



IMPRESSIONS

JOURNAL OF INDIAN DENTAL ASSOCIATION ATTINGAL BRANCH

Volume - 16., Issue - 1 JAN-APRIL 2026



Also available online : idaattingalbranch.org

IMPRESSIONS

JOURNAL OF INDIAN DENTAL ASSOCIATION ATTINGAL BRANCH

JANUARY-APRIL 2026, VOLUME 16, ISSUE 1.

EDITOR IN CHIEF

Dr. NRIPAN T. MDS

Associate Professor, Oral & Maxillofacial Pathology,
Azeezia College of Dental Sciences & Research, Kollam.

EDITORIAL BOARD

Dr. RAMESH S, Dr. SHERIN A KHALAM, Dr. ASHOK GOPAN,
Dr. SUPRASIDH SUPRAKASAM, Dr. NITHIN RS, Dr AMAL DEV JS

PRESIDENT

Dr. RAKHEE RAKESH

Sreekrishna Dental Clinic, Chithara, Kadakkal, Kollam-691559
Ph: +91 9496300465. E-mail: drrakheerakesh@gmail.com

HON. SECRETARY

Dr. VASUDEVAN VINAY

Vinays Dental Care, Kavitha, KRA-16, Market Road,
Attingal P.O, Pin:695101
Ph: +91 7907396313. E-mail: secretaryidaattingalbranch@gmail.com

IDA ATTINGAL BRANCH

IDA Attingal Branch was established on January 14th, 2001. Since then, the branch has symbolized unity. The harmony among its members made the branch popular. Over time, the untiring efforts of eminent office bearers and members reached the branch to its current heights. The branch is always promised to deliver something to the community. Certainly, the plethora of programs organized by the branch over the past two decades has impacted the community's oral health. The branch and its members are always there to share knowledge among the dental fraternity and are the torchbearers of ethical dental practice.

IDA Attingal branch is involved in all the national and state activities of the association with great spirit and won many titles too. The branch organizes a multitude of programs including oral health screening camps, oral cancer detection camps, oral health awareness talks, free denture camps for the needy, continuing dental education programs and workshops for the dentists, training programs for the dental assistants, fun activities for its members, observance of important days, distribution of pamphlets and public awareness materials to the community, spreading awareness talks and videos via various social media platforms, financial support to the poor and a free active dental clinic at an orphanage. The branch is always committed to dental excellence and our journal 'Impressions' is its humble attempt to spread scientific communications among the dental fraternity.



OFFICE BEARERS

President

Dr. Rakhee Rakesh

Hon. Secretary

Dr. Vasudevan Vinay

Imm Past President

Dr. Subhash R Kurup

President Elect

Dr. Shameem Shukkoor

Vice Presidents

Dr. Adheena Chandran

Dr. Roshith S Nath

Joint Secretary

Dr. Arya Arun

Treasurer

Dr. Dhanush Shaji

CDE Chairman

Dr. Jithin Rajeev

CDH Chairperson

Dr. Thaufina H

Sports Coordinator

Dr. Akhil Yadav

EXECUTIVE COMMITTEE MEMBERS

EXECUTIVE COMMITTEE MEMBERS

Dr. Ashok Gopan Executive committee member(s)

Dr. Arun S Executive committee member(s)

Dr. Suprasidh Suprakasham Executive committee member(s)

Dr. Pratheesh AP Executive committee member(s)

Dr. Midhun MJ Executive committee member(s)

Dr. Jitha Jayaraj Executive committee member(s)

Dr. Firoz A Executive committee member(s)

Dr. Vasudevan Vinay Reps to State

Dr. Arun Roy S Reps to State

Dr. Premjith S Reps to State

Dr. Anish P Reps to State

Dr. Afsal A Reps to State

Dr. Alex Philip Reps to State

Dr. Sherin A Khalam Reps to State

Dr. Anilkumar D Reps to State

Dr. Subhash R Kurup Reps to State

Dr. Noufal N IDA HOPE Rep

Dr. Ajas A IDA CAN Rep

Dr. Sherin A Womens Council Rep

Dr. Priyalekshmi L Womens Council Rep

Dr. Thriptha S Prasad Cultural Convenor

Dr. Abhilash G S CC member(s)

Dr. Biju A Nair CC member(s)

Dr. Roshith S Nath CC member(s)

Dr. Dhanush Shaji CC member(s)

Dr. Mili James CC member(s)



Dr. Rakhee Rakesh
President,
IDA Attingal Branch

It is a great pleasure to mark the release of the inaugural issue of this Dental Journal. This milestone reflects the dedication, vision, and scholarly efforts of the editorial team and contributors.

The launch of this journal is an important step in promoting research, knowledge sharing, and academic excellence in dentistry. I am confident it will serve as a valuable platform for professionals and students alike.

I extend my sincere congratulations and best wishes for the continued success of this publication.

Dr. Rakhee Rakesh



Dr. Vasudevan Vinay
Hon. Secretary,
IDA Attingal Branch

Greetings Dear members,

Happy to see the first edition of the journal out for publication in 2026. The editorial team is not resting after achieving great success last year. IDA Kerala State under leadership of Dr Eapen Thomas and Dr Siddharth V Nair is doing a lot for the benefit of dentist in Kerala. Have not come across a team of such enthusiastic leaders working day in and out for the benefit of our future in Dentistry. By the time this edition is out the second dose of Hepatitis Vaccines would have been administered to the members' staff who were in need of the vaccine. Never before has a vaccination drive been organized and implemented on such a large scale in the state of Kerala. CE Act is going to be a part of our lives and it cannot be avoided. The Office is doing it's best to make the transition smooth and hassle free for our members. The Act has been diluted a lot from its original format, thanks to the endless negotiations with the government bodies. Sports is another activity that is always very close to most of us. This year after a long wait of over 12 years we, IDA Attingal, have been crowned State Champions in the recently concluded outdoor cricket tournament at Palakkad. The effort and dedication of the team under the leadership of Dr Prashanth S P as captain was simply outstanding.

This year we are celebrating our 25 years of formation and seems fit that we lifted the trophy this year. We had conducted a get together to commemorate the event. All our branch Past Presidents and Secretaries were felicitated during this program. On the topic of sports, another major event coming up is the two day sports event being conducted by IDA Kerala State in the month of May. The scale of the program is comparable to a mini olympics with an expected footfall of over 500. We have participation in a few categories and hope to see more participation from our members in future editions. Our CDH, CDE and WDC wings are quite active in conducting programs and events for the benefit of members. Hope the members take advantage of these programs and upgrade their skills and knowledge.

IDA Sparsh is another initiative of State office which will guide patients to your clinics. Clinics will be upgraded as cancer detection hubs shortly, Sessions are being planned by the branch to make us concious of various oral lesions and conditions to help in diagnosis. So requesting all members to upload your clinics in the Sparsh app. Signing off for now and wishing the editorial team all the best for the year.

Regards

Dr. Vasudevan Vinay

AUTHOR GUIDELINES

About the Journal : Impressions is the official scientific publication of IDA Attingal Branch, which publishes in every four months period.

Aims and Scope : The aim of Impressions is to publish all forms of scientific articles including systematic reviews, original articles, case reports, and review articles pertaining to dentistry. Those articles bring new knowledge to the field are welcomed.

Ethical Considerations : Manuscripts submitted for publication must comply with the following ethical considerations: Written informed consent must be obtained from the subjects before their data included in the study and the informed consent must be archived with the authors. Any data from the patient must be submitted by hiding their identity. All the research should be carried out with prior approval from the institutional or national ethics committee and should be in accordance with the Helsinki Declaration of 1964 (revised in 2008). If animals are used for the research, the authors must follow the institutional or national guidelines for the care and use of laboratory animals.

Manuscript Submission : All the manuscripts should be in English language and are to be submitted electronically at: journalidaatl@gmail.com The manuscript must be original and submitted only to Impressions.

Manuscript format :

Title : The title must be clear, specific, and informative.

Abstract : Must include an abstract of not more than 250 words that describe the significance of the article.

Manuscripts : The manuscripts should be of maximum of 3500 words excluding the references.

Illustrations : High-quality digital images must be submitted with a file name matching the manuscript reference.

References : References must be included and the bibliography should follow the Vancouver format.

Disclaimer : All the articles published are peer-reviewed, even though we cannot accept responsibility for unsolicited manuscripts. All the opinions or views published are those of the authors and do not reflect that of the Publisher or Editor. Articles are published with the understanding that they have not been published before and are submitted only to Impressions. All rights are reserved. No part of this journal may be reproduced in any form without permission of the copyright owner. The Publisher and Editor cannot be held responsible for errors or any consequences arising from the use of information contained in this journal.

Editor Office Address : Dr. Nripan. T, Editor-in-Chief, Impressions-Journal of Indian Dental Association, Attingal Branch, Crystal Dental, Oyoor, Kollam-691510. Mobile: +91 7907184241.



For the online edition of the journal visit/ Scan the QR Code:
www.idaatingalbranch.org/publications.htm#journal

CONTENTS

EDITORIAL

Name

Nripan. T 9

ORIGINAL RESEARCH

Public Perception of Mobile Dental Clinics as an Alternative Oral Healthcare Delivery System in India. A Cross Sectional Study

Archa SP, Kiran S Kumar, Malavika A, Priyamvada AK, Sarath Babu K, Praveen, Alaka Subodh 10

ORIGINAL RESEARCH

Compliance with Biomedical Waste Management Guidelines Among Dental Clinics in Varkala: A Cross-sectional Study

Lal Mohan, Nandana MS, Caron MB, Aswanth Adithya, Divya Prakash, Praveen, Alaka Subodh 20

CASE REPORT

Case Report of Compound Odontoma in Relation to Maxillary Premolar Region

Gopika JB 27

REVIEW

Dentistry, its Evolution and Role of Specialization in Current Scenario

Nithin RS, Akhilesh Prathap 30

CASE REPORT

Peripheral Ossifying Fibroma: A Case Report

Nripan T, Theertha Mohan, Amal Dev JS 34

REVIEW

Oral Potentially Malignant Disorders: A Comprehensive Review of Diagnostic and Management

Arjun O, Arjundas VS 36



Dr. Nripan. T
Editor-in-Chief
Impressions

A New Chapter of Excellence

Dear Esteemed Colleagues,

It is a privilege to introduce the first 2026 volume of **'Impressions'** following our proud achievement as **Runner-Up at the IDA National awards** last year. This milestone reflects the high caliber of our members, and I warmly encourage you to both read this issue and contribute your own clinical research or case reports to sustain this momentum. Together, let us ensure our journal remains a vital platform for professional growth and academic excellence within the IDA Attingal Branch.

Happy Reading!

Dr. Nripan. T

PUBLIC PERCEPTION OF MOBILE DENTAL CLINICS AS AN ALTERNATIVE ORAL HEALTHCARE DELIVERY SYSTEM IN INDIA. A CROSS SECTIONAL STUDY

¹ Archa S P, ² Kiran S Kumar, ³ Malavika A, ⁴ Priyamvada A K, ⁵ Sarath Babu K, ⁶ Praveen D, ⁷ Alaka Subodh

ABSTRACT

Aim: To investigate community perception and attitude towards mobile dental clinics and their role in improving access to dental care in India.

Methodology: Assessment of patient satisfaction plays a vital role on determining the quality and effectiveness of healthcare delivery. Digital feedback mechanisms have gained significant prominence in the assessment of healthcare services. The present study aims to evaluate the attitude of people towards dental care services provided through mobile dental clinics using digital feedback forms and to assess various factors influencing oral health-seeking behaviour.

Results: Pre-intervention analysis showed no statistically significant difference in DI-S, CI-S, or OHI-S scores between the two groups ($p > 0.05$), confirming baseline comparability. Post-intervention findings demonstrated improvement in both groups. Although mean DI-S and overall OHI-S scores differed between groups after 12 weeks, these differences were not statistically significant ($p > 0.05$). However, a statistically significant improvement was observed in the CI-S component ($p = 0.006$), with the pamphlet reinforced by sign-language group showing greater reduction in calculus scores compared to the visual-aid group.

Conclusion: Mobile dental clinics represent a promising strategy for improving access to oral healthcare services, particularly among populations residing in underserved and remote regions of India. The findings of the present study demonstrate that the majority of participants exhibit a favourable attitude toward mobile dental clinics and acknowledge their potential to enhance accessibility, convenience, and delivery to basic healthcare.

Keywords: Mobile Dental Clinic, Public Health

INTRODUCTION

Oral health is an integral component of general health and well-being, yet it remains one of the most neglected aspects of healthcare in many developing countries. Oral diseases such as dental caries, periodontal disease, and oral infections are

highly prevalent and can significantly affect quality of life, nutrition, and overall systemic health. Despite advances in dental care, disparities in access to oral healthcare services continue to exist, particularly in rural and underserved populations^(9,10).

In India, a significant proportion of the population resides in rural areas where access to dental healthcare facilities is limited. The uneven distribution of dental professionals, inadequate infrastructure, financial constraints, and lack of awareness contribute to poor utilization of dental services among rural communities. As a result, many individuals in these regions often seek dental care only when conditions become severe, leading to increased morbidity and reduced quality of life. Ensuring equitable access to oral healthcare for rural populations is therefore a major public health priority.

Mobile dental clinics have emerged as an effective approach to bridge the gap between dental healthcare providers and underserved populations. These clinics are equipped with portable dental equipment and are capable of delivering preventive, diagnostic, and basic therapeutic services directly within communities. By bringing dental services closer to people, mobile dental clinics can reduce geographical barriers, improve accessibility, and promote early detection and treatment of oral diseases. Such initiatives are particularly valuable in rural areas where fixed dental facilities may be scarce or inaccessible.

Public perception and acceptance play a crucial role in the successful implementation and sustainability of mobile dental services. Understanding the attitudes of people toward mobile dental clinics can provide valuable insights into their awareness, utilization, and perceived effectiveness. Evaluating these attitudes is essential for planning community-based oral health programs and for improving service delivery models that address the needs of underserved populations.

Therefore, the present study aims to assess the attitudes of people toward mobile dental clinics in India and to explore their perceptions regarding the role of these clinics in improving access to oral healthcare, particularly among rural communities.

¹ Final year Student, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ² Final year Student, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ³ Final year Student, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ⁴ Final year Student, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ⁵ Final year Student, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ⁶ Associate Professor and HOD, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ⁷ Associate Professor, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum

Correspondence : Archa S P

Email : dpraveen5@yahoo.com

How to cite this article : SP Archa, SK Kumar, A Malavika, AK Priyamvada, KS Babu, D Praveen, A Subodh. Public Perception of Mobile Dental Clinics as an Alternative Oral Healthcare Delivery System in India. A Cross Sectional Study. Impressions. 2026;16(1):10-19.

Source of support : Nil,

Conflict of Interest : None declared.

Understanding these perspectives may contribute to the development of more effective strategies for expanding oral healthcare services and reducing disparities in oral health across the country.

MATERIALS AND METHODOLOGY

The present study was conducted using a descriptive cross-sectional design to assess the attitude of people towards mobile dental clinics. The study was carried out throughout the state of Kerala, India, encompassing participants from various districts to obtain responses from a diverse section of the population. The study population comprised members of the general public aged 18 years and above residing in Kerala. Individuals

who were willing to participate and provided informed consent were included in the study. A total of 200 participants were included in the study. Participants were selected using a random sampling method, ensuring that individuals from the target population had an equal probability of being included in the study. Data were collected using a pre-tested structured questionnaire developed for the purpose of the study. The questionnaire consisted of multiple sections designed to obtain relevant information from the participants. These included sociodemographic characteristics such as age, gender, education, and occupation; awareness and utilization of mobile dental clinics; attitude-based questions assessing perceptions toward mobile dental services; perceived barriers and suggestions related to visiting dental clinics; and a series of concerned statements to evaluate participants' opinions regarding mobile dental services. Data were collected through an online survey using Google Forms. The questionnaire link was distributed electronically to potential participants, and responses were recorded once the participants voluntarily completed and submitted the form. The collected data were compiled and analyzed using appropriate statistical methods. Ethical considerations were maintained throughout the study. Informed consent was obtained from all participants prior to participation in the survey. Participants were informed about the purpose of the study, and confidentiality and anonymity of the collected information were strictly maintained. Participation in the study was entirely voluntary.

STATISTICAL ANALYSIS

Statistical analysis will be done using SPSS software version 25.0. Armonk, NY: IBM Corp. Shapiro-Wilk test will be done to test the normality of the data. Descriptive statistics will be expressed in terms of mean and standard deviation for

quantitative data and in frequency and percentage for qualitative data. Chi square test was used to compare data. P-value was set at $p < 0.05$

RESULTS

Table 1: Frequency distribution of demographic details

		Frequency	Percent
Age	18-30	154	77.0
	31-50	27	13.5
	>50	19	9.5
Sex	Male	71	35.5
	Female	129	64.5
Education	No formal education	2	1.0
	Primary school	2	1.0
	Higher secondary	28	14.0
	Graduate	133	66.5
	Post graduate	35	17.5
Occupation	Student	89	1.0
	Employed	71	1.0
	Self employed	18	14.0
	Retired	8	66.5
	Unemployed	14	17.5
Place of residence	Rural	79	39.5
	Urban	65	32.5
	Semi-urban	56	28.0

Out of 200 participants, the majority were 18-30 years old (77%), followed by 31-50 years (13.5%) and above 50 years (9.5%). Females constituted the larger proportion (64.5%) compared to males (35.5%). Regarding education, most participants were graduates (66.5%), followed by postgraduates (17.5%) and higher

secondary (14%), while very few had primary or no formal education (1% each).

In terms of occupation, students formed the majority, followed by employed individuals, while smaller proportions were self-employed, retired, or unemployed. Regarding place of residence, 39.5% lived in rural areas, 32.5% in urban areas, and 28% in semi-urban areas.

Table 2: Descriptive data

		Frequency	Percent
Frequency of visiting dental clinic	Once in 6 months	45	22.5
	Once a year	30	15.0
	Only when problems occur	120	60.0
	Never visited	5	2.5
Barrier for visiting dental clinic	Cost	76	38.0
	Fear/anxiety	22	11.0
	Lack of time	90	45.0
	Distance	12	6.0
Heard about mobile dental clinic	Yes	126	63.0
	No	74	37.0
Ever visited a mobile dental clinic	Yes	71	35.5
	No	129	64.5
If yes, What service you receive	Check-up	126	63.0
	Cleaning/Scaling	41	20.5
	Filling	24	12.0
	Extraction	5	2.5
	Medicine prescription	1	.5
	Awareness/Health Education	3	1.5
If mobile clinic comes to your area will you use	Yes	137	68.5
	No	7	3.5
	Maybe	56	28.0

Preferred areas for mobile dental clinic	Health centres	71	35.5
	School/College	56	28.0
	Workplace	31	15.5
	Home	42	21.0
Preferred time	Morning	88	44.0
	Afternoon	39	19.5
	Evening	73	36.5
Services you expect from mobile dental clinic	Check-up	2	1.0
	Scaling	147	73.5
	Filling	17	8.5
	Extraction	14	7.0
	Oral cancer screening	14	7.0
	Referral to hospital	5	2.5

Frequency of visiting dental clinic: Most participants visited a dental clinic only when problems occurred (60%). About 22.5% visited once in 6 months, 15% visited once a year, and 2.5% had never visited a dental clinic.

Barriers for visiting dental clinic: The most common barrier was lack of time (45%), followed by cost (38%), fear/anxiety (11%), and distance (6%).

Awareness of mobile dental clinics: A majority of respondents had heard about mobile dental clinics (63%), while 37% were unaware.

Ever visited a mobile dental clinic: Only 35.5% had visited a mobile dental clinic, whereas 64.5% had never visited one.

Services received from mobile dental clinics :The most common service received was check-up (63%), followed by scaling (20.5%), filling (12%), extraction (2.5%), awareness programs (1.5%), and medicine prescription (0.5%).

Willingness to use mobile dental clinic: Most participants (68.5%) said they would use a mobile dental clinic if it came to their area, 28% were unsure, and only 3.5% said no.

Preferred location for mobile dental clinic: Participants preferred the clinic to be located at health centers (35.5%) followed by Schools/colleges (28%), Home visits (21%) and workplaces (15.5%)

Preferred time: The most preferred time was morning (44%) followed evening (36.5%) and afternoon (19.5%)

Expected services from mobile dental clinic: Most participants expected scaling (73.5%), followed by filling (8.5%), extraction (7%), oral cancer screening (7%), referral to hospital (2.5%), and check-up (1%).

Table 3: Comparison with age

		Age			P Value
		18-30 years	30-50 years	Above 50 years	
Frequency of visit to dental clinic	Every 6 months	93.3%	6.7%	0.0%	0.013
	Once in a year	80.0%	16.7%	3.3%	
		71.7%	14.2%	14.2%	
	Never visited	40.0%	40.0%	20.0%	
Barrier for visiting a dental clinic	Cost	80.3%	10.5%	9.2%	0.264
	Fear /anxiety	63.6%	13.6%	22.7%	
	Lack of time	80.0%	16.7%	3.3%	
	Distance	58.3%	8.3%	33.3%	
Services received	Check-up	78.6%	10.3%	11.1%	0.977
	Cleaning	82.9%	12.2%	4.9%	
	Filling	66.7%	25.0%	8.3%	
	Extraction	20.0%	60.0%	20.0%	
	Medicine prescription	100.0%	0.0%	0.0%	
	Awareness	100.0%	0.0%	0.0%	

Willingness to use mobile clinic	Yes	75.2%	13.1%	11.7%	0.423
	No	71.4%	28.6%	0.0%	
	Maybe	82.1%	12.5%	5.4%	
Preferred location for mobile dental clinic	Health center	69.0%	18.3%	12.7%	0.012
	School/college	92.9%	1.8%	5.4%	
	Workplace	83.9%	9.7%	6.5%	
	Home	64.3%	23.8%	11.9%	

There was a statistically significant association ($p = 0.013$) between age and frequency of dental visits. Younger participants (18–30 years) were more likely to visit dental clinics compared to older age groups. There was no statistically significant association ($p = 0.264$) between age and barriers to visiting a dental clinic. Younger participants (18-30 years) received most of the services such as check-ups and scaling, while extractions were more common in 30-50 years group. There was no significant association ($p = 0.423$) between age and willingness to use mobile dental clinics. There was a significant association ($p = 0.012$) between age and preferred service location.

Table 4: Comparison with sex

		Sex		P Value
		Male	Female	
Frequency of visit to dental clinic	Every 6 months	31.1%	68.9%	0.634
	Once in a year	36.7%	63.3%	
	When problems occur	35.8%	64.2%	
	Never visited	60.0%	40.0%	
Barrier for visiting a dental clinic	Cost	39.5%	60.5%	0.097
	Fear /anxiety	18.2%	81.8%	
	Lack of time	33.3%	66.7%	
	Distance	58.3%	41.7%	

Services received	Check-up	100.0%	0.0%	0.189
	Cleaning	37.4%	62.6%	
	Filling	35.3%	64.7%	
	Extraction	28.6%	71.4%	
	Oral cancer screening	14.3%	85.7%	
	Referral to hospital	20.0%	80.0%	
Willingness to use mobile clinic	Yes	37.2%	62.8%	0.609
	No	42.9%	57.1%	
	Maybe	30.4%	69.6%	
Preferred location for mobile dental clinic	Health center	42.3%	57.7%	0.463
	School/college	32.1%	67.9%	
	Workplace	35.5%	64.5%	
	Home	28.6%	71.4%	

There was no significant association ($p = 0.634$) between sex and dental visiting frequency. There was no statistically significant association ($p = 0.097$) between sex and barriers for visiting dental clinics. Females had higher utilization of mobile dental clinics, but the association was not statistically significant.

Table 5: Comparison with education

		Education					P Value
		No formal education	Primary education	Higher secondary	Graduate	Post graduate	
Barrier for visiting a dental clinic	Cost	0.0%	1.3%	15.8%	63.2%	19.7%	0.000
	Fear/anxiety	9.1%	0.0%	4.5%	50.0%	36.4%	
	Lack of time	0.0%	0.0%	13.3%	73.3%	13.3%	
	Distance	0.0%	8.3%	25.0%	66.7%	0.0%	
Ever visited a mobile dental clinic	Yes	1.4%	0.0%	12.7%	67.6%	18.3%	0.830
	No	0.8%	1.6%	14.7%	65.9%	17.1%	

There was a statistically significant association ($p = 0.000$) between education level and barriers to dental clinic visits. There was no significant

association ($p = 0.830$) between education level and visiting mobile dental clinics.

Table 6: Comparison with occupation

		Occupation					P Value
		Student	Employed	Self employed	Retired	Unemployed	
Barrier for visiting a dental clinic	Cost	42.1%	38.2%	7.9%	5.3%	6.6%	0.009
	Fear/anxiety	40.9%	27.3%	13.6%	0.0%	18.2%	
	Lack of time	47.8%	38.9%	7.8%	1.1%	4.4%	
	Distance	41.7%	8.3%	16.7%	25.0%	8.3%	
Services received	Check-up	53.2%	28.6%	6.3%	4.8%	7.1%	0.007
	Cleaning	26.8%	51.2%	12.2%	0.0%	9.8%	
	Filling	33.3%	50.0%	8.3%	4.2%	4.2%	
	Extraction	20.0%	0.0%	60.0%	20.0%	0.0%	
	Medicine prescription	100.0%	0.0%	0.0%	0.0%	0.0%	
	Awareness	33.3%	66.7%	0.0%	0.0%	0.0%	
Mobile clinic visit	Yes	31.0%	46.5%	12.7%	2.8%	7.0%	0.036
	No	51.9%	29.5%	7.0%	4.7%	7.0%	
Willingness to use	Yes	38.7%	41.6%	10.2%	5.8%	3.6%	0.003
	No	57.1%	0.0%	14.3%	0.0%	28.6%	
	Maybe	57.1%	25.0%	5.4%	0.0%	12.5%	

There was a significant association ($p = 0.009$) between occupation and barriers to visiting dental clinics. There was a significant association ($p = 0.036$) between occupation and visiting mobile dental clinics. There was a significant association ($p = 0.007$) between occupation and services received from mobile clinics. There was a significant association ($p = 0.003$) between occupation and willingness to use mobile dental clinics.

Table 7: Comparison with place of residence

		Residence			P Value
		Rural	Urban	Semi-urban	
Frequency of visit to dental clinic	Every 6 months	46.7%	33.3%	20.0%	0.379
	Once in a year	53.3%	23.3%	23.3%	
	When problems occur	33.3%	34.2%	32.5%	
	Never visited	40.0%	40.0%	20.0%	
Barrier for visiting a dental clinic	Cost	46.1%	27.6%	26.3%	0.734
	Fear/anxiety	36.4%	36.4%	27.3%	
	Lack of time	35.6%	36.7%	27.8%	
	Distance	33.3%	25.0%	41.7%	
Preferred location for mobile dental clinic	Health center	49.3%	32.4%	18.3%	0.033
	School/ College	23.2%	37.5%	39.3%	
	Workplace	32.3%	35.5%	32.3%	
	Home	50.0%	23.8%	26.2%	

There was no significant association ($p = 0.379$) between place of residence and dental visiting frequency. There was no significant association ($p = 0.734$) between residence and barriers to visiting dental clinics. There was a statistically significant association ($p = 0.033$) between place of residence and preferred location for mobile dental clinics.

Table 8: Comparison with awareness

		Awareness		P Value
		Yes	No	
Preferred area for mobile dental clinic	Health centre	53.5%		0.032
	School/ College	78.6%		
	Workplace	61.3%		
	Home	59.5%		
Preferred time	Morning	78.4%		0.000
	Afternoon	56.4%		
	Evening	47.9%		

What service do you expect from mobile dental clinic	Check-up	0.0%	0.0%	0.121
	Cleaning	66.0%	66.0%	
	Filling	41.2%	41.2%	
	Extraction	71.4%	71.4%	
	Oral cancer screening	57.1%	57.1%	
	Referral to prescription	80.0%	80.0%	

There was a significant association ($p = 0.032$) between awareness and preferred service location. There was a highly significant association ($p = 0.000$) between awareness of mobile dental clinics and preferred time of service. There was no significant association ($p = 0.121$) between awareness and expected services from mobile dental clinics.

DISCUSSION

The present study was conducted to assess the attitude of people towards mobile dental clinics and the factors affecting utilization of dental services. The findings of this study provide valuable insights into dental service utilization, barriers to accessing dental care, and the acceptance of mobile dental clinics among the population.

In the present study, the majority of participants were in the 18-30 years age group (77%), followed by 31-50 years (13.5%) and above 50 years (9.5%). Females constituted 64.5% of the study population, while males accounted for 35.5%. Similar demographic distributions were reported in studies conducted by Singh et al. (2016) and Nagarajappa et al. (2013), where young adults and females showed greater participation in oral health surveys due to increased awareness and interest in health-related issues^(4,5).

Regarding dental service utilization, the present study showed that 60% of participants visited the

dental clinic only when problems occur, while 22.5% visited once every six months and 15% visited once a year. Only 2.5% had never visited a dental clinic. These findings indicate that dental visits are mostly problem-oriented rather than preventive. Similar results were reported by Petersen (2003) and Varenne et al. (2006), who observed that in many developing countries people tend to seek dental care only when symptoms arise rather than for routine preventive check-ups^(1,2).

The present study also evaluated barriers to visiting dental clinics, where lack of time (45%) was the most commonly reported barrier, followed by cost (38%), fear or anxiety (11%), and distance (6%). Comparable findings were reported by Gupta et al. (2018) and Nagarajappa et al. (2013), who identified financial constraints, time limitations, and dental anxiety as major factors affecting utilization of dental services^(3,5).

With respect to awareness of mobile dental clinics, 63% of participants reported that they had heard about mobile dental clinics, while 37% had not heard about them. However, only 35.5% had ever visited a mobile dental clinic, whereas 64.5% had never utilized such services. This indicates that although awareness exists, actual utilization is still limited. Similar observations were reported by Sarin et al. (2015) and Subramanian and Kumar (2017), who highlighted that awareness about mobile dental clinics does not always translate into regular utilization of services^(6,7).

Among those who had visited a mobile dental clinic, the most common service received was dental check-up (63%), followed by scaling (20.5%), filling (12%), extraction (2.5%), medicine prescription (0.5%), and oral health education (1.5%). These findings are consistent with studies by Nagarajappa et al. (2013) and Sarin et al. (2015), which reported that mobile dental clinics mainly provide basic preventive and

primary dental care services, such as screening, oral hygiene instructions, and simple treatment procedures^(5,6).

A significant proportion of participants (68.5%) expressed willingness to use mobile dental clinic services if they were available in their area, while 28% responded maybe and 3.5% were not interested. This indicates a positive attitude towards mobile dental clinics among the study population. Similar positive attitudes towards mobile dental services were reported in studies conducted by Mathur et al. (2015) and Subramanian and Kumar (2017), which suggested that mobile dental clinics can improve accessibility to dental care, particularly among underserved populations^(7,8).

The preferred location for mobile dental clinic services among participants was health centres (35.5%), followed by schools or colleges (28%), homes (21%), and workplaces (15.5%). This finding is comparable to previous studies where community-based locations such as health centres and educational institutions were considered convenient for delivering outreach dental services.

In the present study, morning (44%) was the most preferred time for mobile dental clinic services, followed by evening (36.5%) and afternoon (19.5%). This may reflect the convenience of accessing dental services before daily work or study activities begin.

Regarding the services expected from mobile dental clinics, the majority of participants (73.5%) expected scaling, followed by filling (8.5%), extraction (7%), oral cancer screening (7%), and referral to hospital (2.5%). The high demand for scaling indicates increased awareness regarding oral hygiene and periodontal health among the study population.

Statistical analysis revealed several significant associations. Age showed a significant association with frequency of dental visits ($p = 0.013$) and preferred place for mobile dental clinics ($p = 0.012$). Occupation was significantly associated with barriers to visiting dental clinics ($p = 0.009$), utilization of mobile dental clinics ($p = 0.036$), willingness to use mobile dental clinics ($p = 0.003$), preferred location ($p = 0.036$), and expected services ($p = 0.049$). Education level also showed a significant association with barriers to visiting dental clinics ($p = 0.000$). These findings suggest that demographic and socioeconomic factors play an important role in influencing oral health behavior and service utilization.

Place of residence did not show significant association with most variables, although preferences regarding the location of mobile dental clinics differed among rural, urban, and semi-urban populations. Similar findings were observed in studies conducted by Varenne et al. (2006) and Singh et al. (2016)^(4,2).

Overall, the results of the present study suggest that although dental visits are mainly problem-based and several barriers to dental care exist, there is good awareness and a positive attitude towards mobile dental clinics. Mobile dental clinics therefore have the potential to improve access to dental care and promote preventive oral health services within the community.

CONCLUSION

The present study evaluated the attitude of people towards mobile dental clinics among a selected population in Kerala. The findings indicate that the overall attitude of participants toward mobile dental clinics is largely positive. Most respondents recognized the importance and potential benefits of mobile dental services in

improving access to oral healthcare, particularly for individuals who face difficulties in reaching conventional dental clinics.

The study also revealed that awareness of mobile dental clinics was moderate, with a majority of participants having heard about such services. However, a considerable proportion of the population was still unaware, indicating the need for increased public awareness and community outreach programs to educate people about the availability and advantages of mobile dental clinics.

Although only a smaller proportion of participants had previously utilized mobile dental clinic services, a large majority expressed willingness to use these services if they were available in their area. This finding reflects a favorable acceptance of mobile dental clinics and highlights their potential role in expanding oral healthcare delivery. Accessibility, affordability, and convenience were identified as key factors influencing people's positive perception of these services.

The study also identified several barriers to visiting conventional dental clinics, with lack of time and cost being the most commonly reported factors. Mobile dental clinics can help overcome these barriers by bringing dental care closer to the community and reducing travel and waiting time. In addition, participants showed preference for mobile dental clinics to be located in health centers, educational institutions, and community areas, and most preferred services to be provided during the morning or evening hours.

Statistical analysis showed that certain socio-demographic factors such as age, education, occupation, and place of residence were significantly associated with specific attitudes and preferences regarding mobile dental clinics. These

findings suggest that demographic characteristics may influence how individuals perceive and utilize mobile dental services.

Despite the overall positive perception, some challenges such as limited awareness, logistical constraints, and restricted treatment facilities were identified. Addressing these issues through improved infrastructure, better planning, and increased awareness campaigns could enhance the effectiveness and utilization of mobile dental clinics.

In conclusion, the results of this study suggest that mobile dental clinics are well accepted by the public and have significant potential to improve access to oral healthcare services, especially in rural and underserved areas. Strengthening mobile dental services through policy support, community engagement, and increased awareness initiatives may play an important role in reducing oral health disparities and promoting better oral health outcomes in the population.

REFERENCE

- Petersen PE. The World Oral Health Report 2003: Continuous improvement of oral health in the 21st century – the approach of the WHO Global Oral Health Programme. *Community Dent Oral Epidemiol.* 2003;31(Suppl 1):3-23.
- Varenne B, Petersen PE, Ouattara S. Oral health behaviour of children and adults in urban and rural areas of Burkina Faso, Africa. *Int Dent J.* 2006;56(2):61-70
- Gupta N, Vujicic M, Blatz A. Multiple chronic conditions among adults in the United States: A growing challenge for dental care. *J Am Dent Assoc.* 2018;149(5):345-352.
- Singh A, Purohit BM, Masih N. A cross-sectional study of utilization of dental care: An Indian outlook. *J Nat Sci Biol Med.* 2016;7(1):35-40.
- Nagarajappa R, Tak M, Sharda AJ, Asawa K, Batra M, Jain S. Assessment of barriers to utilization of dental services among adults. *J Clin Diagn Res.* 2013;7(12):2927-2930.
- Sarin S, Nagarajappa R, Suma S. Mobile dental clinics: A model for providing oral health care to underserved populations. *J Clin Diagn Res.* 2015;9(5):ZE01-ZE04
- Subramanian S, Kumar S. Role of mobile dental clinics in improving oral health care access in rural populations. *Int J Community Med Public Health.* 2017;4(3):709-713.
- Mathur MR, Williams DM, Reddy KS, Watt RG. Universal health coverage: A unique policy opportunity for oral health. *J Dent Res.* 2015;94(3 Suppl):3S-5S.
- Jain S, Mohanty V. Assessing patient satisfaction toward mobile dental clinics using digital feedback form in Delhi, India. *J Indian Assoc Public Health Dent* 2023;21:178-82.
- Santoso W L, Setiawan A, Gunawan S. Developing a Prototype of Mobile Dental Information System in Indonesia. *J Bua Infor.* 2012;3(2):1-10.

COMPLIANCE WITH BIOMEDICAL WASTE MANAGEMENT GUIDELINES AMONG DENTAL CLINICS IN VARKALA: A CROSS SECTIONAL STUDY

¹ Lal Mohan, ² Nandana M S, ³ Caron M B, ⁴ Aswanth Adithya, ⁵ Divya Prakash, ⁶ Praveen D, ⁷ Alaka Subodh

ABSTRACT

Aim: To assess the biomedical waste management practices among private dental clinics in Varkala.

Materials and Methods: A cross-sectional questionnaire-based study was conducted among 50 private dental clinics. Clinics were selected through simple random sampling. Data were collected using a structured self-administered questionnaire distributed through Google Forms. The questionnaire assessed infrastructure availability, waste segregation practices, documentation, occupational safety measures, recycling practices, and compliance with biomedical waste management regulations. Data were analyzed using descriptive statistics and associations between variables were evaluated.

Results: Among the participating clinics, 76% reported having a designated biomedical waste storage area and 78% had color-coded waste segregation bins in each operatory. Puncture-proof sharps containers were available in 68% of clinics, while amalgam separators were installed in 64%. On-site sterilization facilities such as autoclaves were present in 92% of clinics. Contracts with authorized Common Biomedical Waste Treatment Facilities were reported by 72% of clinics. Adequate personal protective equipment was available in 94% of clinics and 86% maintained staff training records. A statistically significant association was observed between the frequency of internal waste management audits and maintenance of waste collection records ($p=0.009$).

Conclusion: Although most dental clinics demonstrated satisfactory compliance with basic biomedical waste management practices, gaps remain in areas such as sharps disposal, amalgam management, and formal waste disposal arrangements. Strengthening training programs, regular monitoring, and stricter regulatory enforcement are essential to improve compliance and ensure safe dental waste management.

Keywords: Assessment, dental waste, dental practitioners, disposal, management

INTRODUCTION

The safe management of biomedical waste represents a fundamental requirement for

maintaining infection control, occupational safety, and environmental protection in healthcare facilities. Although hospitals are traditionally regarded as the primary generators of biomedical

waste, smaller healthcare units such as dental clinics also contribute substantially to waste production. The nature of dental practice involves the routine use of materials that may be infectious, chemically hazardous, or environmentally toxic, thereby necessitating structured waste management systems.

Dental waste is included in hospital waste.^[1] It is of two types, liquid waste and solid waste.^[2] They are further classified into two main groups: Non-risk waste and risk waste. Risk waste is infectious waste and hazardous waste.^[3]

Dental waste is unique due to the presence of potentially hazardous materials such as mercury-containing amalgam, radiographic chemicals, and contaminated disposables. Inadequate segregation, storage, treatment, or disposal can contribute to the transmission of infectious diseases, occupational injuries, and environmental pollution. The safe management of biomedical waste therefore requires strict adherence to regulatory guidelines, appropriate infrastructure, and continuous staff training.

In India, biomedical waste management is governed by the Biomedical Waste Management Rules, which mandate segregation, color-coding, storage, transportation, treatment, and documentation of waste. Despite the existence of clear regulations, studies have shown variability in compliance levels across healthcare facilities. Dental practices, particularly private clinics, may face challenges related to awareness, resource availability, cost constraints, and monitoring mechanisms.

Assessing waste management practices in dental clinics is essential for identifying gaps in compliance and promoting safer clinical environments. Evaluating factors such as waste segregation systems, sharps disposal practices, documentation, staff training, use of personal protective equipment (PPE), and recycling

¹ Final year Student, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ² Final year Student, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ³ Final year Student, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ⁴ Final year Student, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ⁵ Final year Student, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ⁶ Associate Professor and HOD, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum, ⁷ Associate Professor, Department of Public Health Dentistry, Sri Sankara Dental College, Varkala, Trivandrum

Correspondence : Lal Mohan

Email : dpraveen5@yahoo.com

How to cite this article : M Lal, MS Nandana, MB Caron, A Aswanth, P Divya, D. Praveen, A Subodh. Compliance with Biomedical Waste Management Guidelines Among Dental Clinics in Varkala: A Cross Sectional Study. Impressions. 2026;16(1): 20-26.

Source of support : Nil,

Conflict of Interest : None declared.

measures provides insight into the effectiveness of existing waste management protocols.

Therefore, the present study was undertaken to evaluate biomedical waste management practices among dental clinics using a structured questionnaire-based assessment

MATERIALS AND METHOD

Study Design and Setting: A cross-sectional, questionnaire-based survey was conducted to assess biomedical and dental waste management practices among dental clinics. The study was designed as an observational descriptive study.

Study Population: The study population consisted of private dental clinics. Clinics actively providing dental care services during the study period were considered eligible.

Sample Size and Sampling: A total of 50 dental clinics were approached for participation. Clinics were selected using a simple random sampling method based on accessibility and willingness to respond.

Data Collection Tool: Data were collected using a structured, self-administered questionnaire created via Google Forms. The questionnaire was designed to evaluate compliance with biomedical waste management guidelines and to assess infrastructure, waste handling practices, documentation, and safety measures.

The questionnaire consisted primarily of closed-ended (Yes/No) questions along with selected open-ended fields to capture specific operational details. The survey included items assessing:

- Availability of designated biomedical waste storage areas
- Presence of color-coded waste segregation bins
- Use and replacement frequency of puncture-proof sharps containers
- Installation of amalgam separators
- On-site waste treatment facilities (e.g., autoclave)
- Contracts with authorized Common Biomedical Waste Treatment Facilities (CBWTF)
- Maintenance of waste collection and disposal records
- Availability of spill kits and standard operating procedures (SOPs)

- Staff training and immunization records
- Personal protective equipment (PPE) adequacy
- Incident/needle-stick injury reporting mechanisms
- Waste generation metrics
- Recycling practices
- Regulatory compliance and internal audits

Validation of Questionnaire: The questionnaire was developed based on biomedical waste management regulations and standard infection control guidelines. Content validity was established through expert review

Data Collection Procedure: The Google Forms survey link was distributed electronically through simple random sampling. Participation was voluntary. Responses were collected over the study period 25/12/25 to 25/1/25

Ethical Considerations: Confidentiality of clinic information was maintained and used exclusively for research purposes

RESULT

Table 1: Frequency Distribution of Dental Waste Management Practices Among Private Dental Clinics

		Frequency	Percent
Is there a designated, secured, ventilated biomedical waste storage area?	Yes	38	76.0
	No	12	24.0
Colour-coded bins present in each operatory?	Yes	39	78.0
	No	11	22.0
	Not Applicable	2	4.0

Amalgam separator installed?	Yes	32	64.0
	No	18	36.0
Autoclave or other on-site treatment available?	Yes	46	92.0
	No	4	8.0
Contract with an authorized Common Biomedical Waste Treatment Facility (CBWTF) or licensed waste handler?	Yes	36	72.0
	No	14	28.0
Records of waste collection and disposal maintained (register)?	Yes	42	84.0
	No	8	16.0
Spill kits and SOP for chemical spills available?	Yes	39	78.0
	No	11	22.0
Written SOPs for waste segregation, handling and disposal exist and accessible?	Yes	35	70.0
	No	15	30.0
Staff training schedule and attendance records present?	Yes	43	86.0
	No	7	14.0
PPE stock (gloves, masks, goggles, aprons) adequate?	Yes	47	94.0
	No	3	6.0
Immunization (Hep B) records for staff kept?	Yes	40	80.0
	No	10	20.0
Incident/needle-stick reporting mechanism present?	Yes	37	74.0
	No	13	26.0
Average weekly weight/volume of biomedical waste generated:	Below 5kg	35	70.0
	5 - 10 kg	10	20.0
	10 - 15 kg	3	6.0
	15 - 20 kg	2	4.0
Frequency of internal collection:	Daily	18	36.0
	Alternate day	16	32.0
	Weekly	16	32.0
Are recyclable materials segregated and sent for recycling?	Yes	42	84.0
	No	8	16.0
Is amalgam collected separately and sent for recycling/processing?	Yes	37	74.0
	No	13	26.0

Are chemical disinfectants stored and disposed according to MSDS?	Yes	42	84.0
	No	8	16.0
Any notices/penalties from regulatory authorities in last 3 years?	Yes	19	38.0
	No	31	62.0
Internal audit of waste management performed ?	Monthly	31	62.0
	Quarterly	12	24.0
	Yearly	5	10.0
	Never	2	4.0

Table 1 shows Frequency Distribution of Dental Waste Management Practices Among Private Dental Clinics. A total of 50 private dental clinics participated in the present cross-sectional study.

Regarding infrastructure for biomedical waste management, 76% of clinics reported having a designated, secured, and ventilated waste storage area, while 24% lacked such facilities. Colour-coded waste segregation bins were available in 78% of operatories. Puncture-proof sharps containers were present and in active use in 68% of clinics; however, 28% reported non-availability.

Amalgam separators were installed in 64% of clinics. On-site sterilization facilities such as autoclaves were available in 92% of clinics. A formal contract with an authorized Common Biomedical Waste Treatment Facility (CBWTF) was reported by 72% of clinics, while 28% operated without such agreements.

Documentation practices were encouraging: 84% maintained records of waste collection and disposal, and 70% had written standard operating procedures (SOPs) for segregation and handling. Spill kits and chemical spill SOPs were available in 78% of clinics.

With respect to occupational safety measures, 86% maintained staff training records,

94% reported adequate availability of personal protective equipment (PPE), and 80% maintained Hepatitis B immunization records. An incident/needle-stick injury reporting mechanism was present in 74% of clinics.

Most clinics (70%) generated less than 5 kg of biomedical waste per week. Internal waste collection was performed daily in 36% of clinics, while 32% followed alternate-day or weekly schedules.

Recycling practices were adopted by 84% of clinics, and 74% reported separate collection and recycling of amalgam. Compliance with Material Safety Data Sheet (MSDS) guidelines for chemical disinfectant storage and disposal was reported by 84%.

Notably, 38% of clinics reported receiving notices or penalties from regulatory authorities within the last three years. Internal audits of waste management were conducted monthly in 62% of clinics, quarterly in 24%, yearly in 10%, and never in 4%.

Table 2: Comparison between availability of Hep B immunization records for staff and availability of staff training schedule and attendance records

		Immunization (Hep B) records for staff kept?		
		Yes	No	
Staff training schedule and attendance records present?	Yes	87.5%	80.0%	0.541
	No	12.5%	20.0%	

Table 2 shows the relationship between staff training practices and maintenance of Hepatitis-B immunization records was assessed. Among clinics that maintained a staff training schedule and attendance records, 87.5% also maintained Hepatitis-B immunization records, whereas 80% of clinics without documented training schedules maintained immunization records. However, the

association between staff training and maintenance of immunization records was not statistically significant ($p=0.541$).

Table 3: the association between the frequency of internal waste management audits and the maintenance of waste collection and disposal records

		Internal audit of waste management performed?				
		Monthly	Quarterly	Yearly	Never	
Records of waste collection and disposal maintained (register)?	Yes	90.3%	83.3%	80.0%	0.0%	0.541
	No	9.7%	16.7%	20.0%	100.0%	

Table 3 shows the association between the frequency of internal waste management audits and the maintenance of waste collection and disposal records. Among clinics performing monthly internal audits, 90.3% maintained waste collection and disposal records. Similarly, 83.3% of clinics conducting quarterly audits and 80% of clinics conducting yearly audits maintained such records. In contrast, none of the clinics that never performed internal audits maintained waste collection records. This association between the frequency of internal audits and maintenance of waste records was found to be statistically significant ($p=0.009$).

DISCUSSION

Biomedical waste management is a critical component of infection control and environmental safety in dental practice. Dental clinics generate various types of waste including infectious materials, sharps, amalgam residues, and chemical waste, which require proper handling and disposal. The present study assessed biomedical waste management practices among private dental clinics and identified areas of satisfactory compliance as well as aspects requiring improvement.

In the present study, 78% of clinics reported the presence of color-coded waste segregation bins,

indicating relatively good adherence to biomedical waste segregation guidelines. This finding is consistent with the study conducted by Bansal et al., which reported that 76% of dental practitioners segregated different types of waste in their clinics according to biomedical waste management regulations. However, despite good awareness, some practitioners still failed to consistently follow proper segregation practices.

Proper sharps management is essential to prevent occupational injuries and transmission of blood-borne infections. In the present study, 68% of clinics reported the use of puncture-proof sharps containers. However, a considerable proportion of clinics still lacked proper sharps disposal methods. Similar concerns were reported by Sudhakar and Chandrashekar, who observed that only 11.8% of dentists disposed of sharps using appropriate containers, while many practitioners disposed of sharps along with general waste. This indicates that although improvements have occurred over time, sharps management remains an important area requiring attention.

The present study found that 64% of clinics had installed amalgam separators, and 74% reported separate collection of amalgam for recycling. Dental amalgam contains mercury, which is a potential environmental pollutant if not properly managed. In comparison, Sudhakar and Chandrashekar reported that only 60.9% of dentists segregated excess mercury or amalgam before disposal, while a significant proportion failed to do so. This suggests that awareness regarding mercury waste management in dental clinics is gradually improving but still requires strengthening.

In terms of sterilization infrastructure, 92% of clinics in the present study had on-site sterilization facilities such as autoclaves, reflecting good compliance with infection control practices. Adequate availability of personal protective

equipment (PPE) was also reported by 94% of clinics, indicating a high level of awareness regarding occupational safety.

With regard to documentation and training, 86% of clinics maintained staff training records, while 80% maintained Hepatitis-B immunization records for staff members. These findings demonstrate the increasing emphasis on occupational health protection in dental settings.

The present study also demonstrated a statistically significant association between the frequency of internal waste management audits and the maintenance of waste collection and disposal records ($p = 0.009$). Clinics that conducted regular internal audits were more likely to maintain proper documentation. Similar observations have been reported in previous studies which emphasized the importance of monitoring systems and regulatory supervision in improving compliance with biomedical waste management practices.

Despite the generally satisfactory practices observed in the present study, certain gaps remain. For instance, 28% of clinics did not have contracts with authorized Common Biomedical Waste Treatment Facilities, and 38% reported receiving notices or penalties from regulatory authorities in the past three years. These findings highlight the need for improved regulatory enforcement and continuous education programs for dental practitioners.

Overall, the findings of the present study suggest that while awareness and compliance with biomedical waste management practices among dental practitioners have improved compared with earlier studies, certain deficiencies persist. Strengthening training programs, improving access to waste treatment services, and implementing regular monitoring mechanisms may further enhance compliance and promote safe dental practice.

The present study has certain limitations. The sample size was relatively small and limited to private dental clinics within a specific geographic area, which may affect the generalizability of the findings. Additionally, the study relied on self-reported responses obtained through questionnaires, which may introduce response bias. Future studies with larger sample sizes and direct observational assessments may provide a more comprehensive evaluation of biomedical waste management practices in dental settings.

CONCLUSION

The present study evaluated biomedical waste management practices among private dental clinics and found that most clinics demonstrated satisfactory compliance with several essential waste management practices, including the use of color-coded segregation bins, availability of sterilization facilities, and adequate personal protective equipment.

However, deficiencies were observed in certain areas such as sharps disposal, installation of amalgam separators, and formal agreements with authorized biomedical waste treatment facilities. The study also demonstrated that regular internal waste management audits significantly improve documentation and record-keeping practices.

Continuous training of dental personnel, improved awareness of biomedical waste management regulations, and strict monitoring by regulatory authorities are necessary to ensure effective and safe waste management practices. Proper biomedical waste management in dental clinics is essential not only for occupational safety but also for protecting public health and the environment.

REFERENCES

1. Park K. Park's Textbook of Preventive and Social Medicine. 25th ed. Jabalpur: Banarsidas Bhanot; 2019.p.563.
2. Darwish RO, Al-Khatib IA. Evaluation of dental waste management in two cities in Palestine. East Mediterr Health J. 2006;12(Suppl 2):S217-22.
3. Iliyas M. Community Medicine and Public Health. 5th ed. Karachi: Time Publisher; 2001. p.62.
4. Sudhakar V, Chandrashekar J. Dental health care waste disposal among private dental practices in Bangalore City, India. Int Dent J. 2008;58(1):51-54.
5. Bansal M, Vashisth S, Gupta N. Knowledge, awareness and practices of dental care waste management among private dental practitioners in Tricity (Chandigarh, Panchkula and Mohali). J Int Soc Prev Community Dent. 2013;3(2):72-76.
6. Sharma S, Chauhan SVS. Assessment of biomedical waste management in three apex government hospitals of Agra. J Environ Biol. 2008;29(2):159-162.
7. World Health Organization. Safe management of wastes from health-care activities. 2nd ed. Geneva: WHO Press; 2014.
8. Hegde V, Kulkarni RD, Ajantha GS. Biomedical waste management. J Oral Maxillofac Pathol. 2007;11(1):5-9.
9. Charania ZK, Ingle NA. Awareness and practices of dental care waste management among dental practitioners in Chennai City. J Contemp Dent. 2011;1:15-21.
10. Taiwo JO, Aderinokun GA. Assessing cross infection prevention measures at the dental clinic, University College Hospital, Ibadan. Afr J Med Med Sci. 2002;31:213-217

CASE REPORT OF COMPOUND ODONTOMA IN RELATION TO MAXILLARY PREMOLAR REGION

¹ Gopika JB

ABSTRACT

Odontoma is one of the most common odontogenic tumor, Even though it is classified under the group of tumour, it is not a true neoplasm.[1]It is mostly considered as a developmental anomaly with hamartomatous malformation.

Odontoma is recognizable in two forms Compound Odontoma and Complex odontoma. Complex Odontoma is seen mostly in posterior aspect of most jaws and compound odontoma is mostly seen in anterior region of maxilla. Here, we present a case report of compound odontoma located in Premolar region of maxilla which of rare occurrence and makes this case distinctive.

Keywords: Odontoma, Compound, Premolar, Maxillary

INTRODUCTION

The term Odontoma was coined by Paul Broca in 1867.^[2] It refers to any tumor of odontogenic origin. The growth in both epithelial and mesenchymal cells exhibits complete differentiation, and as a result the functional ameloblasts and odontoblasts form enamel and dentin. This enamel and dentin develop into an abnormal pattern and organization of these cells fails to reach normal state of morpho-differentiation. This represents a hamartomatous malformation. According to WHO classification 2022, it is classified into Complex odontoma and Compound odontoma. Compound odontoma consists of hard and soft tissues, which are laid down in their anatomic relationships with formed calcified tooth like structures. It also resembles as a miniature dwarfed tooth.^[2] Etiology of Odontoma is not clear. It may be hereditary anomaly, trauma,

odontoblastic hyperactivity or infection.^[3] They are mostly seen in anterior region of maxilla which may be asymptomatic without any expansion. It can be found at any age with no gender predilection. It may create a "bag of marbles" radiographic appearance of multiple tooth like structures.^[1] Usually, these are diagnosed during routine radiographic examination.

¹Dental Practitioner

Correspondence : Gopika JB

Email : gopikajb7476@gmail.com

How to cite this article : JB Gopika. Case Report of Compound Odontoma in Relation to Maxillary Premolar Region. Impressions. 2026;16(1):27-29.

Source of support : Nil,

Conflict of Interest : None declared.

CASE REPORT

a) Case Presentation

A 20 year old female patient reported to the department of Orthodontics and Dentofacial orthopedics with a chief complaint of aesthetic issues. After clinical examination patient was advised for Fixed mechanotherapy. During radiographic examination as a part of treatment, multiple calcified tooth like structures were identified on left Maxillary premolar region. The patient was referred to our department of Oral and Maxillofacial Surgery. On clinical examination and case history recording patient presents with no relevant findings associated with familial history, medical history or any systemic conditions.

b) Investigation

In order to assess the location and relation of the lesion, the patient was asked to take a Cone beam computerized tomography (CBCT) with an area of interest in relation to 25 CBCT revealed. It has four well-formed cone shaped cusps that lie palatal to the mid root regions of 23,24 and 25 causing thinning of palatal cortex. Crown of this tooth like structure resemble single tooth with four cusps surrounded by lamina dura. Two cusps fused at the mid region and form a fused root join at the apical end. The root were oriented vertically with its end lies at anterior wall of left Maxillary sinus. RBE was done and the patient was posted for surgical extraction of odontome under local anesthesia in our OPD

c) Surgical Management

The Odontome Was removed carefully along with the first premolars under local anesthesia without any complications. The patient was reevaluated regularly after the surgical procedure and referred for fixed mechanotherapy procedures.

d) Discussion

Prevalence : Odontomas are the most frequent odontogenic tumors, and it accounts for 22 to 67% of all Maxillary tumors.^[5]

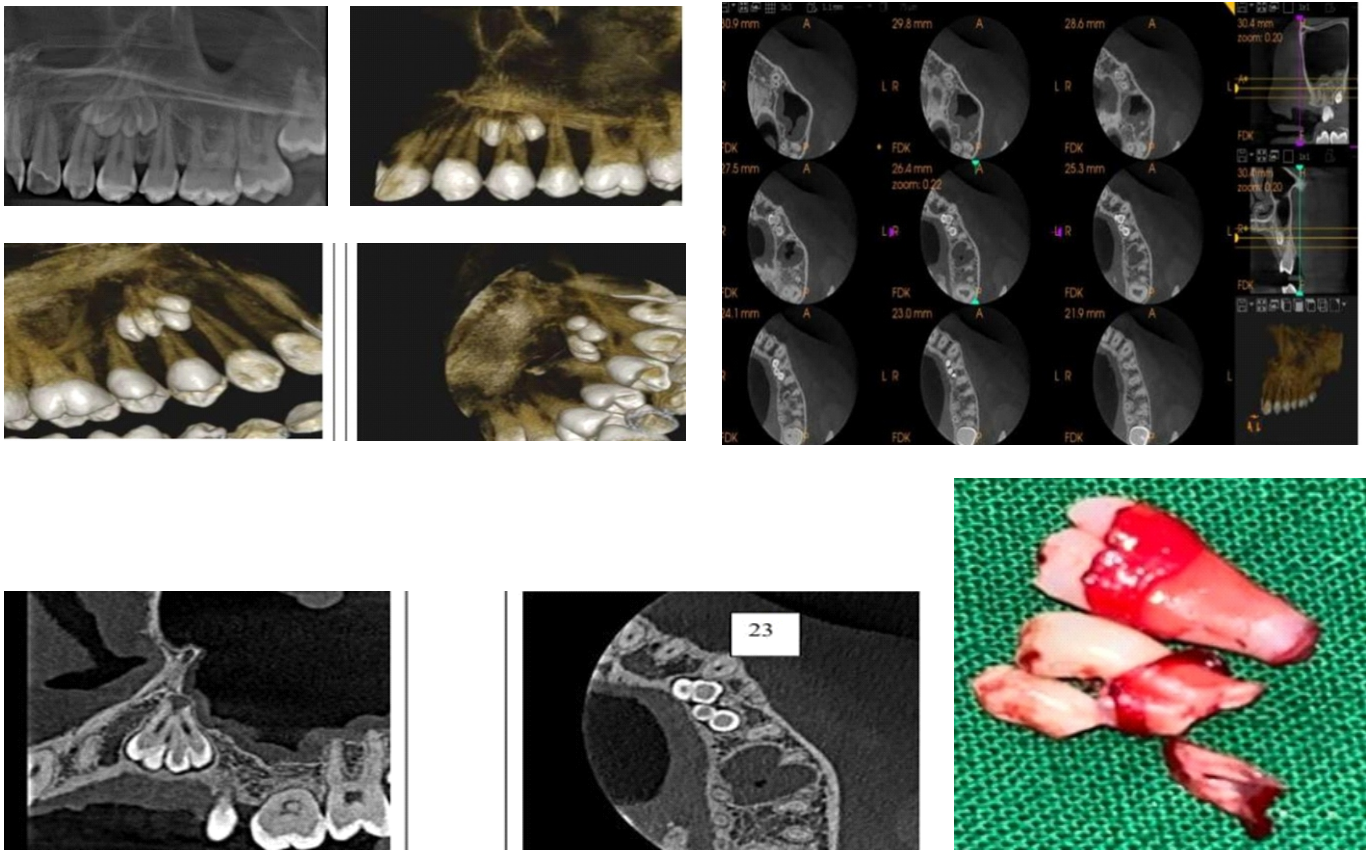
Etiopathology : Etiology of Odontoma is unknown but it may cause due to trauma during primary dentition. It can also occur as an inflammatory, infectious process or as a hereditary anomaly.^[5] Odontoblastic hyperactivity or alteration in genetic components are also responsible for dental development in odontoma.^[7]

Clinical features : Compound Odontomas are more common in maxilla and seen in anterior jaw. Mostly they are asymptomatic. Radiographically it appears as a radioopaque mass of calcified structures with anatomic similarities to normal teeth. It can also be seen as a pocket of dwarfed teeth or tooth like form surrounded by narrow radiolucent zone.^[1] Compound odontomas can often be associated with anterior teeth malalignment and tooth eruption disorders with impaction or delayed tooth eruption.^[8]

Management : Surgical removal of lesion is the major treatment of choice. Provisional diagnosis of Odontoma can be made by radiographic examination and cone beam computerized tomography. Histological study of removed lesion should be done to confirm diagnosis of Odontoma.

CONCLUSION AND TAKEAWAY LESIONS

Odontomas are not common in the premolar area. Here in our case we had noticed multiple Odontomas in the premolar area. Multiple Odontomas are usually associated with syndromes like 'Gardeners Syndrome'. In order to note out any such systemic illness, we have send the patient for further detailed examination.



REFERENCES

1. Textbook of Oral and Maxillofacial Surgery, Neelima Anil Malik, 5th edition.
2. Odontome: A Brief Overview V Satish, corresponding author, Maganur C Prabhadevi, and Rajesh Sharma. *Int J Clin Pediatr Dent.* 2011 Sep-Dec; 4(3): 177-185. Published online 2011 Apr 15. doi: 10.5005/jp-journals-10005-1106. PMID: 27678223
3. Rana V, Srivastava N, et al Compound Odontoma: A case report *Int J Clin Pediatric Dent* 2019;12(1): 64-67
4. Metaanalysis of the epidemiology and clinical manifestations of odontomas Olga Hidalgo-Sánchez et al. *Med Oral Patol Oral Cir Bucal.* 2008.
5. Helena Salgado, Pedro Mesquita Clinical case-Compound Odontoma-case report Faculdade de medicina Dentária, Universidade do Porto (FMDUP), Porto, Portugal.
6. S. Amado Cuesta, J. Gargekko Albiol, L Berini Aytès, C. Gay Escoda.
7. P. Morgan Odontogenic tumors: a review *Periodontology* 2000, 57(2011), P.160-176
8. Article: Characteristics, diagnosis and intent of Compound Odontoma associated with impacted teeth Department of Oral and Maxillofacial sciences, Sapienza University of Rome, 00161 Rome, Italy

DENTISTRY, ITS EVOLUTION AND ROLE OF SPECIALIZATION IN CURRENT SCENARIO

¹ Nithin R S, ² Akhilesh Prathap

ABSTRACT

Dentistry is one of the most developed disciplines of modern medical sciences over the centuries. The trail of evolution of dentistry from scratch in the antiquity to one of the most developed disciplines of modern medical sciences over the centuries is exciting, interesting and thoughtful. During its evolution, many specialities have developed. Now the dental profession has reached new heights. Along with the professional excellence, unwanted “tug of war” is also raising. This will fade the reputation of our profession down the lane. This short article will try to tell that tale of evolution and current hurdles. Also we are suggesting some ideas to tackle the problem of professional ego.

INTRODUCTION

It has been common for individual practitioners within the dental profession to seek and obtain advanced education, experience and specific focused competencies. This has occurred due to the demands placed upon individual practitioners by the populations they serve and because of unique skills and aptitudes of individual dentists. Consequently, as with other caring professions, specialization in dentistry has occurred as a natural evolutionary process across several disciplines of dental profession.

The transition toward specialization in all health care fields often presents the developing profession with challenging concerns and issues. Creative solutions to these concerns will strengthen the integrity and cohesiveness of profession as long as the welfare of patients remain as focal point.

A PEEP IN TO THE PAST

Dental diseases are as old as the evolution of Homo sapiens on this earth. So, every culture,

every tribe, every country, every rural, urban and aboriginal people and the like, through their own experience, have contributed to the development of dental science over the centuries. Dentistry is a well-developed science today. Where we arrived today in, our dental detour is less important, more important and exciting, is how we came to where we are today.^[1]

¹ Assistant Professor, Oral & Maxillofacial Surgery, Sri Sankara Dental College, Varkala. ² Professor, Oral & Maxillofacial Surgery, Pushpagiri Dental College, Thiruvalla.

Correspondence : Akhilesh P

Email : akhileshomfs@gmail.com

How to cite this article : RS Nithin, P Akhilesh Dentistry, its Evolution and Role of Specialization in Current Scenario. Impressions. 2026;16(1):30-33.

Source of support : Nil,

Conflict of Interest : None declared.

Evolution of dentistry: from barber- surgeons to dentists

Until the mid-eighteenth century, the main providers of dental services were barber-surgeons. Some may think that the term “barber-surgeons” is quite annoying. But until mid-eighteenth century barbers and surgeons were effectively a single entity (figure 1). Surprisingly they were entitled as members of the Company of Masters of Barbery and Surgery, London (Est. 1300 A.D. - Received Grant of Arms, 1451, Royal Charter, 1462).^[2,3] Later on, this company was amalgamated with the Guild of Surgeons by a royal Charter granted by King Henry VIII. Later on, in 1843, the Royal College of Surgeons was formed, which played a profound and dominant role in the evolution of dentistry from a trade into a profession.



Figure 1: an ancient “barber-surgeon”

Image courtesy : Dr Alun Withey,
Wellcome research Fellow, University of Exeter

The legacy of India; Indus valley civilization and “Susruta- Samhita”

Indian culture and civilization had given special focus in medical field. But since our

historical skills and excellence were side-lined by the european historians, many such medical marvels were not revealed. From the archaeological excavations in harappan civilization, it's confirmed that dentist of that period used copper or bronze strings for periodontal splintage in order to keep those defective loose teeth fixed on the jaw, as is now done in modern dental practice. It's surprising that normal sets of teeth along with diseased teeth were enclosed in jar during the bronze age (around 2500 B.C. - 1500 B.C.), which might have been kept for reference to compare with the diseased one - a lyric of lesson for future generations!^[1]

Susruta who is known as “the father of Surgery”, in his collected works “Susruta-Samhita” had mentioned about the diseases of mouth, oral cavity and throat in “Nidanasthana”. This is one of the pioneer works in dentistry.

THE ROLE OF SPECIALISATION AND THE CONFLICT OF WAR

Modern dentistry has now evolved a lot and has expanded in many directions to form sub-specialities. The factors influencing the choice of a dental profession are very important in terms of identifying the expectations of the profession. Several studies have reported that the majority of the undergraduate dental students prefer to continue their education towards a specialty degree.^[4] This has important implications for the dental workforce planning agenda in any country. With an increase in demand for dental treatment and with an increase in supply of dental schools, a striking balance between dental needs and supply is inevitable.

The factors that were considered to be important in the specialty/general dentistry preferences appears to be related to the influence of family, colleagues or faculty members in the dental

profession. However possession of specific skills/talents unique to the specialty, intellectual content of specialty and challenging diagnostic problems are the three most important influencing factors on choosing a specialty. Constructive family inspiration is important to the progression of students' academic careers and it has been reported that strong encouragement from spouses, relatives, mentors, and advisors can greatly increase pursuit of a specialty program.

Medico-legal implications

Dentists are increasingly facing legal threats from the patients who are not satisfied by the treatment given. Hence it is imperative that all the health care professionals including dentists should be familiar of the medico legal aspects of the field.

In order for achieving success in an action for negligence consumer must be able to establish to the satisfaction of the court that ^[5]:

1. Duty owed by the doctor to him to confirm the particular standard of professional conduct.
2. There is breach of duty.
3. Patient has suffered actual damage.
4. Doctor's conduct was direct or proximate cause of damage, suffer damage or injuries

Now common people are becoming more and more aware of medical and dental services. There is a necessity for preserving the records officially and professionally to defend against any commercial, legal and medico-legal litigation. Records are the main factors needed to persuade in the lawsuit. Written records including dental and medical history, photographs, radiographs, chart notes and models are the only accessible guidelines from which to deliberate in a negligent lawsuit and must be carefully kept. ^[6]

When is the need for a consultant in clinical specialities?

It is apparent that general dentists accomplish most of the services in about one-half of the specialties. Much of the general practitioners are skilled to do the speciality procedures. Some procedures in every specialty can be accomplished to a high level of acceptability by educated, experienced general dentists. But when complications arise from the side of general practitioner, the question "Is the doctor really qualified to do that procedure?" comes in scenario. If the procedure is beyond the skill of the general practitioner, never try to do the case. It's better to take service of the consultant.

Skill vs Qualification

Only the gifted hands will survive in the profession. Skill and adequate training is more important than qualification. It's not unusual to have a senior general practitioner more skilful than a consultant maxillofacial surgeon in a third molar surgery!

Grey areas between specialities

There are many overlapping services between specialities and speciality vs. general dentistry. Implantology is one of such areas. Implantology is a sub-speciality performed by OMFS, prosthodontics and periodontics. And hence it's a common area of professional clash. Likewise there are many areas where overlapping occurs.

Tough time - turf battles

It is unfortunate that some treatment procedures, usually defined within a specialty area but practiced by both generalists and specialists, become topics for both professional and community debate. Turf battles do not solve any

problems, but they certainly create many new ones. There is plenty of dentistry in all areas to keep everybody busy. Our profession is a service profession, and such battles are inappropriate.

Suggestions for better generalist-specialist interaction

1. Specialists of all categories should participate and become leaders in dental societies and study groups that are multi disciplinary.

2. Specialists should teach general dentists how to better accomplish some of the procedures in their respective specialty areas.

3. Generalists and specialists should examine their own clinical knowledge and skills and do everything possible to develop adequate competency in any clinical area in which they treat patients.

CONCLUSION

Dental specialties have an important, positive role in improving education and practice, stimulating research and defining quality expectations in their areas of expertise. However, it is well-known that general dental practitioners accomplish a significant portion of the dental therapy that commonly is classified as being within the scope of the respective recognized specialty areas. This creates many unnecessary ego and professional jealousy.

We should have a team work between our fellow members, so that we can improve the interaction between specialists and generalists.

And the story goes on.....

Still we have a long way to go. There are limits to medical and dental sciences. Frustrations expressed towards our profession today are because expectations of people have always been

far more than medical sciences can meet. Many ideas and concepts thought to be sanctified absolute truth in the past were held to be completely false at another time in the future. Many aspects of contemporary medicine and dentistry today may prove to be false and even harmful and dangerous in the years to come. At the same time, discarded concepts of the past have been resuscitated and found useful later. This is the intellectual part of the story.

REFERENCES

1. History of dentistry: an overview Sisir K. Majumdar Bull.Ind.Inst.Hist.Med.Vol.XXXII-2002. pp 31 to 42.
2. Adams, F. 1985 : The Genuine Works of Hippocrates, Vol. II, Aphorism, p.721 (Translated from the Greek), Classics of Medicine Library, Alabama, U.S.A. (Originally printed for The Sydenham Society, London).
3. Singer, C. and Underwood, E.A 1962 A Short History of Medicine. 2nd Ed. Clarendon Press, Oxford, p.663.
4. Halawany, H.S. et al., Dental specialty, career preferences and their influencing factors among final year dental students in Saudi Arabia. The Saudi Dental Journal (2017).
5. Paul G. Medical Law for dental surgeon. Jaypee Digit. 2004;(5):29.
6. Carranza's clinical periodontology;. p. 1221-6.

PERIPHERAL OSSIFYING FIBROMA: A CASE REPORT

¹ Nripan T, ² Theertha Mohan, ³ Amal Dev JS

ABSTRACT

A 13-year old female patient undergoing fixed orthodontic treatment came with a growth on the gingiva in relation to mandibular left canine-premolar region. The growth was of around three-month duration. Excisional biopsy was performed using electrocautery.

Keywords: Peripheral ossifying fibroma, reactive hyperplastic lesions

INTRODUCTION

Reactive hyperplastic lesions are common findings in oral cavity.^{1,2} They are an exuberant or overzealous tissue reactions to chronic, low-grade irritation or injury-essentially considered as an “over-healing” process rather than a true neoplasm. The reactive hyperplastic lesions include pyogenic granuloma, peripheral giant cell granuloma, traumatic/ irritation fibroma, and peripheral ossifying fibroma. Most of these conditions looks similar clinically and with similar nature and needs histopathological confirmation for final diagnosis.

CASE REPORT

A 13-year old female patient came to our dental office with a chief complaint of a growth noticed on her gingiva in relation to the mandibular left-canine premolar region. The patient is undergoing fixed orthodontic treatment at another office for the past one and half year and this particular growth was started three-months back. Over the three months the size of the growth increased and reached the present size. The patient gave a history of occasional bleeding from the growth especially during brushing. There is no other pain or clinical signs associated with the growth.

The intra-oral examination revealed a reddish-pink pedunculated growth of approximate size of 1.5x1.0 cm on the buccal surface of gingiva with an ovoid shape and firm consistency (Fig 1). The growth shows bleeding on palpation. The metal brackets of the fixed orthodontic treatment is seen chronically rubbing the gingiva in the particular region.

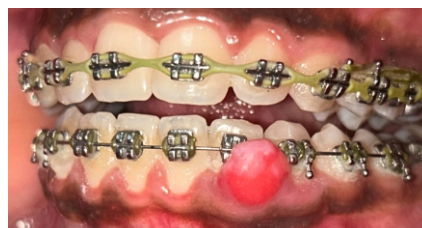


Figure 1: Clinical picture demonstrating a reddish growth in interdental papilla adjacent to mandibular left incisor-canine region.

^{1,2,3} Dental Surgeon, Crystal Dental Care, Kollam

Correspondence : Amal Dev JS

Email : amaldevjs@gmail.com

How to cite this article : T Nripan, M Theertha, JS Amal Dev. Peripheral Ossifying Fibroma: A Case Report. Impressions. 2026;16(1):34-35.

Source of support : Nil,

Conflict of Interest : None declared.

After administering local anaesthesia the growth was excised surgically followed by cauterization of the associated gingiva and deep scaling was administered as the treatment plan (Fig 2). The excised specimen was submitted for histopathological examination.



Figure 2: Clinical photograph after the excision and curettage of the growth.

The histopathological examination revealed stratified squamous surface epithelium associated with a fibrovascular connective tissue exhibiting numerous blood capillaries, endothelial cell proliferation, spindle shaped fibroblasts and focal areas of chronic inflammatory cell infiltrate. Spicules of vital bony trabeculae are seen within the connective tissue indicating a diagnosis of peripheral ossifying fibroma (Fig 3).

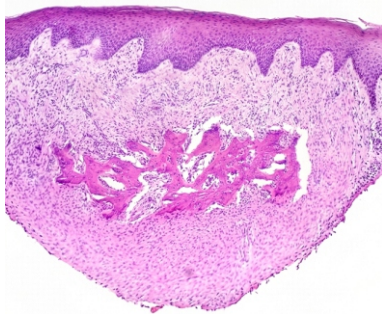


Figure 3: Photomicrograph demonstrating surface epithelium, bony trabeculae and proliferating fibroblasts (H & E stain, 40X magnification)

DISCUSSION

Peripheral ossifying fibroma (POF) is one of the commonest reactive hyperplastic lesions affecting oral cavity which is believed to arise from periodontal ligament cells. Chronic irritation from local factors such as dental calculus, plaque, poorly contoured restorations or orthodontic appliances can cause chronic injury to the gingival tissues.^{3,4,5} This chronic irritation triggers the migration and proliferation of undifferentiated mesenchymal cells from the periodontal ligament space. Since

these undifferentiated mesenchymal cells have the potential to differentiate into diverse type of connective tissue cells, including fibroblasts, osteoblasts and cementoblasts these hard tissue can be seen within the connective tissue element of the growth. Clinically it mimics a pyogenic granuloma or a peripheral giant cell granuloma. Though these lesions have similar clinical appearance there is a difference in recurrence rate. Peripheral ossifying fibroma is having 8% to 16% recurrence rate while Peripheral Giant Cell Granuloma is having 10% and Pyogenic granuloma is having only 3% to 5% of recurrence rate.

CONCLUSION

Reactive hyperplastic lesions are benign growths, though their recurrence rate may vary. Histopathological examination and curettage to periosteum can prevent recurrences in peripheral ossifying fibroma.

REFERENCES

1. Kumar S, Chahal AS, Kumar M, Gupta M. Reactive lesions of the oral cavity: A retrospective study of 5 years in a single centre. *Bull Stomatol Maxillofac Surg.* 2026 Jan;21(12):45-52.
2. de Oliveira-Silva N, de Castro-Andrade H, de Almeida-Lopes S, de Faria-Vasconcelos R, de Carvalho-Melo A. Peripheral ossifying fibroma: A 20-year retrospective study with focus on clinical and morphological features. *J Clin Exp Dent.* 2022 Sep;14(9):e715-e721.
3. Sapkota P, Shrestha A, Gunjeshwari S. Clinicopathological analysis of reactive gingival lesions in a tertiary care center: A retrospective study. *J Nepal Health Res Counc.* 2021 Jul;19(2):294-298.
4. Silwal P, Singh M, Sharma S. Clinico pathological correlation of reactive lesions of the oral cavity: A 6-year retrospective study. *J Oral Maxillofac Pathol.* 2020 May;24(2):405.
5. Gunashekar M, Chandra S. Recurrence rates and management protocols of peripheral ossifying fibroma: A systematic review. *Int J Oral Dent Health.* 2019 Oct;5(3):094-101.

ORAL POTENTIALLY MALIGNANT DISORDERS: A COMPREHENSIVE REVIEW OF DIAGNOSTIC AND MANAGEMENT

¹ Arjun O, ² Arjundas VS

ABSTRACT

Oral potentially malignant disorders (OPMDs) represent a heterogeneous group of clinical conditions characterized by an increased risk of progression to oral squamous cell carcinoma (OSCC). This review focuses on the clinical characteristics, malignant transformation rates, and contemporary management of four significant OPMDs: oral leukoplakia, proliferative verrucous leukoplakia (PVL), oral submucous fibrosis (OSMF), and erosive oral lichen planus (OLP). Despite advancements in molecular biology, clinical diagnosis remains the cornerstone of identification. Oral leukoplakia is the most common, while PVL carries the highest risk of malignancy. OSMF, primarily linked to areca nut habits, presents unique surgical and therapeutic challenges. Erosive OLP, unlike its reticular counterpart, requires vigilant monitoring due to chronic inflammation-driven transformation. Early detection through systematic screening and habit cessation is vital to improving patient outcomes and reducing the global burden of oral cancer.

Keywords: Oral Leukoplakia, Oral Submucous Fibrosis, Proliferative Verrucous Leukoplakia, Malignant Transformation

INTRODUCTION

Oral cancer remains a significant public health concern in India, with oral squamous cell carcinoma (OSCC) being the most prevalent malignancy. A critical strategy in reducing the mortality associated with OSCC is the early identification of Oral Potentially Malignant Disorders (OPMDs). The World Health Organization (WHO) defines OPMDs as "clinical presentations that carry a risk of cancer development in the oral cavity, whether in a precursor lesion or a clinically normal-appearing area."¹

¹ Senior Lecturer, Dept. of Oral Pathology and Microbiology, Azeezia College of Dental Sciences and Research, Kollam, ² Consultant Oral and Maxillofacial Surgeon

Correspondence : Arjun O

Email : arjunsabareesam@gmail.com

How to cite this article : O Arjun, VS Arjundas. Oral Potentially Malignant Disorders: A Comprehensive Review of Diagnostic and Management. Impressions. 2026;16(1):36-39.

Source of support : Nil,

Conflict of Interest : None declared.

The transition from a benign state to malignancy is a multi-step process involving genetic mutations and environmental influences, such as tobacco, areca nut, and alcohol consumption. In regions like Kerala, where cultural habits involving smokeless tobacco and areca nut are prevalent, the clinical vigilance of dental practitioners is paramount. The risk of progression varies significantly between different disorders, necessitating a personalized approach to screening and intervention.² This article discusses the clinical nuances of leukoplakia, PVL, OSMF, and erosive lichen planus, emphasizing the need for standardized diagnostic and management protocols.

DISCUSSION

Oral Leukoplakia

Oral leukoplakia is defined as a white plaque of questionable risk having excluded (other) known diseases or disorders that carry no increased risk for cancer.³ It remains the most frequently encountered OPMD in clinical practice. Clinically, it is categorized into homogeneous and non-homogeneous types. Homogeneous leukoplakia is typically thin, flat, and uniform, carrying a relatively low malignant transformation rate (MTR).⁴

In contrast, non-homogeneous types-including speckled (erythroleukoplakia), nodular, and verrucous types-have a significantly higher risk of progressing to OSCC. Recent studies indicate that the presence of epithelial dysplasia remains the most reliable histological predictor of malignancy.^{12,13} Management involves strict habit cessation and surgical excision (laser or cold knife) for high-risk sites like the tongue and floor of the mouth. However, even after successful excision, the “field cancerization” effect means patients must be monitored for new lesions elsewhere in the oral cavity.¹³

Proliferative Verrucous Leukoplakia (PVL)

PVL is a distinct, aggressive form of OPMD characterized by a multi-focal distribution and a high resistance to treatment. Unlike conventional leukoplakia, PVL is often not associated with tobacco use and is more common in elderly females.⁵ It typically begins as simple hyperkeratosis and progresses into exophytic, verrucous lesions that eventually involve multiple sites such as the gingiva, buccal mucosa, and palate.

The MTR for PVL is alarmingly high, often exceeding 70% over a 10-year period.⁶ Because PVL tends to recur frequently after excision, management requires a “mapping” approach with frequent biopsies and lifelong follow-up every 3 to 6 months. Practitioners must be wary of “biopsy fatigue” in these patients, as each new proliferative area requires fresh histological evaluation to rule out micro-invasive carcinoma.⁵

Oral Submucous Fibrosis (OSMF)

OSMF is a chronic, insidious, scarring disease strongly associated with the chewing of areca nut, a habit deeply rooted in the Indian subcontinent. It is characterized by juxta-epithelial inflammatory reaction followed by fibroelastic changes in the lamina propria and epithelial atrophy.⁷ Patients typically present with progressive trismus (inability to open the mouth), a “burning sensation” upon consuming spicy foods, and blanching of the oral mucosa due to reduced vascularity.

The risk of malignant transformation in OSMF ranges from 7% to 13%.⁹ The management of OSMF is particularly challenging because the fibrosis is often irreversible. While intralesional steroids and hyaluronidase can alleviate symptoms and improve mouth opening in early stages,

advanced cases with severe trismus often require surgical intervention such as fibrotomy and skin grafting or buccal fat pad flap reconstruction.⁸ Nutritional supplementation with antioxidants like lycopene has shown promise in reducing the oxidative stress associated with the disorder.¹⁴

Erosive Oral Lichen Planus (OLP)

While reticular OLP is often considered a low-risk inflammatory condition, the erosive and atrophic variants are classified as OPMDs. Erosive OLP presents as painful, erythematous areas surrounded by white radiating striae (Wickham's striae). The chronic inflammatory milieu in erosive OLP promotes DNA damage and cellular proliferation, which can lead to malignancy.¹⁰ Distinguishing erosive OLP from lichenoid reactions (often caused by dental materials or systemic medications) is vital for accurate prognosis. Treatment focuses on managing the immune-mediated inflammation using potent topical corticosteroids, such as clobetasol or triamcinolone acetonide.¹¹ Patients with erosive OLP require long-term surveillance even when asymptomatic, as the chronic nature of the disease increases the risk of late-stage transformation.¹⁰

CONCLUSION

The identification and management of OPMDs represent a critical window of opportunity in the fight against oral cancer. While leukoplakia and OSMF are frequently encountered in the Indian clinical setting, practitioners must remain alert to the aggressive nature of PVL and the malignant potential of erosive OLP. Successful management depends on three pillars: habit cessation, early histological assessment, and rigorous long-term follow-up.

REFERENCES

1. Warnakulasuriya S, Kujan O, Aguirre-Urizar JM, et al. Oral potentially malignant disorders: A consensus report from an international seminar on nomenclature and classification, convened by the WHO Collaborating Centre for Oral Cancer. *Oral Dis.* 2021;27(8):1862-1880.
2. Speight PM, Khurram SA, Kujan O. Oral potentially malignant disorders: risk of progression to malignancy. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2018;125(6):612-627.
3. Müller S. Oral Epithelial Dysplasia and the Differential Diagnosis of Oral Leukoplakia. *Head Neck Pathol.* 2017;11(1):38-44.
4. Villa A, Menon RK, Sonis ST. Oral leukoplakia: A review of the current evidence. *Int J Environ Res Public Health.* 2017;14(12):1529.
5. Gillenwater AM, Vigneswaran N, Fatani H, et al. Proliferative Verrucous Leukoplakia (PVL): A Review of an Elusive Pathologic Entity. *Adv Anat Pathol.* 2021;28(2):63-71.
6. Aburahma MH, Grawish ME, El-Sakhawy MA. Proliferative verrucous leukoplakia: A clinicopathologic study of 12 cases. *J Oral Maxillofac Pathol.* 2020;24(1):185.
7. Arakeri G, Brennan PA. Oral submucous fibrosis: an overview of the aetiology, pathogenesis, classification, and management. *Br J Oral Maxillofac Surg.* 2017;55(9):870-877.
8. Rao NR, Villa A, More CB, et al. Oral submucous fibrosis: a contemporary narrative review with a proposed protocol for management. *Oral Dis.* 2020;26(2):271-286.

9. Ray JG, Ranganathan K, Chattopadhyay I. Malignant transformation of oral submucous fibrosis: A systematic review. *Oral Oncol.* 2016;54:32-36.
10. Gonzalez-Moles MA, Warnakulasuriya S, Ramos-García P. Oral lichen planus and oral lichenoid lesions as oral potentially malignant disorders: A systematic review and meta-analysis. *Cancers (Basel).* 2021;13(9):2053.
11. Aghbari SM, Abushala A, Ghandour L, et al. Malignant transformation of oral lichen planus and oral lichenoid lesions: A meta-analysis of 20,095 patients. *J Oral Pathol Med.* 2017;46(10):925-931.
12. Iocca O, Sollecito TP, Alawi F, et al. Potentially malignant disorders of the oral cavity and oral cavity squamous cell carcinoma: A meta-analysis of risk of squamous cell carcinoma development. *Oral Oncol.* 2020;101:104513.
13. Carrard VC, van der Waal I. A clinical diagnosis of oral leukoplakia; A guide for dentists. *Med Oral Patol Oral Cir Bucal.* 2018;23(1):e59-e64.
14. Odell EW. Oral potentially malignant disorders. *Dermatol Clin.* 2020;38(4):455-467.



IDA HOPE HELP OFFERED TO PROFESSIONALS IN EMERGENCIES

INDIAN DENTAL ASSOCIATION - KERALA STATE BRANCH



HOPE MEDI

TAILOR MADE FOR IDA HOPE MEMBERS

- No age limit for joining
- No medical checkup
- Pre existing diseases covered from day 1 for members
- Only one year waiting period for parents and dependents for pre existing diseases
- New born baby cover from Day 1 if parents are enrolled

100 % CLAIM FOR
PRIMARY IDA MEMBER

Exempt under section 80 D



LOWEST PREMIUM IN THE MARKET
WHEN COMPARED WITH SIMILAR SCHEMES

EASY ONLINE ENROLLMENT

CASHLESS & REIMBURSEMENT OPTIONS

For Claim reimbursements or processing of
Cashless Insurances Contact
Jubilee Insurance Broking

Rahul - 7736810082
Jomey George - 9544157066

HOPE MEDI RENEWALS/JOINING IN SEPTEMBER

SUPER TOP - UP

Top up your insurance upto
1 Cr if the total claim
amount exceeds your
chosen limits

ELIGIBILITY

- ACTIVE (RENEWED) IDA KSB MEMBERSHIP
- RECOGNISED BDS/MDS DEGREEE
- VALID DENTAL COUNCIL REGISTRATION
- AGE < 45 YEARS

HOW TO JOIN HOPE

Apply to Hon.Secretary, HOPE through your branch HOPE
Representative with the following documents

1. Filled in original application form
2. Admission fees remitted as NEFT/DD/Online Transfer
3. One recent Passport Photograph
4. BDS/MDS Degree certificate and valid council registration
5. Age and address proofs

ADMISSION & RENEWALS

Upto age of 30 yrs - Rs.5000
31-40 yrs- Rs.7500
41-45 yrs - Rs.10000

RENEWALS IN APRIL - MAY

DEFAULTERS AND DROPOUTS

- HOPE members who do not renew by May 31st will not receive Benevolent Scheme Coverages but can renew upto June 30 with a fine
- After June 30 - no renewals possible and has to join afresh as per the age

IDA HOPE FORMATION

- Started as Professional Protection Scheme in 2002
- Later Merged PPS and Benevolent (Social Security Scheme) to form HOPE in 2007
- HOPE is a unique voluntary subscribed project of IDA KSB



4750 + MEMBERS
AND GROWING EVERY DAY

HOPE LEGAL CELL (PROFESSIONAL PROTECTION SCHEME)

- Legal support in Medico/Dento legal cases- takes up the cases from beginning with a lawyer's notice
- Monetary support in court cases - Engages and supports the legal steps including Lawyer's fees and other expenses
- Compensation of upto Rs.3.5 lakhs if awarded will be paid by the scheme

Legal protection starts after one month of receiving payment and acceptance of filled up application forms by the Hon HOPE Secretary

For Legal Assistance Contact

Dr Ittyvirah Babu
Vice Chairman Legal Cell
94967 24042

HOPE (BENEVOLENT SCHEME)

- Supporting the family in unfortunate event of Death or Total Permanent Disability
- The contribution to family is collected from the members (as Fraternity contribution) - Rs.500 per death/TPD

Current Death Benefit > 16 lakhs

Benevolent coverage starts after one year of receiving payment and acceptance of filled up application forms by the Hon HOPE Secretary

For Assistance
Contact

Dr Saji Kurian
Vice Chairman HBS
98474 40646

HOPE ASSURE

- Extended Professional Indemnity cover of Rs 25 Lakhs to 2 crores
- Clinic Insurance against natural calamities, Fire , Floods , Burglary, Theft, Vandalism etc
- Add on for Neon Signages and glass
- Public Liability cover

RENEWALS - JULY

OFFICE ADDRESS

Dr M Rajarajan
Hon.Secretary ,IDA HOPE KSB
Maniraj's Dental Clinic , First Floor,
Opp.Village Office,(Near Bus Stand)
Thiruvilwamala, Thrissur-680588.

Email - secretaryidahope@gmail.com
9947096663 (P) 8075869200 (O)



IMPRESSIONS

JOURNAL OF INDIAN DENTAL ASSOCIATION ATTINGAL BRANCH

Volume - 16., Issue - 1 | JAN-APRIL 2026