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2. Rashid M. Food and Nutrition. In Rashid KM, Rahman M, Haider S eds. Textbook of Community Medicine and Public Health. 4th edn. RHM Publishers 2004; 126-140
3. Sayeed MA, Hussain MZ, Banu A, Rumi MAK, Azad AK. Prevalence of diabetes in a suburban population of Bangladesh Diab Res Clin Prac 1997; 34: 149-155
4. Jarett RJ. Insulin and hypertension (Letter). Lancet 1987; 2: 748- 749
5. Banerji MA, Faridi N, Atulri R, Chiken Rl, Lebovitz HE. Body composition, visceral fat, leptin and insulin resistance in Asian Indian men. J Clin Endocrinol Metab 1999; 84: 137-144 (Abstract)
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Editorial

We have published the current issue of Journal of Contemporary Dental Sciences with original articles, review and a case report.

From working environment to issues related to the practice of dentistry, dental professionals are exposed to a wide range of occupational health hazards. The article by I Ferdous and N Sultana explored the health hazards among the Dental surgeons and dental laboratory technicians in their study. They concluded their report by identifying more than fifty percent of dental surgeons and more than eighty percent of dental laboratory technicians had suffered from one or more occupational health hazards. There was lack of safety awareness, safety measures and safety practices among the members of the concerned dental health professionals.

The article by Tofael et al describes the effects of maxillofacial prosthesis on quality of life. Their findings showed that appropriate prosthesis measures significantly enhance the quality of life for patients with maxillofacial defects, particularly help in improving physical health, psychological wellbeing and social interactions.

Another original paper by A Ahmed, a Cross- sectional study carried out on patients' awareness of tooth brushing in different private clinics, report the knowledge of tooth brushing among the patients. The authors also recommend proper brushing techniques and useful dental hygiene aids for prevention of oral diseases.

A review article by U Habiba et al. thoroughly describes oral soft tissue biopsy techniques in detail. This is a commendable effort to guide an avid learner of minute details of biopsy techniques.

This issue also includes a case report on 2 cases of mucoepidermoid carcinoma in the lower jaw by S Tafhim and her team. These reports are also very interesting and informative read for our learned followers

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Journal of Contemporary Dental Sciences (JCDS)
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Contents

Original Article

Assessment of Occupational health hazards and safety practice among the dental professionals

I Ferdous [1], N Sultana [2]

Abstract

Purpose: Background: Dental professionals are usually exposed to a variety of occupational health hazards. Preventive measures are crucial to minimize the effects of occupational health hazards. ***Objectives:*** The aim of the study was to assess the different occupational health hazards and the safety practices among the dental professionals. ***Materials and methods:*** This cross sectional study was conducted among the dental professionals (105 dental laboratory technicians and 62 dental surgeons) interviewed from two major teaching hospitals and twenty different private dental laboratories in and around the Dhaka city. After taking verbal informed consent from the respondents data were collected using a semi-structured questionnaire and a check list for the duration of two months. Collected data were analyzed using MS word and MS Excel according to the study objectives. ***Results:*** The study result revealed that among the dental professionals majority of them experienced any one type of occupational health hazard in their clinical practice. More specifically, more than half (66.1%) dental surgeons and more than three fourth (83.8%) dental laboratory technicians experienced at least any one type of occupational health hazard in their practice life. Among the different types of occupational health hazards musculoskeletal problems found the highest experienced occupational health hazard in dental professionals. Regarding protective measures and safety practice, it was observed that dental surgeons were more aware of wearing protective eyewear than the dental laboratory technicians during work. ***Conclusion:*** Present study concluded that different occupational health hazard persist among dental professionals. The preventive measures and safety practices were not sufficient to prevent these occupational health hazard for them. Moreover lack of awareness observed among the professionals regarding this matter. However dental professionals should upgrade their knowledge by practicing in continuing dental education.

Key Words: Occupational hazards; Dental professionals; Safety practice; Preventive measures. (J Cont Dent Sci 2021;9(1): 1-5)

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Introduction

Every occupation has its own occupation related risks and hazards. Dental professionals are constantly exposed to a variety of occupational health hazards.[1] In this study, dental professionals include dental surgeons and dental laboratory technicians. Among them, dental surgeons are directly related with patient handling, whereas the dental laboratory technicians who are not directly related with patients, but work in the dental laboratory with different hazardous element and environment. Dentistry is a profession, which is considered by the practitioners and most of the public as being extremely hazardous.[2,3] These hazards can be broadly classified as psychological hazards, physical hazards, ergonomic hazards, infectious hazards, chemical hazards, radiation hazards and others.[4-12] Concerning prevention, the international literature focuses mostly on infection control and proper handling of potentially infected materials, owing to the high profile of dentistry regarding transmission of infection.[13] Therefore present study is undertaken to assess the different occupational health hazards and the safety practices among the dental professionals.

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Materials and Methods

The present cross sectional study was conducted among the dental professionals (105 dental laboratory technicians and 62 dental surgeons) practicing in and around the Dhaka city with the aim to assess the occupational health hazards and safety practice among them. The dental professionals were face to face interviewed from two major teaching hospitals (Dhaka Dental College Hospital & Bangabandhu Sheikh Mujib Medical University Hospital) and twenty different private dental laboratories in and around Dhaka City

through convenient sampling technique. Data were collected from these respondents using a semi-structured interview administered questionnaire and a check list for the duration of two months. Before data collection verbal informed consent was taken from the participants explaining the purpose and the procedure of the study elaborately. Written permission for the collection of data was taken from the concerned authority and the ethical clearance for this study was taken from the institutional ethical review board of State University of Bangladesh. The study participants were asked to respond according to their understanding, perception of importance and opinion regarding the occupational health hazards they experienced in their daily practice in an orderly manner. No list of occupational health hazards was given in the questionnaire. Also the participants were asked to report in the same way regarding the preventive strategy or safety practice they used. In the safety questionnaire, responses were collected in the form of 'yes' and 'no' against twelve occupational health hazards or safety practice related questions, where occupational accidents or health problems, effective fire suppression system in workplace, effective healthcare waste management system, instrument sterilization, Hepatitis B vaccination, usage of protective wear. were included. After data collection and analysis, the analyzed data were presented in the form of tables and figures using MS word and MS Excel according to the objectives of the study. Here only descriptive statistics (frequency, percentage, mean, SD, range) were applied to show the result.

Results:

Table 1 shows the mean age of the dental surgeons was 37.4 years with range 25-52 years; more than half 61.3% was male: the mean clinical service length was 13.4 years with range of 7-31 years. Among the dental laboratory technicians the mean age was 26.7 years with range of 17-50 years; majority (84.7%) was male, the mean service length and practicing hours per week were 7.6 years and 46.2 hours respectively.

Table 1 : Particulars of the study subjects

	Particulars		n (%)
Dental laboratory technicians (105)	Age (in years)		Mean (±SD) : 26.7 (±8.5), Range : 17 - 50
	Sex	Male	89 (84.7)
		Female	16 (15.2)
	Service length (in years)		Mean (±SD) : 7.6 (±5.7), Range : 2-11
	Practicing hours (per week)		Mean (±SD) : 46.2 (± 11.7)
Dental surgeons (62)	Age (in years)		Mean (±SD) : 37.4 (± 6.9), Range : 25 - 52
	Sex	Male	38 (61.3)
		Female	24 (38.7)
	Daily clinical hour	>8	43 (69.4)
		- 8	19 (30.6)
	Clinical service length (in years)		Mean (± SD) : 13.4 (± 5.2) , Range : 7 - 31

SD - standard deviation

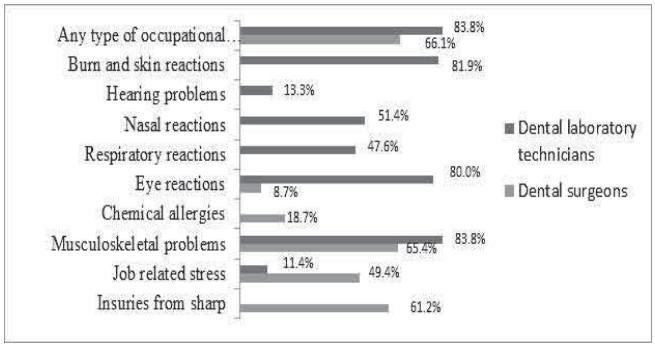

Figure 1: Occupational health hazards experienced by the dental professionals

Figure 1 shows the occupational health hazards experienced by the dental laboratory technicians and dental surgeons. Here 66.1% dental surgeons and 83.8% dental laboratory technicians experienced at least any one type of occupational health hazards in their practice life. Among the dental laboratory technicians, musculoskeletal problems were the highest (83.8%) experienced

occupational health hazards followed by burn or skin reactions (81.9%), eye reactions (80.0%). Whereas the highest (65.4%) experienced occupational health hazards found musculoskeletal problems, followed by injuries from sharp (61.2%), job related stress (49.4%) among the dental surgeons.

Table 2: Occupational hazards control measures and safety practice among dental professionals

Occupational hazards control measures and safety practice	Dental laboratory technicians (105)	Dental surgeons (62)
	n(%)	n(%)
Ensure instrument sterilization	65 (61.5)	58 (93.2)
Use protective eyewear during work	80 (76.3)	51 (81.4)
Use facemask during work	99 (94.5)	51 (82.3)
Practice of changing gloves between patients	-	60 (97.1)
Wash hands before and after gloving	55(52.1)	56 (90.3)
Use hand sterilizing agents	44(42.1)	49 (79.4)
Wear protective apron during work	89 (84.4)	55(89.3)
Attended workshop regarding occupational health hazards	(0)	7(11.5)
Hepatitis B vaccinated	54 (51.5)	56(89.5)
Safe system of healthcare waste management and disposal	-	51(82.5)
Effective fire suppression system	64(60.5)	47(75.4)
Effective warning system or alarm for any accident or emergency	83 (78.9)	48 (77.5)

Discussion: Present cross sectional study assessed the occupational health hazards and safety practice among the dental professionals. Occupational health hazards are major concern in different working population. Among the dental professionals occupational health hazards are common due to their working pattern and susceptible working environment.[14,15,21,22] According to the study results among the dental professionals the mean age of the dental surgeons was 37.4 years, majority (61.3%) was male, the mean clinical service length was 13.4 years. On the other hand, among the dental laboratory technicians the mean age found 26.7 years, majority 84.7% was male, the mean length of service found 7.6 years. It was also observed that among the dental practitioners majority of them experienced any one type of occupational health hazards in their clinical practice. More specifically, more than half (66.1%) dental surgeons and more than three fourth (83.8%) dental laboratory technicians experienced at least any one type of occupational health hazards in their practice life. There are different types of occupational health hazards experienced by the respondents, where musculoskeletal problems found the highest experienced occupational health hazards among both the dental surgeons and the dental laboratory technicians. Musculoskeletal problems are the ergonomic hazards, which is an important type of occupational health hazards. Musculoskeletal complaints are common among the dental professionals, especially due to wrong postural practices and not practicing the four handed dentistry technique.[16] Other occupational health hazards experienced by the dental laboratory technicians found burn or skin reactions, followed by eye reactions and respiratory reactions. Among the dental surgeons injuries from sharp objects found the second highest experienced occupational health hazards followed by job related stress. Least experienced (8.7%) occupational health hazards mentioned by the dental surgeons was eye reactions, whereas this type of occupational health hazard was the third highest experienced (80.0%) occupational health hazards among the dental laboratory technicians. Stress found as a major occupational health hazards in different literatures,[4-6] which coincides with the study results.

Regarding protective measures and safety practice, it was observed that dental surgeons were more aware of wearing protective eyewear than the dental laboratory technicians during work. Although majority of the dental professionals both dental surgeons and dental laboratory technicians in this study found practicing the occupational health control measures like wearing protective eyewear, facemask, protective apron etc. during work; but the percentage was a bit lower in dental laboratory technicians than dental surgeons. Concerning the preventive measures of occupational health hazards, present study observed that most of the participants are generally aware of the safety practices during dental work. Wearing protective equipment is the standard behavior for nearly all the respondents. This is in agreement with the results of several previous studies worldwide.[17-20] Concerning the safety system like effective fire suppression system, waste management system in the dental workplace, present study found majority of the dental professionals were aware about that and the percentage was higher among dental surgeons than dental laboratory technicians. Surprisingly it was observed that dental laboratory technicians were completely unaware about the safe system of healthcare waste management and disposal. Among the dental laboratory technicians nobody received any training regarding occupational health hazards. Very few of dental surgeons found trained in occupational health hazards, which was very unfortunate. The interest and response of the dental professionals to attend any workshop regarding occupational health is still weak.[23] Regarding other preventive measures like instrument sterilization, washing hand before and after gloving, changing gloves between patients etc. Satisfactory findings observed among the dental surgeons, which was quite similar with the study conducted by Chopra et al-in India.[24] But these preventive practices found very poor among dental laboratory technicians, which is really very unsatisfactory.

Conclusion: Findings from this study revealed that different occupational health hazards persist in dental professionals and among these occupational health hazards ergonomic hazards are common among dental surgeons and dental laboratory technicians. The preventive measures and safety practices were not sufficient to prevent these occupational health hazards for them. Moreover lack of awareness observed among the professionals regarding this matter. Hence it is essential to conduct training and workshops for dental professionals to reduce the occupational health hazards related effects. However dental professionals should upgrade their knowledge by practicing in continuing dental education.

References

1. Hamida AA, Hedia AM. Occupational health problems among a group of dental laboratory technicians in Alexandria City. in Mansoura University. Conference paper. International Alexandria Conference. 2002
2. Galginatis C, Gift G. Occupational hazards: is dentistry hazardous to your health? New dentist, 1980; 10(9):24-7
3. Leigh JP. Estimates of the probability of job-related death in 347 occupations. Journal of occupational medicine, 1987; 29(6):510-9
4. Alexander RE. Stress-related suicide by dentists and other health care workers. Fact or folklore. Journal of the American Dental Association, 2001; 132(6): 786-94
5. Winwood PC, Winefield AH, Lushington K. The role of occupational stress in the maladaptive use of alcohol by dentists: a study of South Australian general dental practitioners. Australian dental journal, 2003; 48(2):102-9
6. Newton JT et al. Stress in dental specialists: a comparison of six clinical dental specialties. Primary dental care, 2002; 9(3):100-4
7. Al Wazzan KA et al. Back and neck problems among dentists and dental auxiliaries. Journal of contemporary dental practice, 2001; 2(3):17-30

8. Updated USPHS guidelines for managing occupational exposures to HBV, HCV, and HIV and considerations for dentistry. Journal of the American Dental Association, 2002; 133(12):1627-9

9. Lewis MA. Herpes simplex virus: an occupational hazard in dentistry. International dental journal, 2004; 54(2):103-11

10. Samaranayake P. Re-emergence of tuberculosis and its variants: implications for dentistry. International dental journal, 2002; 52(5):330-6

11. Szymanska J. Occupational hazards of dentistry. Annals of agricultural and environmental medicine, 1999; 6(1):13-9

12. Shuhaiber S et al. A prospective controlled study of pregnant veterinary staff exposed to inhaled anesthetics and X-rays. International journal of occupational medicine and environmental health, 2002; 15(4):363-73

13. Al-Khatib IA, Ishtayeh M, Barghouty H, Akkawi B. Dentists- perceptions of occupational hazards and preventive measures in East Jerusalem.Eastern Mediterranean Health Journal, 2006;12(2): 153-160

14. Toufique H, Nisar N, Saadat S. Work Place Related Health Hazards Among Dental Laboratory Technicians In Karachi. J Pak Dent Assoc, 2017;26(4):181-88. DOI: https://doi.org/10.25301/JPDA.264.181

15. Kakosy T , N-meth L. Musculoskeletal disorders caused by hand-arm vibration. Global Occup Health Network, 2003 ;4 (winter):3-6

16. Rundcrantz BL, Johnsson B, Moritz U. Pain and discomfort in the muskuloskeletal system among dentists. Swedish dental journal, 1991; 15(5):217-28

17. Al-Rabeah A, Moamed AG. Infection control in the private dental sector in Riyadh. Ann Saudi Med 2002;22(1-2):13-17

18. Morris E, Hassan FS, Al Nafisi A, Sugathan TN. Infection control knowledge and practices in Kuwait: a survey on oral health care workers. Saudi Dent J, 1996;8(01):699-703

19. Behal S. Perception of dental undergraduates and interns on radiation protection safety protocol□a questionnaire based cross-sectional study. IAIM,2016;3(12):68-74

20. Kearns HP, Burke FJ, Cheung SW. Cross-infection control in dental practice in the Republic of Ireland. Int Dent J, 2001;51(01):17-22

21. Ramachandran S, Carounanidy U, Manikandan S, Kumari R. Evaluation of knowledge, attitude, and practices about the health-related occupational hazards among dental practitioners in Pondicherry, India. J Educ Ethics Dent, 2017;7(02):44-48

22. Puriene A, Aleksejuniene J, Petrauskiene J, Balciuniene I, Janulyte V. Occupational hazards of dental profession to psychological wellbeing. Stomatologija, 2007;9(03):72-78

23. Alamri A, ElSharkawy MF, Alafandi D. Occupational Physical Hazards and Safety Practices at Dental Clinics. Eur J Dent, 2023;17:439-449. DOI https://doi.org/ 10.1055/s-0042-1745769. ISSN 1305-7456.

24. Chopra SS, Pandey SS. Occupational hazards among dental surgeons. Med J Armed Forces India, 2007;63(01):23-25

Effects of Maxillofacial Prostheses on Quality of Life - An Observational Study

T Tofail[1], MU Chowdhury[2], MZ Hossain[3]

Abstract

Background: Maxillofacial defects significantly impact patients' physical, psychological, and social well-being. Maxillofacial prostheses play a crucial role in rehabilitating these patients, particularly in low-resource settings like Bangladesh, where access to specialized healthcare is limited. This study aims to assess the impact of maxillofacial prostheses on the quality of life of patients with maxillofacial defects. ***Methods:*** This observational study included 29 patients with maxillofacial defects, selected from various healthcare facilities in Bangladesh. Participants were interviewed using the European Organization for Research and Treatment of Cancer (EORTC) QLQ-H&N35 questionnaire. Descriptive statistics were used to summarize the demographic characteristics of the patients, while inferential statistics were employed to assess the impact of maxillofacial prostheses on different quality of life domains. Informed consent was obtained from all participants. ***Results:*** The age distribution of participants showed a predominance of individuals in the 21-40 and 41-60 of age groups, with 68.97% males. Carcinoma was the most prevalent diagnosis (65.52%), followed by cysts of the maxilla (17.24%) and other less common conditions. Right maxillectomy was the most common surgical treatment (24.14%). Definitive obturators were provided to 37.93% of participants. Quality of life scores were high, with 34.48% scoring between 81-90%. Significant negative correlations were found between quality of life and symptoms such as swallowing difficulties ($r = -0.603$, $p = 0.001$), speech problems ($r = -0.621$, $p < 0.001$), and social contact issues ($r = -0.679$, $p < 0.001$). ***Conclusion:*** Maxillofacial prostheses significantly enhance the quality of life for patients with maxillofacial defects, particularly in improving physical health, psychological well-being, and social interactions. These findings highlight the importance of accessible prosthetic care, especially in low-resource settings.

Keywords: Maxillofacial prostheses, Quality of life, Prosthetic rehabilitation ***(J Cont Dent Sci 2021;9(2): 6-12***

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Introduction

Maxillofacial defects, arising from trauma, cancer, congenital anomalies, or surgical interventions, present significant challenges for affected individuals. These defects impact not only the physical appearance but also the functional capabilities and psychological well-being of patients, severely affecting their quality of life. In low-resource settings like Bangladesh, the burden of such defects is compounded by limited access to specialized healthcare services and prosthetic rehabilitation. Maxillofacial prostheses play a critical role in rehabilitating patients with facial defects, aiming to restore both aesthetics and functionality, thereby improving their quality of life significantly. The prevalence and impact of maxillofacial defects are well-documented, with studies highlighting their physical, psychological, and social implications. For instance, Prakash et al. discuss how these defects, resulting from developmental anomalies, trauma, or cancer surgeries, pose substantial challenges due to their alteration of form, function, and aesthetics, leading to significant psychological impacts on self-confidence and social interactions.[1] In a survey by Melnyk and Horzov, the development of maxillofacial anomalies in young children is attributed to genetic, social, and environmental factors, underscoring the complex aetiology of these defects and their widespread prevalence.[2] Maxillofacial prostheses are indispensable in rehabilitating patients with such defects. These prostheses, which can be either implant-retained or adhesive-retained, serve to restore oral functions, aesthetic appearance, and psychological well-being. Implant-retained prostheses, in particular, have been shown to offer superior retention and ease of use compared to adhesive-retained options. Nemli et al. report that patients with implant-retained maxillofacial

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prostheses experienced significant improvements in satisfaction and quality of life, highlighting the effectiveness of these prostheses in enhancing patient outcomes.[3] Similarly, Dings et al. found that implant-retained prostheses provided enhanced retention and ease of placement and removal, contributing to higher patient satisfaction and better quality of life.[4] However, despite their benefits, the rehabilitation process using maxillofacial prostheses is fraught with challenges, particularly in low-resource settings. Limited access to specialized prosthetic services and the high cost of treatment are significant barriers. Tetteh et al. review the state of maxillofacial rehabilitation in resource-limited nations, emphasizing the multifactorial challenges and the need for public health awareness programs and bespoke training programs for maxillofacial prosthetics to suit these settings.[5] This sentiment is echoed by Shreya and Nayakar, who highlight the lack of comprehensive understanding and clinical application of prosthodontic rehabilitation among dental students, underscoring the need for improved education and training.[6] The impact of maxillofacial prostheses on quality of life has been extensively studied. Schoen et al. demonstrate that prosthodontic rehabilitation with implant-retained prostheses significantly improves quality of life and oral functioning in head-neck cancer patients, with non-irradiated patients showing the most substantial improvements.[7] Similarly, Dholam et al. report that patients with implant-retained prostheses experienced improvements in speech, swallowing, and overall quality of life, particularly in those who had undergone post-cancer treatments.[8] Hooper et al. further support these findings, noting high patient satisfaction with implant-retained facial prostheses and their positive impact on the quality of life.[9]

Furthermore, the benefits of prosthetic rehabilitation are not limited to the restoration of function and aesthetics but extend to psychological well-being. Ribeiro et al. highlights the significant psycho-emotional benefits of maxillofacial prostheses, noting improvements in self-esteem and social interactions among patients who underwent prosthetic rehabilitation. [10] This is crucial as the psychological impact of facial disfigurements can be profound, affecting patients' self-worth and ability to engage in social activities. In conclusion, maxillofacial prostheses play a vital role in improving the quality of life for patients with facial defects by restoring function, aesthetics, and psychological well-being. The evidence from various studies underscores the benefits of implant-retained prostheses over adhesive-retained options, particularly in terms of retention, ease of use, and patient satisfaction. However, the challenges in providing effective prosthetic rehabilitation in low-resource settings necessitate a multifaceted approach, including improved education, public health awareness, and the development of cost-effective prosthetic solutions. This study aims to further explore the impact of maxillofacial prostheses on quality of life in Bangladesh, contributing valuable data to the existing body of knowledge and informing strategies to enhance prosthetic rehabilitation services in similar contexts.

Methods:

A total of 29 patients with maxillofacial defects were selected from those referred to the Department of Prosthodontics at Dhaka Dental College & Hospital, Mirpur, Bangabandhu Sheikh Mujib Medical University, Shahbagh, and a private dental clinic in Shantinagar.

The selection of subjects was done conventionally based on the fulfilment of predefined selection criteria to ensure a representative sample of the patient population. Upon selection, the participants were interviewed using a standardized questionnaire organized by the European Organization for Research and Treatment of Cancer (EORTC), specifically the QLQ-H&N35, which is tailored for assessing the quality of life in patients with head and neck cancer. This questionnaire was chosen for its comprehensiveness and relevance to the study population, capturing various dimensions of quality of life including physical, emotional, and social aspects. Before data collection, all participants provided informed consent, acknowledging their understanding of the study's purpose and their voluntary participation. It was ensured that no interventions were administered to the patients during the study, thus maintaining the observational nature of the research. Data collected from the questionnaires were statistically analyzed using the SPSS software version 16. Descriptive statistics were used to summarize the demographic characteristics of the patients, while inferential statistics were employed to assess the impact of maxillofacial prostheses on different quality of life domains.

Results:

The age distribution of participants showed that a majority were in the age groups of 21-40 and 41-60 years, each accounting for 37.93% of the sample [Table 1]. Participants aged - 20 and 61-80 years each represented 10.34% of the sample, while only one participant (3.45%) was over 80 years old. In terms of gender distribution, there were more male participants (68.97%) compared to female participants (31.03%).

Table 1: Distribution of participants by baseline characteristics (N = 29)

Baseline Characteristics	n	%
Age		
- 20	3	10.34%
21-40	11	37.93%
41-60	11	37.93%
61- 80	3	10.34%
> 80	1	3.45%
Sex		
Male	20	68.97%
Female	9	31.03%

The majority of the participants, 19 out of 29 (65.52%), were diagnosed with carcinoma [Table 2]. Other diagnoses included cysts of the maxilla, which accounted for 17.24% of the cases. Fractures of the maxilla were observed in 6.90% of the participants. Less common diagnoses included ameloblastoma of the mandible, cleft palate, and eye enucleation, each representing 3.45% of the sample.

Table 2: Distribution of diagnosis among the participants (N = 29)

Diagnosis	n	%
Ameloblastoma of mandible	1	3.45%
Carcinoma	19	65.52%
Cleft palate	1	3.45%
Cyst of maxilla	5	17.24%
Eye enucleating	1	3.45%
Fracture of maxilla	2	6.90%

The most common surgical procedure was right maxillectomy, performed on 24.14% of the participants [Table 3]. Left maxillectomy and cyst enucleation were each performed on 17.24% of the participants. Segmental mandibulectomy accounted for 13.79% of the cases, while segmental maxillectomy was performed on 10.34% of the participants. Less common procedures included fracture reduction (6.90%), cleft lip and palate repair, eye enucleation, and resection of the hard and soft palate, each accounting for 3.45% of the sample.

Table 3: Distribution of types of surgical treatment among the participants (N = 29)

Types of Surgical Treatment	n	%
Cleft lip and palate repair	1	3.45%
Cyst Enucleation	5	17.24%
Eye Enucleation	1	3.45%
Fracture Reduction	2	6.90%
Left Maxillectomy	5	17.24%
Resection of hard and soft palate	1	3.45%
Right Maxillectomy	7	24.14%
Segmental Mandibulectomy	4	13.79%
Segmental Maxillectomy	3	10.34%

The most commonly provided prostheses was the definitive obturator, used by 37.93% of the participants [Figure 1]. Surgical obturators were the next most common, accounting for 27.59% of the prostheses. Interim obturators were used by 17.24% of the participants. Definitive prostheses were provided to 13.79% of the participants, while eye prostheses were the least common, and used by only 3.45% of the participants.

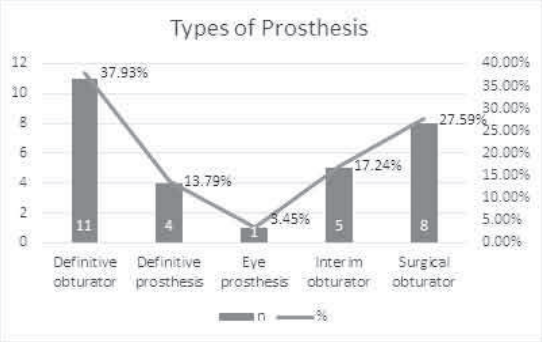

Figure 1: Distribution of types of prostheses among the participants (N = 29)

The majority of participants reported relatively high quality of life scores. Specifically, 34.48% of participants scored between 81-90%, and 24.14% scored between 61-70% [Table 4]. Scores between 71-80% were reported by 20.69% of participants, while 13.79% scored between 51-60%. Lower scores were less common, with only one participant (3.45%) scoring between 31-40% and another (3.45%) scoring between 41-50%. Notably, no participants scored below 30% or above 90%.

Table 4: Distribution of quality of life (EORTC) score among the participants (N = 29)

Quality of Life (EORTC Score)	n	%
< 10	0	0.00%
11-20%	0	0.00%
21-30%	0	0.00%
31-40%	1	3.45%
41-50%	1	3.45%
51-60%	4	13.79%
61-70%	7	24.14%
71-80%	6	20.69%
81-90%	10	34.48%
91-100%	0	0.00%

The correlation between quality of life scores and various symptom scales from the EORTC QLQ-H&N35 questionnaire is detailed in Table 5. Several significant negative correlations were observed, indicating that higher quality of life scores were associated with lower symptom severity in specific areas. There was a significant negative correlation between quality of life and swallowing difficulties (HNSW1) ($r = -0.603$, $p = 0.001$), speech problems (HNSP1) ($r = -0.621$, $p < 0.001$), social contact issues (HNSO1) ($r = -0.679$, $p < 0.001$), and sexual function (HNSC1) ($r = -0.741$, $p < 0.001$). This suggests that as the severity of these symptoms decreased, the quality-of-life scores increased. Additionally, a significant negative correlation was found between quality of life and feelings of illness (HNFI1) ($r = -0.532$, $p = 0.003$) and weight loss (HNWL) ($r = -0.560$, $p = 0.002$). These correlations imply that patients with fewer symptoms related to illness and weight loss reported a better quality of life. Other symptom scales such as physical appearance (HNPA1), senses (HNSE1), teeth issues (HNTE1), opening mouth (HNOM1), dry mouth (HNDR1), sticky saliva (HNSS1), coughing (HNCO1), and pain killer usage (HNPK1) showed no significant correlations with quality of life scores. Furthermore, the correlation between quality of life and nutrition (HNNU1) and weight gain (HNWG) was not significant, indicating no strong association between these factors and the perceived quality of life.

Table 5: Correlation and significance between Quality of life and other symptom scales of QLO-HN35 (N = 29)

Variable Name	Pearson Correlation	Sig. (2-tailed)
Physical Appearance (HNPA1)	-0.334	0.076
Swallowing (HNSW1)	-0.603**	0.001
Senses (HNSE1)	-0.106	0.584
Speech (HNSP1)	-0.621**	< 0.001
Social Contact (HNSO1)	-0.679**	< 0.001
Sexual Function (HNSC1)	-0.741**	< 0.001
Teeth (HNTE1)	0.139	0.473
Opening Mouth (HNOM1)	-0.132	0.495
Dry Mouth (HNDR1)	-0.146	0.45
Sticky Saliva (HNSS1)	-0.189	0.326
Coughing (HNCO1)	0.137	0.478
Feeling Ill (HNFI1)	-0.532**	0.003
Pain Killer (HNPK1)	-0.212	0.269
Nutrition (HNNU1)	0.041	0.832
Weight Loss (HNWL)	-0.560**	0.002
Weight Gain (HNWG)	0.219	0.254

Discussion:

The present study aimed to assess the impact of maxillofacial prostheses on the quality of life of patients with maxillofacial defects, focusing on a population in Bangladesh. The findings revealed a significant improvement in the quality of life of patients following prosthetic rehabilitation, with the majority of participants reporting high scores on the EORTC QLQ-H&N35 quality of life questionnaire. This improvement aligns with previous studies that have documented the positive impact of maxillofacial prostheses on patient outcomes.

In terms of demographic characteristics, the age distribution of participants in this study was predominantly middle-aged, with 37.93% each in the 21-40 and 41-60 age groups. This is consistent with the findings of other studies, such as the one by Motamedi et al., which reported a similar age distribution among patients with maxillofacial fractures, with the majority being young adults and middle-aged individuals.[11] The gender distribution in our study, with 68.97% males, also mirrors the trends observed in studies by Melnyk and Horzov, who noted a higher prevalence of maxillofacial defects among males.[2] Carcinoma was the most prevalent diagnosis in our study, affecting 65.52% of the participants. This high prevalence is supported by similar findings in the literature, where carcinoma has been frequently reported as a common cause of maxillofacial defects. For instance, a study by Deogratius et al. reported a significant proportion of maxillofacial tumour cases being carcinoma.[12] Other diagnoses in our study included cysts of the maxilla (17.24%), fractures of the maxilla (6.90%), and less common conditions such as ameloblastoma of the mandible, cleft palate, and eye enucleation, each accounting for 3.45%. These findings are in line with those of Nascimento de Aquino et al., who also reported a variety of conditions leading to maxillofacial defects.[13]

The types of surgical treatments varied, with right maxillectomy being the most common (24.14%), followed by left maxillectomy and cyst enucleation (17.24% each), segmental mandibulectomy (13.79%), and segmental maxillectomy (10.34%). These treatment patterns are corroborated by the study conducted by Vayvada et al., which also highlighted the frequent use of maxillectomy and mandibulectomy in managing maxillofacial defects.[14] Prosthetic rehabilitation showed significant improvements in the quality of life of patients. Definitive obturators were provided to 37.93% of participants, surgical obturators to 27.59%, interim obturators to 17.24%, definitive prostheses to 13.79%, and eye prostheses to 3.45%. These findings are consistent with the study by Dholam et al., which demonstrated the effectiveness of various types of obturators in enhancing patient outcomes post-maxillectomy.[15]

Quality of life scores in this study were predominantly high, with 34.48% of participants scoring between 81-90%, 24.14% scoring 61-70%, and 20.69% scoring 71-80%. These scores are comparable to those reported by Nemli et al., who found significant improvements in quality of life among patients using implant-retained maxillofacial prostheses.[3] Furthermore, the study by Ishii et al. supports the finding that improved swallowing function is strongly correlated with higher quality of life scores in patients with low activities of daily living.[16] Correlation analyses revealed significant negative correlations between quality of life and various symptom scales, including swallowing difficulties, speech problems, social contact issues, sexual function, feelings of illness, and weight loss. These correlations highlight the multifaceted impact of maxillofacial defects on patients' lives. For example, Plowman-Prine et al. found similar correlations between swallowing difficulties and quality of life in Parkinson's disease patients, while Araghi et al. reported strong associations between poor sleep quality, mood disturbances, and quality of life in patients with extreme obesity.[17,18]

The study was conducted with a small sample size. So, the results may not represent the whole community. Future studies should therefore include a larger sample size and aim should also explore the long-term benefits of various types of prostheses and address the challenges in providing equitable access to prosthetic care in low-resource settings.

Conclusion:

The findings of this study demonstrate that maxillofacial prostheses significantly enhance the quality of life for patients with maxillofacial defects. Through comprehensive prosthetic rehabilitation, substantial improvements were observed in various domains of well-being, including physical health, psychological status, and social interactions. The demographic distribution of the participants, predominantly middle-aged males, reflects the broader trends seen in maxillofacial patient populations. Carcinoma emerged as the most prevalent diagnosis, underscoring the critical need for effective prosthetic solutions in oncology. The use of different types of prostheses, such as definitive and surgical obturators, proved beneficial, with high patient satisfaction and improved quality of life scores. Moreover, the strong negative correlations between quality of life and symptoms like swallowing difficulties, speech problems, and social contact issues highlight the multifaceted benefits of prosthetic rehabilitation. These findings reinforce the importance of accessible and high-quality prosthetic care, particularly in low-resource settings.

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References:

1. Prakash P, Bahri R, Bhandari SK. Maxillofacial defects: impact on psychology and esthetics. InBeauty-Cosmetic Science, Cultural Issues and Creative Developments 2021 May 12. IntechOpen.
2. Melnyk VS, Horzov LF. Predicting the development of maxillofacial anomalies in young school-age children. Актуальні проблеми сучасної медицини: Вісник Української медичної стоматологічної академії. 2019 Jul 19;19(2):170-3.
3. Nemli SK, Aydin C, Yilmaz H, Bal BT, Arici YK. Quality of life of patients with implant-retained maxillofacial prostheses: a prospective and retrospective study. J Prosthet Dent. 2013 Jan;109(1):44-52. doi: 10.1016/S0022-3913(13) 60010-4. PMID: 23328196.
4. Dings JPJ, Merkx MAW, de Clonie Maclennan-Naphausen MTP, van de Pol P, Maal TJJ, Meijer GJ. Maxillofacial prosthetic rehabilitation: A survey on the quality of life. J Prosthet Dent. 2018 Nov;120(5):780-786. doi: 10.1016/j.prosdent.2018.03.032. PMID: 30414646.

5. Tetteh S, Bibb RJ, Martin SJ. Maxillofacial prostheses challenges in resource constrained regions. Disabil Rehabil. 2019 Feb;41(3):348-356. doi: 10.1080/09638288.2017.1390697. Epub 2017 Oct 24. PMID: 29065718.

6. Shreya S, Nayakar RP. Knowledge, Attitude, and Practices Regarding Maxillofacial Defects and their Prosthetic Rehabilitation among Dental Undergraduate Students in Belagavi District- A cross-sectional Study. Journal of Clinical and Diagnostic Research 2020;14:ZC06-ZC10.

7. Schoen PJ, Raghoebar GM, Bouma J, Reintsema H, Burlage FR, Roodenburg JL, Vissink A. Prosthodontic rehabilitation of oral function in head-neck cancer patients with dental implants placed simultaneously during ablative tumour surgery: an assessment of treatment outcomes and quality of life. Int J Oral Maxillofac Surg. 2008 Jan;37(1):8-16. doi: 10.1016/j.ijom.2007.07.015. Epub 2007 Sep 4. PMID: 17766084.

8. Dholam KP, Bachher GK, Yadav PS, Quazi GA, Pusalkar HA. Assessment of quality of life after implant-retained prosthetically reconstructed maxillae and mandibles postcancer treatments. Implant Dent. 2011 Feb;20(1):85-94. doi: 10.1097/ID.0b013e31820031ab. PMID: 21278531.

9. Hooper SM, Westcott T, Evans PL, Bocca AP, Jagger DC. Implant-supported facial prostheses provided by a maxillofacial unit in a U.K. regional hospital: longevity and patient opinions. J Prosthodont. 2005 Mar;14(1):32-8. doi: 10.1111/j.1532-849X.2005.00004.x. PMID: 15733133.

10. Ribeiro GH, DE Oliveira BS, Kosmann C, De Mello ALSF, Lisboa ML, Grando LJ. Maxillofacial prosthesis in the rehabilitation of patients with oral tumors: case analysis and impact on quality of life. Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology. 2020;129(1):e103-e104,

11. Motamedi MH. An assessment of maxillofacial fractures: a 5-year study of 237 patients. J Oral Maxillofac Surg. 2003 Jan;61(1):61-4. doi: 10.1053/joms.2003.50049. PMID: 12524610.

12. Deogratius BK, Isaac MM, Farrid S. Epidemiology and management of maxillofacial fractures treated at Muhimbili National Hospital in Dar es Salaam, Tanzania, 1998-2003. Int Dent J. 2006 Jun;56(3):131-4. doi: 10.1111/j.1875-595x.2006.tb00084.x. PMID: 16826878.

13. Nascimento de Aquino S, Silvestre Verner F, 'lvares Cabral R, Najar Rios CH, Paes de Almeida O, S-nchez-Romero C. Adenoid cystic carcinoma with myoepithelial predominance affecting maxilla and maxillary sinus. J Stomatol Oral Maxillofac Surg. 2019 Feb;120(1):55-60. doi: 10.1016/j.jormas.2018.08.002. Epub 2018 Aug 17. PMID: 30125736.

14. Vayvada H, Mola F, Menderes A, Yilmaz M. Surgical management of ameloblastoma in the mandible: Segmental mandibulectomy and immediate reconstruction with free fibula or deep circumflex iliac artery flap (evaluation of the long-term esthetic and functional results). J Oral Maxillofac Surg. 2006 Oct;64(10):1532-9. doi: 10.1016/j.joms.2005.11.065. PMID: 16982313.

15. Dholam KP, Bachher G, Gurav SV. Changes in the quality of life and acoustic speech parameters of patients in various stages of prosthetic rehabilitation with an obturator after maxillectomy. J Prosthet Dent. 2020 Feb;123(2):355-363. doi: 10.1016/j.prosdent.2019.03.005. Epub 2019 Jul 12. PMID: 31307797.

16. Ishii M, Nakagawa K, Yoshimi K, Okumura T, Hasegawa S, Yamaguchi K, Nakane A, Tamai T, Nagasawa Y, Yoshizawa A, Tohara H. Higher Activity and Quality of Life Correlates with Swallowing Function in Older Adults with Low Activities of Daily Living. Gerontology. 2022;68(6):673-681. doi: 10.1159/000518495. Epub 2021 Sep 28. PMID: 34818215.

17. Plowman-Prine EK, Sapienza CM, Okun MS, Pollock SL, Jacobson C, Wu SS, Rosenbek JC. The relationship between quality of life and swallowing in Parkinson's disease. Mov Disord. 2009 Jul 15;24(9):1352-8. doi: 10.1002/mds.22617. PMID: 19425089; PMCID: PMC3614344.

18. Araghi MH, Jagielski A, Neira I, Brown A, Higgs S, Thomas GN, Taheri S. The complex associations among sleep quality, anxiety-depression, and quality of life in patients with extreme obesity. Sleep. 2013 Dec 1;36(12):1859-65. doi: 10.5665/sleep.3216. PMID: 24293760; PMCID: PMC3825435.

Original Article

Awareness on tooth brushing among the patients of private dental clinics in Uttara, Dhaka-A Cross Sectional Study

A Ahmed[1], Z Ahmed[2], MTH Chowdhury[3]

Abstract

Objective: To assess knowledge on tooth brushing among the patients attended at private dental clinics in Uttara, Dhaka. ***Method:*** This was a cross-sectional descriptive type of study. The study population was 160 patients with aged above 15 years attending at different private dental clinics at Uttara in Dhaka for seeking treatment. Purposive method of sampling was followed for this study. Data was collected by taking personal interview of the respondents. ***Results:*** The study showed that 73.13% of the respondents knew that frequency of tooth brushing should be twice per day, 62.50% knew that tooth should be brushed in morning just after awake and 20% knew that tooth should be brushed after breakfast. 73.75% of the respondents were aware that tooth should be brushed nights before sleeping. Regarding type of tooth brush, 55% knew that soft tooth brush is suitable while 28.13% answered medium. The study found that 46.88% of the respondent answered brushing should be done after taking every meal. ***Conclusions:*** The findings of the study have shown that the patients attended at different dental clinics had fair knowledge on tooth brushing. They are aware that teeth should be brushed at least twice per day and toothbrush should be replaced after every three months. Majority of the participants know about the benefits of using toothbrush and toothpaste. However, we need to create awareness of the proper tooth brushing technique, proper use of oral hygiene aids and prevention of oral disease.

Keywords: Oral hygiene, oral health, tooth brushing ***(J Cont Dent Sci 2019;9(2):13-17)***

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Introduction

A healthy mouth enables an individual to speak, eat and socialize without experiencing any active disease, discomfort or embarrassment. Tooth has a very important role in chewing and proper digestion of the food, speech and esthetic. Neglecting oral hygiene can cause caries, toothache, and/loss of teeth which could lead to disability of chewing, and speech; orthodontic problems and TMJ disorders.

Professional tooth cleaning and oral hygiene instruction may reduce the progression of caries and periodontal disease.[1] Daily preventive care, including proper brushing helps to stop problems before they develop and is much less painful, less expensive, and less worrisome than treating conditions that have been allowed to progress. Health education attempts to change behaviors by altering an individual's knowledge, attitudes, and beliefs about health matters.[2] Its aim is to raise awareness and motivate health behaviors to maintain good oral health. Also, preventive measures such as dental health educational programs, dietary control and adoption of proper procedures for plaque removal, particularly correct tooth brushing and interproximal cleaning have been shown to be important in improving oral health.[3]

The cross sectional study was conducted on the patients attended at different private dental clinics in Uttara, Dhaka with a view to assess their awareness on tooth brushing and oral health. The paper covers knowledge of the respondents on frequency of tooth brushing, time spent for tooth brushing, schedule time of tooth brushing, frequency of changing toothbrush, proper brushing technique and tooth brushing materials.

Materials and Methods

This was a cross-sectional descriptive type of study. The study population was the patients

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with aged above 15 years attending at different private dental clinics of Uttara, Dhaka for seeking treatment and the sample included 160 number of patients. Purposive method of sampling was followed for this study. According to research questions and objectives of study, variables were selected first. An interview type questionnaire was developed and after briefing the objectives, benefits, risks and burdens of the study to the patients, the investigator collected date from the selected patients by face to face interview. The data were entered in a statistical software package of SPSS 17 for appropriate analysis and interpretation. Descriptive statistics was used for all variables.

Results

This cross sectional study was conducted on the patients attended at different private dental clinics at Uttara in Dhaka with a view to assess their awareness on tooth brushing.

Table 1. Distribution of respondents by knowledge on frequency of tooth brushing

Parameter	Frequency	Percentage (%)
Frequency of tooth brushing		
Irregular brushing practice	0	0
Once per day	31	19.38
Twice per day	117	73.13
More than twice per day	12	7.5
Do not know	0	0

Table 1. shows knowledge of the respondents on frequency of tooth brushing. Nobody answered that teeth should be brushed irregularly. 31 answered (19.38%) it should be done once per day, 117 answered (73.13%) twice per day, 12 answered (7.5%) more than twice per day.

Table 2. shows knowledge of the respondents on time of tooth brushing. Result shows that 18 respondents (11.25%) answered that it needs 1-2 minutes for brushing tooth, 71 answered (44.38%) 2-3 minutes for brushing tooth, 55 answered (34.38%) 3-5 minutes, 14 answered (8.75%) more than 5 minutes. 2 (1.25%) did not know the time of tooth brushing.

Table 2. Distribution of respondents by knowledge on time spent for tooth brushing

Parameter	Frequency	Percentage (%)
Time spent for tooth brushing		
1-2 minute	18	11.25
2-3 minutes	71	44.38
3-5 minutes	55	34.38
More than 5 minutes	14	8.75
Don't know	2	1.25

Table 3. Distribution of respondents by knowledge on schedule time of tooth brushing

Parameter	Frequency	Percentage (%)
Time of tooth brushing		
In morning just after awake	100	62.50
After breakfast	32	20
After lunch	3	1.88
Nights before sleeping	118	73.75
Do not know	1	0.63

Table 3. shows knowledge of the respondents on schedule time of tooth brushing. 100 respondents (62.50%) answered that in morning just after awake tooth should be brushed. 32(20%) knew that tooth should be brushed after breakfast. 3(1.88%) answered after lunch.118(73.75%) were aware that tooth should be brushed nights before sleeping. 1(0.63%) answered they did not know.

Table 4. Distribution of respondents by knowledge on frequency of changing toothbrush

Parameter	Frequency	Percentage (%)
Frequency of changing toothbrush		
Every month	37	23.13
Every 3 months	90	56.25
Every 6 months	14	8.75
More than 6 months	13	8.13
Do not know	6	3.75

Table 4. shows knowledge of the respondents on frequency of changing toothbrush. 37 respondents (23.13%) answered that a toothbrush should be changed every month. 90 answered (56.25%) that

one should change toothbrush after every 3 months, 14 (8.75%) knew after every 6 months, 13 (8.13%) knew more than 6 months. 6 (3.75%) answered they did not know.

Table 5. Distribution of respondents by knowledge on proper brushing technique

Parameter	Frequency	Percentage (%)
Proper brushing technique		
Front to backward	40	25
Down to upward for lower teeth	61	38.13
Up to downward for upper teeth	92	57.5
Backward to front	21	13.13
Do not know	22	13.75

Table 5. shows knowledge of the respondents on the proper brushing technique. 40 respondents (25%) answered that brushing teeth front to backward is the proper procedure of tooth brushing. 61 (38.13%) answered brushing down to upward for lower teeth, 92 (57.5%) knew brushing up to downward for upper teeth, 21(13.13%) answered brushing backward to front. 22 (13.75%) did not know the proper technique of tooth brushing.

Table 6. Distribution of respondents by knowledge on tooth brushing materials

Parameter	Frequency	Percentage (%)
Materials used for tooth brushing		
Tooth powder	31	19.38
Tooth paste	157	98.13
Coal	0	0
Gul	0	0
Others	0	0
Device used for tooth brushing		
Tooth brush	160	100
Chewing stick	13	8.13
Finger	7	4.38
Mango leaf	0	0
Others	0	0
Type of tooth brush		
Hard	9	5.63
Soft	88	55.00
Medium	45	28.13
Medium hard	15	9.38
Do not know	3	1.88

Table 6. shows knowledge of the respondents on items used for tooth brushing, device used for tooth brushing and nature of tooth brush. 31 respondents (19.38%) answered that tooth power is used for tooth cleaning. 157(98.13%) answered tooth paste as tooth cleaning material. All answered that tooth brush is used for tooth brushing. 13(8.13%) answered chewing stick as tooth brushing device. Regarding type of toothbrush, 9 respondents (5.63%) answered that hard tooth brush is suitable for brushing. 88 respondents (55%) knew that soft tooth brush is suitable, while 45(28.13%) answered medium.

Discussion

A total of 160 patients were interviewed using a structured questionnaire which was pre-tested in Uttara, Dhaka by face to face interview.

The present study revealed that majority of the respondents (73.13%) in this study were aware that teeth should be brushed at least twice per day. The result was very similar to a study conducted by J Hamissi, P Bakianian Vaziri,[4] A Davalloo (2009) in Iran where 73.1% of the patients used to brush their teeth at least twice a day. Both respondents have the almost same level of knowledge on frequency of tooth brushing .

Majority of the respondents (73.13%) in this study were aware that teeth should be brushed at least twice per day. A soft-bristle toothbrush could be used to brush teeth and brush at least twice daily with fluoride toothpaste to remove plaque and bacteria that cause cavities and periodontal disease (gum disease). For effective tooth brushing, brushing should be done for 2-3 minutes. 44.38% respondent were aware of it. Tooth should be brushed after breakfast and at nights before sleeping. 20% knew that tooth should be brushed after breakfast. 73.75% were aware that tooth should be brushed nights before sleeping.

Toothbrushes wear out and should be replaced every three months. 56.25% respondents were aware of it. 23.13% thought that a toothbrush should be changed every month. Knowledge on proper brushing technique is important in achieving adequate oral hygiene. Teeth should be brushed down to upward for lower teeth and up to downward for upper teeth. The study found that 25% thought that brushing teeth front to backward is the proper method of tooth brushing. 38.13% were aware that brushing should be done down to upward for lower teeth, 57.5% knew brushing up to downward for upper teeth, 13.13% answered brushing backward to front. 13.75% did not know the proper technique of tooth brushing.

All of the respondents (100%) in this study were aware that tooth brush should be used for tooth brushing and majority of the respondents (98.13%) knew that tooth paste should be used as tooth cleaning materials. Antora Mahmud Khan et al.[5] found that in Gauripur upazila people hardly used tooth brush and/or tooth paste/powder. Only 38% of the respondents of that study mentioned that they used tooth brush.

100% respondent were aware that toothbrush should be used for tooth brushing. However, 13(8.13%) thought that chewing stick could be used as tooth brushing device. Most dentists recommend using a soft toothbrush, since firmer bristled toothbrushes can damage tooth enamel and irritate gums. 55% respondents in this study knew that soft tooth brush is suitable. 28.13% answered medium. Another study by Bhuiyan[6] in four different rural areas in the vicinity of Dhaka city showed that only 7% used tooth brush to clean the teeth. Most of the patients either used charcoal, meswak, or finger for teeth cleaning.

Tooth should be brushed after breakfast and at nights before sleeping. 20% participants of this study knew that tooth should be brushed after breakfast. 73.75% were aware that tooth should be brushed nights before sleeping. Most of the participants knew that tooth should be brushed before breakfast because it is cultural acceptance of the society and they also intend to remove bad breath after waking up. Similar finding was found in a study by Amjad H. Wyne et al.[7] in Saudi Arabia where majority (60.5%) of the participants reported that teeth should be cleaned after each meal as it is also a cultural acceptance of the society.

Conclusion

The findings of the study have shown that the patients attended at different dental clinics had fair knowledge on tooth brushing. They are aware that teeth should be brushed at least twice per day, toothbrush should be replaced after every three months. Majority of the participants know about the benefits of using toothbrush and toothpaste. Besides, we need to create awareness of the proper tooth brushing technique and proper use of oral hygiene aids and prevention of oral disease. Public awareness on the importance of oral health needs to be enhanced. Dental health education programs, national or community health programmes with oral health care, dental health promotion through print and electronic media should be undertaken to raise awareness and motivate pro-health behaviors to maintain good oral health. Dentist could also play important role in providing information and motivating patient.

References

1. Suomi JD, Greene JC, Vermillon JR et al.(1971). The effect of controlled oral hygiene procedures on the progression of periodontal disease in adults. Results after third and final years. J Periodontal, 42(3):152-60.

2. Kegeles SS: Some motives for seeking preventive dental care. J Am Dent Assoc 67:110-118, 1963

3. Horton JE, Zimmermann ER, Collings CK (1969). The effect of toothbrushing frequency on periodontal disease measurement. J Periodontal, 40(1): 14-16.

4. J Hamissi, P BakianianVaziri, A Davalloo .2009. 'Evaluating Oral Hygiene Knowledge and Attitude of Pregnant Women' Iranian J Publ Health Vol. 39, No.1, 2010, pp.28-31

5. Khan AM, Ahmed SM. 2011. 'Why do I have to Clean Teeth Regularly?: Perceptions and State of Oral and Dental Health in a Low-income Rural Community in Bangladesh' BRAC Publication

6. Bhuyan AM. 1988. 'Prevalence of dental diseases in Bangladesh'. Bangladesh Dental Journal -89.5(1) .6-9

7. Wyne AH, Chohan AN, Al-Abdulsalam Z. 2009. 'Oral health knowledge and sources of information among male secondary school children in Riyadh'. The Saudi Dental Journal

Review Article

An Overview of Oral Soft Tissue Biopsy

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Abstract

An oral biopsy is crucial in diagnosing diseases ranging from superficial oral mucosal lesions to malignancies. This process involves obtaining a tissue sample to examine its structure both macroscopically and microscopically, allowing for a definitive diagnosis. It's important to remember that clinicians play a crucial and empowering role in managing the entire process of obtaining a biopsy, from history taking and clinical examination to the operative findings. This article provides an overview of oral soft-tissue biopsy techniques and identifies potential problems with biopsy techniques that dental practitioners should be aware of.

Keywords: Biopsy, Microscopy, Examination, Histopathology, Diagnosis ***(J Cont Dent Sci 2019;9(2):18-23)***

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Introduction

A biopsy involves extracting tissue from the body for microscopic examination, which can aid in diagnosing various conditions.[1] Planning before a biopsy is key to assisting the pathologist in reaching an accurate diagnosis and, therefore, ultimately and, more importantly, to the patient. An unsuitable, unrepresentative sample is useless to the pathologist, clinician, or, most importantly, the patient who would be ill-served by an unnecessary repeat procedure.[2] A successful biopsy requires basic knowledge and technical skills. [3] The accuracy of a biopsy begins with thorough history taking and clinical examination. Following this, factors such as the administration of local anesthesia, the technique used to remove the tissue, the size and depth of the tissue sample from a representative site, and the method of fixation all contribute to the quality of the biopsy. [4]

This paper aims to (1) Describe the pitfalls of biopsy methods. (2) Explore the challenges oral pathologists face when interpreting tissues damaged by artifacts, and (3) Consider strategies for addressing and eliminating these alterations.

Documenting Patient History

A comprehensive history is the first crucial step in performing a diagnostic biopsy. This includes lifestyle factors such as betel quid chewing, smoking, alcohol use, drug taking, familial conditions, and reviewing past surgeries and hospitalizations. Medications can significantly impact oral health, so a thorough drug history is necessary.

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For example, some drugs such as Phenytoin (anti-epileptic), Nifedipine, and other calcium channel blockers (antihypertensive) drugs may explain the gingival enlargement observed in the biopsy. Understanding a patient's surgical history in the case of ameloblastoma helps the oral pathologist determine if the lesion is recurring. History of trauma or previous root canal treatment records can also aid in confirming a diagnosis of periapical lesions. Other diagnostic tools, such as radiological imaging, laboratory tests, or specialized procedures like ultrasound or CT scans, provide valuable insights into the lesion that needs biopsying. Additionally, on the request form, it is desirable to have previous biopsy numbers to enable comparison if necessary. For example, comment on the progression or regression of a dysplastic lesion.

Clinical examination of the lesion

A detailed clinical assessment of the oral mucosa is essential for identifying oral lesions. The lesion's location, size, color, consistency, or texture should be documented. For instance, a firm, non-healing sore with irregular, raised, or rolled edges might indicate squamous carcinoma, while a pedunculated, cauliflower-like growth could suggest papilloma. Observing a soft, compressible lesion that blanchs under pressure can help differentiate a vascular lesion from a pigmented one. The overlying epithelium is often intact, but its coloration reflects the contents of the lesion: red, purple if vascular, blue if mucinous, or yellow if adipose, lymphoid, or neural.[5] Documenting and sending the clinical presentation details to the oral pathologist and the specimen is essential, ensuring no details are omitted. [4]

Local Anaesthesia Application

A local anesthetic should be administered away from the lesion to avoid artifacts in the sample. Peripheral anesthesia is recommended to prevent excessive pressure and distortion of the tissue. Infiltration should be administered at least [3-4] mm away from the lesion. The four-point anesthesia technique can be used as a cardinal reference (top, bottom, left, right).[6] Intralesional injection of anesthetic solution produces hemorrhage with extravasation and separation of connective tissue bands with vacuolization, complicating the interpretation for the oral pathologist.[7]

Tissue Selection

Properly selected samples aid the oral pathologist in making an accurate diagnosis. Unrepresentative samples are ineffective and often lead to repeated biopsies, causing unnecessary patient discomfort. (Figure 1). As biopsies are conducted to diagnose a lesion and confirm its complete removal, the procedure should involve taking a representative portion of the lesion along with some surrounding healthy tissue. Representative biopsy of an epithelial lesion must include the total epithelial thickness with some supporting connective tissue to allow assessment for invasive carcinoma and margin to ensure complete clearance. [2,8]

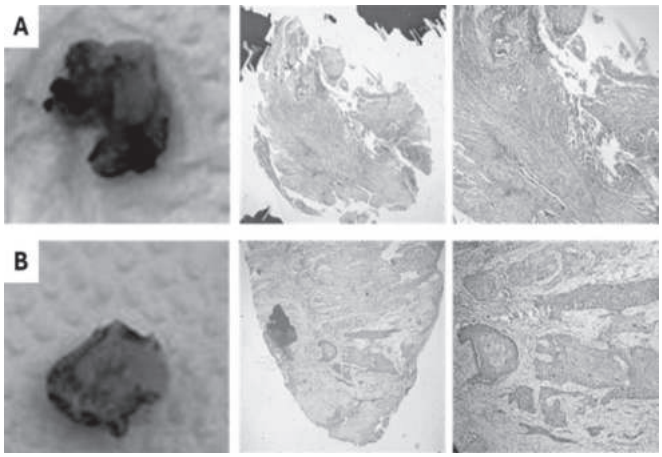

Figure-1: A.An unrepresentative sample. B. A repeat biopsy from a representative site shows squamous cell carcinoma features.

The center of larger tumors should be avoided as this is often necrotic and unhelpful for diagnosis. [9]

An area of non-erosive lesional tissue should be chosen for mucocutaneous lesions like lichen planus or lichenoid reactions. Sampling of an erosive area will often show non-specific inflammatory changes associated with ulceration and will not assist in the diagnosis. Adjacent normal tissue is not generally required for such lesions. In the case of vesiculobullous lesions, the biopsy should be taken from the area adjacent to the bulla, where the epithelium remains intact. An early-stage lesion should be chosen for biopsy, ideally no older than 48 hours.[2,9] Multiple samples should be collected for extensive or variably appearing lesions, such as erythroplakia or speckled leukoplakia.[11,12] Diagrams indicating the lesion locations should also be provided with the biopsy data.

Tissue size and depth

The tissue's quantity and quality are crucial in an incisional biopsy. Inadequate tissue samples can hinder diagnosis. Additionally, tissue shrinkage during fixation can further reduce the sample size, complicating orientation and increasing the risk of loss during handling. For excisional biopsies, assessing the advancing front of the tumor is essential.

An adequate sample depth is crucial for obtaining a high-quality tissue section. Still, the appropriate depth varies from one lesion to another, depending on the thickness and location of the mass.[5] The sample should include epithelium and a few millimeters of the underlying lamina propria. Traditional incisional biopsies are in the shape of an ellipse, the length of which should be approximately three times the width. The elliptical shape facilitates primary-intention closure.[13] Biopsies that only contain epithelium are often non-diagnostic because they do not allow for assessing connective tissue changes. For example, in oral carcinoma, the epithelial biopsy does not provide helpful information, making it challenging to evaluate local invasion in cases of epithelial neoplasia accurately. (Figure 2) Similarly, in oral submucous fibrosis, the hyalinization of the connective tissue indicates the diagnosis.

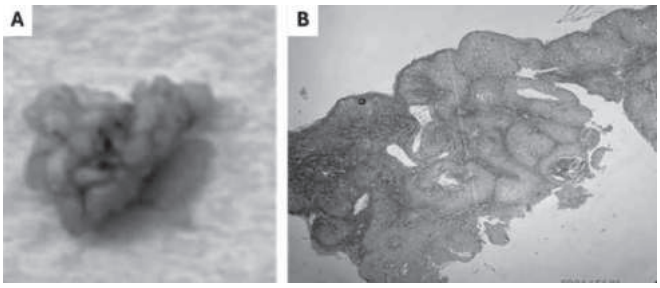

Figure 2: A. The section of a biopsy specimen, mainly epithelium.B. Histopathologic section of such

B. lesion is inadequate and difficult to interpret.

In addition, insufficient depth can lead to the delicate mucosa folding or curling upon itself during fixation, creating a curling artifact. This curling and bending of the tissue complicate proper orientation during the embedding process.[14] To minimize this issue, ensuring an adequate tissue depth can help prevent such artifacts.[15]

Handling of the specimen

Proper tissue handling is essential for accurate interpretation. Tissue artifacts may originate from several sources but interfere with histologic interpretation. Crush artifacts are common and are typically due to inappropriate compression from forceps during surgery or by the pathologist. Toothed forceps can create puncture marks that mimic mucosal pits or epidermoid cysts.[9] Incorrect use of forceps can also lead to the formation of pseudomicrocysts, where the surface epithelium is pushed inward by the instrument's teeth.[14] Small, atraumatic forceps should be used to prevent these issues, and the tissue should be held in normal adjacent areas rather than the lesional tissue. Artifacts can also result from using dull scissors or knives. To avoid this, tissue should be obtained with a clean cut, avoiding tearing or compression.

Electrosurgery and laser techniques produce thermal artifacts, such as tissue protein coagulation, leading to an amorphous appearance in the epithelial and connective tissues. Epithelial cells may become fusiform and hyperchromatic, and a fulguration artifact can result from electrosurgical or laser cutting, causing marked alterations like detached epithelial cells and spindled, palisading nuclei. The epithelium may separate from the basement membrane, while the connective tissue, fat, and muscle may appear opaque and amorphous.[16,17,18] Therefore, these cutting techniques are not recommended for diagnostic incisional biopsies.

Suction devices should be used with care to prevent specimen loss if required. A suction-induced artifact can create large pleomorphic vacuoles in connective tissue that resemble traumatized adipose tissue.[19] Thus, careful use of suction tips is crucial to avoid such artifacts.

There are various methods available to reduce traumatic damage to the specimens. A popular method is to place a suture within the mucosa to be removed and hold the ends of the suture in an artery forceps or sometimes tie a loose knot above the mucosa while undertaking the biopsy. Using such a suture can aid the biopsy procedure by providing traction and preventing unwanted tissue movement when taking a biopsy from mobile structures such as the tongue. It also helps the pathologist to orientate the biopsy sample for sectioning. [2]

Labeling, orientation, and preparation of the specimen

Proper labeling is needed for a meaningful report to the clinician. Label the specimen container with the patient's name, date of birth, date of biopsy, and the biopsy site, together with the hospital number, if appropriate. The site of the biopsy is critical if there are specimens from more than one site in an individual patient. When multiple specimens are collected, each specimen should be identified by using identifying sutures or placing each in a separate container. If more than one specimen has to be placed in the same container, they must be marked, which is most readily done using sutures; do not rely on describing the shapes of the pieces of tissue submitted because when they are fixed, this will probably have altered.

Orientation is crucial for all surgical specimens submitted for microscopic examination. Proper orientation is essential for mucosal biopsies, particularly those involving superficial lesions due to their small size and limited morphological features after formalin immersion. Correctly orienting the surface lesion specimen helps the oral pathologist section it accurately, avoiding tangential cuts. Without proper orientation, sections may include only epithelium or connective tissue, but not both. Orientation is accomplished by placing one or several sutures on known margins. If the specimen is thin, it is advisable to put it on a piece of paper, with the connective tissue side down, for at least 1 minute to ensure that the sample stays flat during fixation.[10,17] Including illustrations is also beneficial. The clinician should ensure the specimen is placed in a wide-mouth container. If a narrow-mouthed container is used, the specimen may have to be handled roughly, or the container needs to be broken to get the fixed specimen out. (Figure 3a)

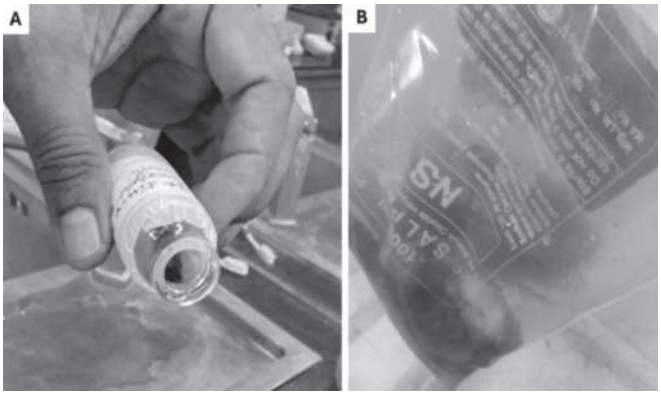

Figure 3: A. Sample received in undersized bottle B. Sample received in insufficient formalin.

Placing the specimen in alternative solutions like saline or water can lead to autolysis and artifacts resembling pemphigus, causing a loss of detail and cellularity with indistinct cell cytoplasm and nuclear structures.[23] Fixation bottles should be tightly sealed to prevent the evaporation of the fixative and labeled with pencil on tape to avoid specimen mix-up.

Submission of Biopsy

When submitting a biopsy for histopathological analysis, relevant clinical information such as the patient's demographic details, the lesion's clinical appearance and location, and any pertinent medical history must be included.[8] A color photograph of the lesion can also be helpful. The provisional clinical diagnosis will help determine the appropriate technique and handling of the tissue. Providing radiographs to the oral pathologist for bony lesions is crucial for accurate evaluation. An explanatory diagram of the biopsy site may also be helpful.[20] Tissue should not be frozen before fixation, as freezing during transport can cause cytoplasmic condensation due to dehydration. If the specimen is being sent by mail, it is essential to adhere to the regulations governing pathological specimens, which can be obtained from the post office. Typically, these regulations require the specimen to be placed in a primary container tightly sealed and wrapped in absorbent material, such as a paper towel, to manage any potential leakage. This container should be placed in a sealed plastic bag and inside a rigid outer container secured with adhesive tape. The package should be clearly labeled with terms like 'Human Tissue,' 'Pathological Specimen,' 'Fragile,' or 'Handle With Care,' and must include the sender's full name and address.[5,24]

Surgeon-pathologist relationship

Effective communication between clinicians/ surgeons and pathologists is crucial for addressing any uncertainties related to biopsy interpretation or diagnoses. Rather than being split, specimens should be sent to a single pathologist for each case. This approach is essential because different specimen areas may show distinct histological patterns frequently observed in salivary gland tumors or certain odontogenic tumors.[9] If there are doubts about the adequacy or representativeness of the original specimen, a pathologist might request a second biopsy. These issues can be minimized by carefully avoiding common pitfalls during the biopsy process.

Conclusion

While generally straightforward, an oral biopsy can be ineffective if improperly executed. A well-planned biopsy and some technical expertise can significantly enhance diagnostic accuracy. While many different biopsy techniques and devices are available, the primary objective remains to obtain a representative tissue sample that allows for accurate histologic analysis.

References:

1. Mota-Ramirez A,Silvestre FJ. Oral biopsies in the dental practice. Aust Dent J. Med Oral Patol Oral Cir Bucal. 2007;12: E504-10

2. Oliver RJ, Sloan P, Pemberton MN. Oral biopsies: methods and applications. British Dental Journal. 2004; 196: 329-33

3. Diamanti N, Duxbury AJ, Ariyaratnam S, Macfarlane TV. The attitudes to the biopsy procedures in the general dental practice. Br Dent J. 2002; 192: 588-92

4. Masthan KMK, Sankari SL, Babu NA, Rajguru JP . How to Help the Oral Pathologist in Making an Accurate Diagnosis. J Clin Diagn Res. 2013; 7:181-4

5. Avon SL , Klieb HBE. Oral soft-tissue biopsy: an overview. J Can Dent Assoc 2012:78: c75

6. Kumaraswamy KL, Vidhya M, Rao PK, Mukunda A. Oral biopsy: Oral pathologists perspective. Journal of Cancer Research and Therapeutics 2018: 8 (2):192-8.

7. Margarone EJ, Natiella JR, Vaughan DC. Artifacts in the oral biopsy specimens. J Oral Maxillofac Surg 1985; 43:163-72

8. Melrose RJ, Handlers JP, Kerpel S, Summerlin DJ, Tomich J .The use of a biopsy in the dental practice: The position of the American Academy of Oral and Maxillofacial Pathology. General Dentistry 2007; Sep October:457-67

9. Khoo SP. Oral biopsies in the dental practice: The pathologist's perspective. Annals Dent Univ Malaya 1995;c2:c29-32

10. Rosebush MS, Anderson KM, Rawal SY, Mincer HM, Rawal YB. The oral biopsy: indications, techniques and special considerations. J Tenn Dent Assoc 2010; 90:17-20

11. Mashberg A, Samit A. Early diagnosis of asymptomatic oral and oropharyngeal squamous cancers. CA Cancer J Clin 1995; 45(6): 328-51

12. Driemel O, Kunkel M, Hullmann M, von Eggeling F, M-ller Richter U, Kosmehl H. Diagnosis of oral squamous cell carcinoma and its precursor lesions. J Dtsch Dermatol Ges 2007; 5 (12):1095-100

13. Golden DP, Hooley JR. Oral mucosal biopsy procedures. Excisional and incisional. Dent Clin North Am 1994; 38:279-300

14. Giuseppe Ficarra G, McClintock B, Hansen LS. The artefacts which are created during the oral biopsy procedures J. Cranio-Max-Fac. Surg 1987;15:34-37

15. Meghana SM, Ahmed M. Surgical artefacts in oral biopsy specimens: a punch biopsy compared to a conventional scalpel biopsy. J of Oral and Maxillofac Path. 2007; 11(1):11-14

16. Seoane J, Caballero TG, Urizar JMA, Almagro M, Mosquera AG, Varela-Centelles P. The pseudodysplastic epithelial artefacts which are associated with the oral mucosa CO2 laser excision: an assessment of the margin status. Int. J. Oral Maxillofac.Surg 2010; 39: 783-87

17. Krishnanand PS, Kamath VV, Nagaraja A, Badnia M. Artefacts in Oral Mucosal Biopsies - A Review. J Orofac Sci 2010;2:57-62.

18. Logan RM, Goss AN. Biopsy of the oral mucosa and use of histopathology services. Aust Dent J 2010;55:9-13

19. George P, Wysocki GP, Gusenbauer AW, Daley TD, Sapp JP. The surgical suction damage: A common tissue artefact. Oral Surg 1987; 63(5): 573-75

20. Pinto LSS, Aparecida da Silva A, Le n JE, Jorge J. Letter to the Editor: Starch artifacts in oral biopsy specimens. Med Oral Patol Oral Cir Bucal 2008 ;13(6): E336-37

21. Lovas GL, Howell RE, Peters E, Gardner DG. Starch artifacts in oral cytologic specimens. Oral Surg Oral Med Oral Pathol 1985;60:195-6

22. Sheehan DC, Hrapchak BB.Theory and practice of histotechnology, 2nd edn. St. Louis, CV Mosby, 1980

23. Weir JC, Weathers DR A fixation artefact simulating acantholytic disease. Oral Surg 1976;41:105-8

24. Odell EW, Morgan PR. Practitioner biopsy services. (Letter). Br Dent J 2002; 193: 182

Mucoepidermoid Carcinoma in the Mandible: Report of Two Cases

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Abstract

Mucoepidermoid carcinoma (MEC) is the most common malignant tumor of salivary gland. These tumors commonly arise in the parotid and minor salivary glands but may also develop within the jaw bones. Only 2-4% of all mucoepidermoid carcinomas have a primary intraosseous site (central mucoepidermoid carcinoma), with unknown etiology which justify the importance of researching the subject. In this article, we discussed two patients of intraosseous mucoepidermoid carcinoma.

Key Words: Mucoepidermoid carcinoma , malignant tumor, salivary glands. ***(J Cont Dent Sci 2019;9(2):24-27)***

Introduction

Salivary carcinoma accounts for 3 to 4% of all head and neck cancers, and of these, mucoepidermoid carcinoma (MEC) is the most common type. MEC demonstrates highly variable clinical behavior, ranging from slow to indolent to locally aggressive and highly metastatic tumors. MEC occurs predominantly in the parotid glands and when it affects the minor salivary glands, it is most frequently found on the palate, followed by the retromolar region, buccal mucosa, tongue, lips and floor of the mouth, sinuses, and larynx.[1]

Intraosseous mucoepidermoid carcinoma is rare in jaw bones. Although theories have been proposed based on the neoplastic transformation of the epithelial mucosa of odontogenic cysts or ectopic salivary gland tissue, their origin is yet uncertain.[2]

This article illustrates the clinical and radiographic features of two rare cases of mucoepidermoid carcinoma in the mandible.

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Case Reports

Case- 1

A 50 years old female patient reported to the Department of Oral and Maxillofacial Surgery with the complaint of a swelling on right side of body of mandible for the last six months (figure 1A). The swelling was accompanied by pain and difficulty in mastication and deglutition. Extraoral examination revealed a single diffuse swelling on right side of body of mandible which was tender and firm in consistency, smooth surface, normal in color and temperature (figure 1B). Right submandibular lymph node was palpable, tender, firm, fixed with underlying structure but free from overlying skin. Intraoral examination revealed a 5x3 cm2 oval swelling extending from right mandibular lateral incisor to second molar with buccal- cortical plate expansion (figure 1C). An incisional biopsy was taken and revealed intermediate grade MEC. Histopathological slide

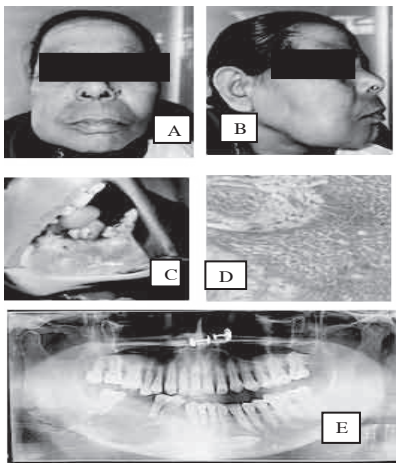

Figure 1 (A) Patient's profile; (B) swelling on Rt side of body of mandible; (C) intraoral picture; (D) H/P view (E) X-ray OPG. side of body of mandible; (C) intraoral picture; (D) H/P view (E) X-ray OPG.

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showed cystic spaces surrounded by mucous secreting cells and squamous cells (figure 1D). Panoramic radiograph showed unilocular radiolucency from tooth #44 area to tooth #47. Root resorption of teeth #44, #45 and thinning of inferior border of mandible was observed (figure 1E). The patient was educated about the necessity of early treatment.

Case-2

A 45 years old female patient reported to the Department of Oral and Maxillofacial Surgery with the complaint of a swelling on right side of body of mandible for the last one year (figure 1A). The patient complained of trismus for the last three months. Extraoral examination revealed a single diffuse swelling on right side of body of mandible which was non tender and firm in consistency, smooth surface, normal in color and temperature (figure 1B). Intraoral examination revealed a 4x3 cm2 oval swelling extending from right mandibular second molar to RMT (figure 1C).

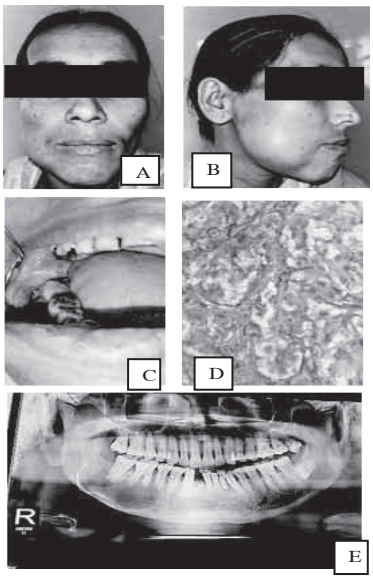

Figure 2 (A) Patient's profile; (B) swelling on Rt side of body of mandible; (C) intraoral picture; (D) H/P view (E) X-ray OPG.

An incisional biopsy was taken and revealed intermediate grade MEC. Histopathological slide shows cystic spaces surrounded by mucous secreting cells and epidermoid cells (figure 1D). Panoramic radiograph showed mixed radiopacity and radiolucency from tooth #44 area to tooth #47 area and thinning of inferior border of mandible was observed (figure 1E). The patient was educated about the necessity of early treatment.

Discussion

Mucoepidermoid carcinoma is a salivary gland neoplasm accounting for 5-10% of all salivary gland tumors; 86% involves the parotid gland, followed by submandibular gland (8%) and sublingual glands (4%). The minor salivary glands found in the palate is the next most common site for these tumors.[3-5] According to the existing literatures, it's appearance in the jaw bone is very rare comprises only 2%-4% of all mucoepidermoid carcinomas.[6] Its intraosseous origin, although widely discussed, is not well understood. Four possible theories for its origin are suggested: 1) entrapment of the retromolar glands in the mandible, with subsequent neoplastic transformation; 2) embryonic remnants of the development of the submandibular gland entrapped in the mandible; 3) neoplastic transformation of mucosecretory cells commonly found in the pluripotential epithelial lining of dentigerous cysts associated with impacted third molars; and 4) neoplastic transformation and invasion of the maxillary sinus lining in case of maxilla.[7]

Traditionally, mucoepidermoid carcinomas have been classified into three histopathological grades using the following criteria: quantity of cystic formation, degree of cellular atypia, and relative number of mucous, epidermoid, and intermediate cells. Low-grade tumors exhibit prominent cystic formation, minimal cellular atypia, and a relatively high proportion of mucosal cells. High-grade tumors consist of solid islands of squamous and intermediate cells, which may demonstrate

considerable pleomorphism and mitotic activity. Mucus-producing cells may be infrequent, and sometimes, it may be difficult to distinguish the tumor from squamous cell carcinoma. However, those of intermediate grade exhibit characteristic features in between low and high-grade tumors.[8]

Intraosseous mucoepidermoid carcinomas are more common in middle aged females. Two patients of this article were also middle aged female which correlates with the other studies. Mandible is more commonly affected than the maxilla and body and ramus of the mandible are the most common region. In this case series, MEC were found in the body of the mandible which shows similarity with the other articles. Patients commonly complaints of hard swelling, pain, trismus, and paresthesia. Metastasos have been reported in 12% of the cases.[8] One case of this literature showed submandibular lymphadenopathy which indicates that there might be possibility of lymph node metastasis.

Imaging plays an important role in the detection and differentiation of MEC because of its sclerotic periphery and unilocular and/or multilocular pattern with similar to those of other lesions such as ameloblastoma, odontogenic myxoma, glandular odontogenic cyst, and odontogenic keratocyst. Tooth dislocation and root resorption are also commonly found.[9] Unilocular and multilocular radiolucency with root resorption have been found in this case series which corresponds with the other studies.

Most central mucoepidermoid carcinomas are low grade and exhibit a good survival rate. In a review of 64 patients, Brookstone and Huvos observed 40% recurrences after conservative surgical treatment modalities such as curettage, enucleation, marsupialization and marginal resection with or without adjuvant therapy. On the other hand, the group treated by radical surgery such as segmental resection with/without treatment of associated neck and/ or adjuvant therapy, the recurrence rate was only 4%. This suggests that radical resection offers better chance of tumor eradication and prevention of local recurrence and late distant metastasis. Adjuvant radiotherapy is recommended for high-grade tumors.[10]

Conclusion

Mucoepidermoid carcinoma is a salivary gland malignancy having the ability to metastasize and recurs locally. Central MEC should always be included in the differential diagnosis of unilocular and multilocular lesions in the jaw bone such as dentigerous cyst, odontogenic keratocyst, ameloblastoma etc. When dealing with intraosseous lesions, clinicians must consider that the lesion may be malignant and perform a histopathological examination before any surgical approach.

References

1. Pelaz AC, Rodrigo JP, Triantafyllou A et al. Salivary mucoepidermoid carcinoma revisited. European Archives of Oto-Rhino-Laryngology 2015; 272(4): 799-819.
2. Bouquot JE, Gnepp DR, Dardick I, and J. H. P. Hietanen. Intraosseous salivary tissue: jawbone examples of choristomas, hamartomas, embryonic rests, and inflammatory entrapment: another histogenetic source for intraosseous adenocarcinoma. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology 2000; 90(2): 205-217.
3. Verma RK, Sunku SK, Bal A, Panda NK. Giant cystic primary mucoepidermoid carcinoma of mandible: a rare case and literature review. The polish otolaryngology, 2014; 68(6): 328-332.
4. Garcia-Molina D, Del Castillo J, Navarro I, S-nchez R, Burgue-o M. Low grade mucoepidermoid carcinoma. Differential diagnosis of palatal masses. Spanish journal of oral and maxillofacial surgery, 2014; 36(3): 136-138.

5. Zhang X, et al. Nasopharyngeal mucoepidermoid carcinoma: a review of 13 cases. Oral Oncol 2010; 46: 618-621.

6. Johnson B, Velez I. Central mucoepidermoid carcinoma with an atypical radiographic appearance. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology 2008; 106(4): 51-53.

7. Shafer WG, Hine MK, Levy BM. A textbook of oral pathology. 3rd ed. Philadelphia: B. Saunders Company; 1974. p.359.

8. Neville BW, Damm DD, Allen CM , and Bouquot JE. Oral & Maxilofacial Pathology, Elsevier, Rio de Janeiro, 3rd edition, 2009.

9. George Borja de Freitas, Arthur Jos 'Barbosa de Fran-a, Stefanny Torres dos Santos et al. Intraosseous Mucoepidermoid Carcinoma in the Mandible. Case Reports in Dentistry 2018; 2018: 1-4.

10. Sankireddy S, Kaushik A, Vijaychander V et al. Intraosseous mucoepidermoid carcinoma of the mandible - a rare case report. The South Brazilian Dentistry Journal 2014; 11(4): 401-404.

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