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EDITORIAL

Dr. Rekha Jagadish
Editor in Chief
IDA Bangalore Branch

Greetings to all.

" *Behind the scenes: Forensic Dentists – The unsung heroes of air crash disasters* "

In the wake of the tragic Ahmadabad air crash, the role of forensic dentists has been nothing short of invaluable. Air crashes leave not just wreckage, but shattered families desperate for answers. Amidst the chaos, while investigators search for the cause and rescuer retrieve remains, a quiter yet crucial mission unfolds – **Identifying the victim.** Leading this effort behind the scenes are the forensic dentists – the unsung heroes of every air disaster.

The work of these experts is far from easy – it demands precision, patience and psychological resilience. Matching dental charts, radiographs and unique dental features is painstaking, often conducted in temporary morgues under distressing conditions yet through their diligence families can claim their loved ones, perform last rites and find closure amidst unbearable grief.

Let us remember – in every disaster, there are heroes not just on the frontlines but also behind the scenes, ensuring no life goes unnamed.

With Regards,

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PRESIDENT 'S MESSAGE

Dr. (Capt.) Suresh T
President
IDA Bangalore Branch

Greetings to all

"Every smile is a work of art, and every tooth, a testament to our commitment to excellence."

It is with great pride and enthusiasm that I present this inaugural message in our IDA Bangalore Branch Journal. As I step into the role of President, I am excited to embrace the challenges and opportunities that lie ahead, and I am deeply committed to advancing our shared vision of excellence in dentistry.

Our association has long been a beacon of innovation and collaboration, fostering an environment where dental professionals can thrive, learn, and contribute to the broader dental community. This journal stands as a testament to our commitment to knowledge-sharing and academic excellence. It serves not only as a platform for the latest research and clinical advancements but also as a forum for insightful discussions and the exchange of ideas that drive our profession forward.

In this era of rapid technological and scientific progress, our focus remains on elevating patient care and advancing the standards of dental practice. Through continuing education initiatives, groundbreaking research, and community outreach, we are dedicated to nurturing the next generation of dental professionals and ensuring that our field remains at the forefront of healthcare innovation.

I extend my heartfelt gratitude to all members, contributors, and our editorial team for their unwavering support and commitment. Together, let us build on our rich legacy, celebrate our achievements, and pave the way for a future marked by excellence and transformative progress.

SECRETARY 'S MESSAGE

Dr. Shivu M E
Hon. Secretary
IDA Bangalore Branch

Warm Greetings!

It is my pleasure to introduce this first issue of IDA Bengaluru branch for the year 2025.

As Secretary I am delighted to see the high-quality research and insights that our members and contributors have shared with the community.

This journal is a testament to the dedication and expertise of our members, who have worked tirelessly to advance the field of modern dentistry. The articles in this issue showcase the latest developments, trends, and innovations in our field,and provide a valuable resource for scholars, practitioners, and policymakers.

I would like to extend my gratitude to the authors, reviewers, and editors who have contributed to this issue. Your hard work and commitment to excellence have made this journal a valuable asset to our community.

I hope that this issue will inspire and inform readers, and contribute to the ongoing conversation in our field. I look forward to seeing the impact that this journal will have on our field and the broader community.

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Esthetic Rehabilitation of a Partially Edentulous Maxillary Arch Using a Digitally Designed Fixed Dental Prosthesis with Loop Connectors

AUTHORS : **Dr. Tejaswini Jain, Dr. Bharat Raj R, Dr Ashwini HV, Dr Tanuja, Dr. Parmeet Kaur**

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Abstract:

This clinical report describes the esthetic rehabilitation of a partially edentulous maxillary arch in a 54-year-old female patient with missing maxillary right lateral incisor (12) and first premolar (15). The treatment objective was to deliver a prosthesis that met high esthetic demands while preserving anterior spacing and providing optimal biomechanical support. A six-unit fixed dental prosthesis (FDP) from 11 to 16 was digitally planned using CAD/CAM technology. Loop connectors were strategically incorporated in the anterior segment to maintain spacing and esthetics. The prosthesis was fabricated using direct metal laser sintering (DMLS) technology, followed by ceramic layering and cementation with Type I glass ionomer cement.

Keywords: Fixed dental prosthesis, loop connector, digital prosthodontics, intraoral scanner, DMLS, Exocad, anterior esthetics, diastema preservation

INTRODUCTION :

Replacing missing anterior teeth has always posed a significant challenge for prosthodontists, especially when trying to achieve both optimal esthetics and function that meet the high expectations of patients. The anterior region is particularly demanding due to its critical role in appearance and the limited tolerance for error[1]. The situation becomes even more complex when there's a pre-existing diastema or when adjacent teeth have drifted into the edentulous space. This can result in an unusually large mesiodistal width, further complicating the design of the prosthetic replacement[2].Several treatment options are available for replacing missing anterior teeth, including removable partial dentures, fixed partial dentures, and implant-supported prostheses[3].

One often-overlooked yet highly effective option is the use of a loop connector. This non-rigid connector, positioned on the lingual side of the prosthesis, links adjacent retainers and/or pontics. It is particularly useful in cases with a pre-existing diastema, as it helps maintain the space and achieves a more esthetically pleasing outcome without compromising function[1].

Indications for loop connector [2]:

1. When the patient wishes to maintain the diastema,
2. Presence of excessive mesiodistal pontic space
3. Multiple joined prosthetic restorations in clinical situations with presence of localised or generalised spacing between abutments.

Limitations[2]:

1. Leads to food accumulation.
2. Difficulty in maintaining hygiene especially in patients with limited manual dexterity.
3. Interference in tongue movements and phonetics.

4. Relative flexibility as compared to conventional connectors

Case Description

Patient Profile

A 54-year-old female reported to the Department of Prosthodontics with the chief complaint of missing maxillary right lateral incisor (12) and right first premolar (15) and wished to get it replaced superior esthetics. The clinical objective was to restore function and esthetics while maintaining spacing and achieving a natural appearance in the anterior segment. (Fig 1a, b).

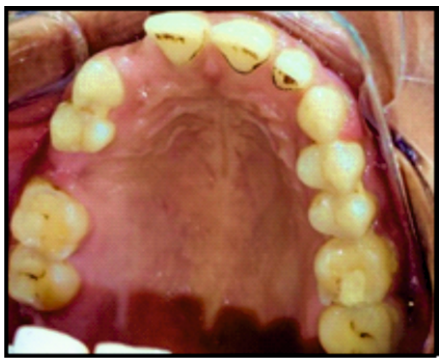

Fig 1 A

Fig 1 B

Clinical and Diagnostic Procedures

Preliminary Phase

Impressions: Maxillary and mandibular alginate impressions were made to obtain diagnostic casts. A diagnostic wax-up was fabricated to visualize the anticipated prosthetic outcome and to obtain patient approval.

Tooth Preparation

Teeth 11, 13, 14, and 16 were prepared following conventional prosthodontic principles to serve as abutments for a six-unit fixed prosthesis. Careful attention was paid to ensure optimal axial reduction, clearance, and finish line integrity to support a metal-ceramic restoration. (Fig 2)

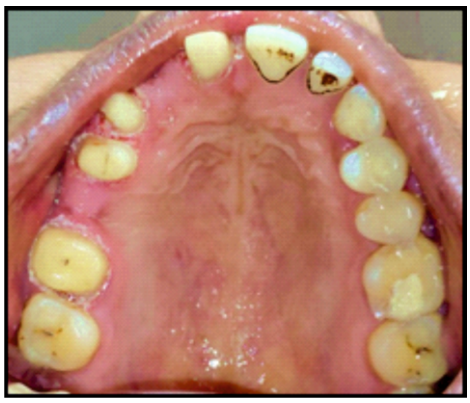

Fig 2

Provisionalization

A provisional fixed dental prosthesis extending from 11 to 16 was fabricated using a direct-indirect technique. The provisional prosthesis was cemented using a non-eugenol temporary cement, allowing for easy removal while protecting the prepared tooth surfaces. (Fig 3a,3b)

Fig 3 A

Fig 3 B

Digital Workflow and Prosthesis Design

Intraoral Scanning

Instead of conventional final impressions, a full-arch intraoral digital scan was performed to capture the prepared teeth and occlusion with high precision. (Fig 4a,4b)

Fig 4 A

Fig 4 B

CAD Design (Exocad)

The definitive prosthesis was digitally designed using Exocad software.A six-unit prosthesis (11–16) was planned, with loop connectors incorporated between 11, 12, and 13 to maintain natural spacing in the esthetic zone.The posterior segment (13–16) was designed as a conventional fixed bridge, ensuring optimal load distribution.(Fig 5)

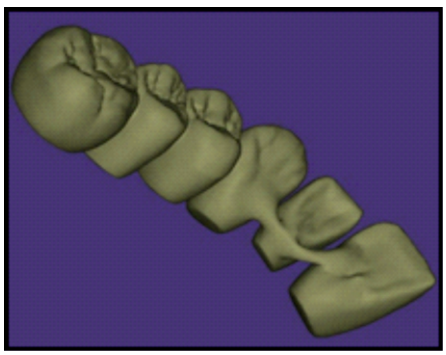

Fig 5 A

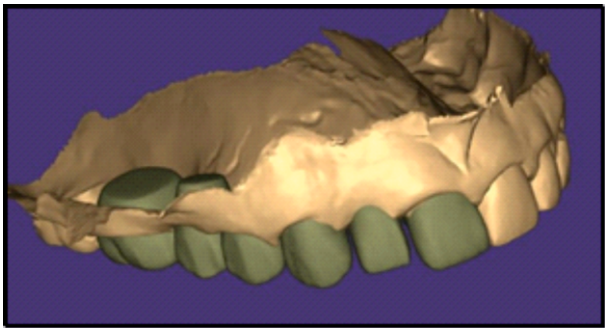

Fig 5 B

Prosthesis Fabrication

Metal Coping Fabrication

The designed framework was fabricated using Direct Metal Laser Sintering (DMLS), a form of additive manufacturing that produces high-strength cobalt-chromium frameworks with excellent fit and structural accuracy.

Metal Try-in

A clinical metal try-in (Fig 6a,6b) was performed to verify fit, marginal integrity, and passive adaptation of the framework. Occlusion and connector positioning were also evaluated. Upon patient and clinician approval, the case proceeded to ceramic layering.

Fig 6 A

Fig 6 B

Esthetic Layering and Cementation

Ceramic buildup was performed on the DMLS coping to achieve harmonious color blending and translucency. Following intraoral try-in and minor esthetic adjustments, the final prosthesis was finished and polished. Definitive cementation was carried out using Type I Glass Ionomer Cement, providing chemical adhesion and long-term biocompatibility. (Fig 7a,7b)

Fig 7 A

Fig 7 B

Outcome and Follow-up

The patient expressed high satisfaction with the final result, particularly the preservation of anterior spacing which contributed to her personal esthetic identity. Occlusion was balanced, and periodontal health was maintained. The patient was advised on oral hygiene maintenance and scheduled for periodic reviews.

Discussion

This case exemplifies the successful integration of digital and conventional prosthodontic techniques to address complex esthetic demands. The use of loop connectors enabled preservation of anterior diastemas without compromising the strength or function of the prosthesis. Additionally, intraoral scanning and CAD/CAM workflows eliminated conventional impression errors and improved fabrication precision.

The DMLS process offers enhanced mechanical properties and passive fit compared to traditional casting techniques, while Exocad provides flexibility in designing complex connector geometries tailored to individual esthetic needs.

Conclusion

Digitally designed fixed partial dentures with loop connectors present a viable solution in cases requiring the preservation of anterior spacing. When combined with advanced scanning and additive manufacturing techniques, such restorations can meet high esthetic expectations while ensuring mechanical durability and periodontal compatibility.

References

1. Mishra A, Chopade SR, Rastogi R, Thareja P. Loop Connectors: An Overlooked Solution to Missing Anteriors. Annals of Prosthodontics and Restorative Dentistry. 2016 Jan;2(1):26-8.

2. Srinivasan K, Mathew CA, Kannan S. Estheticrehabilitation of anterior missing teeth with loop connector: a case report. J Clin Diagn Res. 2018;12(3):ZD07–ZD09

3. Shah DS, Raj APN, Aatika, Bumb PP. Loop connectors in fixed prosthodontics: a case report. TMU J Dent. 2021;8(3):22–25.

4. Ashwini BL, Hiremath V. Anterior loop connector fixed partial denture in replacing missing central incisor: a case report. CODS J Dent. 2013;5(2):1–2

5. Dandekeri SS, Dandekeri S. Single anterior tooth replacement by a cast lingual loop connector – a conservative approach. J Clin Diagn Res. 2014;8(9):ZD07–ZD08

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Knowledge and Awareness Regarding Dental Management of Children With Bleeding Disorders Among Pediatric Postgraduates And Pediatric Dentists: A Questionnaire Based Study

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INTRODUCTION

ABSTRACT

AIMANDOBJECTIVE

This study aims to evaluate the knowledge, awareness, and clinical preparedness of pediatric dental professionals regarding the management of children with bleeding disorders. Given the high-risk nature of invasive dental procedures in such patients, the study seeks to identify educational gaps and propose recommendations for improved training and protocol development.

MATERIALS&METHODOLOGY:

A cross-sectional, questionnaire-based survey was conducted in 2024 among pediatric dental professionals across the state. The survey instrument, developed through literature review and expert validation, comprised 28 questions targeting knowledge, awareness, and clinical experience related to bleeding disorders. The questionnaire was disseminated via Google Forms, and responses were analyzed using SPSS version 26.0. Descriptive statistics were employed to summarize participant demographics and survey findings.

RESULTS:

A total of 101 pediatric dental professionals participated, the majority being female (81.2%) and under 35 years of age (89.1%) with ≤10 years of experience. Most respondents worked in academic institutions (77.2%). While 94.1% routinely inquired about a history of bleeding disorders and 97.0% acknowledged the importance of preoperative precautions, only 50.5% felt confident in managing such patients. Clinical exposure was reported by 63.4% of respondents, and 99% sought physician consent prior to treatment. Pressure application was the most preferred hemostatic method (71.3%). Despite general awareness, variability existed in understanding diagnostic tests and treatment protocols. All participants agreed on the need for greater emphasis on bleeding disorders in dental education.

CONCLUSION:

The findings reveal a generally high level of awareness but insufficient clinical confidence among pediatric dental professionals in managing children with bleeding disorders. This highlights the need for enhanced educational strategies, including curriculum integration, simulation-based training, and continued professional development. Bridging these knowledge gaps is essential to ensure safe, competent, and effective care for this medically vulnerable patient group.

KEYWORDS

Bleeding disorders, Pediatric dentistry, Hemostasis, Hemophilia, von Willebrand disease, Dental management, Anticoagulant therapy, Patient safety.

INTRODUCTION

Bleeding disorders encompass a range of conditions characterized by an impaired ability to achieve effective hemostasis, often due to abnormalities in platelets or coagulation factors.

Platelets play a pivotal role in clot formation by aggregating at sites of vascular injury. These disorders may be classified as platelet-related (e.g., thrombocytopenic purpura, von Willebrand disease), coagulation factor deficiencies (e.g., hemophilia), or based on etiology as either congenital or acquired. Acquired causes include systemic conditions such as leukemia, infections, nutritional deficiencies, disseminated intravascular coagulation (DIC), and adverse drug reactions [1,2].

As many of these disorders may interact with pharmacologic agents, clinical management must be carefully tailored to mitigate bleeding risks. Dental practitioners hold a critical responsibility in the safe management of such patients, particularly during invasive procedures. Therefore, a comprehensive understanding of the types and implications of bleeding disorders is essential to minimize complications and ensure optimal patient outcomes [3,4].

When a patient with a known or suspected bleeding disorder presents for dental treatment, it is imperative that the dental practitioner conducts a thorough coagulation assessment prior to initiating any invasive procedures. This includes evaluating relevant hemostatic parameters and, when applicable, adjusting anticoagulant therapy.Such preoperative evaluation is essential to determine the patient's capacity to achieve adequate postoperative hemostasis and to assess the potential risks of thrombosis or embolic events. A careful, individualized approach ensures both the safety and efficacy of the planned dental intervention [4,5].

Furthermore, the delivery of prophylactic, restorative, and surgical dental care to patients with bleeding disorders is most effective when carried out by dental practitioners who have a thorough understanding of the underlying pathology and the available treatment options.Such knowledge is critical in minimizing the risk of complications during invasive procedures and ensuring the safe and effective management of these medically complex patients [4,5,6].

The rationale for conducting this study is rooted in the critical importance of safe and effective dental care for pediatric patients with bleeding disorders. These conditions pose unique clinical challenges that require specialized knowledge, particularly during invasive dental procedures where the risk of bleeding complications is heightened. Pediatric dentists and postgraduate students are often at the forefront of managing such patients, and their level of awareness and understanding directly influences treatment outcomes and patient safety.

By assessing the knowledge and awareness of pediatric dental professionals regarding the dental management of children with bleeding disorders, this study aims to identify gaps in education and clinical preparedness. The findings can guide the development of targeted educational programs, improve clinical protocols, and ultimately enhance the quality of care delivered to this vulnerable patient population.

MATERIALS AND METHODS

The data for this study were obtained through a structured questionnaire-based survey conducted in the year 2024. The primary instrument for data collection was an online questionnaire specifically designed to assess the level of knowledge and awareness among pediatric dental professionals regarding the management of children with bleeding disorders.

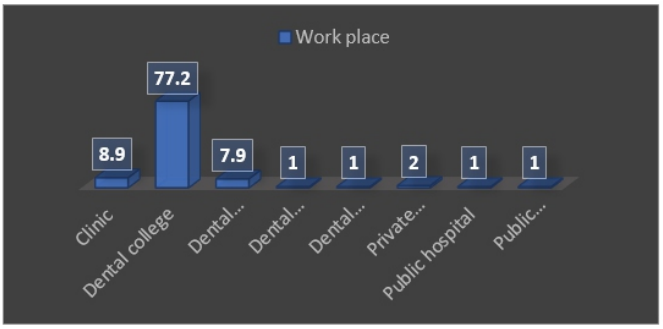
The development of the questionnaire involved a comprehensive review of existing literature and consultation with subject matter experts to ensure content validity. Based on expert recommendations and prior validated tools, a total of 28 questions were finalized for inclusion.

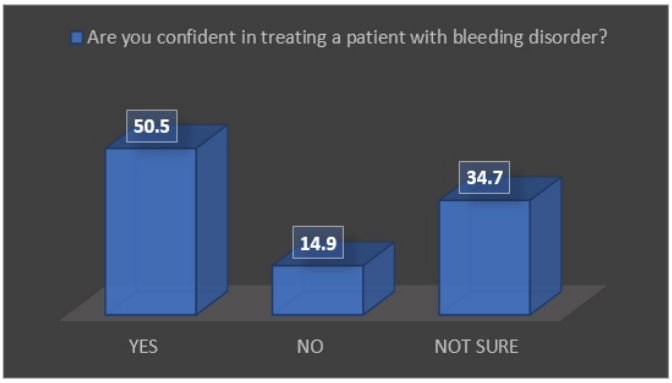
The survey was disseminated digitally using Google Forms, and targeted pediatric dentists practicing across the state. The questionnaire link was shared through professional networks and email to ensure wide participation. In addition to knowledge- and awareness-based items, the questionnaire collected key demographic information, including participants' gender, age, years of clinical experience, and area of specialization. It also gathered data on their previous clinical exposure to managing children with bleeding disorders.

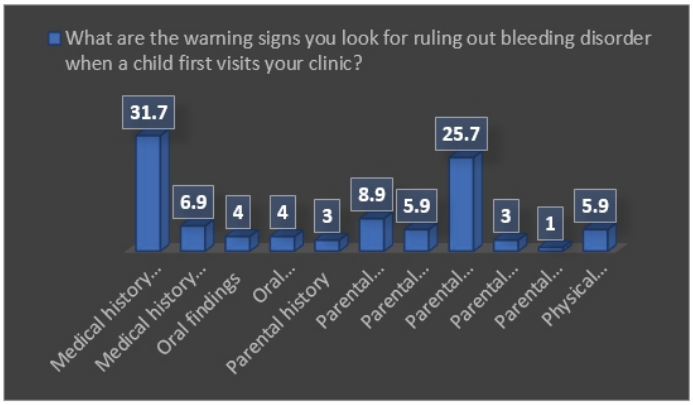
A total of 101 pediatric dental professionals

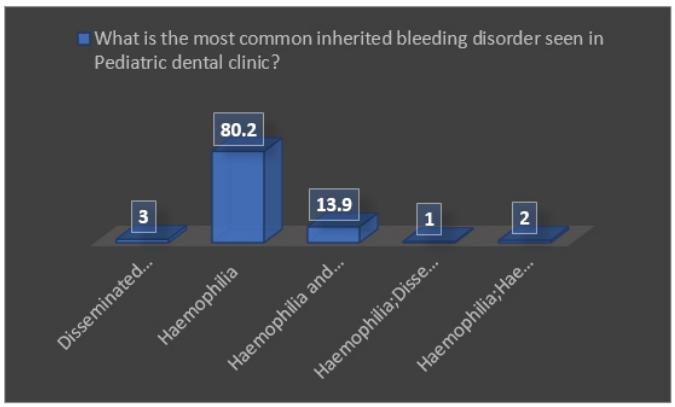
responded to the survey. Upon completion of data collection, responses were systematically compiled and subjected to statistical analysis using SPSS version 26.0 for Windows. Descriptive statistics were computed to summarize the demographic characteristics of the respondents and to quantify levels of knowledge and awareness. These analyses provided foundational insights into current educational gaps and guided recommendations for enhancing clinical preparedness in pediatric dental settings.

RESULT









The survey included participation from 101 pediatric dental professionals.The majority (89.1%) were aged ≤35 years and had ≤10 years of professional experience. Most respondents (77.2%) worked in academic institutions, and the sample was predominantly female (81.2%).

Regarding clinical practices, 94.1% reported routinely inquiring about a patient's history of bleeding disorders, while 79.2% included family history. A strong awareness of perioperative precautions was evident, with 97.0% and 95.0% acknowledging the importance of pre- and postoperative measures, respectively. Furthermore, 92.1% recognized the potential for fatal bleeding if improperly managed.

Despite this awareness, only 50.5% felt confident in managing patients with bleeding disorders, while 34.7% expressed uncertainty. Greater confidence was noted among those with over 10 years of experience. Notably, 100% agreed that the dental curriculum requires enhanced emphasis on this topic.

Clinical encounters with bleeding disorder cases were reported by 63.4% of participants, with 99%

referring patients for physician consent. Pressure application was the most preferred hemostatic method (71.3%).

Knowledge regarding diagnostic testing and clinical presentation was variable. While 86.1% correctly identified bleeding and clotting time as key preliminary tests, understanding of PT/aPTT prolongation varied across conditions such as hemophilia, DIC, and von Willebrand's disease.

Finally, 93.1% agreed that dental care significantly impacts the overall health of patients with bleeding disorders, reinforcing the need for better training and evidence-based protocols in pediatric dental practice.

DISCUSSION

Bleeding disorders in children, such as hemophilia and von Willebrand's disease, present unique challenges in pediatric dentistry, particularly due to their potential to cause unanticipated or prolonged bleeding during routine procedures. Pediatric dentists, as early-care providers, are often in a unique position to identify the first clinical signs of such conditions. This underscores the necessity for strong foundational knowledge in bleeding pathophysiology, thorough history-taking, and appropriate perioperative management strategies to mitigate complications and facilitate early diagnosis.

The present study reaffirms the essential role pediatric dentists play in identifying and managing bleeding disorders. However, consistent with earlier literature, it also reveals notable gaps in confidence and clinical preparedness. Robati et al., in a study conducted among general dental practitioners in Shiraz, Iran, found a limited understanding of inherited bleeding disorders and anticoagulant management, emphasizing the need for enhanced professional training and awareness[3]. Likewise, Ribeiro et al. observed that final-year dental students in Brazil had insufficient knowledge of von Willebrand's disease, further indicating a lack of integration of hematological considerations in dental education [7].

A key demographic observation from this study was the predominance of younger professionals: 89.1% of respondents were aged 35 or below, and a similar proportion had 10 years or less of clinical experience. Most participants (77.2%) were affiliated with academic institutions, primarily dental colleges. With females comprising 81.2% of the sample a significant gender skew was noted reflecting evolving trends in the pediatric dental workforce.

Encouragingly, a majority of participants demonstrated strong awareness of the importance of patient medical history, with 94.1% routinely inquiring about a history of bleeding disorders and 79.2% asking about family history. This practice is fundamental in recognizing underlying coagulopathies prior to treatment. Moreover, most respondents acknowledged the need for preoperative (97.0%) and postoperative (95.0%) precautions, highlighting their clinical vigilance and risk awareness.

Clinical exposure to patients with bleeding disorders was reported by 63.4% of respondents, and among them, 99% sought medical clearance from a physician prior to treatment. These figures reflect a responsible and collaborative approach to care and are in line with findings by Potdar et al., who reported that 82.5% of general practitioners endorsed the importance of obtaining physician consent [8], and Gopalasamy et al., who observed a similar trend among 70% of final-year students and postgraduates [5].

However, variability was observed in the understanding of treatment protocols, particularly with respect to factor replacement therapy. While 57.4% of respondents advocated for its preoperative use, 39% supported both pre- and postoperative administration, suggesting a need for clearer clinical guidelines in this area. Pressure application was the most widely preferred method for controlling hemorrhage (71.3%), with statistically significant correlations to years of experience. This aligns with the findings of George A et al., where 77.4% of participants also favored pressure as a primary method of hemostasis [1].

Despite relatively high awareness levels, only 50.5% of participants reported feeling confident in managing patients with bleeding disorders, while

34.7% expressed uncertainty. This is consistent with the findings of Ann Mary George et al., who reported that fewer than half of surveyed dental students in Malaysia felt confident in treating hemophilic patients[7].Their study also highlighted the general reliance on physician consent prior to extractions mirroring the cautious approach seen in our cohort.

A unanimous need for detailed inclusion of dental management of bleeding disorders in the undergraduate and postgraduate curriculum was reflected from the study. This strong consensus underscores the urgent need for structured educational reform, including focused lectures, case-based learning, simulation training, and continuing education modules. The association of clinical experience and higher knowledge levels emphasize the importance of practical exposure in shaping competence and decision-making confidence.

While the findings provide valuable insights, the study is not without limitations. The relatively small sample size may restrict generalizability, and the cross-sectional nature limits the ability to assess changes in knowledge or practice over time. Future research involving larger, more demographically diverse cohorts and longitudinal designs is recommended to deepen understanding and support the development of standardized, evidence-based educational and clinical protocols.

CONCLUSION

This survey underscores a generally high level of awareness and a cautious approach among pediatric dental professionals in the management of children with bleeding disorders. However, a significant proportion of respondents reported low confidence in handling such cases, highlighting the pressing need for focused educational initiatives and advanced clinical training. While those with greater clinical experience exhibited improved knowledge and decision-making capabilities, the overall results reveal critical gaps in preparedness. These findings emphasize the importance of integrating comprehensive training modules into dental curricula to equip practitioners with the necessary skills for managing this high-risk patient group. Addressing these educational shortcomings is vital for ensuring safe, effective, and informed care. Further research involving larger and more diverse populations is recommended to substantiate these findings and inform the development of robust, evidence-based educational frameworks.

REFERENCES

1. Abed H, Ainousa A. Dental management of patients with inherited bleeding disorders: a multidisciplinary approach. General dentistry. 2017 Nov 1;65(6):56-60.
2. Russeau AP, Vall H, Manna B. Bleeding time. InStatPearls [Internet] 2023 Aug 8. StatPearls Publishing.
3. Alnaim T, Almajed O, Alqahtani S, Alhulibi I, Bokhari SA. Assessment of the Dental Students and Dental Practitioners Awareness about Bleeding Disorders across Saudi Arabia. Journal of Pharmaceutical Research International. 2021;33(60B):2739-44
4. Brewer A, Correa ME. Guidelines for dental treatment of patients with inherited bleeding disorders. Haemophilia. 2005;11(40):504-9.
5. Gopalasamy K. Awareness among final year and postgraduate dental students on bleeding disorders': a questionnaire based study. IJSR. 2017;6(3):2157-61.
6. Johnson WT, Leary JM. Management of dental patients with bleeding disorders: review and update. Oral surgery, oral medicine, oral pathology. 1988 Sep 1;66(3):297-303.
7. George AM, Mayya A, Mayya A, Iszham AB, Rafi NH, Marius R, Mayya SS. Knowledge and Awareness regarding Dental Management of Hemophilic Patients among Students of a Malaysian University: A Cross-Sectional Study. The Open Dentistry Journal. 2022 Jul 13;16(1).
8. Potdar S, Ahmad E, Al-Johani K, Al Mushayt A, Reddy SG. Assessment of the Dental Students Awareness about Bleeding Disorders in Buraidah and Riyadh city, Saudi Arabia.

Advances in Human Biology. 2016 Jan 1;6(1):7-11.

9. Shivakumar VH, Garg R, Tegginamani AS, Gupta VV. Dental Considerations of Hereditary Bleeding Disorders in Children: An Overview. Oral & Maxillofacial Pathology Journal. 2022 Jan 1;13(1).

10. Raikuna AF, Prabhu N. Protocols for Oral Health Management of Paediatric Patients with Inherited Bleeding Disorders: A Narrative Review. Oral. 2023 Oct 5;3(4):462-76.

11. Martínez-Rider R, Garrocho-Rangel A, Márquez-Preciado R, Bolaños-Carmona MV, Islas-Ruiz S, Pozos-Guillén A. Dental management of a child with incidentally detected hemophilia: Report of a clinical case. Case reports in dentistry. 2017; 2017(1):7429738.

12. Nagaveni NB, Arekal S, Poornima P, Hanagawady S, Yadav S. Dental health in children with congenital bleeding disorders in and around Davangere: A case-control study. Journal of Indian society of pedodontics and preventive dentistry. 2016 Jan 1;34(1):76-81.

13. Gaviappa D, Shetty AK, Jeniffer N, Ramu SA, Sharma S, Narayanan R. Incidental Diagnosis of Christmas Disease in a 5-year-old Child: A Case Report. International Journal of Clinical Pediatric Dentistry. 2025 Mar 20;18(2):235-8.

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Aesthetic Improvement of Hypomineralized Enamel Lesions With Resin Infiltration: A Conservative Treatment Approach

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ABSTRACT:

Introduction:

Resin infiltration provides a non-invasive treatment option for discoloured anterior non-cavitated lesions, which commonly patients can present for aesthetic needs and treatment. To achieve a non-invasive aesthetic result that fulfills the patient's expectations and is clinically acceptable.

Method: The author reports on one case of a female patient that was concerned with the non-cavitated discoloured anterior lesions on her teeth. The treatment proposed to the patient was a conservative approach by the use of Icon® resin infiltration.

Results: The treatment provided an aesthetic result that was non-invasive and produced a satisfactory outcome.

Conclusion: Resin infiltration provides a non-invasive treatment option with a satisfactory outcome as presented in this case.

Keywords

White spot lesions; Icon® resin infiltration; Aesthetics; Non-invasive treatment, Enamel Hypoplasia.

INTRODUCTION

Aesthetics and minimally invasive dentistry have increasingly become integral to modern treatment approaches. Appearance plays a crucial role in comprehensive oral care, and meeting patient expectations in this regard often presents challenges. With a focus on conservative techniques, our goal is always to preserve as much natural tooth structure as possible.[1]

Resin infiltration, introduced in 2009, offers a micro-invasive treatment option for managing early enamel lesions. Icon® resin infiltration (DMG America, Englewood, NJ, USA) is a well-established system in this category. [2] It utilizes a 15% hydrochloric acid etchant to remove the surface layer of the decalcified enamel, allowing penetration to a depth of approximately 58 ± 37 µm. [3,4] This process provides access to the body of the lesion, enabling the low-viscosity resin to infiltrate and occlude the porous enamel. Once infiltrated, the resin renders the lesion watertight. With a refractive index (RI) of 1.44—closely matching that of healthy enamel (RI = 1.63)—the resin not only improves the aesthetic appearance but also creates a barrier within the lesion that inhibits further acid diffusion.[5]

Resin infiltration is primarily recommended for the treatment of hypomineralized enamel and early carious lesions. Compared to other treatment options such as microabrasion, tooth whitening, composite restorations, or veneers—which are generally more invasive—resin infiltration offers even more conservative approach. This makes it a viable and attractive option, particularly for managing early dental caries on anterior teeth. Its noninvasive nature, combined with the growing

emphasis on minimally invasive dentistry, supports its use as a preferred first-line treatment.[6]

The objective of this article is to report the outcome of the treatment provided by using resin infiltration on non-cavitated discoloured anterior lesion.

CASE PRESENTATION

A 27-year-old female patient presented with concerns about the appearance of white patches on her front tooth, which were causing aesthetic dissatisfaction. She was medically fit and well, with no current medications or known allergies.

Extraoral examination revealed no swelling, facial asymmetry, or lymphadenopathy. Intraoral examination showed healthy soft tissues with no abnormalities. The upper anterior teeth exhibited white opaque discoloration, particularly noted as a hypomineralized and stained area on the labial surface of tooth 21. The lesion was hard in consistency and the enamel remained intact.

All treatment options were thoroughly discussed with the patient and her mother, including potential risks, complications, and the expected prognosis. The patient provided informed consent for the selected treatment—a minimally invasive approach using resin infiltration.

The treatment was performed under rubber dam isolation to ensure optimal moisture control, prevent contamination, avoid soft tissue irritation, and provide the high level of isolation required for this technique-sensitive procedure. The protocol involved eight distinct stages, which are summarized in Table 1 along with the composition of the resin infiltration product used. [7]

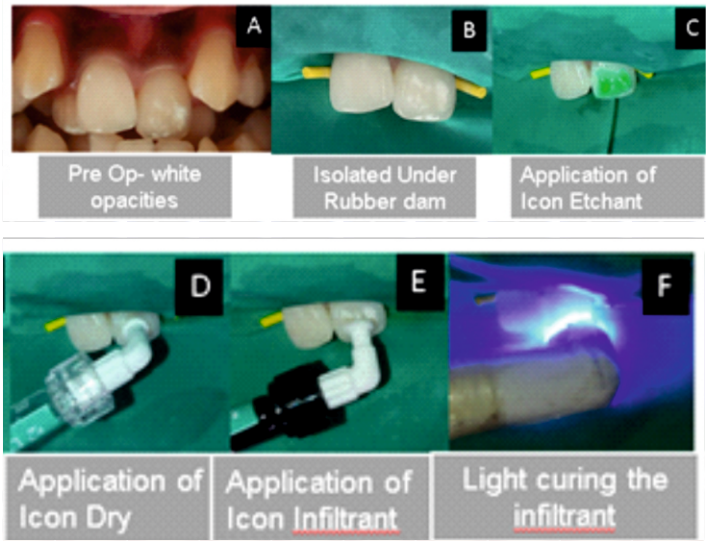
Material	**Icon® Resin infiltration**
Manufacturer	DMG-Hamburg, Germany
Composition	1. Icon-Etch (HCl 15%)
	2. Icon-Dry (99% ethanol)
	3. Icon-Infiltrant (methacrylate-based resin matrix, initiators, additives)
Directions of usage	1. Clean tooth
	2. Apply Icon-Etch. Let set for 2 min
	3. Rinse off with water for 30s. Air dry
	4. Apply Icon -Dry. Let set for 30s. Air dry
	5. Apply Icon-Infiltrant. Let set for 3 min
	6. Light-cure for 40s
	7. Apply Icon-Infiltrant. Let set for 1 min
	8. Light-cure for 40s

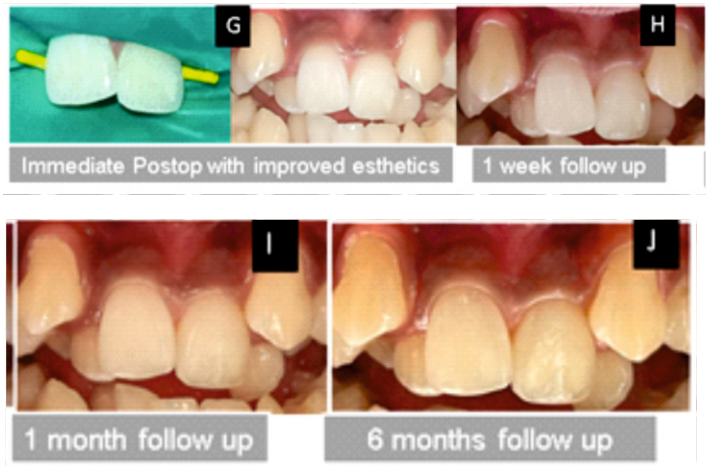
Table 1: Composition and Direction of usage for Icon Resin Filtration®.

OUTCOME

The treatment yielded a satisfactory outcome, as evidenced by the pre- and post-operative photographs (Figure 1a–1j). There were no reports of gingival or soft tissue irritation, and the patient experienced no post-operative sensitivity or pain. The patient expressed great satisfaction with the final result and was visibly pleased with the aesthetic improvement. 6 months follow up showed stable esthetics with no rebounce phenomenon of white spots.

FIGURE 1- representing the clinical images of the treatment procedure





DISCUSSION

This case successfully demonstrated the use of resin infiltration as a minimally invasive treatment for discolored, non-cavitated lesions. The technique effectively preserved tooth structure and was associated with no reported complications. The initial results were promising, and follow-up assessments also revealed satisfactory outcomes.

A systematic review has also highlighted resin infiltration as an effective treatment modality.[8] In this case, the lesion presented as white opaque area which is similar to hypomineralization white spot lesions, which has likewise shown favorable results with resin infiltration.[9] Despite the encouraging outcomes, there is a recognized need for further clinical studies to strengthen the evidence base—a conclusion supported by another systematic review.[10]

Although some studies report promising results regarding color stability and long-term effectiveness, these findings remain somewhat controversial, underlining the necessity for more comprehensive future research.[11,12] Beyond aesthetic improvement, resin infiltration has also been explored for its utility in resealing intact restorations with defective margins, showing additional clinical benefits.[13]

CONCLUSION

For a non-invasive, non-cavitated discoloured lesions Resin Infiltration provides a suitable and justifiable treatment option as illustrated in this case report.

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REFERENCES

1. Ndokaj A, Jedlinski M, Pasqualotto D, Stamegna C, Capocci M, et al. Treatment of developmental defects of enamel. Clin Ter 2021;171: e55-e56.
2. DMG America (2019) Icon Celebrates 10years. DMG Newsletter.
3. Paris S, Meyer-Lueckel H, Kielbassa AM. Resin infiltration of natural caries lesions. J Dent Res 2007; 86: 662-666.
4. Meyer-Lueckel H, Paris S, Kielbassa AM. Surface layer erosion of natural caries lesions with phosphoric and hydrochloric acid gels in preparation for resin infiltration. Caries Res. 2007; 41: 223-230.
5. Kanan A, Padmanabhan S. Comparative evaluation of Icon® resin infiltration and Clinpro™ XT varnish on colour and fluorescence changes of white spot lesions: a randomized controlled trial. Prog Orthod. 2019; 20: 23.
6. Gençer MDG, Kirzioğlu Z. A comparison of the effectiveness of resin infiltration and microabrasion treatments applied to developmental enamel defects in color masking. Dent Mater J. 2019; 38: 295-302.
7. Taher NM, Alkhamis HA, Dowaidi SM. The influence of resin infiltration system on enamel microhardness and surface roughness: An in vitro study. Saudi Dent J. 2012; 24: 79-84.
8. Doméjean S, Ducamp R, Léger S, Holmgren C. Resininfiltration of non-cavitated caries lesions: a systematic review. Med Princ Pract. 2015; 24: 216-221.
9. Perdigão J. Resin infiltration of enamel white spot lesions: An ultramorphological analysis. J Esthet Restor Dent. 2020; 32: 317-324.
10. Manoharan V, Arun Kumar S, Arumugam SB, Anand V, Krishnamoorthy S, et al. Is Resin Infiltration a Microinvasive Approach

to White Lesions of Calcified Tooth Structures?: A Systemic Review. Int J Clin Pediatr Dent. 2019; 12: 53-58.

11. Gözetici B, Öztürk-Bozkurt F, Toz-Akalın T. Comparative Evaluation of ResinInfiltration and Remineralisation of Noncavitated Smooth Surface Caries Lesions: 6-month Results. Oral Health Prev Dent.2019; 17: 99-106.

12. Chen M, Li JZ, Zuo QL, Liu C, Jiang H, et al. Accelerated aging effects on color, microhardness and microstructure of ICON resin infiltration. Eur Rev Med Pharmacol Sci. 2019; 23: 7722-7731.

13. Espigares J, Hayashi J, Shimada Y, Tagami J, Sadr A. Enamel margins resealing by low-viscosity resin infiltration. Dent Mater J. 2017 37: 350-357.

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A Novel Approach to Ranula Decompression: The Aluko Technique

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ABSTRACT

Ranulas are cystic lesions beneath the ventral surface of the tongue, on floor of oral cavity. These may arise from various etiology, extravasation of mucous being the common cause. Ranulas vary in size from around 4 cm until 10 cm, in big-sized can cause a tongue deviation and in extreme-sized and expanding downward penetrating mylohyoid muscle presenting as plunging ranula. Treatment of this lesion involves both non invasive methods like injection of sclerosing agents and or cryotherapy, and invasive methods like marsupialization, modified micro marsupialization, aiming at establishing drainage of mucus content of the cyst. Recurrent and large ranula's (>10cm) are traditionally treated by surgical excision along with the corresponding side of sublingual gland. Despite all the treatment, some patients report with considerable high incidence of recurrence. This article presents a case of ranula of the floor of the oral cavity treated by a lesser invasive technique called The Aluko technique.

Key Words :

Ranula, Marsupialization, Incision and Drainage, Cryosurgery, Recurrence.

INTRODUCTION :

A ranula is a fluid filled lesion on the floor of the oral cavity, that develops when mucus extravasates into the surrounding tissue, either as a pseudocyst or retention cyst[1]. These are dome-shaped, blue, cystic growths in the floor of the oral cavity that look alike a frog's underbelly[2]. They are typically painless huge in swelling due to its resemblance to the protruding underbelly of a frog, the term "ranula" is derived from the Latin word "rana," which means frog[3].

Depending on where they are in relation to the mylohyoid muscle, ranulas can be classified as simple or plunging; simple ranulas are limited above the muscle, while plunging ranulas extend inferior to the mylohyoid muscle[3]

A mucus retention cyst or, more frequently, a mucus extravasation pseudocyst that is limited to the mouth's floor could be the cause of a simple ranula. A cervical ranula, also known as a plunging ranula, is a mucus extravasation pseudocyst that originates from the sublingual gland and manifests as a neck swelling.[3]

The treatment of ranulas varies and includes ranula-only excision, cryosurgery, marsupialization only, marsupialization with cauterization, intraoral surgical excision of the sublingual gland, lncision and drainage, and cervical approach surgical removal of the lesion occasionally in conjunction with sublingual gland excision.[4]

Even though there are numerous methods for treating ranula, they are typically rather invasive and have a considerable recurrence rate. Therefore this article presents a case of Ranula of the floor of the oral cavity, decompressed by a less invasive approach, the stitch and stab technique.

CASE REPORT

A 35 year old Female patient reported to the Department of Oral and Maxillofacial Surgery, GDCRI with the complaint of swelling beneath her tongue on the right side since 1 year with history of recurrent increase in size and associated pain while swallowing. Patient gave no history of trauma, and no significant medical history. On extraoral examination, no extraoral swelling was noted, lymph nodes were non tender and non-palpable bilaterally.

Intraoral examination revealed a translucent, well defined, dome shaped swelling on the floor of the oral cavity on the right side. The swelling was seen extending lingually from mesial aspect of 47 to distal aspect of 44 (Figure 1a & 1b). On palpation the swelling was fluctuant, tender, compressible and soft in consistency. Mandibular occlusal radiograph revealed no evidence of sialolith hindering submandibular gland ducts. USG was done to rule out cervical extension of ranula, which reported no other abnormality.

Figure 1(a &b)

Based on the clinical, and radiological investigations diagnosis was made as Ranula. All routine blood investigations were done and treatment plan of ranula decompression using Aluko technique was made.

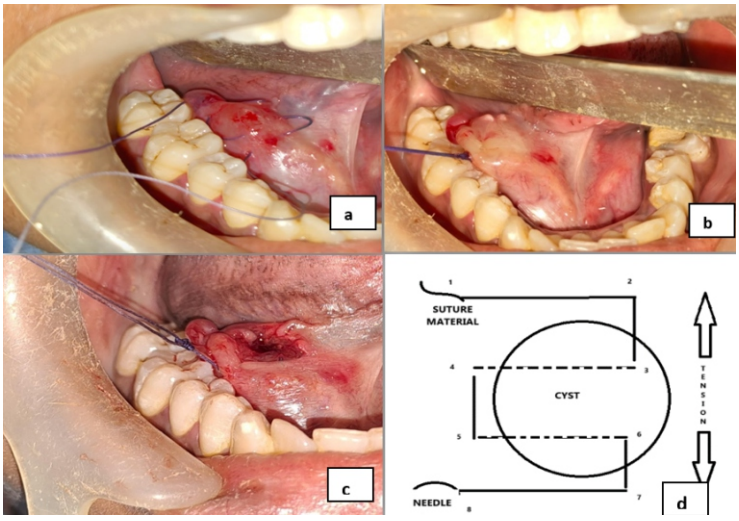
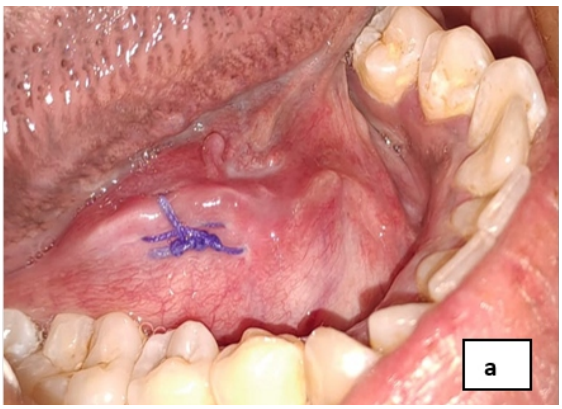


Figure 2 (a, b, c & d)

The surgical procedure was done as described by the Aluko technique under local anesthesia after thorough intra oral irrigation with betadiene. In order to achieve eight sites where the suture material perforates the cyst's roof, the stitch-and-stab procedure was proceeded by utilizing four parallel sequential piercing of the needle with attached vicryl 3-0 suture material in alternatively opposed orientations as shown in figure 2a.

The suture's free ends were pulled together to form a knot (figure 2b). A cut slit was given away from the knot towards the midline to facilitate drainage (Figure 2c). Figure 2d depicts graphical representation of the Aluko technique.

Through the sliced slit, mucinous material was observed to drain out. since the knotted suture was given using vicryl (absorbable material), it is kept in place until it apparently falls off.



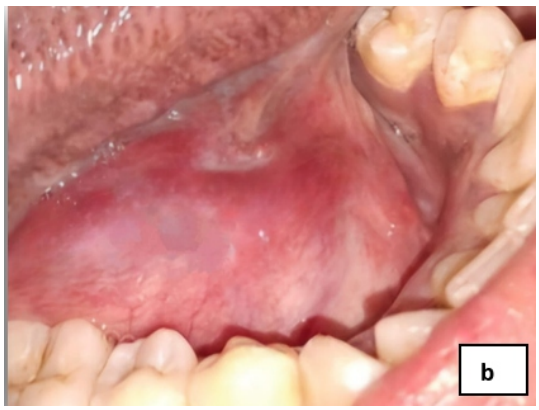


Figure 3(a &b)

Weekly check-ups were performed on the patient until the suture dissolved. Figure 3a shows post operative 1 week follow up. Figure 3b shows post operative follow up at 15 days.

DISCUSSION :

Ranulas are uncommon mucoceles found in the floor of the oral cavity3. They occur as a result of extravasation or blockage of excretory channels, which causes saliva from the sublingual gland to accumulate.[5]

A traumatic rupture of the excretory duct is the first step in the creation of a ranula. The second step is the seepage and subsequent accumulation of saliva within the tissue[5]

The majority of ranulas affect children and adolescents. In contrast, it is also observed in the third age of life, with females experiencing the majority of cases as seen with our case.[6] A typical association between ranula and submandibular space is that the latter might be invaded in cases of dysfunction of the salivary glands.6 Knowing the anatomical shape of the area in the neck can be crucial for choosing the right course of treatment.6 Since the cervical extension of the ranula in our case was ruled out with USG, we proceeded with the conventional Incision and drainage approach.

Various approaches to treatment have been used to address ranulas. Conservative and nonsurgical treatment reduces the chance of surgical complications and morbidities.[7] One nonsurgical treatment option for ranulas is sclerosing therapy, which involves the use of various sclerosing agents such as ethanol and OK-432 . Certain surgeons have also documented the use of liquid nitrogen and intra-cystic injections of steroids.[7]

The most common traditional method of treating ranulas is surgical removal of the sublingual gland and the associated ranula; however, this procedure carries risks, including the potential for recurrence and injury to important structures including the lingual nerve and Wharton's duct. Thus, in order to minimize potential consequences, surgeons recommend using minimally invasive procedures to treat the lesion, such as modified micro marsupialization, micro marsupialization, and marsupialization.[7]

The Aluko technique is one such minimally invasive procedure that requires only one suture and requires less time. In our case by following the Aluko technique we placed a single suture by using four parallel consecutive piercing of the needle through the roof of the cyst. Suture placement before slitting eliminates the need to hold the slit edges with potentially tissue-crushing forceps, allowing for uncomplicated healing and lowering the risk of complications.1 Until continuity is achieved between the inner and outer mucocele's epithelium, the procedure keeps the incision formed to ensure mucocele decompression and continuous draining of its contents patent. The suture pulls the incision edges apart, therefore the procedure does not require direct handling of the edges.[1]

In a few days, epithelialization occurs along the cut slit, establishing continuity of epithelial barrier between the cyst's interior and outside while the suture keeps its edges apart. After that, the slit edges permit fluid to move through since the epithelium on both sides prevents them from sealing up the channel.[1] However in our case, after 1 week of post operative follow up the slit edges approximated thereby preventing the continuous drainage of the contents of the cyst. It required a second time stabbing in the same place as previously placed and subsequent follow up of the patient. In our patients no recurrence was seen even after 6 months and no new cyst was seen in any adjacent site in floor of the oral cavity.

CONCLUSION :

Stitch and stab technique is successful, with minimal intraoperative time and can be adopted to other surgical specialities like for Bartholin's cyst, pancreatic cyst. Advantage of this technique over the others is that it is less technique sensitive, minimally invasive, uneventful healing with lesser incidence of complications, and of recurrence as mentioned by the Aluko. Despite being less invasive and reducing the intra operative time, this technique needs further evaluation with more cases in near future. In our opinion this technique needs to be considered as a reliable technique for marsupialization of ranula by new age surgeons since the major edge of this technique is minimal to no recurrence over the other techniques

REFERENCES

1. Aluko-Olokun B, Olaitan AA. Ranula decompression using stitch and stab method: the aluko technique. Journal of maxillofacial and oral surgery. 2017 Jun;16:192-6.
2. Elnager M, Udeabor SE, Elfadeel AS, Onwuka CI, Hamid MM, Alsubaie YM. Modified micromarsupialization technique as an alternative primary treatment for ranulas: A case series in a resource-challenged economy. Clinical and Experimental Dental Research. 2022 Dec;8(6):1434-9.
3. Swain SK, Dubey D. Ranula: A narrative review. Int J Res Med Sci. 2023 Jan;11:417-22.

4. Yoshimura Y, Obara S, Kondoh T, Naitoh SI. A comparison of three methods used for treatment of ranula. Journal of oral and maxillofacial surgery. 1995 Mar 1;53(3):280-2.
5. Hallur N, Suryavanshi RK, Raddar K, Zakaullah S, Kothari C, Tenglikar PD. Management of ranula. International Journal of Dental Clinics. 2011 Jul 1;3(3):79-80.
6. Sulfiana N, Sylvyana M, Tasman A, Lia E. Marsupialization as a ranula management: Case report. Int J Med Rev Case Reports. 2019 Aug 26;3:458-61

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Laser Therapy in the Management of Dentinal Hypersensitivity: A Case Report

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ABSTRACT

Dentin hypersensitivity (DH) is a common clinical condition characterized by sharp, transient pain that arises from exposed dentin in response to thermal, chemical, tactile, or osmotic stimuli. The Indian population shows a prevalence DH rate of 20.6%, with a noticeable predominance in females. The pain associated with DH may hinder effective oral hygiene maintenance and eating, potentially resulting in periodontal issues and malnutrition. While treatment modalities such as desensitizing toothpastes, mouth rinses, and restorative materials are available, they tend to have low patient compliance due to the time required to see results and repeated application, as well as time consuming protocols.

Laser therapy has become a promising alternative, providing immediate relief through an in-office procedure. Laser interaction with the dental pulp induces a photobiomodulatory effect, increasing the metabolic activity of odontoblasts and encouraging tertiary dentin formation. This process results in the occlusion of dentinal tubules, thereby reducing hypersensitivity and making lasers a valuable addition to modern DH management strategies.

This case report presents the clinical management of dentin hypersensitivity in four female patients using diode lasers at 810 nm and 980 nm wavelengths (1 W, non-contact mode, continuous wave, 30 seconds), both with and without the adjunctive use of 5% potassium nitrate. The results show the effectiveness of diode laser therapy as a reliable and patient-friendly approach for managing DH.

Key words : Dentinal hypersensitivity, laser desensitisation, diode laser, 980 nm, 810 nm, Potassium nitrate.

INTRODUCTION :

Dentin hypersensitivity (DH) is a major challenge in dentistry, characterized by short, sharp pain arising from exposed dentin in response to stimuli typically thermal, evaporative, tactile, osmotic, or chemical and which cannot be ascribed to any other form of dental defect or pathology.[1] DH occurs when the protective layer over the dentin is removed, thereby exposing it to the external environment.[2]

The etiology of DH includes gingival recession, periodontal diseases and root instrumentation procedures like scaling and root planing (SRP), periodontal surgeries, parafunctional habits. Wasting diseases such as abrasion, attrition, erosion, and abfraction also play a significant role.[3]

Certain risk factors predispose individuals to DH. Advanced age is a significant factor due to cumulative wear and tear over time. Poor oral hygiene, improper tooth brushing techniques, and a diet high in acidic foods further exacerbate the condition. Severe DH can impact daily activities such as eating, drinking, and maintaining oral hygiene, and sometimes even

breathing.3 DH is more common among adults with a higher prevalence between 30–45-year age group, particularly females.[2,4]

Several theories have been proposed to explain the mechanism of DH, such as direct neural theory, odontoblast receptor theory, transducer theory, gate control theory, and the widely accepted hydrodynamic theory. The latter, introduced by Brännström in 1963,

attributes pain to the rapid movement of fluid within dentinal tubules in response to external stimuli.[5]

Management of DH involves a variety of therapeutic approaches. Chemical desensitizing agents such as potassium nitrate, aluminium salts, ferric oxalate, carbonates, and fluoride compounds are often found in toothpaste and mouth rinses. Physical interventions like fluoride varnishes, bonding agents, and restorative materials such as composites have demonstrated clinical effectiveness in reducing sensitivity.[6]

In recent years, laser therapy has emerged as a promising and advanced technique for managing DH, offering potential long-term benefits.[7,8] The adjunctive use of diode lasers with desensitizing agents has also yielded positive clinical outcomes.[9]

This case report involving four patients shows the effectiveness of diode laser treatment for dentinal hypersensitivity using 810 nm and 980 nm wavelengths, both alone and in combination with a desensitizing agent.

CASE 1:

A 33-year-old female patient reported to the Department of Periodontics with a chief complaint of sensitivity in the lower front tooth, which was triggered by cold beverages. Her medical history was non-contributory.

Clinical examination revealed attrition with respect to #31. Based on the findings, a treatment plan was formulated to perform laser desensitization using a diode laser with a wavelength of 810 nm. The procedure was explained in detail to the patient, and informed consent was obtained.

To establish a baseline sensitivity level, a burst of air was delivered using a 3-way syringe for one second, held at a distance of 1 cm from the tooth surface. The patient reported a baseline Visual Analog Scale (VAS) score of 5.

The diode laser with a wavelength of 810 nm was used for desensitization. A laser tip with a diameter of 400 µm was positioned 1 mm away from the tooth surface, and irradiation was performed using 1 W power in continuous wave mode for 30 seconds (Figure 1).

Fifteen minutes after the procedure, the patient's VAS score was re-evaluated and found to have decreased to 3. The patient was given appropriate oral hygiene instructions and was scheduled for follow-up visits at 1 week, 1 month, and 3 months post-treatment. VAS scores were recorded after 1 week, 1 month, and 3 months (Table 1). The patient reported complete relief from sensitivity at the end of 3 months.

CASE 2:

Time point	Baseline	After 15 mins	1 week	1 month	3 months
Score	5	3	1	0	0

A 26-year-old female patient reported to the Department of Periodontics with a chief complaint of sensitivity in upper left back tooth for the past 3 months. The patient had no relevant medical history. Clinical examination revealed cervical abrasion with respect to #26. The treatment plan decided was to use a desensitizing agent followed by irradiation using a diode laser of wavelength 810nm. The procedure was explained in detail to the patient, and informed consent was obtained.

To establish a baseline sensitivity level, a burst of air was delivered using a 3-way syringe for one second, held at a distance of 1 cm from the tooth surface (Figure 2). The patient reported a baseline VAS score of 8. Desensitizing agent containing 5% potassium nitrate (Senquel F) was applied with an applicator and left for 60 seconds (Figure 3). Then the laser applicator tip of 400 µm diameter was placed in non-contact mode (at a distance of 1 mm) and was irradiated for 30 seconds with a power of 1W in a continuous manner (Figure 4). After 15 minutes the VAS score was checked for which, the patient gave a score of 5. The patient was given oral hygiene instructions and was recalled at 1 week, 1 month and 3 months for evaluation of VAS scores (Table 2). The patient reported relief from sensitivity as early as one week with a VAS score of 0 and expressed satisfaction with the treatment outcome.

Figure 2: Air blast stimulus wrt #26

Figure 3: Desensitizing agent application wrt #26

Figure 4: Irradiation with 810nm diode laser wrt #26

Time point	Baseline	After 15 mins	1 week	1 month	3 months
Score	8	5	0	0	0

CASE 3:

A 33-year-old female patient reported with a chief complaint of sensitivity in lower front teeth region which was triggered by drinking cold beverages and also with slight breeze. She had no significant medical history, and was not on any medication. On clinical examination the patient had recession with respect to #31, #32 exposing the root surfaces.

Based on the findings, a treatment plan was formulated to perform laser desensitization using a diode laser with a wavelength of 980 nm. The procedure was explained in detail to the patient, and informed consent was obtained.

A burst of air was delivered using a 3-way syringe for one second, held at a distance of 1 cm from the tooth surface (Figure 5). The patient reported a baseline VAS score of 9 (#31), 8 (#32). The diode laser with a wavelength of 980 nm was used for desensitization. A laser tip with a diameter of 400 µm was positioned 1 mm away from the tooth surface, and irradiation was performed using 1 W power in continuous wave mode for 30 seconds (Figure 6). The VAS scores were checked after 15 minutes and were 9 (#31), 7 (#32). As the patient was not satisfied with the initial outcome after a week, a second treatment session using the same parameters was performed. VAS scores were reassessed 15 minutes following the second session. The patient was provided with appropriate oral hygiene instructions and scheduled for follow-up visits at 1 week, 1 month, and 3 months. A progressive reduction in VAS scores was observed (Table 3).

Figure 5: Air blast stimulus wrt #31

Figure 6: Irradiation with 980nm diode laser wrt #31

Table 3: VAS score wrt #31 and #32

Tooth/ Time point/ Score	Baseline	After 15 mins Session-1	Session-2 Pre-op	After 15 mins Session-2	1 week	1 month	3 months
#31	9	9	9	8	6	3	3
#32	8	7	6	3	2	1	1

CASE 4:

A 32-year-old female patient reported with a complaint of sensitivity in lower front teeth, triggered by drinking cold beverages and also even with slight breeze. The patient reported no significant medical history.

Clinical examination revealed mild recession wrt #31 and #41.

After evaluating the condition, it was decided to proceed with a combination of desensitizing agent and laser irradiation. The patient was explained about the treatment and informed consent was obtained. Sensitivity was assessed using an air blast delivered for 1 second from a 3-way syringe held 1 cm away from the involved tooth surface. The patient reported a baseline VAS score - 8 (#31), 8 (#41) (Figure 7). A desensitizing agent containing 5% potassium nitrate (Senquel F) was applied on the affected area and was left for 60 seconds (Figure 8). Then a diode laser operating at 980 nm with a tip of 400 µm diameter was positioned 1 mm away from the tooth surface, and irradiation was performed using 1 W power in continuous wave mode for 30 seconds (Figure 9). The VAS scores were checked after 15 minutes and were as follows - 6 (#31), 7 (#41). Since the VAS score at one week was not satisfactory, a second treatment session with the same parameters was scheduled to address the areas of concern. The VAS scores were recorded before the treatment and 15 minutes after the second session. Oral hygiene instructions were given and patient was recalled after 1 week, 1 month and 3 months. The VAS scores at the follow-up visits were recorded (Table 4). The patient was completely relieved of her symptoms at the end of 3 months following her second session.

Figure 7: Air blast stimulus wrt #31

Figure 8: Application of desensitizing agent

Figure 9: Irradiation with 980nm diode laser

Table 4: VAS scores wrt #31 and #41

Tooth / Time point/ Score	Baseline	After 15 mins Session-1	Session-2 Pre-op	After 15 mins Session-2	1 week	1 month	3 months
#31	8	6	4	3	2	2	1
#41	8	7	5	1	0	0	0

DISCUSSION

Dentin Hypersensitivity is one of the most commonly reported concerns in dental practice, where patients may experience sharp pain of short duration, ranging from mild discomfort to extreme severity. This pain often interferes with daily activities, prompting individuals to seek immediate treatment.8 DH is characterized by short, sharp pain arising from exposed dentin in response to stimuli typically thermal, evaporative, tactile, osmotic, or chemical and which cannot be ascribed to any other form of dental defect or pathology.1

Dentin exposure can occur through two primary mechanisms, either removal of the enamel covering the crown of the tooth, or denudation of the root surface by loss of cementum and overlying periodontal tissues. Enamel loss is often linked to factors such as occlusal wear (attrition), aggressive tooth brushing (abrasion), acidic dietary habits (erosion), parafunctional behaviours, or a combination of these. Root surface exposure, on the other hand, is influenced by multiple factors including gingival recession with advancing age (Woofter 1969), chronic periodontal disease (Schluger et al. 1978), certain forms of periodontal surgery, incorrect tooth brushing and chronic trauma from habits are of particular importance (Glickman 1979).[5]

Diagnosing DH requires a methodical approach, primarily based on excluding other potential causes of dental pain. Since its symptoms can resemble those of conditions like dental caries, cracked tooth syndrome, or pulpitis, it is crucial to conduct a comprehensive dental history along with a detailed clinical examination to arrive at an accurate diagnosis.[10]

Managing DH typically includes both at-home and professional treatment options. Home care products like desensitizing toothpastes and mouth rinses often contain active ingredients such as potassium salts, strontium, stannous fluoride, arginine, or calcium-based compounds. Clinical interventions performed in-office may involve the use of desensitizing varnishes, bonding materials, resin-based sealants, glass ionomer restorations, and more recently, advanced technologies such as laser therapy.[11]

According to the review of Behniafar et al., 2024, a range of laser systems have been explored for managing dentinal hypersensitivity, including diode lasers, Er:YAG, Er,Cr:YSGG, Nd:YAG, Nd:YAP, and CO_2lasers, each exhibiting distinct absorption properties and mechanisms of action. These lasers work primarily by minimizing fluid movement within dentinal tubules, achieved through dentin melting, recrystallization, or vaporization of the tubule contents. Additionally, they provide analgesic benefits by either inhibiting nerve signal transmission or inducing the formation of tertiary dentin via stimulation of odontoblasts, leading to tubule occlusion. Among these, diode lasers particularly those operating at wavelengths of 660 nm, 810 nm, 940 nm, and 980 nm, have been most frequently used and have demonstrated superior clinical outcomes in the treatment of dentinal hypersensitivity.[12,13]

In an in vitro study conducted by Marwan El Mobadder et al., the 980 nm diode laser, operated at 1 W in continuous mode, significantly reduced hypersensitivity and was found to be clinically safe and effective in minimizing post-operative discomfort.[14]

According to a study done by Gautami S Penmetsa et al in 2021, a diode laser of 810nm wavelength with 0.5 W for one minute has significantly reduced DH.[15]

In this case report, a desensitizing toothpaste containing 5% potassium nitrate (Senquel F) was employed. Potassium nitrate alleviates dentin hypersensitivity by interfering with the nerve signalling process, specifically by increasing the potassium ion concentration within the dentinal tubules. This buildup of potassium disrupts the normal function of Aδ nerve fibres by maintaining a depolarized state, which inhibits the transmission of pain stimuli. According to Purra et al., potassium ions need to migrate through the dentinal tubules to reach concentrations sufficient to impact nerve endings at the pulp. While the relief is not immediate, consistent application can lead to a steady reduction in sensitivity, possibly aided by partial occlusion of the tubules over time.[16]

The combination of 5% potassium nitrate and diode laser therapy has shown enhanced clinical benefits in managing dentinal hypersensitivity, offering both faster onset and greater overall pain reduction compared to using either approach alone. Potassium nitrate primarily acts on the neural pathways by reducing nerve excitability, while diode lasers contribute by sealing dentinal tubules and exerting anti-inflammatory effects. This dual-action mechanism creates a more comprehensive therapeutic effect. As reported by Tevatia et al., this combined treatment strategy achieved a 97–99% reduction in pain levels by the sixth week, demonstrating superior outcomes relative to individual therapies. The complementary action of these modalities makes the combination an efficient and enduring option in DH management.[17,18]

Pain is inherently subjective, making it difficult to measure objectively. To address this, the Visual Analog Scale (VAS) is commonly used to assess pain intensity. It offers several advantages as a continuous, easy-to-use scale that helps differentiate between varying degrees of pain perception.19 In the present case report, a marked reduction in the patient's pain response was observed. VAS scores were effectively utilized to evaluate pain levels before and after the application of both the diode laser and combination treatment.

In accordance to the above-mentioned studies, the present case report showed the effectiveness of diode

laser therapy with and without the adjunctive use of 5% potassium nitrate (KNO_3) in the management of dentin hypersensitivity.

All four cases showed a noticeable reduction in dentinal hypersensitivity. The results suggest that diode laser therapy with 810nm and 980nm wavelengths, is effective in reducing dentin hypersensitivity.

These findings are consistent with previous literature indicating the effectiveness of diode lasers in hypersensitivity management. The use of 5% KNO_3 has also been supported as an effective desensitizing agent. However, only limited studies have explored their combined application, especially comparing both 810 nm and 980 nm lasers, making this report a valuable clinical observation.

While the outcomes observed in this case report are encouraging and support the clinical potential of different wavelengths of diode laser therapy with and without potassium nitrate in managing dentinal hypersensitivity, the findings are based on a limited number of cases with a relatively short follow-up period. Nevertheless, this report contributes valuable preliminary insights and adds to the growing body of evidence supporting these treatment modalities. To further validate and standardize these results, larger-scale randomized controlled trials with extended follow-up durations are recommended.

CONCLUSION

Dentinal hypersensitivity poses a considerable challenge in clinical dentistry, impacting patients' comfort and quality of life. Diode laser therapy alone or in combination with potassium nitrate has shown promising, immediate, and sustained desensitizing effects. However, given the higher cost and equipment dependency of laser therapy, treatment decisions should be individualized. Factors such as severity of symptoms, patient accessibility, cost-effectiveness, and the potential need for reapplication must be carefully considered. A balanced, patient-centred approach combining clinical efficacy with practicality is essential for the long-term management of DH.

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Conflicts of interest

There are no conflicts of interest

REFERENCES

1. Holland G, Narhi MN, Addy M, Gangarosa L, Orchardson R. Guidelines for the design and conduct of clinical trials on dentine hypersensitivity. Journal of clinical periodontology. 1997 Nov;24(11):808-13.
2. Femiano F, Femiano R, Lanza A, Festa MV, Rullo R, Perillo L. Efficacy of diode laser in association to sodium fluoride vs Gluma desensitizer on treatment of cervical dentin hypersensitivity. A double blind controlled trial. Am J Dent. 2013 Aug 1;26(4):214-8.
3. Dilsiz A, Aydın T, Emrem G. Effects of the combined desensitizing dentifrice and diode laser therapy in the treatment of desensitization of teeth with gingival recession. Photomedicine and laser surgery. 2010 Oct 1;28(S2):S-69.
4. Haneet RK, Vandana LK. Prevalence of dentinal hypersensitivity and study of associated factors: a cross-sectional study based on the general dental population of Davangere, Karnataka, India. International dental journal. 2016 Feb 1;66(1):49-57.
5. Dowell P, Addy M. Dentine hypersensitivity-A review: Aetiology, symptoms and theories of pain production. Journal of clinical periodontology. 1983 Aug;10(4):341-50.
6. Naghsh N, Hosseini A, Bazmara A, Birang R. Evaluation of three methods for the treatment of dentin hypersensitivity: a randomised clinical trial. International Dental Journal. 2024 Oct 1;74(5):1016-23.
7. Kimura Y, Wilder-Smith P, Yonaga K, Matsumoto K. Treatment of dentine hypersensitivity by lasers: a review. Journal of Clinical Periodontology: Review article. 2000 Oct;27(10):715-21.
8. Sumana N, Chakravarthy YS, SS CS, Harika P, Bontu S, Ramya D. Evaluation and comparision of the clinical effectiveness of diode laser and Gluma as desensitizing agents in the treatment of dentinal hypersensitivity. The Journal of Dental Panacea. 2023 Jan 18;3(2):69-72.
9. Pal C, Chopra R, Sharma N, Tevatia S, Chandra J, Singh S. The effect of desensitizing dentifrice with or without diode laser therapy in the management of dentinal hypersensitivity of teeth with Miller's Class I or Class II gingival recession. Journal of

Dental Specialities. 2018 Mar 1;6(1).

10. Gillam DG. Current diagnosis of dentin hypersensitivity in the dental office: an overview. Clinical oral investigations. 2013 Mar;17:21-9.

11. Grover V, Kumar A, Jain A, Chatterjee A, Grover HS, Pandit N, Satpathy A, Pillai BR, Melath A, Dhruvakumar D, Thakur R. ISP good clinical practice recommendations for the management of dentin hypersensitivity. Journal of Indian Society of Periodontology. 2022 Jul 1;26(4):307-33.

12. Behniafar B, Noori F, Chiniforoush N, Raee A. The effect of lasers in occlusion of dentinal tubules and reducing dentinal hypersensitivity, a scoping review. BMC Oral Health. 2024 Nov 19;24(1):1407.

13. Umberto R, Claudia R, Gaspare P, Gianluca T, Alessandro DV. Treatment of dentine hypersensitivity by diode laser: a clinical study. International journal of dentistry. 2012;2012(1):858950.

14. El Mobadder M, Namour A, Namour M, Dib W, El Mobadder W, Maalouf E, Geerts S, Zeinoun T, Nammour S. Dentinal hypersensitivity treatment using diode laser 980 nm: In vivo study. Dentistry journal. 2019 Jan 9;7(1):5.

15. PENMETSA GS, VUNDAVALLI S, ANUSHA B, RAJU M, SRUTHIMA N, VELURI S, PRIYA N, PATNAIK B. Treatment of Dentinal Hypersensitivity with Diode Laser of Two Different Wavelengths-A Randomised Clinical Trial. Journal of Clinical & Diagnostic Research. 2023 Jun 1;17(6).

16. Purra AR, Mushtaq M, Acharya SR, Saraswati V. A comparative evaluation of propolis and 5.0% potassium nitrate as a dentine desensitizer: A clinical study. Journal of Indian Society of Periodontology. 2014 Jul 1;18(4):466-71.

17. Tevatia S, Khatri V, Sharma N, Dodwad V. Comparative clinical evaluation of gallium-aluminum-arsenide diode laser and potassium nitrate in treating dentinal hypersensitivity. Journal of Indian Society of Periodontology. 2017 Sep 1;21(5):391-7.

18. Pandey R, Koppolu P, Kalakonda B, Lakshmi BV, Mishra A, Reddy PK, Bollepalli AC. Treatment of dentinal hypersensitivity using low-level laser therapy and 5% potassium nitrate: A randomized, controlled, three arm parallel clinical study. International Journal of Applied and Basic Medical Research. 2017 Jan 1;7(1):63-6.

19. Gilam DG, Newman HN. Assessment of pain in cervical dentinal sensitivity studies: a review. Journal of clinical periodontology. 1993 Jul;20(6):383-94.

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PRECISION PERIO CARE – A paradigm shift from Traditional to Precision: A Review

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ABSTRACT

Precision periodontal care (PPC) represents an innovative approach to the prevention, diagnosis, and treatment of periodontal diseases, focusing on personalized care tailored to individual patients. Unlike traditional periodontal care, which follows generalized treatment protocols, PPC integrates advanced diagnostic technologies, genetic insights, microbiome analysis, and personalized risk factors to create customized treatment plans. This method allows clinicians to address the unique genetic, environmental, and behavioural factors that contribute to periodontal disease, thereby enhancing treatment outcomes and improving long-term gum health. By emphasizing early detection, precision interventions, and personalized preventive strategies, PPC offers the potential for more effective, efficient, and patient-centered care. As research and technology advance, PPC is set to revolutionize periodontal care, offering promising benefits for both clinicians and patients alike.

Keywords : Periodontitis, precision, p4 medicine, personalized periodontics, microbiome analysis.

INTRODUCTION

Periodontitis poses a significant public health concern, as evidenced by its ranking as the 11th most prevalent condition worldwide (2016)[1]. This leads to tooth loss, which can negatively impact masticatory function, aesthetics and overall quality of life[2]. While bacteria are the cause of periodontal disease, the individual's inflammatory response, environmental, genetic factors that are unique to individuals determine the clinical presentation and outcome. Traditionally, periodontal treatments have been emphasized on generalized treatments. However, recently precision dentistry in periodontal care highlights how when Providers that use a precision oral health approach get more specific treatments for patients within each diagnostic subgroup [3].Thus,PPC aims to optimize periodontal health outcomes with personalized treatment plans over one-size-fits-all protocols.

CORNERSTONE OF PRECISION PERIODONTICS:

The concept of p4 medicine, introduced by Dr. Leroy Hood, is considered as a progressive vision for the future of healthcare[4]. In the context of periodontal care, this model emphasizes a shift from traditional, reactive treatments to a more proactive and preventive strategy. The focus moves toward maintaining overall patient wellness rather than merely addressing symptoms after disease onset. A key objective is to anticipate disease risks in individuals before any clinical signs emerge, thereby enabling early intervention and better health outcomes. This strategy involves gathering and interpreting data through diagnostic tools, mobile health technologies, and other digital platforms to help individuals understand their personal risk factors and how to manage them. Crucially, all these processes must be grounded in rigorous, evidence-based practices to ensure that

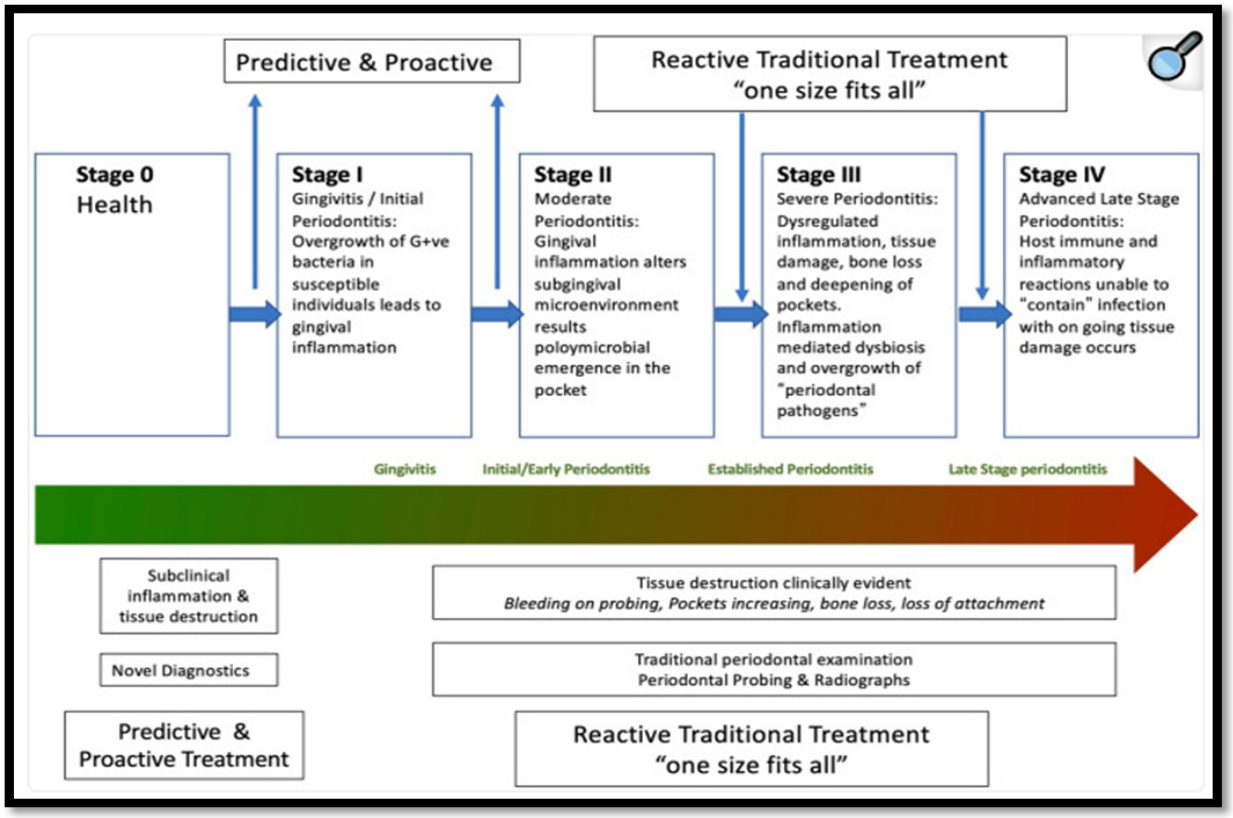
treatment decisions and expectations are scientifically sound [5]. P4 medicine promotes a comprehensive and integrative care model, where both patients and healthcare providers collaborate equally to enhance overall health and well-being. [6]

This model comprises of:

1) Prediction
2) Prevention
3) Personalizing
4) Participatory

The use of sophisticated diagnostic technologies enables a predictive approach to care by identifying individuals' risk profiles and detecting periodontitis at an earlier, more manageable stage. With a deeper understanding of the molecular underpinnings of disease, systems medicine can estimate the probability of an organ becoming compromised or foresee when disruptions in specific biological systems may lead to disease onset. By pinpointing early indicators that precede the clinical signs of stage I periodontitis, targeted intervention strategies can be developed to halt disease progression at its earliest point. This shift supports a preventive model centered on early action rather than delayed response [6]. Anticipating future disease risk plays a vital role in advancing preventive healthcare.

- Preventing the onset of periodontal disease has been a foundational aim within periodontology. Historically, prevention efforts have heavily emphasized meticulous plaque control, often at the expense of acknowledging the significant variability in individual immune responses to dental plaque[6].Although many individuals with periodontitis exhibit the expected pattern of extensive plaque and calculus accumulation, which is typically linked with inflammation and tissue breakdown, there are cases where substantial periodontal damage occurs in the presence of only minimal plaque buildup. This inconsistency has sparked renewed discussion about the actual roles of specific oral bacteria and personal hygiene in disease progression. Despite widespread improvements in oral hygiene due to educational campaigns and clinical guidance, the rate of severe periodontitis remains concerning high [7,9,10,11].
- As a result, there is a growing consensus that the conventional focus solely on plaque removal may be insufficient. Contemporary understanding of the disease emphasizes the need to



explore the complex relationship between the oral biofilm and the body's immune response. This shift is exemplified by the model proposed by Bartold and Van Dyke (2013), which centers on the role of inflammation as a key factor in both the development and treatment of periodontitis [7, 12, 13, 14]. This newer paradigm advocates for therapeutic strategies aimed at reducing inflammation to levels associated with periodontal health, following a "treat to target" approach commonly used in medicine. Such an approach supports individualized treatment based on each patient's unique genetic and microbial profile

- **Personalization:**

  As Periodontitis manifests in diverse patterns, with modifying factors varying among patients, treatments should be tailored to address these individual factors. However, as previously discussed, traditional periodontal therapy often relies on generic approaches rather than patient specific treatments. Most periodontal treatments have been designed with the 'average' patient in mind. This 'one size fits all' approach can be very effective for some patients, but less so for others. [7] In contrast, personalized dentistry is an innovative approach that considers individual variations in genes, environments, and lifestyles or behaviours [7, 15]. The strength of personalised medicine is in its capacity to direct healthcare decisions toward the most effective treatments for individual patients. This not only enhances the quality of care but also reduces the need for unnecessary diagnostic tests and therapies. The idea of categorizing patients based on individual characteristics has recently gained prominence as a crucial aspect of personalized periodontal treatment [7, 16]. This approach acknowledges that periodontitis is a complex disease with multiple developmental pathways, influenced by various risk factors that can have either independent or combined effects on the condition. For personalized periodontics to succeed, it is essential to identify individuals who don't benefit from standard (conventional) treatments. Risk factors like smoking, uncontrolled diabetes, etc. need to be integrated at the individual patient level. By identifying these individuals and their specific biological, phenotypic, and genotypic traits, personalized approaches can be developed to manage their periodontitis more effectively. Achieving this requires integrating disease systems and biological networks, incorporating processes to access individual genomic, microbiomic, resistomic, and inflammasomic data.[7]

- Participatory periodontics represents a modern shift in periodontal care, emphasizing the active role of patients in maintaining their own oral health. This approach involves empowering individuals—often connected through digital platforms—to take charge of their health-related decisions and behaviors [8]. While patient involvement has long been encouraged in integrated periodontal care, it does not always produce the desired clinical results. Patients newly diagnosed with periodontitis frequently seek clarity about the origins of their condition, personal missteps, and possible corrective actions. This reflects both a sense of accountability and a need for structured guidance. Common responses from clinicians include providing basic oral hygiene advice, encouraging healthier habits, and addressing risk factors such as tobacco use and diabetes [7,17]. However, even with a clear willingness to participate in their care, many patients find it difficult to maintain effective oral hygiene practices long-term, despite ongoing reminders from dental professionals. Research by Jönsson and Abrahamsson [7,18] explores these challenges and highlights the importance of addressing behavioral obstacles through educational support and a patient-centered care model. To make participatory care more effective, emphasis must be placed on improving oral health literacy—helping individuals understand, access, and use relevant health information to manage their oral health more confidently [6,7].Technology plays a growing role in supporting this shift. The emergence of mobile health tools and wearable devices enables individuals to collect and track personal

health data. These tools generate patient-reported experience measures (PREMs), offering insights into patients' real-time experiences and quality of life. This data can be incorporated into health records and used by dental professionals to personalize treatment plans, set meaningful goals, and adjust care based on each patient's self-reported profile [7,19].Examples include smart toothbrushes and oral health apps that guide users on proper brushing techniques, identify neglected areas, and help establish and monitor hygiene goals. Despite the promise of these innovations, many still require refinement to meet standards of clinical reliability, usability, and scientific validation [7,20].Enhancing these tools will be essential for improving their effectiveness in managing and interpreting oral health data. Incorporating participatory strategies into periodontal care aligns with the broader principles of P4 periodontics, where prevention, personalization, prediction, and participation are all essential. As more patients seek active involvement in their treatment journeys, this model reinforces the value of collaborative decision-making and continuous information exchange between healthcare providers and patients across all stages of disease and wellness.

Components of Precision Periodontics

- **Biological Informations**
  - Host Response Information
  - Biosensors
  - Omics Technology
  - Genetic Information
  - Biomarkers
- **Electronic Health Record Capabilities**
- **Wearable /Portable Electronic Devices**
- **Patients Reported Outcomes**
- **Tele dentistry.**

Ex: Custom scaffold fabrication from medical grade polymer, Customized scaffold guided tissue regeneration (S GTR), Omics and microbiome technologies, Rejuvenation medicine.

Future Challenges:

- **Data Accessibility :** The fragmentation of dental data into isolated systems must be addressed to allow for secure integration into both research and clinical practice. While ensuring data protection remains a top priority, legal regulations necessitate that any shared data is handled with care. Alternative methods, such as sharing encrypted data or utilizing techniques like federated learning [21,22], where data does not leave its original site, should be explored further. For example, Dayan et al. (2021) successfully used federated learning across 20 institutes worldwide to predict future oxygen requirements in COVID-19 patients, relying on patient vital signs, lab results, and chest X-rays [21,23]. Their model demonstrated better generalizability and outperformed single-site models. The integration of multi-center data, including sources like imaging, textual data, claims information, omics, and environmental factors, could be the missing link in advancing precision dentistry. Additionally, creating public datasets through broad consent or opt-out data-sharing options could provide valuable benchmarks for predictive models.
- **Data Integration:** A key challenge is the absence of universal standards for data exchange and reuse. Dental and oral health data is often not indexed efficiently (for instance, SNOMED: The Systematized Nomenclature of Medicine Clinical Terms is rarely applied), and limited interoperability means that data is not easily shareable or combinable. As a result, even digitalized medical data may remain siloed, preventing its full potential from being realized.
- **Bias, Robustness, Generalizability, and Accountability :** Many advanced predictive models that use complex and large datasets operate as "black boxes," meaning that the logic behind the predictions is not easily understandable, which complicates the identification of potential biases. There is a growing call for mandatory explainability in medical prediction models. Moreover, datasets employed in these models need to be carefully

evaluated for biases, such as sample selection bias, which can affect fairness and generalizability [21, 24]. Bias may also arise from the users themselves, as cognitive biases like confirmation bias or automation bias (where users accept automated suggestions without critical evaluation) can impact results, especially in multitasking situations. It is essential to enhance user education on interpreting probabilistic outputs, as data literacy will be a cornerstone of precision dentistry's progress.

- **Resources and Sustainability :** Predictive modeling and precision dentistry require substantial data storage, transmission, and computational power. While the technological infrastructure supporting these models has expanded rapidly, so have the associated costs and energy consumption. Both the financial and environmental costs of training and deploying these models should be critically evaluated. Researchers and developers should consistently report on the resources utilized, and both cost and energy use must be factored into the assessment of new technologies in precision dentistry.

REFERENCES:

1. Knight ET, Murray Thomson W: A public health perspective on personalized periodontics. Periodontol 2000. 2018, 78:195-200. 10.1111/prd.12228
2. Papapanou PN, Susin C: Periodontitis epidemiology: is periodontitis under-recognized, over-diagnosed, or both?. Periodontol 2000. 2017, 75:45-51. 10.1111/prd.12200
3. Beck JD, Philips K, Moss K, Divaris K, Morelli T, Offenbacher S. Advances in precision oral health. Periodontology 2000. 2020 Feb;82(1):268-85.
4. Hood L. Systems biology and P4 medicine: past, present, and future. Rambam Maimonides Med J. 2013;4:15.
5. European Federation of Periodontology Special Issue: Treatment of stage I-III periodontitis. The EFP S3 Level Clinical Practice Guideline. Editors: Gonzalez DH, Sanz M, Tonetti M. J Clin Periodontol. 2020;47:1–391.
6. 62, Vol.11, Issue 10, page no.c315-c321, Bartold PM, Ivanovski S. P4 Medicine as a model for precision periodontal care. Clin Oral Investig. 2022;26(9):5517-5533.
7. Revolutionizing Periodontics: A Paradigm Shift through P4 Medicine, International Journal of Emerging Technologies and Innovative Research (www.jetir.org), ISSN:2349-51October-2024
8. George C, Anju KS, Manjunath N. Personalized Periodontics. Int J Innov Sci Res Technol. 2022;7(3):1376-81. doi:10.5281/zenodo.6480744.
9. Bartold PM, Seymour GJ, Cullinan MP, Westerman B. Effect of increased community and professional awareness of plaque control on the management of inflammatory periodontal diseases. Int Dent J 1998: 48 (3 Suppl 1): 282–289.
10. Demmer RT, Papapanou PN. Epidemiologic patterns of chronic and aggressive periodontitis. Periodontol 2000 2010: 53: 28–44
11. Gjermo PE. Impact of periodontal preventive programmes on the data from epidemiologic studies. J Clin Periodontol 2005:32 (Suppl 6): 294–300.
12. Bartold PM, Van Dyke TE (2017) Host modulation: controlling the infammation to control the infection. Periodontol 2000 75:317–329.
13. Bartold PM, Van Dyke TE (2019) An appraisal of the role of specifc bacteria in the initial pathogenesis of periodontitis. J Clin Periodontol 46:6–11.
14. Van Dyke TE, Bartold PM, Reynolds EC (2020) The nexus between periodontal

infammation and dysbiosis. Front Immunol 11:9.

15. Lang NP, Tonetti MS. Periodontal risk assessment (PRA) for patients in supportive periodontal therapy (SPT). Oral Health Prev Dent 2003: 1: 7–16.

16. Kornman KS, Giannobile W, Duf GW (2017) Quo vadis: what is the future of periodontics? How will we get there? Periodontol 2000 75:353–371

17. Oruba Z, Pac A, Olszewska-Czyz I, Chomyszyn-Gajewska M (2014) The significance of motivation in periodontal treatment: the infuence of adult patients' motivation on the clinical periodontal status. Community Dent Health 31:183–187.

18. Jönsson B, Abrahamsson KH. Overcoming behavioral obstacles to prevent periodontal disease. Behavioral change techniques and self-performed periodontal infection control. Periodontol 2000. 2020;84(1):134-144

19. Vaghef I, Tulu B (2019) the continued use of mobile health apps: insights from a longitudinal study. JMIR mHealth uHealth 7:11.

20. Tifany B, Blasi P, Catz SL, McClure JB (2018) Mobile apps for oral health promotion: content review and heuristic usability analysis. JMIR mHealth uHealth.

21. Schwendicke F, Krois J. Precision dentistry—what it is, where it fails (yet), and how to get there. Clinical Oral Investigations. 2022 Apr; 26(4):3395-403.

22. National Research Council (US) Committee on a Framework for Developing a New Taxonomy of Disease, 2, Why now? , in Toward Precision Medicine: Building a Knowledge Network for Biomedical Research and a New Taxonomy of Disease. . 2011, Washington (DC): National Academies Press (US)

23. Dayan I, et al. Federated learning for predicting clinical outcomes in patients with COVID-19. Nat Med. 2021; 27(10):1735–1743.

24. Krois, J., et al., Generalizability of deep learning models for dental image analysis Scientific Reports, 2021. Accepted.

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Indian Dental Association
Bengaluru Branch

CDE PROGRAMMES CONDUCTED IN YEAR 2025 in association with IDA Bangalore Branch – By convener Dr. Smitha T

1) **DENTAL PHOTOGRAPHY: MANIFEST THE SNAP INTO REALITY-** Conducted in association with Oxford Dental College and Hospital. Guest speaker for the session was Dr. Mohammed Umer Sherriff, Implantologist and wildlife enthusiast photographer, held at Oxford Dental College on 30th June 2025. The event provided valuable insights into intraoral and extraoral photography techniques, importance of lighting and angulation, photography in documentation and esthetic dentistry.

2) **OPTIMISING ANTIBIOTIC THERAPY IN ODONTOGENIC INFECTIONS-** A Rational Approach- Conducted in association with V.S. Dental College and Hospital. Guest speaker for the sessions were Dr. Raghunand Shinde MDS - oral medicine and radiology, fellowship in oral implantlogy IDA convener Karnataka state branch and Dr. Roopashri G ,MDS, HOD (Dept of oral medicine and radiology M.R Ambedkar Dental college) held on 16th July 2025.

3) **COMPLEX CASES IN HEAD AND NECK ONCOLOGY & SPECTRUM OF PLASTIC SURGERY-** Conducted in association with SPARSH Hospital, Yeshwantpura. Guest speakers for the sessions were Dr. Karthik K Prasad, a renowned and reputed surgical oncologist, having over 14 years of experience in dealing with complex surgical procedures related to oncology, and Dr. Karthik Vishwanath, a board-certified Plastic Surgeon with 16 years of experience, specializes in cancer reconstruction, hand surgery, aesthetic procedures, and microvascular surgery. The session provided insightful talks into management of head and neck cancers that require a multidisciplinary approach and plastic surgery, which plays a vital role in post treatment reconstruction. The event was held on 18th July 2025 at Hotel Leroy Grand, yeshwantapura.


THE OXFORD DENTAL COLLEGE
PRESENTS
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Indian Dental Association
Bengaluru Branch

CDH Programs by CDH Convenor Dr. Akshay V, IDA Bengaluru Branch

LIST OF CAMPS CONDUCTED BY VARIOUS DENTAL COLLEGES IN BENGALURU FROM JANUARY 2025 TO APRIL 2025.

1. CDH-26/2025 – Screening & Treatment Camp conducted at TG HALLI, KURUBARAHALLI, MADHUGIRI TALUQ, TUMKUR on 04-05-2025 by the Dept. of Public Health Dentistry, BIDS.
   Patients screened: 61, Oral prophylaxis: 23, Restorations: 10

2. CDH-27/2025 – Screening & Treatment Camp conducted at SURABHI SEVADHAMA, BIDADI MAIN ROAD, VADARAPALYA on 12-05-2025 by the Dept. of Public Health Dentistry, V.S. Dental College.
   Patients screened: 81, Oral prophylaxis: 13, Restorations: 10, Extractions: 5
   Remarks: 28 patients treated

3. CDH-28/2025 – Screening Camp conducted at NAGARBHAVI BDA COMPLEX, BANGALORE on 16-05-2025 by the Dept. of Public Health Dentistry, V.S. Dental College.
   Patients screened: 32 and 32 samples were distributed.
   Remarks: Referred to dental college for treatment

4. CDH-29/2025 – Treatment Camp conducted at KARALAKATTE, MALAVALLI TALUK, MANDYA DISTRICT on 17-05-2025 by the Dept. of Public Health Dentistry, V.S. DENTAL COLLEGE & HOSPITAL
   Patients screened: 37, Oral prophylaxis: 10

5. CDH-30/2025 – Treatment Camp conducted at Sri Soma Sai Skanda Ashram, Mandya District on 17-05-2025 by the Dept. of Public Health Dentistry, BIDS.
   Patients screened: 29, Oral prophylaxis: 18

6. CDH-31/2025 – Screening & Treatment Camp conducted at Primary Health Centre, G.Hosahalli, Doddabalapur, Bangalore Rural on 24-05-2025 by the Dept. of Public Health Dentistry, M.R. AMBEDKAR DENTAL COLLEGE & HOSPITAL.
   Patients screened: 27, Oral prophylaxis: 23, kits distributed.

7. CDH-32/2025 – Treatment Camp conducted at PRIMARY HEALTH CENTRE, CHANDAPURA, ANEKAL TALUK on 26-05-2025 by the Dept. of Public Health Dentistry, GOVERNMENT DENTAL COLLEGE & HOSPITAL, BANGALORE.
   Patients screened: 45
   Remarks: 10 patients treated

8. CDH-33/2025 – AWARENESS DRIVE conducted at MG ROAD METRO STATION on occasion of WORLD NO TOBACCO DAY on 30-05-2025 by the Dept. of Public Health Dentistry, M.R. AMBEDKAR DENTAL COLLEGE & HOSPITAL.
   Patients screened for oral cancer: 22

9. CDH-34/2025 – WORLD NO TOBACCO DRIVE conducted at VICTORIA HOSPITAL, Bangalore on 30-05-2025 by the Dept. of Public Health Dentistry, GOVERNMENT DENTAL COLLEGE & HOSPITAL, BANGALORE

10. CDH – 35/2025 – WORLD NO TOBACCO DAY AWARENESS SKIT PERFORMED AT KEMPEGOWDA BUS STAND, MAJESTIC by Bangalore Institute of Dental Sciences & Hospital on 31-05-2025.

11. CDH – 36/2025 – Treatment Camp conducted at GOPAL NOODLES FACTORY, AVALAHALLI, ANEKAL TALUK on 08-06-2025 by the Dept of Public Health dentistry, Bangalore Institute of Dental Sciences & Hospital. Screened – 112, Oral Prophylaxis -50, Restoration -12

12. CDH – 37/2025 - Treatment Camp conducted at GOVERNMENT IDEPENDENT P.U. College, CHIKKA MUDHAWADI, KANAKAPURA TALUK on 15-06-2025 by the Dept of Public Health dentistry, Bangalore Institute of Dental Sciences & Hospital. Screened –58, Oral Prophylaxis -12, Restoration -11, Extractions – 8.

13. CDH – 38/2025 - Screening Camp conducted at NIGHTINGALE SANDHYA KIRANA, O SHAUGHNESSY ROAD, LANGFORD GARDENS, BANGALORE on 16-06-2025 by the Dept. of Public Health Dentistry, Bangalore Institute of Dental Sciences & Hospital.

    Patients screened: 68 and 68 samples were distributed.

    Remarks: Referred to dental college for treatment

14. CDH – 39/2025 – Screening Camp conducted at ANANDA SOCIAL AND EDUCATIONAL SOCIETY, YESHANTHPURA, BENGALURU on 19-06-2025 by the Dept. of Public Health Dentistry, M.R. AMBEDKAR DENTAL COLLEGE & HOSPITAL.

    Students screened: 150, Samples distributed – 150

15. CDH-40/2025 – Treatment Camp conducted at KARALAKATTE, MALAVALLI TALUK, MANDYA DISTRICT on 21-06-2025 by the Dept. of Public Health Dentistry, V.S. DENTAL COLLEGE & HOSPITAL

    Patients screened: 28 Oral prophylaxis: 19

16. CDH – 41/2025 – On the occasion of "INTERNATIONAL YOGA DAY", a Yoga session for students was conducted on 25-06-2025 by the Dept. of Public Health Dentistry, Bangalore Institute of Dental Sciences & Hospital.

17. CDH-42/2025 – Treatment Camp conducted at SRI SAJJAN RAO SCHOOL on 02-07-2025 by the Dept. of Public Health Dentistry, V.S. DENTAL COLLEGE & HOSPITAL

    Patients screened: 140 , Oral prophylaxis: 15

18. CDH-43 /2025 – Treatment Camp conducted at SRI SAJJAN RAO SCHOOL on 03-07-2025 by the Dept. of Public Health Dentistry, V.S. DENTAL COLLEGE & HOSPITAL

    Patients screened: 175 , Oral prophylaxis: 12

19. CDH – 44/2025 – Screening Camp conducted at MARY IMMACULATE HIGH SCHOOL, WILSON GARDEN, BENGALURU on 04-07-2025 by the Dept. of Public Health Dentistry, Bangalore Institute of Dental Sciences & Hospital.

    Patients screened: 676

20. CDH-45 /2025 – Treatment Camp conducted at SRI SAJJAN RAO SCHOOL on 04-07-2025 by the Dept. of Public Health Dentistry, V.S. DENTAL COLLEGE & HOSPITAL

Patients screened: 109 , Oral prophylaxis: 13

21. CDH – 46/2025 – Screening & TREATMENT Camp conducted at HALASURU, Someshwarapura, BENGALURU on 06-07-2025 by the Dept. of Public Health Dentistry, M.R. AMBEDKAR DENTAL COLLEGE & HOSPITAL.
    Students screened: 152, Treatment – 38 (Oral Prophylaxis & Dental Fillings)

22. CDH – 47/2025 – Screening Camp conducted at KENMORE ENGLISH SCHOOL, BASAVANAGUDI, BENGALURU on 08-07-2025 by the Dept. of Public Health Dentistry, Bangalore Institute of Dental Sciences & Hospital.
    Patients screened: 203

23. CDH-48 /2025 – Treatment Camp conducted at SRI CAUVERY SAI DHAMA, DODDEGOWDANAKOPPALU, PANDAVAPURA TALUK, MANDYA DISTRICT on 10-07-2025 by the Dept. of Public Health Dentistry, V.S. DENTAL COLLEGE & HOSPITAL
    Patients screened: 143, Treated patients: 21

24. CDH-49/2025 – Treatment Camp conducted at SSK SCHOOL, BENGALURU on 14-07-2025 by the Dept. of Public Health Dentistry, V.S. DENTAL COLLEGE & HOSPITAL
    Patients screened: 166, Treated:5

25. CDH-50/2025 – Treatment Camp conducted at SSK SCHOOL, BENGALURU on 15-07-2025 by the Dept. of Public Health Dentistry, V.S. DENTAL COLLEGE & HOSPITAL
    Patients screened: 127, Treated:9

26. CDH-51/2025 – Screening Camp conducted at HSR LAYOUT, BENGALURU on 16-07-2025 by the Dept. of Public Health Dentistry, V.S. DENTAL COLLEGE & HOSPITAL
    Patients screened: 87

27. CDH-52/2025 – Treatment Camp conducted at KARALAKATTE, MALAVALLI TALUK, MANDYA DISTRICT on 19-07-2025 by the Dept. of Public Health Dentistry, V.S. DENTAL COLLEGE & HOSPITAL
    Patients screened: 14 Oral prophylaxis: 05


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