infections and as prophylaxis for invasive procedures. Inappropriate prescribing practices contribute significantly to the emergence of antimicrobial resistance (AMR), posing a growing public health concern. **Methods:** A cross-sectional observational study was conducted among 150 dental practitioners and 120 patients presenting with odontogenic infections. Data regarding antibiotic choice, dosage, duration, and indication were collected using structured questionnaires and prescription audits. Microbiological samples from patients were cultured, and antimicrobial susceptibility testing was performed. Prescribing appropriateness was assessed using standard clinical guidelines. **Results:** Antibiotics were prescribed in 82.0% of dental consultations, with amoxicillin-clavulanic acid (46.7%) being the most commonly prescribed drug, followed by metronidazole (28.9%). Inappropriate prescribing was identified in 41.3% of cases, primarily due to unnecessary antibiotic use and prolonged duration. Resistant isolates were detected in 34.2% of cultured samples, with significantly higher resistance observed among patients exposed to prior antibiotic therapy ($P = 0.003$). Dentists with fewer than 5 years of clinical experience demonstrated a higher rate of inappropriate prescribing compared to senior practitioners (48.9% vs. 29.6%, $P = 0.018$). **Conclusion:** Suboptimal antibiotic prescribing practices are prevalent among dentists and are significantly associated with increased antimicrobial resistance in oral infections. Implementation of antibiotic stewardship programs and continued professional education are essential to promote rational antibiotic use in dental practice.

Keywords: *Antibiotic prescribing, antibiotic stewardship, antimicrobial resistance, dentistry, oral infections*

Introduction

Antibiotics play a crucial role in the management of odontogenic infections, preventing the spread of localized infections and reducing systemic complications.[1] However, dentistry accounts for a substantial proportion of community antibiotic

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RESEARCH ARTICLE

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Is MRI still the gold standard for assessing disc position in Temporomandibular joint disorders? A clinical–Imaging agreement study

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ABSTRACT

Background: Temporomandibular disorders (TMDs) are primarily diagnosed clinically using the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD), while the role of magnetic resonance imaging (MRI) remains selective. This study evaluated agreement between DC/TMD-based clinical diagnoses and MRI findings in symptomatic patients.

Methods: In this prospective diagnostic agreement study, 85 symptomatic patients diagnosed with TMJ internal derangement using DC/TMD criteria underwent standardized bilateral TMJ MRI. Clinical and imaging findings were compared using sensitivity, specificity, diagnostic accuracy, and Cohen's kappa statistics. Inter-observer reliability for MRI interpretation was also assessed.

Results: MRI identified no disc displacement in 30.6%, anterior disc displacement with reduction in 37.6%, anterior disc displacement without reduction in 20.0%, and other findings in 11.8%. Clinical assessment showed sensitivity of 88.6%, specificity of 70.9%, and diagnostic accuracy of 85.9%. Inter-observer MRI agreement was substantial ($\kappa = 0.71$).

Conclusion: DC/TMD clinical assessment demonstrates good agreement with MRI findings; however, MRI provides complementary anatomical information and is best reserved for selected clinical scenarios.

KEYWORDS
Temporomandibular disorders; Diagnostic Criteria for Temporomandibular Disorders (DC/TMD); temporomandibular joint imaging; magnetic resonance imaging; disc displacement; diagnostic agreement

1. Introduction

Internal derangement of the temporomandibular joint (TMJ) is a common disorder characterized by abnormal positional and functional relationships between the articular disc, condyle, and articular eminence [1–3]. Temporomandibular disorders (TMDs) are currently understood as a heterogeneous group of musculoskeletal pain conditions characterized primarily by pain, functional limitation, and psychosocial impact rather than by structural abnormalities alone. Contemporary standards of care emphasize that TMDs are fundamentally clinical diagnoses, and that imaging findings frequently represent anatomical variation or adaptive changes rather than disease requiring intervention [4].

Over the past three decades, significant efforts have been made to standardize the clinical diagnosis of TMDs. The Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) and its successor, the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD), were developed to improve diagnostic reliability and validity through structured history taking and physical examination. These frameworks have demonstrated acceptable reliability for identifying pain-related and functional TMJ disorders; however, they were not intended to define detailed intra-articular anatomy or to establish disc position as a determinant of disease severity [1,5,6].

Advances in imaging technology have substantially improved the evaluation of temporomandibular joint (TMJ) anatomy and function. Earlier modalities, such as transcranial radiography and tomography, provided limited information on osseous changes and were inadequate for soft-tissue assessment. The introduction of computed tomography (CT) and, more importantly, magnetic resonance imaging (MRI) enabled high-resolution, multiplanar visualization of both hard and soft tissues of the TMJ. Owing to its excellent contrast resolution and absence of ionizing radiation, MRI remains the most comprehensive non-invasive modality for visualizing the articular disc, joint effusion, and periarticular soft tissues [1,5].

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RESEARCH ARTICLE

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Comparative evaluation of marginal bone loss and prosthetic success in immediate versus delayed implant loading protocols: A radiographic study

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RESEARCH PAPER

Alveolar Bone Changes After Premolar Extraction Orthodontics Versus Segmental Osteotomy-Assisted Space Management: A Comparative CBCT Study

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ABSTRACT

Background: Alveolar bone remodeling is a critical factor influencing the success and stability of orthodontic treatment. Premolar extraction orthodontics is a conventional approach for space management, whereas segmental osteotomy-assisted techniques offer a surgical alternative that may better preserve alveolar bone integrity. However, comparative evidence evaluating their effects on alveolar bone using Cone Beam Computed Tomography (CBCT) is limited.

Aim: To compare alveolar bone changes following premolar extraction orthodontics and segmental osteotomy-assisted space management using CBCT.

Materials and Methods: This prospective comparative study included 100 patients aged 18–35 years, divided into two groups: Group I (n=50) treated with premolar extraction orthodontics and Group II (n=50) treated with segmental osteotomy-assisted space management. CBCT scans were obtained at baseline (T0) and post-treatment (T1). Parameters assessed included alveolar bone thickness, height, bone density, and incidence of dehiscence and fenestration. Statistical analysis was performed using paired and independent t-tests, with significance set at $p<0.05$.

Results: Both groups showed significant alveolar bone changes from T0 to T1. However, Group I demonstrated significantly greater reduction in bone thickness, increased bone height loss, and decreased bone density compared to Group II ($p<0.001$). The incidence of dehiscence and fenestration was also higher in the extraction group. Segmental osteotomy-assisted space management showed better preservation of alveolar bone parameters.

Conclusion: Segmental osteotomy-assisted space management is more effective in preserving alveolar bone integrity compared to premolar extraction orthodontics. CBCT serves as a reliable tool for evaluating three-dimensional bone changes, aiding in improved treatment planning and outcomes.

Keywords: Alveolar bone, CBCT, Orthodontic Space Management, Premolar extraction, Segmental osteotomy

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Introduction

Orthodontic treatment planning often involves space management strategies to achieve optimal functional and esthetic outcomes [1]. One of the most commonly employed approaches is premolar extraction, particularly in cases of crowding, protrusion, or

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dentoalveolardiscrepancies. While extraction-based orthodontics has been widely practiced and documented for decades, recent advances in surgical adjuncts, such as segmental osteotomy-assisted orthodontics, have introduced alternative modalities for managing space without relying solely on conventional tooth movement. These differing approaches may exert distinct effects on alveolar bone morphology, which plays a crucial role in long-term periodontal health and treatment stability.

The alveolar bone is a dynamic structure that undergoes continuous remodeling in response to mechanical forces applied during orthodontic treatment [2]. Controlled orthodontic forces result in bone resorption on the pressure side and bone apposition on the tension side, allowing for tooth movement within the alveolar housing. However, excessive or poorly controlled forces may lead to undesirable consequences such as alveolar bone loss, dehiscence, fenestration, and root resorption. In extraction-based orthodontics, significant tooth movement is often required to close the extraction spaces, which may increase the risk of adverse alveolar bone changes, particularly in patients with thin biotypes or pre-existing periodontal compromise [3].

Premolar extraction orthodontics typically involves retraction of anterior teeth into the extraction spaces, often resulting in substantial remodeling of the surrounding alveolar bone. Studies have shown that such movements can lead to changes in alveolar bone thickness, height, and density, especially in the anterior region [4]. The degree of these changes depends on various factors, including the magnitude and direction of orthodontic forces, treatment duration, patient age, and individual biological response. Moreover, the risk of cortical plate perforation and alveolar bone dehiscence becomes more pronounced when tooth movement exceeds the anatomical boundaries of the alveolar housing.

In contrast, segmental osteotomy-assisted orthodontics represents a surgical approach that facilitates rapid repositioning of dentoalveolar segments. This technique involves selective corticotomy or osteotomy cuts in the alveolar bone, allowing for en bloc movement of teeth along with their supporting bone [5]. By reducing resistance from cortical bone and enhancing regional acceleratory phenomena, segmental osteotomy can significantly shorten treatment duration and minimize the extent of orthodontic tooth movement required. Consequently, it may offer advantages in preserving alveolar bone integrity and reducing the risk of periodontal complications.

The advent of Cone Beam Computed Tomography (CBCT) has revolutionized the assessment of alveolar bone changes in orthodontics. Unlike conventional two-dimensional radiographs, CBCT provides high-resolution, three-dimensional images that enable precise evaluation of bone morphology, including thickness, height, and volumetric changes. This imaging modality allows clinicians and researchers to detect subtle alterations in the alveolar bone that may not be visible on traditional radiographs, thereby improving the accuracy of diagnosis, treatment planning, and outcome assessment [6].

Despite the growing interest in minimally invasive and surgically assisted orthodontic techniques, there remains a paucity of comparative studies evaluating the impact of premolar extraction orthodontics versus segmental osteotomy-assisted space management on alveolar bone changes. Most existing literature focuses either on extraction-based treatment outcomes or on the benefits of surgical adjuncts independently, with limited direct comparison between the two approaches. Furthermore, variations in study design, sample characteristics, and imaging methodologies have contributed to inconsistent findings, highlighting the need for standardized and evidence-based investigations [7].

Understanding the differential effects of these treatment modalities on alveolar bone is essential for optimizing clinical decision-making [8]. Preservation of alveolar bone volume and architecture is critical not only for periodontal health but also for ensuring the stability of orthodontic outcomes and achieving favorable esthetic results. As patient expectations continue to evolve, there is an increasing demand for treatment approaches that are both efficient and minimally detrimental to supporting structures [9].

In this context, a comparative evaluation using CBCT imaging can provide valuable insights into the extent and pattern of alveolar bone changes associated with each technique [10]. Such analysis can help identify potential risks, guide treatment selection, and contribute to the development of protocols that prioritize both efficiency and biological safety [11]. Therefore, this study is important to determine the comparative effects of premolar extraction orthodontics and segmental osteotomy-assisted space management on alveolar bone changes using CBCT imaging.

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Alveolar Bone Changes After Premolar Extraction Orthodontics Versus Segmental Osteotomy-Assisted Space Management: A Comparative CBCT Study

Methodology

Study Design and Setting

This study was designed as a prospective, comparative clinical study. Ethical clearance was obtained from the Institutional Ethical Committee prior to the commencement of the study, and all procedures were carried out in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants.

Sample Size and Study Population

A total of 100 patients requiring orthodontic space management were selected for the study. The sample size was calculated based on previous studies assessing alveolar bone changes using CBCT, ensuring adequate power (80%) and a significance level of 5%. The participants were randomly divided into two groups:

- **Group I (n = 50):** Patients treated with premolar extraction orthodontics
- **Group II (n = 50):** Patients treated with segmental osteotomy-assisted space management

Inclusion Criteria

- Patients aged between 18 and 35 years
- Presence of Class I or Class II malocclusion requiring space management
- Moderate to severe crowding or dental protrusion
- Good general and periodontal health
- No previous history of orthodontic treatment

Exclusion Criteria

- Patients with systemic diseases affecting bone metabolism (e.g., osteoporosis, diabetes)
- History of craniofacial anomalies or syndromes
- Active periodontal disease
- Pregnant or lactating women
- Patients unwilling to undergo CBCT imaging

Randomization and Allocation

Participants were randomly assigned to either Group I or Group II using a computer-generated randomization table. Allocation concealment was maintained using sealed opaque envelopes.

Treatment Protocol

Group I (Premolar Extraction Orthodontics):
Patients underwent extraction of first premolars followed by conventional fixed orthodontic therapy using pre-adjusted edgewise appliances (MBT prescription, 0.022" slot). Alignment and leveling were achieved using sequential archwires, followed by space closure using sliding mechanics with controlled force application.

Group II (Segmental Osteotomy-Assisted Space Management):
Patients underwent segmental osteotomy performed under local anesthesia by an experienced oral and maxillofacial surgeon. Vertical and horizontal corticotomy cuts were made to mobilize the dentoalveolar segment. Following a healing period of 1–2 weeks, orthodontic treatment was initiated using fixed appliances to guide the repositioned segments and achieve final alignment.

CBCT Imaging Protocol

CBCT scans were taken for all patients at two time points:

T0 (Baseline): Before initiation of treatment
T1 (Post-treatment): After completion of space closure
All CBCT scans were obtained using the same machine with standardized exposure parameters (e.g., 90 kVp, 10 mA, voxel size 0.2 mm). Patients were positioned consistently to ensure reproducibility.

Measurement Parameters

Alveolar bone changes were assessed using CBCT images with specialized imaging software. The following parameters were evaluated:

1. **Alveolar Bone Thickness:** Measured at cervical, mid-root, and apical levels on both buccal and lingual/palatal sides
2. **Alveolar Bone Height:** Distance from cementoenamel junction (CEJ) to alveolar crest
3. **Bone Density:** Measured in Hounsfield Units (HU)
4. **Presence of Dehiscence and Fenestration:** Evaluated qualitatively

All measurements were performed by two independent, calibrated examiners to minimize inter-observer variability. Intra-examiner reliability was assessed using intraclass correlation coefficient (ICC).

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using SPSS software (version XX). Descriptive statistics (mean, standard deviation) were calculated for all variables.

- **Intragroup comparisons (T0 vs T1):** Paired t-test
- **Intergroup comparisons (Group I vs Group II):** Independent t-test
- **Qualitative variables:** Chi-square test

A p-value of <0.05 was considered statistically significant.

Outcome Measures

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The primary outcome measure was the change in alveolar bone thickness and height following treatment. Secondary outcomes included changes in bone density and the incidence of dehiscence and fenestration.

This methodology ensured a standardized and reproducible approach to compare alveolar bone changes between premolar extraction orthodontics and segmental osteotomy-assisted space management using CBCT imaging.

Results

A total of 100 patients completed the study, with 50 patients in Group I (Premolar Extraction Orthodontics) and 50 patients in Group II (Segmental Osteotomy-Assisted Space Management). All participants underwent CBCT evaluation at baseline (T0) and post-treatment (T1). The data were analyzed using SPSS software, and the findings are presented below.

Table 1: Demographic Characteristics of Study Participants

Parameter	Group I (n=50)	Group II (n=50)	p-value
Mean Age (years)	24.6 ± 3.2	25.1 ± 3.5	0.48
Gender (M/F)	22 / 28	24 / 26	0.68
Malocclusion (Class I/II)	30 / 20	28 / 22	0.67

There was no statistically significant difference between the two groups in terms of age, gender distribution, or type of malocclusion ($p > 0.05$), indicating baseline comparability (**Table 1**).

Table 2: Intragroup Comparison of Alveolar Bone Thickness (mm)

Level	Group I (T0)	Group I (T1)	p-value	Group II (T0)	Group II (T1)	p-value
Cervical	1.45 ± 0.30	1.12 ± 0.25	<0.001*	1.48 ± 0.28	1.36 ± 0.26	0.02*
Mid-root	1.90 ± 0.35	1.52 ± 0.31	<0.001*	1.92 ± 0.33	1.75 ± 0.30	0.01*
Apical	2.40 ± 0.40	2.10 ± 0.36	<0.001*	2.42 ± 0.38	2.30 ± 0.35	0.03*

Both groups demonstrated a significant reduction in alveolar bone thickness from T0 to T1. However, the reduction was more pronounced in Group I compared to Group II (**Table 2**).

Table 3: Intergroup Comparison of Alveolar Bone Changes (T1–T0 Difference)

Parameter	Group I (Mean ± SD)	Group II (Mean ± SD)	p-value
Cervical Thickness	-0.33 ± 0.12	-0.12 ± 0.08	<0.001*
Mid-root Thickness	-0.38 ± 0.15	-0.17 ± 0.10	<0.001*
Apical Thickness	-0.30 ± 0.14	-0.12 ± 0.09	<0.001*
Bone Height Loss	0.85 ± 0.30	0.42 ± 0.25	<0.001*
Bone Density (HU)	-120 ± 45	-60 ± 30	<0.001*

Intergroup comparison revealed significantly greater alveolar bone loss and reduction in bone density in Group I compared to Group II ($p < 0.001$), indicating better preservation of alveolar bone in the osteotomy-assisted group (**Table 3**).

Table 4: Incidence of Dehiscence and Fenestration

Finding	Group I (n=50)	Group II (n=50)	p-value
Dehiscence	18 (36%)	7 (14%)	0.01*
Fenestration	12 (24%)	5 (10%)	0.04*

The incidence of dehiscence and fenestration was significantly higher in Group I compared to Group II, suggesting increased risk of periodontal complications with extraction-based orthodontics (**Table 4**).

Table 5: SPSS Statistical Analysis (Independent t-test Summary)

Variable	Mean Difference	Std. Error	t-value	p-value	95% CI (Lower–Upper)
Cervical Thickness Change	-0.21	0.03	-7.00	<0.001*	-0.27 to -0.15

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Mid-root Thickness Change	-0.21	0.04	-5.25	<0.001*	-0.29 to -0.13
Apical Thickness Change	-0.18	0.04	-4.50	<0.001*	-0.26 to -0.10
Bone Height Loss	0.43	0.07	6.14	<0.001*	0.29 to 0.57
Bone Density Change	-60	10.5	-5.71	<0.001*	-80.5 to -39.5

SPSS analysis using independent t-test confirmed statistically significant differences between the two groups for all measured parameters ($p < 0.001$). The confidence intervals did not cross zero, further validating the reliability of the results (**Table 5**).

The results of this study demonstrate that while both treatment modalities resulted in significant alveolar bone changes, premolar extraction orthodontics exhibited greater bone loss, reduced bone density, and higher incidence of dehiscence and fenestration compared to segmental osteotomy-assisted space management. The CBCT analysis provided precise three-dimensional assessment, reinforcing the superiority of the osteotomy-assisted approach in preserving alveolar bone integrity.

Discussion

The present study compared alveolar bone changes following premolar extraction orthodontics and segmental osteotomy-assisted space management using CBCT imaging. The findings revealed that although both treatment modalities resulted in significant alveolar bone remodeling, premolar extraction orthodontics demonstrated greater reduction in alveolar bone thickness, increased bone height loss, decreased bone density, and a higher incidence of dehiscence and fenestration. These results suggest that segmental osteotomy-assisted space management is more favorable in preserving alveolar bone integrity.

Orthodontic tooth movement induces a biologic response characterized by bone resorption and apposition. In the present study, a significant reduction in alveolar bone thickness was observed in the extraction group, particularly at cervical and mid-root levels. This finding is consistent with Atik E et al. (2018) [12] who reported that significant incisor retraction leads to thinning of the alveolar bone, especially when tooth movement approaches the cortical boundaries. The greater reduction observed in the extraction group in this study can be attributed to extensive anterior retraction mechanics and prolonged treatment duration.

The observed increase in alveolar bone height loss in the extraction group is supported by Feyizoglu BB et al. (2025) [13] who demonstrated that orthodontic tooth movement, particularly retraction, can lead to vertical bone loss and apical displacement of the alveolar crest. This occurs due to continuous pressure on the periodontal ligament and surrounding bone, especially in cases where movement exceeds the physiologic limits of the alveolar housing.

The higher prevalence of dehiscence and fenestration in the extraction group in the present study is in agreement with Choi JY et al. (2020) [14] who reported that orthodontic treatment involving significant tooth movement increases the risk of alveolar bone defects. These defects are more common when teeth are moved beyond the cortical plate or in patients with thin alveolar bone biotypes, which further supports the findings of the present study.

Regarding bone density, a significant reduction was observed in both groups, with a more pronounced decrease in the extraction group. Similar findings were reported by Zhang Y et al. (2024) [15] who explained that orthodontic forces lead to temporary reduction in bone density due to increased bone turnover and remodeling activity. The lesser reduction in the osteotomy group observed in this study may be explained by the regional acceleratory phenomenon, which enhances bone healing and remodeling in a more controlled manner.

Furthermore, the role of CBCT in accurately assessing alveolar bone changes has been emphasized in previous research. Anter E et al. (2016) [16] highlighted that CBCT provides precise three-dimensional evaluation of alveolar bone thickness, height, and defects, allowing for better detection of subtle changes that may not be visible on conventional radiographs. The use of CBCT in the present study therefore strengthens the reliability and accuracy of the findings.

The comparatively favorable outcomes in the segmental osteotomy-assisted group can be attributed to the biomechanical and biological advantages of this approach. By allowing en bloc movement of dentoalveolar segments, this technique minimizes the

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need for extensive orthodontic tooth movement, thereby reducing stress on the surrounding alveolar bone. Additionally, the shorter treatment duration associated with this method may further limit bone remodeling and associated complications.

However, despite its advantages, segmental osteotomy is a surgically invasive procedure and may not be suitable for all patients. Clinical decision-making should therefore consider individual patient factors, including skeletal pattern, periodontal status, treatment objectives, and patient willingness to undergo surgery.

Overall, the findings of the present study align with existing literature, demonstrating that extraction-based orthodontics is associated with greater alveolar bone changes compared to surgically assisted approaches. The results support the consideration of segmental osteotomy-assisted space management as an effective alternative for preserving alveolar bone health in appropriately selected cases.

Limitations

The present study has certain limitations that should be considered while interpreting the results. Although a sample size of 100 patients was included, the study was conducted at a single center, which may limit the generalizability of the findings to a broader population. The follow-up period was restricted to the immediate post-treatment phase, and long-term evaluation of alveolar bone stability was not performed. Additionally, variations in individual biological response, bone metabolism, and periodontal biotype were not separately analyzed, which could influence alveolar bone remodeling outcomes. While CBCT provides accurate three-dimensional assessment, factors such as voxel size, image resolution, and observer interpretation may introduce minor measurement errors. Furthermore, surgical variability in segmental osteotomy procedures and differences in operator skill could have influenced the results. Lastly, patient-related factors such as compliance, oral hygiene maintenance, and healing capacity were not quantitatively assessed, which may also have impacted the observed outcomes.

Conclusion

Premolar extraction orthodontics and segmental osteotomy-assisted space management both result in significant alveolar bone changes.However, extraction-based orthodontics is associated with greater reduction in bone thickness, height, and density.Segmental osteotomy-assisted approach demonstrates better preservation of alveolar bone and fewer periodontal complications.CBCT analysis provides an accurate and reliable method for assessing these three-dimensional bone changes.Therefore, segmental osteotomy-assisted space management may be a more favorable option in selected cases for maintaining alveolar bone integrity and treatment stability.

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MATHEWS

Research Article

Mathews Journal of Dentistry

Reviewing the Wonders of Epsom Salt: A Comprehensive Analysis of its Therapeutic Impact on Human Health

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ABSTRACT

Epsom salt, also referred to as magnesium sulphate, has drawn a lot of attention from the medical and cosmetic fields due to its many therapeutic and aesthetic applications. The effectiveness and versatility of Epsom salt are highlighted in this articles thorough review of its application in several fields. Because of its well-known ability to relax muscles, Epsom salt is frequently used in medicine to relieve stress, tension, and pain. Epsom salts are a useful adjuvant therapy for conditions including fibromyalgia and muscle cramps because of its magnesium content, which is believed to be crucial in promoting muscle relaxation and reducing inflammation. Additionally, its osmotic laxative properties have been identified, making it a mild yet efficient treatment for constipation when taken orally in sufficient amounts. Epsom salt functions as a natural exfoliant in cosmetics, eliminating impurities and dead skin cells to reveal smoother, more youthful skin. It is a common component in skincare products because of its capacity to improve skin texture and unclog pores. items like as lotions, masks, and scrubs. Epsom salt baths, which are prized for their ability to soothe painful feet, soften skin, and encourage relaxation, have also evolved into an opulent self-care ritual.

Keywords: Fibromyalgia, Inflammation, Self-Care.

INTRODUCTION

The phrase "Epsom salt" describes a colourless or white crystalline salt called magnesium sulphate hepta-hydrate (MgSO4.7H2 O), which is found in minerals like kieserite and epsomite and dissolves in saltwater and most mineral fluids. It was found in 1618 and got its name from the place near Epsom, England, where it was first prepared [1]. It was distilled there and mostly offered for sale as bath salt. The salt, which has an awful flavour, is produced by reacting magnesium salt with sodium hydroxide and is manufactured from hydrated magnesium sulphate.

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META-ANALYSIS

Effectiveness of Fluoride Varnish in Preventing Dental Caries: Systematic Review and Meta-Analysis

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Abstract: ***Introduction*:** Dental caries remains a prevalent global health issue with over two billion people being affected worldwide, necessitating effective preventive strategies like fluoride varnish (FV). This systematic review and meta-analysis evaluated the effectiveness of fluoride varnish in preventing dental caries by synthesizing data from randomized controlled trials (RCTs) and observational studies. This analysis will help to further scientific knowledge with evidence-based clinical knowledge, which will focus on the real-world clinical problems faced in dental practice.

***Methods*:** Thirteen Randomized trials were analyzed while adhering to PRISMA guidelines, after assessing 2315 archives. ROB2 was used to evaluate the risk of bias from the data obtained through the PICO criteria. Effect sizes were aggregated for caries reduction with Random-effects models. Medical Subject Headings (MeSH) and text words associated with fluoride varnish and dental caries were used for the investigation.

***Results*:** Fluoride varnish reduced caries in 4784 participants, with 95% CI of 0.28 to 0.43. Greater improvements were seen in younger children and those affected with xerostomia, where a reduction of 54% was seen with quarterly applications and with minimal undesirable effects (<5%).

***Discussion*:** Outcomes suggest fluoride varnish as an effective caries preventive tool, especially with high-risk populations. Higher degrees of variation observed (I^2 = 75.1%) suggest that effectiveness might be increased if standardized application protocols are followed.

***Conclusion*:** The study outcomes support the notion that fluoride varnish is an effective measure against caries, hence supporting the idea of its integration into public health programs for reducing widespread caries burden.

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1. INTRODUCTION

With the growing number of chronic diseases affecting the oral cavity worldwide, dental caries continues to affect the population of all age groups [1]. The burden of caries is often highlighted more in the low- and middle-income countries due to limited access to dental care, regardless of progress observed in the field of preventive dentistry [2]. With the increasing relevance of prevention of oral diseases, fluoride varnish (FV) has come to the limelight as a safe and efficacious alternative to other forms of fluoride applications for the prevention of dental caries among younger age groups and high-risk groups [3].

Usually, a concentration of 5% topical sodium fluoride varnish is preferred in a resin or synthetic base [4]. The applied varnish forms a temporary reservoir on the tooth surface that boosts its remineralization and inhibits demineralization [5]. Fluoride varnish is safe because it has minimal risk of ingestion and simultaneously, it provides prolonged effects as compared to gels or mouthrinses [6].

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Gagan Raj et al. Cureus. 2026.

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> Cureus. 2026 Apr 13;18(4):e106933.
doi: 10.7759/cureus.106933. eCollection 2026 Apr.

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Assessment of Antibiotic Prescribing Patterns Among Dentists and their Impact on Antimicrobial Resistance in Oral Infections

Akshay Gelde[1], Safiulla S. Kashme[2], Pawan Shivdas Dhirhade[3], Vikas Singh[4], Disha Gupta[5], Gaurav Gupta[6], Soumyaa Sourav Tripathy[7]

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ABSTRACT

Background: Antibiotics are frequently prescribed in dental practice for the management of oral infections and as prophylaxis for invasive procedures. Inappropriate prescribing practices contribute significantly to the emergence of antimicrobial resistance (AMR), posing a growing public health concern. **Methods:** A cross-sectional observational study was conducted among 150 dental practitioners and 120 patients presenting with odontogenic infections. Data regarding antibiotic choice, dosage, duration, and indication were collected using structured questionnaires and prescription audits. Microbiological samples from patients were cultured, and antimicrobial susceptibility testing was performed. Prescribing appropriateness was assessed using standard clinical guidelines. **Results:** Antibiotics were prescribed in 82.0% of dental consultations, with amoxicillin-clavulanic acid (46.7%) being the most commonly prescribed drug, followed by metronidazole (28.0%). Inappropriate prescribing was identified in 41.3% of cases, primarily due to unnecessary antibiotic use and prolonged duration. Resistant isolates were detected in 34.2% of cultured samples, with significantly higher resistance observed among patients exposed to prior antibiotic therapy ($P = 0.003$). Dentists with fewer than 5 years of clinical experience demonstrated a higher rate of inappropriate prescribing compared to senior practitioners (45.9% vs. 29.6%, $P = 0.015$). **Conclusion:** Suboptimal antibiotic prescribing practices are prevalent among dentists and are significantly associated with increased antimicrobial resistance in oral infections. Implementation of antibiotic stewardship programs and continued professional education are essential to promote rational antibiotic use in dental practice.

Keywords: *Antibiotic prescribing, antibiotic stewardship, antimicrobial resistance, dentists, oral infections*

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Assessment of Antibiotic Prescribing Patterns Among Dentists and their Impact on Antimicrobial Resistance in Oral Infections

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Keywords: *Antibiotic prescribing, antibiotic stewardship, antimicrobial resistance, dentistry, oral infections*

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Chapter

Application of AI in Dental Epidemiology for Automated Data Collection and Analysis in Large-Scale Surveys

April 2026

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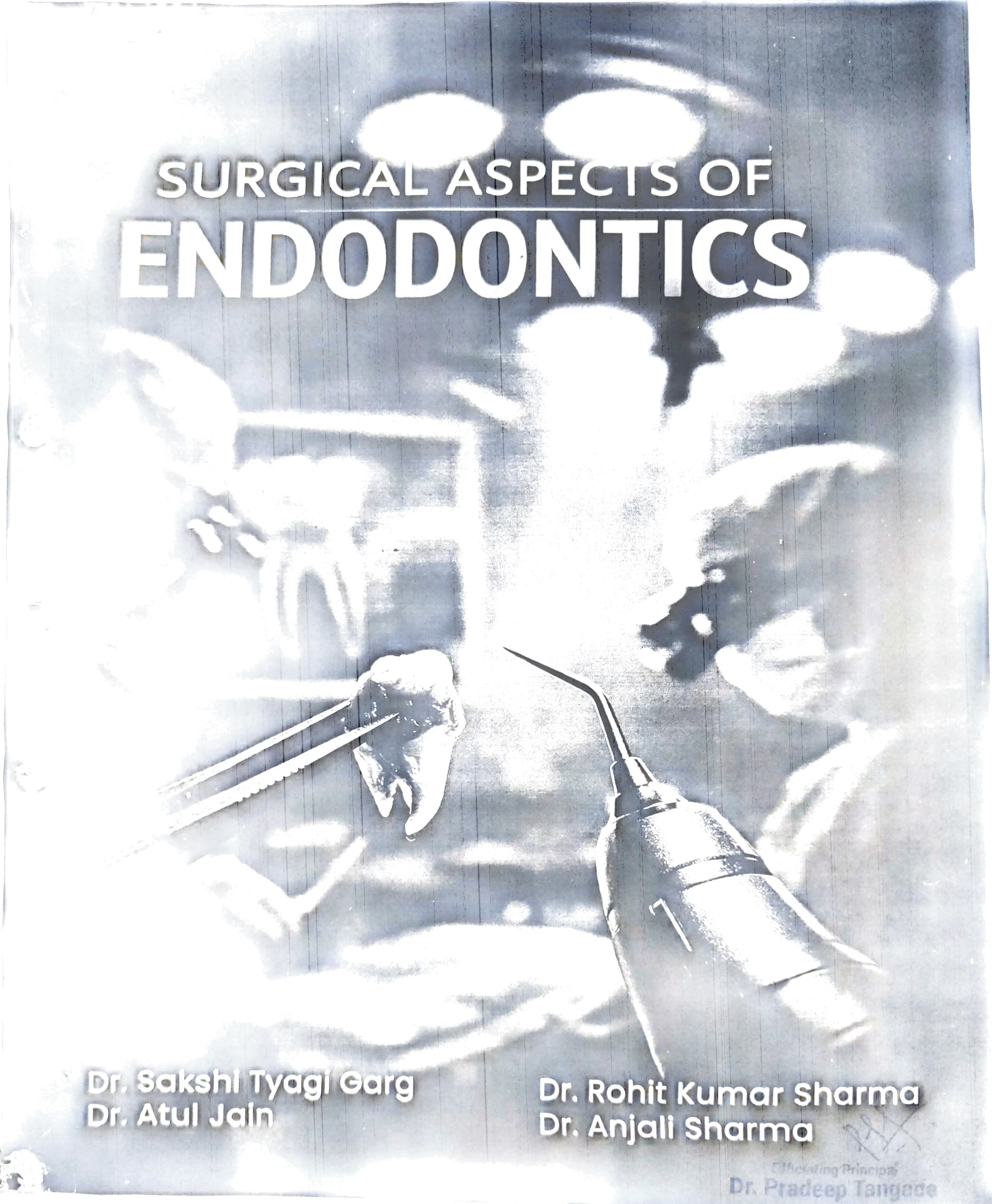
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1	Dr Rachna Bahuguna	lasers in peadiatric dentistry		2026	9786209453649	TMU	Lambert academic publisher
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7	DR VAISHALI MALIK	CONCEPTS OROFACIAL PAIN		2026	978-93-7185-168-8	TMU	DEEP SCIENCE PUBLISHING
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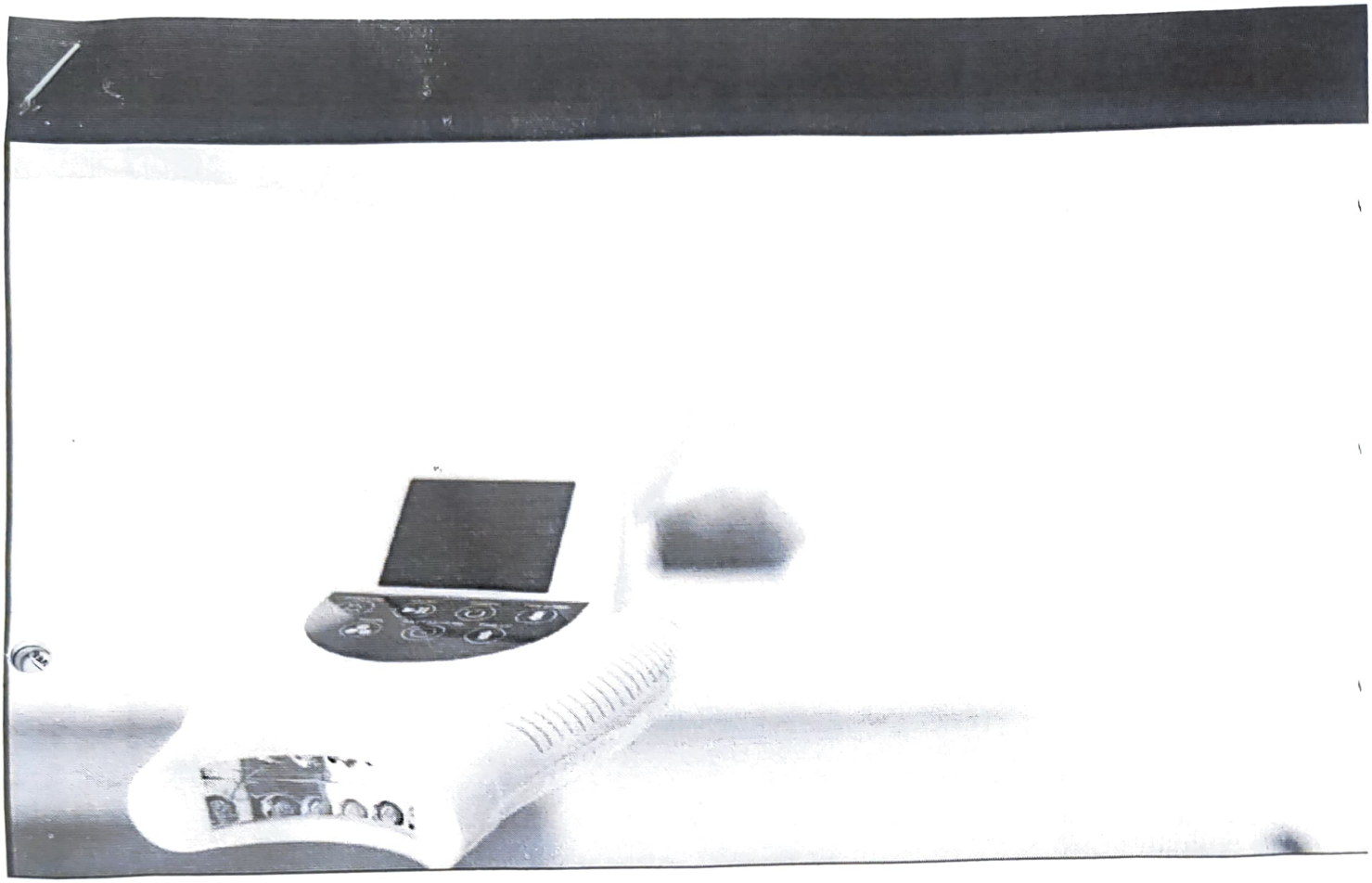
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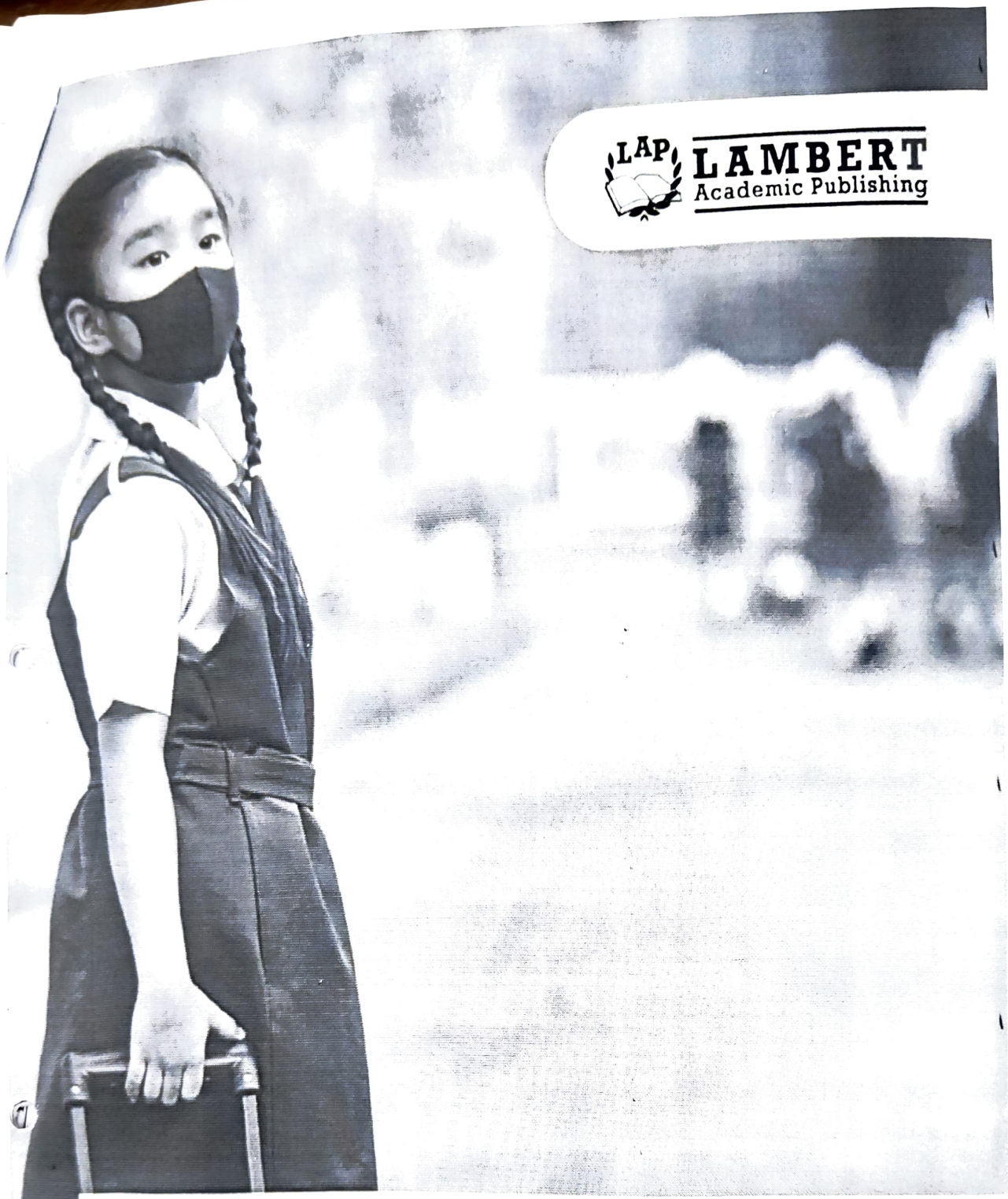
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Chapter 9
Application of AI in Dental Epidemiology for Automated Data Collection and Analysis in Large-Scale Surveys

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ABSTRACT

Artificial Intelligence (AI) may alter dental epidemiological surveys by improving data collecting efficiency and diagnostic accuracy, as shown in this comprehensive



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My Teachers,

My Students.

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Lord Shiva, My Family

And My Teachers who always have faith in me

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Sl. No.	Name of the teacher	Title of the book published	Title of the chapters published	Year of publication	ISBN number	Whether at the time of publication Affiliating Institution was same Yes/No	Name of the publisher
1	Dr. Rajeev Pathak	Cytology of oral lesions		8/11/2026	978-93-7461-085-5	yes	Heal talk publication
2	Dr Jyotsna Joshi		Chapter 4- Intelligent endodontics: AI-Driven automated detection of caries, periapical lesions, and bone loss/ Face of the Future: AI and robotics in Global dentistry	2026	978816 8014121	yes	Taneesha publishing
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5	Dr Abhinay Agarwal, Dr Rohit Sharma, Dr Saleem Azhar		Post-Endodontic Restorations Clinical Considerations and Factors Affecting Long-Term Success	2026	978-93-7837-360-2	yes	Book rivers

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Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to website of the Journal	Link to article/paper/abstract of the article	Is it listed in SCOPUS/WoS/Pubmed
Efficacy of pomegranate extract enriched mouthwash versus chlorhexidine mouthwash for plaque and gingivitis control: Randomized clinical trial	Dr. Pradeep Tangade Dr. Vikas Singh Dr. Ankita Jain	Public Health Dentistry	Bioinformation	8/31/2026	0973-2063	https://www.bioinformation.net/	https://www.google.com/goto?url=CAESbgHrOzAV3MEYI9hiLuTQhu4tUKEc0QltIsPprltgIyaoO0a-m4_eCJphZcF5MjOfkIyJRKOgyzlesHyLceky_OxVnqtKkL6KCuhrcKgBoV8mVUrfmbVe4XFxcUSMojozv0eSRJ1vIP_CVKlMmg10	PubMed, PubMed Central (PMC)
To assess serum vitamin D's influence on dental health in adults attending Teerthanker Mahaveer Dental College & Research Centre, Moradabad, Uttar Pradesh, India	Dr. Pradeep Tangade Dr. Vikas Singh Dr. Ankita Jain	Public Health Dentistry	International Journal of Drug Delivery Technology	8/1/2026	0975-4415	https://ijddt.com/	https://ijddt.com/volume16issue74s/	Scopus
Randomized Trial Assessing Oral Hygiene Effectiveness of Chewable Toothpaste Tablets versus Conventional Dentifrice in Undergraduate Dental Students	Dr. Pradeep Tangade Dr. Vikas Singh Dr. Ankita Jain	Public Health Dentistry	Journal of Indian Association of Public Health Dentistry	9/25/2026	2319-5932	https://www.ovid.com/jnls/aphd	https://www.ovid.com/jnls/aphd/fulltext/10.4103/jiaphd.jiaphd_63_25~randomized-trial-assessing-oral-hygiene-effectiveness-of	Web of Science
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Salivary thioredoxin-1 as a non-invasive redox biomarker in oral diseases	Dr. Vikas Singh Dr. Ankita Jain	Public Health Dentistry	World Journal of Clinical Cases	8/6/2026	2307-8960	https://www.wjgnet.com/2307-8960	https://www.wjgnet.com/2307-8960/full/v14/i22/123160.htm	Web of Science
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The Evaluation of Wound Healing Following Periodontal Flap Closure Using Interrupted Suturing Technique: A Prospective Clinical Study	Dr Shalabh Mehrotra	Periodontology	cureus	8/26/2026	2168-8184	https://www.cureus.com/articles/521718-the-evaluation-of-wound-healing-following-periodontal-flap-closure-using-interrupted-suturing-technique-a-prospective-clinical-study#!/	https://pubmed.ncbi.nlm.nih.gov/42799434/	PUBMED

Photobiomodulation Treatment Parameters and Clinical Outcomes Following Periodontal SoftTissue Surgery: A Systematic Review	Dr Shalabh Mehrotra	Periodontology	cureus	9/29/2026	2168-8184	https://www.cureus.com/articles/533666-photobiomodulation-treatment-parameters-and-clinical-outcomes-following-periodontal-soft-tissue-surgery-a-systematic-review#!/	https://www.cureus.com/articles/533666-photobiomodulation-treatment-parameters-and-clinical-outcomes-following-periodontal-soft-tissue-surgery-a-systematic-review#!/	PUBMED
Periodontal Intervention in Soft Tissue Embedded Orthodontic Appliances: A Multidisciplinary Healing Approach and Case Series	Dr Disha Gupta	Periodontology	cureus	7/27/2026	2168-8184	https://www.cureus.com/articles/511247-	https://pubmed.r	PUBMED
To Compare the Efficacy of 5% Sodium Fluoride Varnish, Diode Laser and their Synergistic Application in the Treatment of Dentin Hypersensitivity: A Randomized Controlled Clinical Trial	Dr Amrita	Periodontology	Journal of Chemical Health Risks	7/12/2026	2251-6727	https://www.researchgate.net/publicatior	https://www.rese	SCOPUS
Comparative Clinical Evaluation of Probiotic and Chlorhexidine Mouthwashes in Patients with Plaque-Induced Gingivitis	Dr Amrita	Periodontology	Journal of Chemical Health Risks	9/1/2026	2251-6727	https://jchr.org/index.php/JCHR/article/view/16743/8902	https://jchr.org/index.php/JCHR/article/view/16743/8902	SCOPUS
A clinical study on the effectiveness of Azadirachta indica (neem) as a local drug delivery agent in periodontal disease management	Dr Pooja Walia, Dr Shweta	Periodontology	Bioinformation	8/31/2026	0973-2063	https://www.bioinformation.net/022/973206300224683.pdf	https://www.bioinformation.net/022/973206300224683.pdf	PUBMED
NANDAN Bone Quality Classification (NBQC): A CBCT-based Functional Bone Assessment System for Dental Implantology	Dr Nidhi ,Dr Rohit Nandan	Periodontology	Natural Resources for Human Health	7/16/2026	2583-1194	https://www.nrfhh.com/index.php/journal/article/view/2542/1482	https://www.nrfhh.com/index.php/journal/article/view/2542/1482	**SCOPUS**
Integrated CBCT and Digital Intraoral Scanning for Precision Endodontic, Prosthetic, and Implant Treatment Planning	Dr Nidhi	Periodontology	Natural Resources for Human Health	7/25/2026	2583-1194	https://nrfhh.com/index.php/journal/article/view/593/332	https://nrfhh.com/index.php/journal/article/view/593/332	SCOPUS
Natural Remedies for Oral Health: Assessing Fennel and Cardamom Seeds in Plaque Control and Salivary pH Regulation	Dr Nishant Chauhan, Dr Ambuj Mathur, Dr Shubham Mishra, Dr Swayam Sourav Tripathy	Periodontology	Natural Resources for Human Health	7/31/2026	2583-1194	https://www.nrfhh.com/index.php/journal/article/view/2597	https://www.nrfhh.com/index.php/journal/article/view/2597	SCOPUS

Bilateral Dental Lamina Cysts of the Newborn: A Rare Case Report with Atypical Mandibular Location and Spontaneous Resolution	Dr Nishant Chauhan	Periodontology	Contemporary Clinical Dentistry	9/22/2026	0976-2361	https://www.researchgate.net/publication/414617038_Bilateral_Dental_Lamina_Cysts_of_the_Newborn_A_Rare_Case_Report_with_Atypical_Mandibular_Location_and_Spontaneous_Resolution	https://www.researchgate.net/publication/414617038_Bilateral_Dental_Lamina_Cysts_of_the_Newborn_A_Rare_Case_Report_with_Atypical_Mandibular_Location_and_Spontaneous_Resolution	PUBMED
Rehabilitation of Partially Edentulous Patient with Cast Partial Dentures	Dr Rohit Sharma	Conservative Dentistry & Endodontics	Natural Resources for Human Health 2026, Vol. 6 (4s): 721–727	8/7/2026	2583-1194	https://doi.org/10.53365/nrfhh.818	https://doi.org/10.53365/nrfhh.818	Scopus
Evaluating the efficacy of laser in Conservative and Endodontic treatment	Dr Saleem Azhar	Conservative Dentistry & Endodontics	Bioinformation 22(7): 3891-3895 (2	7/31/2026	0973-2063	Bioinformation.net	DOI: 10.6026/973206300223891	Pubmed
Comparative evaluation of different matrix systemsin peproducing proximal contacts and contours in Class II Composite restorations: An in vitro study	Dr Abhinay Agrawal, Dr Saleem Azhar	Conservative Dentistry & Endodontics	Journal of chemical health risks	8/16/2026	2251-6727	View of Comparative Evaluation of Different Matrix Systems in Reproducing Proximal Contacts and Contours in Class II Composite Restorations: An In Vitro Study	View of Comparative Evaluation of Different Matrix Systems in Reproducing Proximal Contacts and Contours in Class II Composite Restorations: An In Vitro Study	Scopus
Incidence Of Underfilling And Overfilling In Root Canal Treated Teeth Obturated At Working Length Determined By Radiographic And Electronic Apex Locator Using Cbct Evaluation-An In Vivo Study	Dr Rohit Sharma, Dr Anjali Sharma, Dr Saleem Azhar, Dr Madhurima Sharma	Conservative Dentistry & Endodontics	International Journal of Medical Science and Current Research	Jul-26	2209-2870	https://www.ijmscr.com/asset/images/uploads/17853335585257.pdf	https://www.ijmscr.com/asset/images/uploads/17853335585257.pdf	Pubmed
Sea buckthorn in endodontics: A comprehensive review of its antimicrobial efficacy against Enterococcus faecalis in root canal infections	Dr Saurav Bathla	Conservative Dentistry & Endodontics	Endodontics Today	9/16/2026	1683-2981	3. https://doi.org/10.36377/ET-0210	3. https://doi.org/10.36377/ET-0210	Scopus
Neurobiological Links Between Endodontic Pain and Temporomandibular Disorders: A Comprehensive Review	Dr Saurav Bathla	Conservative Dentistry & Endodontics	Cureus	9/3/2026	2168-8184	DOI: 10.7759/cureus.115695	DOI: 10.7759/cureus.115695	Pubmed

Synthesis and Evaluation of Antimicrobial, Anti-inflammatory, and Antioxidant Activities of a 4-Hydroxycinnamic Acid Dentifrice for Orthodontic Subjects: An In Vitro Study	Dr Saurav Bathla	Conservative Dentistry & Endodontics	The Journal of Contemporary Dental Practice	8/25/2026	1526-3711	10.5005/jp-journals-10024-3957	10.5005/jp-journals-10024-3957	Scopus
Clinical and cone beam computed tomographic evolution of platelet rich fibrin for enhanced healing of mandibular fracture	Dr. Deepak Thakur, Dr D.S.Gupta, Dr. Nimish Agarwal	OMFS	IJDDT	8/21/2026	0975-4415	https://ijddt.com/	https://ijddt.com/?s=Clinical+and+cone+beam+computed+tomographic+evolution+of+platelet+rich+fibrin+for+enhanced+healing+of+mandibular+fracture	SCOPUS
Corrugated rubber drain placement as an adjunct to impacted mandibular third molar surgery:Effect on postoperative pain,swelling,trismus and quality of life	Dr. Deepak Thakur, Dr D.S.Gupta, Dr. Nimish Agarwal, Dr. Mimansa Daftary, Dr Anshi Jain	OMFS	IJDDT	7/31/2026	0975-4415	https://ijddt.com/	https://ijddt.com/?s=Corrugated+rubber+drain+placement+as+an+adjunct+to+impacted+mandibular+third+molar+surgery%3AEffect+on+postoperative+pain%2Cswelling%2Ctrismus+and+quality+of+life	SCOPUS
Knotless barbed versus polydioxanone sutures for intraoral wound closure:A Randomized comparative clinical study	Dr. Deepak Thakur, Dr D.S.Gupta, Dr. Nimish Agarwal	OMFS	IJDDT	8/14/2026	0975-4415	https://ijddt.com/	https://ijddt.com/?s=Knotless+barbed+versus+polydioxanone+sutures+for+intraoral+wound+closure%3AA+Randomized+comparative+clinical+study	SCOPUS

A comparative evolution of computer controlled local anesthestic drug delivery device vs. conventional local anesthesia in minor oral surgical procedures	Dr. Deepak Thakur, Dr D.S.Gupta, Dr Shiv Darshan Rao, Dr.Nakul Chaudhary	OMFS	IJDDT	8/3/2026	0975-4415	https://ijddt.com/	https://ijddt.com/?s=A+comparative+evolution+of+computer+controlled+local+anesthestic+drug+delivery+device+vs.+conventional+local+anesthesia+in+minor+oral+surgical+procedures	SCOPUS
Flap design matters: A prospective clinical comparison of modified szmyd and three-cornered flaps in impacted mandibular third molar surgery	Dr. Deepak Thakur, Dr D.S.Gupta, Dr Nimish Agarwal, Dr.Shubham Mishra	OMFS	IJDDT	7/31/2026	0975-4415	https://ijddt.com/	https://ijddt.com	SCOPUS
Natural remedies for oral health:Assessing fennel and cardamom seeds in plaque control and salivatry ph regulation	Dr.Shubham Mishra	OMFS	IJDDT	7/31/2026	2583-1194	https://www.nrfhh.com/index.php/journal	https://www.nrfhh.com/index.php/journal/article/view/2597	SCOPUS
Hollow complete dentures: a simple cost effective, technique using thermol and putty-2 case reports	Ponika Bais, Shalabh Kumar	Prosthodontics	J of Chemical Health Risk	7/31/2026	2251-6727	https://jchr.org/index.php/JCHR	https://jchr.org/index.php/JCHR/article/view/16112	scopus
Evaluation of the relationship between periodontitis and anemia of chronic disease – A comparative study in smokers and smokeless tobacco users	Kanika Gupta Verma	Pediatric and Preventive Dentistry	J Indian Soc Periodontol	2026	0972-124X	https://www.ovid.com/jnls/jisp	10.4103/jisp.jisp_211_25	SCOPUS, PUBMED