

BDJ

BANGLADESH DENTAL JOURNAL

Vol. 31

No. 1-2

2015



Official Journal of
The Bangladesh Dental Society

BANGLADESH DENTAL JOURNAL

Vol. 31, No. 1-2, 2015

The Official Journal of Bangladesh Dental Society
8/2, Paribagh, 3rd Floor, Motaleb Tower, Hatirpool, Dhaka-1205

EDITORIAL BOARD

Chairman

Professor (Dr.) Md. Abul Kasem

Editor-in-Chief

Dr. Md. Humayun Kabir

Editor

Dr. Morshed Alam Talukder

Co-Editor

Dr. Md. Amanulla Sarkar

Member:

Dr. Md. Ruhul Amin

Dr. Joynal Abdin

Dr. Shahana Dastagir Sunny

Dr. Md. Mosharraf Hossain Khandker Musa

Dr. Md. Shibbir Ahmed Osmani

Dr. Mirza Md. Arifur Rahman

Dr. Md. Mozammel Hossain Ratan

Dr. Mir Nowazesh Ali (Rajib)

Dr. Md. Asaduz Zaman Sarwar

Dr. Abdullah Al Mahmud (Shawon)

Dr. Ikramul Ahmed

Dr. AKM Habibullah Mithu

The Journal is published on the year of 2016 by **Dr. Morshed Alam Talukder** on behalf of Bangladesh Dental Society from Asian Colour Printing, 130, DIT Extension Road, Fakirerpool, Dhaka, Phone: 9357726, 58313186.

The opinion expressed in this publication are those of the authors and do not necessarily reflect those of the Editorial Board of the Bangladesh Dental Journal. Furthermore, Bangladesh Dental Society does not guarantee, directly or indirectly, the quality or efficacy of any product described in the advertisement contained in this Journal.

All communications should be addressed to the Editor-in-Chief, Bangladesh Dental Journal, C/o Bangladesh Dental Society. 8/2, Paribagh, 3rd Floor, Motaleb Tower, Hatirpool, Dhaka-1205. e-mail: bd society@mail.com web: www.bangladeshdentalsociety.org

Subscription: Non members Tk. 100.00 for local and US\$ 20 for overseas subscriber. Members free.

Published two times in a year (January & July) by Bangladesh Dental Society. All rights reserved.

INFORMATION FOR AUTHORS

- ◆ The journal publishes original papers, case reports and review articles related to dental/medical science. The style of the papers should be in the modified vancouver style (Ref: New England Journal of Medicine 1991; 324: 428-8).
- ◆ Paper should be submitted to the Chief Editor, Bangladesh Dental Journal, Bangladesh Dental Society, 8/2, Paribagh, 3rd Floor, Motaleb Tower, Hatirpool, Dhaka-1205. Papers should be written in English and two copies must be submitted with two sets of illustrations. Manuscripts should be typed on one side of white paper (size-A4) with margin of at least one inch. Double spacing should be used throughout. Manuscripts will be reviewed by the editorial board and are subject to editorial revision.

Paper should be accompanied by a soft copy preferably CD in Microsoft Word.

- ◆ Each of the following sections should begin on separate pages as: title, abstract/summary and key words, text (Introduction, Materials and methods, Result, Discussion, Conclusion, etc. for an Original article) acknowledgement, references, individual tables and legends. Page should be numbered consecutively beginnings with title pages. Manuscripts must be accompanied by a covering letter. This must include (i) A statement that the work has not been published or submitted for publication elsewhere. (ii) A statement that the manuscript has been read, approved and signed by all authors. (iii) Any work which has been carried out in part or fully abroad, must be accompanied by a letter from the head of the institution where the work was done stating that the work has been carried out in that institute and that there is no objection to its publication in this journal.

Manuscript organization: The following organization is recommended

- Title pages: Should carry (i) The title of the article. (ii) Name of each author with highest academic degree(s) and institutional affiliation. (iii) Name of the department and institute where the work was carried out and (iv) Name and address of the authors to whom correspondence should be addressed.
 - Summary/Abstract: Provide an abstract of 250 words or less. Briefly state the problem or purpose, the major observations, the methods and the principal conclusions.
 - Introduction: Should include nature and purpose of the study, rationale of the study/observation, strictly pertinent references and brief review of the subject excepting data and conclusion.
 - Materials and Methods: Should include the selection criterion of the study population including controls (if any), the methods and the apparatus used in the research, the procedure of the study in such a detail so that other worker can reproduce the results.
 - Results: Presented in logical sequence in the text, table and illustrations, described without comment and supplemented by concise textual description of the data presented in the tables, charts and figures where it is necessary.
 - Discussion: Point out the significance of the data and the limitations. The authors comment on the result and to relate them to those of the other authors, the relevance to experimental research or clinical practice.
 - References: Should be numbered consecutively in the order in which they are mentioned in the text.
- Examples of correct forms of reference are given below:
- A. Standard journal article.
(List all authors when six or less: when seven or more, list only first three and add et al.)
Mixon JM, Sick JD, D David L, Moore DL, Daviel E, Tiva DE. Effect of two dentin bonding agents on Microleakage in two different cavity designs.
J Prosthet Dent 1992; 67(4): 41-45.
 - B. Format for Books:
 - a) Personal Author's-
Eisen HEN. Immunology: An introduction to molecular and cellular principles of the immune response. 5th ed. New York: Harden and ROW, 1974: 4006.
 - b) Chapter in a book
Ingle JI, Simon JH, Machtou P. Outcome of endodontic treatment and re-treatment. In: Ingle JI, Bakland LK, editors. Endodontics. 5th ed. Ontario: BC Decker, 2002: P. 747-765.
- Acknowledgements: Individuals, organizations or bodies may be acknowledged in the article and may include a) Name (or a list) of funding bodies b) Name of the organization(s) and individual(s) with their consent.
 - ◆ Each table should be typed double spaced on a separate sheet. A brief title of each table should be supplied. Figures should be professionally drawn and photographed. Photograph should be on glossy papers (usually 5 x 7 inch). These should not be inserted into the text but marked on the back with the figure numbers, title of the paper and name of author. The top of the figure should be indicated. All photographs, graphs, diagrams should be referred to an figure and numbered consecutively in the text in arabic numerical. The legends for figures should be typed on a separate sheet.
- Copy right:**
No part of the materials published in this journal may be reproduced, stored in a retrieval system or transmitted in any form or by any means electric, mechanical, photocopying, recording or otherwise without the prior written permission of the publisher. Reprints of any article in the journal will be available from the publisher.

BANGLADESH DENTAL JOURNAL

Vol. 31, No. 1-2, 2015

CONTENTS

ORIGINAL ARTICLES

- A retrospective investigative study of mandibular fracture patterns in two different periods in Dhaka
Amin MR, Chowdhury MAP, Sarwar MG, Moula SM, Kabir MH, Ahmed TI, Ahmed I 1
- Bone healing of different Implant designs and surgical techniques
Shaheen ZA, Rehana Z, Bhuiyan ASMS, Imon AA, Khan MJ 5
- Pectoralis Major Flap: Clinical application in reconstruction of oral defects after oncological resection
Rahman MM, Mamood MA, Rubel ATMT, Uzzaman MH, Talukder MA, Haider IA, Ahmed M 10
- A study on dental caries and oral health care practice among the primary school children
in Puthia upazilla under Rajshahi district
Parvin N, Shoheli S 15
- Pattern of use of Amoxicillin and Penicillin in Upazila Health Complex of Bangladesh
Hoque ANMN, Zaman R, Hoque ME 20
- Mandibular condylar fractures: Treatment modalities and their outcomes
Islam MW, Kumar S, Rahman AFMS, Howlader LB, Begum T, Ahmed M 23
- Food behavior and Oral health among the children aged 6 to 12 years at Dhaka City in Bangladesh
Ahmed S, Lima FR, Kabir MH 27
- Clinical evaluation between Micro Ceramic Composite Crown and Metal Ceramic Crown
in single damaged tooth
Islam S, Hassan GS, Osmani MSA, Shikder AHMZH, Haque MR, Islam P 31
- Evaluation of canine retraction and anchorage loss in fixed orthodontic treatment
Aktar S, Hassan GS, Kabir MH, Islam MR, Khan AMSA, Khanom SR, Asaduszaman M 38
- Dental health facilities in Upazilla Health Complex in Bangladesh
Akter A, Sarker RN, Rahman Z, Kundu GC, Parvin S, Barua CS, Islam MS 44

CASE REPORTS

- Traumatic pseudoaneurysm of the Superficial Temporal Artery- A case report
Rahman MM, Rubel ATMT, Mamood MA, Talukder MA, Bhuiyan RA 50
- Follicular Ameloblastoma of maxilla: A case report and review
Iqbal M, Nur SB, Arefin MR, Rahman KMH, Molla MR 52
- Dental management of Chronic Kidney Disease patients
Chowdhury MAP, Chowdhury MJR, Mahmud ME 56

Editorial



There is a proverb in the health science that “mouth is the gateway of health”. Good oral health is the most important part of human health. The incidence of oro-dental disease has become very common in our country. Teeth play very important role in eating, speaking and esthetics of individual. Unfortunately the growth of dental health care in our country is surprisingly neglected. Our people are not usually well conscious about their oro-dental health care.

Bangladesh dental journal is a mirror of dentistry including its special branches. It reflects the current advancement in treatment and research in dentistry. We believe that this journal will play an important role for education and communication for all levels dental surgeons in Bangladesh.

We have tried to include all the disciplines of dentistry so that the specialized of those subjects can enrich their knowledge. We always tried to ensure the quality of each article. An expert panel of reviewers was involved to standardize the quality of articles.

In addition, I would like to mention that the previous committee during the period of 2012-2015 did not publish any issues of Bangladesh dental journal. Newly elected executive of Bangladesh Dental Society has been formed this (current) new editorial board. It was very hard for us to publish the four volume of previous issues. But we tried hard and became successful to publish these issue.

This issue has original articles 10 and case reports 03 of different fields of dentistry.

I am grateful to the panel of reviewers, all the executive members of Bangladesh Dental Society and my colleges who gave me guidance and idea in editing and publishing the journal successfully.

Dr. Md. Humayun Kabir
Editor-in-Chief
Bangladesh Dental Journal

A retrospective investigative study of mandibular fracture patterns in two different periods in Dhaka

Amin MR¹, Chowdhury MAP², Sarwar MG³, Moula SM⁴, Kabir MH⁵, Ahmed TI⁶, Ahmed I⁷

Abstract:

A retrospective investigative study of mandibular fracture patterns two different hospitals in two periods in Dhaka. Mandibular fracture can lead to extensive long-term functional, esthetic and psychological complications that need urgent management. To evaluate mandibular fractures in Dhaka and to display eight years of changes in different clinical circumstance. A retrospective study of 115 patients with maxillofacial fracture over a one year period from 2006 to 2007 were admitted to Shaheed Suhrawardi Medical College Hospital (ShSMCH) in Dhaka. We selected 115 cases of mandibular fractures at random selection from them. After eight years periods A retrospective study of 145 patients from 2014 to 2015 admitted to Dhaka Medical College Hospital (DMCH). We comparative study age, sex, etiology and site of mandibular fracture compared in both groups. Male was common than female in both group. Road traffic accident was the commonest cause and the age group 20-29 years comprised the biggest group was the commonest fracture region, parasymphysis was the commonest fracture in the region.

Keywords: mandibular fracture, epidemiology, facial trauma.

(Bangladesh Dental Journal 2015; 31: 1-4)

Introduction:

Mandibular fractures constitutes the bulk of the trauma treated by oral & maxillofacial services.^{1,2} Fractures of mandible present a unique problem to the facial surgeons. They were described in ancient Egypt around 1650 BC³. As a given force is applied, the bone no longer behaves elastically so internal displacement of the molecules and permanent deformity of the bone occurs.⁴ A WHO statistics reports indicated that each year one million people die and between 15 and 20 million are injured due to RTA.⁵

The aim of the current retrospective study was to investigate the pattern of mandibular fractures in Dhaka in two periods from 2006-2007 and from 2014-15 for displaying the ten years of changes in several clinical considerations as age, gender type, site, etiology and associated injuries, and complications of this fracture.

Patients and methods:

A retrospective study of 185 patients with maxillofacial fractures over a one year period from 2006-2007 were admitted to a hospital Shahid Suhrawardi Hospital. We selected 115 cases of mandibular fractures at random selection from them. After 08 years period, a retrospective study of 210 patients with maxillofacial fractures over a one-year period from 2014-2015 was admitted to Dhaka Medical College Hospital in Dhaka. We selected a 145 cases of mandibular fractures at random selection as comparative study. Sex, age, etiology, site of mandibular fracture and other parameters were recorded and compared in both groups. The inclusion criterion is patients with mandibular fracture.

On admission, careful history, examination of vital signs and other parts of the body were done. Attention paid to the patency of the air ways, control of bleeding and any lacerated wounds intra orally and or extra orally had been sutured by 3/0 black silk suture. X-ray (occipito frontal, oblique lateral, orthopantogram, periapical and occlusal films) was taken and diagnosis of mandibular fracture was

1. Dr. Md. Ruhul Amin, Associate Professor & Head, Department of Oral & Maxillofacial Surgery, Dhaka Medical College, Dhaka.
2. Dr. Md. Akram Pervez Chowdhury, Associate Professor, Department of Oral & Maxillofacial Surgery, Dental Unit, Chittagong Medical College, Chittagong.
3. Dr. Md. Golam Sarwar, Assistant Professor, Department of Dental Public Health, Dhaka Dental College, Dhaka.
4. Prof. Dr. Syed Morshed Moula, Professor & Head, Dental Unit, Chittagong Medical College, Chittagong.
5. Dr. Md. Humayan Kabir, Associate Professor & Head, Dental Unit, Shaheed Suhrawardi Medical College, Dhaka.
6. Dr. Tahmeena Ishrat Ahmed, Assistant Professor, Department of Conservative Dentistry, Dental Unit, Sir Salimullah Medical College, Dhaka.
7. Dr. Ikramul Ahmed, Assistant Professor, Children, Preventive & Community Dentistry, Dhaka Dental College, Dhaka.

Address of Correspondence: Dr. Md Ruhul Amin, Associate Professor & Head, Department of Oral & Maxillofacial Surgery, Dhaka Medical College, Dhaka, Bangladesh. Mob: 01758898742 email: dentist.ruhul@gmail.com

made. Treatment had been done either by closed reduction with inter maxillary fixation under local anesthesia and others by open reduction with internal fixation and inter maxillary fixation under general anesthesia.

Statistical analysis was done using statistical software program SPSS 20, Microsoft Excel.

Results:

A total of 115 out of 185 patients from 2005-2006, aged 3-80 years were treated for mandibular fractures during the study period. The highest prevalence of fractures occurred in the age group 20-29 years. The second group constitutes 145 out of 210 patients from 2014-2015, same aged group were also treated during that period. The maximum occurrence of fractures happened in 20-29 years. There were an overwhelming male predominantly in all ages in both groups (Table-I).

Mandibular fracture was predominantly caused by road traffic accident in the first period and in the second period was the common ones (Table-II). In 2006-2007, Road traffic accident 56.52%, Fall 30.43%, pathological 6.95% and for sports 6.08%.

After eight years period of comparison, Road traffic accident 53.79%, Fall 28.97%, pathological 9.66% and for sports 6.20%.

The site distribution of mandibular fractures is shown in Table-III. In the period between 2006-2007, the mandibular fractures were most commonly seen in the Parasymphysis (40.86%) and Condylar (20.87%). After eight years of assessment, Parasymphysis and Condylar represents the upper values i.e. 33.10 and 31.03 respectively.

The teeth involved fractures regarding male and female seen in 2006-2007 47.82% and after eight years 50.34%.

Table-I
Age and Sex distribution of patients with mandibular fracture

Age in years	Period from 2006 to 2007 ShSMCH				Period from 2014 to 2015 DMCH			
	No	%	Male	Female	No	%	Male	Female
<10	12	13.8	08	04	14	9.65	08	06
10-19	14	16.1	12	02	19	13.10	17	02
20-29	34	39.1	24	10	41	28.27	29	12
30-39	23	26.45	18	05	29	20.00	23	06
40-49	14	16.1	11	03	19	13.10	15	04
50-59	10	11.5	07	03	12	8.27	08	04
60-69	05	5.75	04	01	10	6.9	06	04
70>	03	3.45	02	01	1	.68	01	00
Total	115	100	86	29	145	100	106	39

Table-II
Causes of mandibular fracture

Causes	Period from 2006 to 2007 ShSMCH		Period from 2014 to 2015 DMCH	
	Number	%	Number	%
Road traffic accident	65	56.52	78	53.79
Fall	35	30.43	42	28.97
Pathological	8	6.95	14	9.66
Sports	7	6.08	09	6.20
Total	115	100	145	100

Table-III
Types and Sites of Mandibular fractures

Types	Period from 2006 to 2007 ShSMCH		Period from 2014 to 2015 DMCH		
	Number	%	Number	%	
Parasymphysis	47	40.86	Parasymphysis	47	33.10
Body	13	11.30	Body	13	10.34
Angle	23	20	Angle	23	20
Ramus	8	6.96	Ramus	8	5.52
Condylar	22	20.87	Condylar	22	31.03

Table-IV
Teeth involved in the fracture line

Period from 2006 to 2007 ShSMCH			Period from 2014 to 2015 DMCH		
Male	Female	%	Male	Female	%
42	13	47.82	53	20	50.34

Discussion :

Mandibular fractures occur in a significant proportion of patients requiring prompt diagnosis of fractures and soft tissue injuries. Each year, increasing numbers of patients are admitted to the hospital with this fracture. The characteristics of mandibular fracture depend on various factors such as geographical place, culture, and socioeconomic background of the communities. However, epidemiological surveys across the world have exposed that some aspects of the facial fracture patterns remain similar among the various nations. The male predominance in our study in harmony with other reports from other countries such as Canada⁶, France⁷, India⁸, Iran⁹, Nigeria¹⁰. The predominance of males is due to most of females are housewives and were not greatly involved in the economic activity of the society. There were two studies from Iran showed females were more common than males^{11,12}. This may be due to their living in mountainous (northwestern Iran), environmental and cultural backgrounds women are much more involved in outdoor activities (driving, etc.) resulting in their increase vulnerability to fracture accidents. In addition to that, women were involved in outdoor socioeconomic activities.

The peak incidence of fracture was in 20-29 years. After eight years the increased incidence of fracture in 20-29 which is similar to other studies in other countries because the third decade of life (younger people) represents an active period when individuals are more energetic involved in high speed transportation and outdoor activities¹³⁻¹⁵.

Conclusion:

Road traffic accident and fall the biggest etiological factor of maxillofacial fractures for both period. The demographic pattern is in general similar to those of the literature. This include the higher incidence of fractures in men and women do and in the age span of 20-29. Parasymphysis were the commonest sites in mandibular fracture in both period.

Recommendation : We recommend evaluating the fracture mandible after other next eight years.

References:

1. Kelly DE, Harrigan WF. A survey of facial fractures: Bellevue Hospital 1948-1974. *J Oral Surg* 1975; 33: 146-149.
2. Patrocínio LG, Patrocínio JA, Borba BHC, Bonatti BS, Pinto LF, Vieira JV, Costa JM. Mandibular fracture: Analysis of 293 patients treated in the hospital of clinics, Federal University of Uberlândia, *Rev Bras Otorrinolaringol* 2005; 71: 560-565.
3. Tawfilis AR, Byrne P. Facial trauma, mandibular fractures. *eMedicine* March 2006.
4. Manoli A. Bone healing and repair. In: Mathog RH, editor. *Maxillofacial trauma*. Baltimore/London : Williams and Wilkins ; 1984. p. 59-60.
5. Wang K, Peng GG, Wu JW, Ding XX, Yan X, Xie JY. Retrospective analysis of 2461 patients with maxillofacial fractures. *Zhonghua Kou Qiang Yi Xue Za Zhi* 2011; 46:139-42.
6. Sojot AJ, Meisami T, Sandor GK, Clokie CM. The epidemiology of mandibular fractures treated the Toronto general hospital : a review of 246 cases. *J Can Dent Assoc* 2001; 67 : 640-4.
7. Timoney N, Saiveau M. A comparative study of maxillofacial trauma in Bristol and Bordeaux. *J Craniomaxillofac Surg* 1990; 18 : 154-7.

8. Subhashraj K, Nandakumar N, Ravindranc. Review of Maxillofacial injuries in Chennai, India : a study of 2748 cases. *Br J Oral Maxillofac Surg* 2007 ; 45 : 637-9.
9. Mesgarzadeh AH, Shahamfar M, Azar SF, Shahamfar J. Analysis of the pattern of maxillofacial fractures in north western of Iran : a retrospective study. *Iran J Med Sci* 2011 ; 4:48-52.
10. Ugboko VI, Odusanya SA, Fagade OO. Maxillofacial fractures in a semi-urban Nigerian teaching hospital : a review of 442 cases. *Int J Oral Maxillofac Surg* 1998; 27 : 286-9.
11. Kadkhodaie MH. Three year review of facial fractures at a teaching hospital in northern Iran. *Br J Oral Maxillofac Surg* 2006;44:229-31.
12. Motamedi MH. An assessment of maxillofacial fractures : a 5 year study of 237 patients. *J Oral Maxillofac Surg* 2003 ; 61:61-4.
13. Ozay O, Gursel T, Mahmut UK, Kemal U, Ismail K, Lutfu B. A retrospective study on the epidemiology and treatment of maxillofacial fractures. *Ulus Travma Acil Cerrahi Derg* 2009; 15:262-6.
14. Maximiana C, Sergio Monterio L, Jose Nazareno G. Analysis of 185 maxillofacial fracture at the state of santa carina, Brazil. *Braz Oral Res* 2009, 23 : 268-74
15. Adriane K, Francis L, Kate K. Oral maxillofacial fractures seen at a Ugandan tertiary hospital : a six-month prospective study. *Clinics (Sao Paulo)* 2009; 64:843-8.

Bone healing of different Implant designs and surgical techniques

Shaheen ZA¹, Rehana Z², Bhuiyan ASMS³, Imon AA⁴, Khan MJ⁵

Abstract:

Purpose: To evaluate the bone healing response to different implant root shape designs in a jaw.

Materials and Methods: Three by eight millimeter screw-type short-pitch (SP) and large-pitch (LP) implants and 4.5 × 6 mm plateau (P) implants were placed along the molar and premolar area of the jaw for 2 and 4 weeks. The combination of implant design and final osteotomy drilling resulted in healing chambers for the LP and P implants. The implants were nondecalcified processed to plates of ~30-µm thickness and were evaluated by radiologically or optical microscopy for healing patterns and bone-to-implant contact (BIC). One-way analysis of variance at 95% level of significance.

Results: Radiologically and microscopy showed a ~150-µm region of newly deposited bone along the whole perimeter of SP implants, near the edge of the LP implant threads, and plateau tips for (P) implants. Rapid woven bone formation and filling was observed in regions where surgery and implant design resulted in healing chambers. No significant differences in BIC were observed (p < .75).

Conclusions: Different implant design/surgical protocol resulted in varied bone healing patterns. However, the BIC and bone morphology evolution between implant designs were comparable. Regardless of the combination between implant design and final osteotomy drilling, bone morphology evolution from 2 to 4 weeks was comparable.

Key words: dental implant, design, plateau root shape, screw root shape.

(Bangladesh Dental Journal 2015; 31: 5-9)

Introduction:

Osseointegration is a phenomenon where intimate contact between bone and biomaterials occurs at the optical microscopy level, enabling dental implants to replace load bearing tooth organs and restore their form and intraoral function.¹ Specific to dental implantology, where implant therapy success ratios often exceed 90%,^{2,3} basic and clinical research has attempted to decrease treatment time frames by reducing the healing period for the establishment of osseointegration.⁴

Over the last 40 years, surgical and prosthetic protocols substantially deviating from the classical two-stage

protocol⁵ have been suggested, typically under the rationale of implant design modifications that would enable improved healing and/or biomechanical behavior.^{4,6-9} While a substantial amount of research has been devoted to increasing the implant surface biocompatibility and osseointegration,^{4,6-10} little information has been published to date concerning the host-to-implant response considering the interplay between surgical protocols and implant bulk design.¹¹

The vast majority of the dental implant systems commercially available presents a root shape where different types of thread design are employed for implant insertion and biomechanical fixation. Implant macroarchitecture has evolved to maximize initial stability in the osteotomy and to provide early stress distribution during the early healing phase. Primary stability of the implant allows early osteoblast proliferation without an intervening fibrous union. Typically, the surgical osteotomy for the placement of screw root shape implants comprises a series of drills of increasing diameter to final dimensions that may be either comparable or narrower in diameter to the implant internal thread diameter. Such intimate surgical fit between bone and screw root form implant results in the formation of a blood clot at the region between bone and implant surface, which is subsequently substituted by a new bone.¹² Then, the long-term stability

1. Dr. Zakir Ahmed Shaheen, BDS, MS, Associate Professor & Head, Dental Unit, Dhaka National Medical College.
2. Dr. Zinat Rehana, BDS, DDS, BCS, Junior Consultant, Dhaka Dental College.
3. Dr. A S M Saiyem Bhuiyan, BDS, MPH (NIPSOM), Assistant Professor, Department of SDM, Dhaka National Medical College.
4. Dr. Ashik Abdullah Imon, MS, Resident, Phase-B, Oral & Maxillofacial Surgery Department, BSMMU.
5. Dr. Mohammad Jongish Khan, BDS, Lecturer, Department of SDM, Dhaka National Medical College.

Address of Correspondence: Dr. Zakir Ahmed Shaheen, Associate Professor & Head, Dental Unit, Dhaka National Medical College.

of screw root shape implants is assured by bone modeling and remodeling processes,¹² a phenomenon that has rendered dental implantology one of the most successful treatment options in dentistry.

While screw root shape implants and surgical protocols that result in the placement of the implant surface in contact with the drilled bone (intimate fit) have been vastly used and researched, implant bulk designs combined with different surgical protocol and insertion methods have also been investigated. For example, screw root form implants, where the final surgical drilling diameter is slightly smaller than the thread outer diameter and larger than the thread inner diameter (resulting in a healing chamber) along with plateau root form implants (where healing chambers also result because of implant design and surgical drilling combination), have been investigated.^{7,11} Following placement, the healing chambers are filled with a blood clot, which will result in new bone formation and biomechanical fixation. When large healing chambers are filled with a blood clot, a significantly different healing pattern will take place as compared with screw root shape implants.^{7,11} Irrespective of implant design and its surgical drilling and insertion counterparts, lamellar bone morphology along regions in proximity with the implant surface will develop after several months in function, providing adequate biomechanical support for loading.¹²⁻¹⁴ However, while the healing patterns have been described for both screw^{1,12} and plateau root shapes,^{7,11} temporal comparisons concerning bone histomorphology and histomorphometry are lacking in the literature.

This study was designed to evaluate the bone response and bone-to-implant contact (BIC) to different implant macrodesigns and their associated surgical drilling techniques at early implantation times in mandible and maxilla model.

Materials and methods:

The different implant designs utilized were short-pitch (SP, $n = 12$, thread external diameter = 3.0 mm, thread internal

diameter = 2.5 mm, dual acid-etched surface) and large-pitch (LP, $n = 12$, thread external diameter = 3.0 mm, thread internal diameter = 2.0 mm, dual acid-etched surface) MILO implants (Intra-Lock International, USA) of 3-mm diameter and 8-mm length, and plateau (P, $n = 12$, along the implant body, a minimum difference of 0.5 mm between outer and inner diameters, alumina-blasted/acid-etched surface) implants of 4.5-mm diameter and 6-mm length (Bicon, USA) (Figure 1).

The surgical region was the maxilla and mandible, with three implants placed in each jaw. The first implant was inserted 2 cm below the crest of the alveolar bone of the molar region

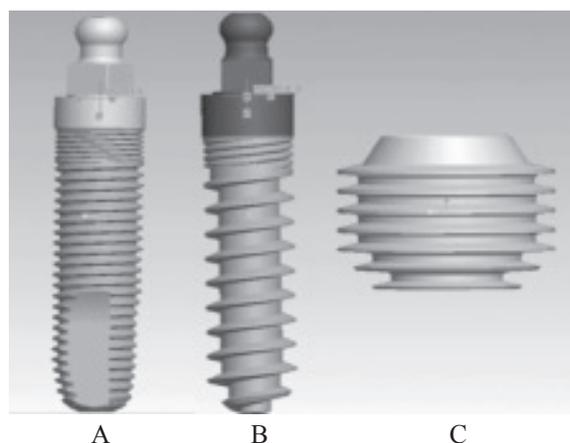


Fig.-1: short-pitch (left), large-pitch (center), plateau (right) root shapes.

The remaining devices were placed along a distal direction at distances of 1 cm from each other along the central region of the bone. The left and right jaw provided implants that remained for 4 and 2 weeks in vivo, respectively. The surgical site distributions for the 2 and 4 weeks comparison for SP, LP, and P implant shapes resulted in an equal number ($n = 6$) of implants per group and implantation time.

All surgical procedures were performed under local anesthesia and antiseptic cleaning with iodine solution at



Fig.-2: Implant macrostructure with respect to the final osteotomy diameter (dashed lines) for the (A) short-pitch implant (implant inner diameter equals the final osteotomy), (B) large pitch (implant inner diameter is 2.0 mm, and osteotomy is 2.5 mm in diameter), and (C) plateau.

the surgical site and surrounding area, a 5-cm incision at the gingiva level was performed. Then, the periosteum was reflected and the alveolar bone was exposed.

Three osteotomies were created along the bone at least 10 mm from each other from proximal to distal. For the SP and LP implants, the osteotomy was made by a 1.5-mm-diameter pilot drill followed by 2.0- and 2.5-mm-diameter burs at 1,200 rpm under saline irrigation. The implants were then driven into the osteotomy sites by means of a torque wrench until a torque of 20 Ncm was reached. For the P implant shape, the initial drilling was performed by a 2-mm-diameter pilot drill at 1,200 rpm under saline irrigation and slow speed sequential drilling with burs of 2.5-, 3.0-, 3.5-, 4.0-, and 4.5-mm diameter. The implants were then press fit into the osteotomies by manual pressure. A schematic representation of the relationship between the final osteotomy and implant dimensions is presented in Figure 2, where direct contact between the SP implant surface and the old bone occurred concurrent with implant placement, whereas healing chambers were created for the LP and P implant designs.

Standard layered suture techniques were utilized for wound closure (4-0 vicryl – internal layers, 4-0 nylon-the skin). Post surgical medication included antibiotics (penicillin), and analgesics (Ketoprophen) for a period of 48 hours postoperatively.

Results:

Surgical procedures and follow-up demonstrated no complications regarding procedural conditions, postoperative infection, or other clinical concerns.

Qualitative evaluation of the biologic response showed intimate contact between cortical and trabecular bone for all implant designs at both implantation times, including regions that were in close proximity or substantially away from the osteotomy walls (see Figures 2 and 3). No significant differences in BIC ($p < .75$) were observed between the SP, LP, and P implant shapes at both 2 and 4 weeks implantation time (Table-I).

The thin sections presented an appositional bone healing mode at regions where intimate contact existed between SP, LP, and P implant surfaces and bone immediately after placement (Figure 3). These regions comprised the vast majority of the SP implant perimeter, the outer aspects of the LP thread, and the tip of the plateaus of the P implant shape. In contrast, the initial healing pattern observed for the LP and P implants' healing chamber, reflecting this combination of implant design and surgical drilling, followed

an intramembranous type healing mode with large amounts of newly formed woven bone (see Figures 3 and 4).

Temporal morphologic changes were observed for the different implant designs. At 2 weeks, the SP implants were primarily surrounded by woven bone throughout its perimeter (see Figure 3A), and initial signs of remodeling and lamellar bone formation were observed at 4 weeks implantation time (see Figure 3B). The same temporal change was observed for the regions of the LP and P implants that were in close proximity with the bone immediately after placement (regions where no healing chamber was formed).

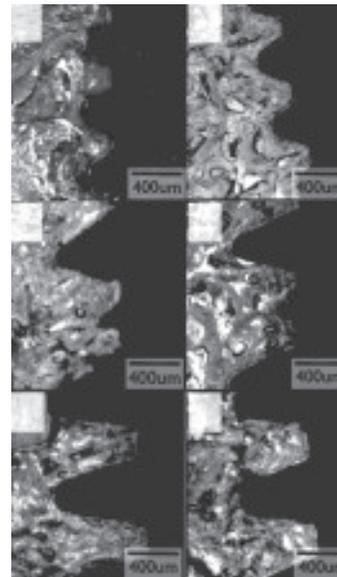


Fig.-3: Toluidine blue-stained nondecalcified thin sections of short-pitch (SP) implants at (A) 2 weeks and (B) 4 weeks, large-pitch (LP) implants at (C) 2 weeks and (D) 4 weeks, and plateau (P) implants at (E) 2 weeks and (F) 4 weeks implantation time. At 2 weeks, newly formed woven bone was observed in direct contact with the surface of the different implant designs, and initial modeling sites were observed in the bone healing chambers of the LP and P implant designs. A qualitative increase in bone organization/maturation was observed for all implant designs at 4 weeks, where initial modeling/remodeling sites were observed in close proximity with the SP implant surface and throughout the chamber created due implant design + surgical drilling for the LP and P implants.

At 2 weeks, LP and P implant chambers were mostly filled with woven bone (see Figure 3, C and E), and initial modeling was also depicted with small amounts of lamellar bone surrounding a primary osteonic morphology. Further

modeling was observed at 4 weeks, where the healing chambers of the LP and P implants showed multiple modeling sites and lamellar bone surrounding a rich vascular array (see Figure 3, D and F).¹¹

Table-I

One way analysis of variance showing no significant differences ($p > .75$) in bone-to-implant contact (BIC) for short-pitch (SP), large-pitch (LP) and plateau (P) implants at both implantation times

Group	BIC (%)	
2W SP	58.55	12.2*
4W SP	72.27	13.36*
2W LP	63.57	12.2*
4W LP	54.45	12.2*
2W P	58.84	13.36*
4W P	66.91	13.36*

*Statistically homogenous group.

Polarized light microscopy and radiologically at 2 weeks implantation time showed that a disorganized, nearly uniform in thickness (~150 μ m) healing zone existed along the SP implant surface (see Figure 4A). Observations under polarized light mode revealed that a substantial amount of woven bone (shown darker on polarized mode because of its randomly organized morphology) was present at the healing chambers created between the LP implant threads or P implant plateaus (see Figure 4, B and C).

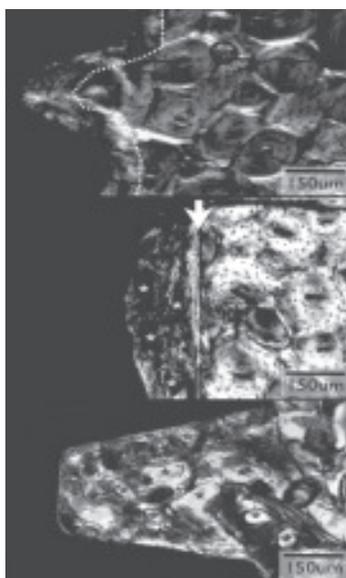


Fig.-4: Polarized light microscopy of (A) short-pitch (SP), (B) large-pitch, and (C) plateau (P) implant designs at 2 weeks implantation time. The dashed line in A depicts the

presence of newly formed woven bone along the perimeter of the SP implant to approximately 150 μ m from the implant surface until reaching the osteonic region of the old cortical bone. The sharp line depicted along the arrow direction in B corresponds to the transition between the healing chamber and the osteonic region of the old cortical bone. Note the presence of blood vessels/trabecular spaces (*) within the healing chamber region. The bone structure presented in C corresponds to the healing chamber of the P implant, where blood vessels/trabecular spaces (*) are surrounded by bone presenting higher polarized light transmittance as a result of microstructural alignment, suggesting the onset of initial modeling of the woven bone microstructure presented throughout the chamber as dark regions because of its lack of organization.

Discussion:

The bone healing process around screw root form implants is a well-known and established series of bio-logic events involving an initial inflammatory process around the implant surface, which is followed by deposition of new bone, modeling, and remodeling.^{1,16} This process results in the anchorage of the implant device, which is prosthetically restored and presents treatment success rates often reported higher than 90%.^{2,3,17,18}

On the other hand, different combinations of surgical drilling and implant designs (either plateau root form or screw root form) may result in void spaces between the implant and the osteotomy, which are filled with a blood clot immediately after implant placement.^{11,19}

It has been previously demonstrated that after a few days, large blood clots filling large healing chambers²⁰ or the regions between bone and implant healing chamber walls^{11,19} will evolve toward a provisional matrix of connective tissue presenting a high content of mesenchymal cells. The matrix adjacent to the drilled bone wall and along the implant surface will be substituted by woven bone trabeculae, and modeling/remodeling processes will result in more mature fiber-aligned lamellar bone.^{11,19} Such pattern of healing may cause a callus-like healing phenomenon, possibly responsible to a rapid biomechanical stabilization of the implant.¹⁴

The histomorphometric results showed that regard-less of the implant and surgical drilling utilized, high degrees of BIC were observed at both 2 and 4 weeks in vivo, supporting that the implant surfaces utilized in the present study were biocompatible and osteoconductive.^{6,7,21} Specific to the healing chamber models, where surface chemistry^{7,19} and hydrophilicity⁷ have been shown to play a significant role on initial healing versus different control surfaces, no significant differences in %BIC were observed between the LP (dual acid-etched surface) and the P (alumina-blasted/acid-etched) implants at both evaluation

times. Thus, despite previously reported differences in surface roughness between dual acid-etched and grit-blasted and acid-etched surfaces (typically rougher than dual acid-etched surfaces^{4,6}), the experimental model and time frames used in the present study were not able to determine BIC differences between the healing chambers' implant surfaces. It should also be noted that BIC is an indicator of implant surface biocompatibility and osteoconductivity, and the final implant in bone biomechanical fixation is a function of the combination of BIC, the mechanical properties of the bone surrounding the implant, implant design, and load nature.¹⁴

Despite the characteristic differences in healing pathway among the groups, where larger amounts of woven bone were required to fill the LP and P implants healing chambers, similar bone morphology evolution was depicted for all implant groups. Thus, the initial signs of woven bone resorption/modeling observed at 2 weeks and its further evolution at 4 weeks suggest that healing kinetics was similar and that bone maturation and mechanical properties achievement may occur in the same temporal frames.¹⁹ However, because of the different implant configurations and amounts of woven bone at different time frames, varied degrees of biome-chemical stability may occur and further investigation concerning bone mechanical properties assessment are desirable to determine potential benefits of one implant design and surgical drilling over the other.

Conclusions:

Based on the results obtained, it was possible to conclude that all materials used in this experiment fulfill their claims of biocompatibility and osteoconduction. Also, although different implant designs and associated surgical techniques leading to varied degrees of initial stability, interaction between bone and biomaterial, no significant differences were observed in bone-to-implant between groups. Finally, regardless of the combination between implant design and final osteotomy drilling, bone morphology evolution from 2 to 4 weeks was comparable.

References:

- Albrektsson T, Branemark PI, Hansson HA, Lindstrom J. Osseointegrated titanium implants. Requirements for ensuring a long-lasting, direct bone-to-implant anchorage in man. *Acta Orthop Scand* 1981; 52:155–170.
- Chuang SK, Tian L, Wei LJ, Dodson TB. Kaplan-Meier analysis of dental implant survival: a strategy for estimating survival with clustered observations. *J Dent Res* 2001; 80:2016–2020.
- Chuang SK, Wei LJ, Douglass CW, Dodson TB. Risk factors for dental implant failure: a strategy for the analysis of clustered failure-time observations. *J Dent Res* 2002; 81:572– 577.
- Albrektsson T, Wennerberg A. Oral implant surfaces: part 2 – review focusing on clinical knowledge of different surfaces. *Int J Prosthodont* 2004; 17:544–564.
- Branemark PI. Osseointegration and its experimental background. *J Prosthet Dent* 1983; 50:399–410.
- Albrektsson T, Wennerberg A. Oral implant surfaces: part 1 – review focusing on topographic and chemical properties of different surfaces and in vivo responses to them. *Int J Prosthodont* 2004; 17:536–543.
- Buser D, Broggini N, Wieland M, et al. Enhanced bone apposition to a chemically modified SLA titanium surface. *J Dent Res* 2004; 83:529–533.
- Butz F, Aita H, Wang CJ, Ogawa T. Harder and stiffer bone osseointegrated to roughened titanium. *J Dent Res* 2006; 85:560–565.
- Coelho PG, Cardaropoli G, Suzuki M, Lemons JE. Early healing of nanothickness bioceramic coatings on dental implants. An experimental study in dogs. *J Biomed Mater Res B Appl Biomater* 2009; 88(2):387–393.
- Yang Y, Kim KH, Ong JL. A review on calcium phosphate coatings produced using a sputtering process – an alternative to plasma spraying. *Biomaterials* 2005; 26:327–337.
- Berglund T, Abrahamsson I, Lang NP, Lindhe J. De novo alveolar bone formation adjacent to endosseous implants. *Clin Oral Implants Res* 2003; 14:251–262.
- Davies JE. Understanding peri-implant endosseous healing. *J Dent Educ* 2003; 67:932–949.
- Davies JE. Mechanisms of endosseous integration. *Int J Prosthodont* 1998; 11:391–401.
- Lemons JE. Biomaterials, biomechanics, tissue healing, and immediate-function dental implants. *J Oral Implantol* 2004; 30:318–324.
- Donath K, Breuner G. A method for the study of undecalcified bones and teeth with attached soft tissues. The Sage-Schliff (sawing and grinding) technique. *J Oral Pathol* 1982; 11:318–326.
- Roberts WE. Bone tissue interface. *J Dent Educ* 1988; 52:804–809.
- Chuang SK, Hatch JP, Rugh J, Dodson TB. Multi-center randomized clinical trials in oral and maxillofacial surgery: modeling of fixed and random effects. *Int J Oral Maxillofac Surg* 2005; 34:341–344.
- Chuang SK, Tian L, Wei LJ, Dodson TB. Predicting dental implant survival by use of the marginal approach of the semi-parametric survival methods for clustered observations. *J Dent Res* 2002; 81:851–855.
- Berglund T, Abrahamsson I, Albouy JP, Lindhe J. Bone healing at implants with a fluoride-modified surface: an experimental study in dogs. *Clin Oral Implants Res* 2007; 18:147–152.
- Cardaropoli G, Wennstrom JL, Lekholm U. Peri-implant bone alterations in relation to inter-unit distances. A 3-year retrospective study. *Clin Oral Implants Res* 2003; 14:430–436.
- Branemark PI, Adell R, Breine U, Hansson BO, Lindstrom J, Ohlsson A. Intra-osseous anchorage of dental prostheses. I. Experimental studies. *Scand J Plast Reconstr Surg* 1969; 3:81–100.

Pectoralis Major Flap: Clinical application in reconstruction of oral defects after oncological resection

Rahman MM¹, Mamood MA², Rubel ATMT³, Uzzaman MH⁴, Talukder MA⁵, Haider IA⁶, Ahmed M⁷

Abstract:

The use of PM pedicle flap in the closure of intraoral or through and through defects after surgical excisions of oral pathologies has gained popularity, probably due to its versatility. The aim of this study is to evaluate the clinical application of PM flap in various oral defects and objective is to evaluate the outcome of PM flap for medium to larger defect reconstruction.

In this study 40 patients with 28 male and 12 female were included with advanced oral malignancy that developed postsurgical large intra oral defect or through and through oral defect. On analysis of outcome 2 patients had complete flap necrosis. Minor complication like partial flap necrosis, wound dehiscence/infection and fistula formation founded in 8 cases. All the patients had acceptable cosmetic and functional outcome except excessive bulk in 3 patient and neck contracture in 2. Satisfactory mouth opening and reasonably good quality of speech and deglutition were observed in all patients.

PM remains an excellent reconstructive option for large oral defect in spite of increased use of micro vascular flap in a limited facility center.

(Bangladesh Dental Journal 2015; 31: 10-14)

Introduction:

Reconstruction of post excision defects of oral cavity malignancies is still a challenge to reconstructive surgeons. These complex defects often have extensive loss of mucosa, bone, soft tissue and skin. Ideal reconstruction should replace all these structures to achieve acceptable aesthetic and functional results¹. Primary reconstruction of such defects with microsurgical techniques is now the protocol in all standard cancer centers². But in view of the long operative time, the need

for expertise and infrastructure and the large work volume in developing countries, microsurgical reconstruction cannot be offered to all patients with such defects.

Reconstruction with PM flap gives a better outcome with a minimum complication rate. Its versatility provides wider clinical application in oral defect reconstruction. As the donor site morbidity is minimum with a low complication rate the choice of PM flap for oral reconstruction is gaining popularity among the surgeons from low socio-economic country.

The PM flap has played an important role in head and neck reconstructive surgery since its introduction by Ariyan in 1979³. The advantages of this pedicle flap include proximity to the head and neck, the relative ease with which it is harvested, and its overall reliability in terms of flap survival and plays important role in patients those for whom a free flap is not indicated but are in need of a salvage operation because of a failure of a previous free flap, those with local problems such as fistula, and those who are in need of the coverage of the exposed vessels for prevention and treatment purposes. The main disadvantage associated with the use of the PM flap for reconstruction of oral cavity is the thickness of the flap, which is determined by the amount of subcutaneous fat between the pectoralis muscle and the overlying skin paddle⁴.

The current study was conducted to assess the versatility and the reliability in clinical application of PM flap in head and neck reconstruction. Also the final functional and aesthetic result was evaluated.

1. Dr. Md. Masudur Rahman, BDS, MS (OMS), Assistant Professor, Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital.
2. Dr. Md. Apel Mamood, BDS, FCPS (OMS), Registrar, Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital.
3. Dr. ATM Tarifuzzaman Rubel, BDS, FCPS (OMS), Assistant Professor, Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital.
4. Dr. Md. Helal Uzzaman, BDS, MS (OMS), Assistant Professor, Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital.
5. Dr. Morshed Alam Talukder, BDS, FNST, MS(OMS), Associate Professor, Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital.
6. Prof. Dr. Ismat Ara Haider, BDS, DDS, MS (OMS) Professor & Head, Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital.
7. Prof. Dr. Mohiuddin Ahmed, BDS, FCPS (OMS), PhD (Japan) Principal, Sapporo Dental College.

Address of Correspondence: Dr. Md. Masudur Rahman, BDS, MS(OMS), Assistant Professor, Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital.

Patients and methods:

This study was carried out between June 2011 and December 2014 on 40 patients of oral cavity malignancy at the Department of Oral & Maxillofacial Surgery, Dhaka Dental College Hospital and Dhaka. In all cases histopathological examination were performed to confirm the diagnosis. All the patients were stage IV based on clinical and radiological (CT or MRI) examination. Reconstruction with PM flap was done in patients who developed through and through defects after oncological resection. Patients with distant metastasis and medically compromised (uncontrolled DM, cardiac problems, immuno compromised, immuno suppressed, etc.) were excluded from this study. Preoperative assessment included routine complete blood count, bleeding and coagulation profile, kidney functions, ECG. An echo cardiography was done for patients presented with a past history of cardiac problems and in over 50 years of age at the time of surgery. The flap design to fit the defect was planned preoperatively. The Consent form with the explanation of the extent of surgery, reconstruction technique and donor site defect and the potential complications were discussed and signed by the patient.

The flap was designed depending on the site, size and shape of the defects. The skin island was usually below and between the nipple and sternum. In case of female flap was designed from sub mammary region. The flap was elevated from a distal to a proximal direction. The pedicle of the flap (the acromiothorathic artery and the lateral thoracic artery) was identified and preserved. During the flap elevation the pectoral fascia and the muscle were secured to the skin to protect the perforators. The flap was elevated up as far as the clavicle where the pedicle was made narrow. The lateral pectoral vessels left intact or divided depending on the flap volume and tension. In all cases the donor site were closed primarily.

The postoperative complications and the total hospital stay were all documented. Follow-up of patients involved clinical examination and radiological investigation for the assessment of local/nodal recurrence and /or distant metastasis. The final aesthetic and functional (Swallowing, deglutition, speech) results were also evaluated in follow up.

Result:

Out of 40 patients 28 male and 12 female patients were included and 5 patients had Fungative skin lesion, 18 had alveolus and cheek involving the skin, 14 patients had Retromolar area with floor of the mouth and 3 had lesions at the Alveolus with involvement of skin over chin.

Of the 40 patients included in this study, all achieved satisfactory cover except 2 patients who had complete

flap necrosis and 2 had partial flap necrosis with fistula formation. One patient was later reconstructed with latissimus dorsi flap and other was by free antero lateral thigh flap. Two patients with partial flap necrosis recovered with regular dressing.

Four patients had wound complication like dehiscence and infection were managed by regular dressing and appropriate antibiotic application.

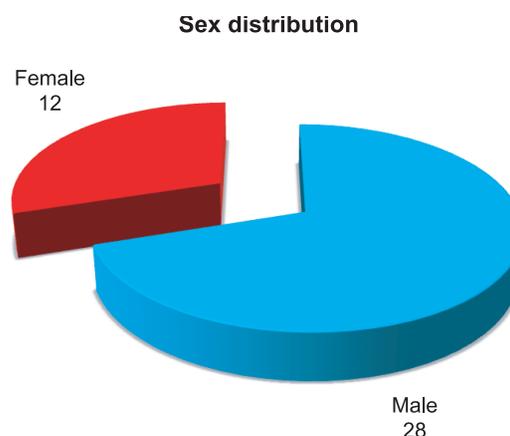


Fig.-1: Pie chart of sex distribution.

Table-I

Site of the primary lesion.

Site	No. of patients
Fungative skin lesion	05
alveolus and cheek involving the skin	18
Retromolar area with floor of the mouth	14
Alveolus with involvement of skin over chin	03

Table-II

Outcome (Complication)

Complication	No. of patients	
Flap Necrosis	Complete	02
	Partial	02
Wound dehiscence	03	
Wound infection	01	
Fistula	02	

Secondary closure was done after wound (fistula) debridement in case of fistula (of two patients) formation.

Table-III

Outcome (Aesthetics)

Aesthetical factors	No. of patients
Excessive Bulk	03
Neck contracture	02

From the aesthetic point of view all had satisfactory result but three had excessive bulk while other two developed neck contracture.

All the patients had satisfactory mouth opening ranges from 22 mm to 30 mm. with no major complaints of difficulty in swallowing and speech was found in the follow up.

Table-IV
Outcome (Function)

Function	Quality
Mouth Opening	adequate (>22 mm)
Speech	good
Swallowing	good



Fig.-1.1: Mouth opening 2 years after surgery.



Fig.-1.2: Appearance 2 years after surgery.



Fig.-2.1: Presenting with skin involving Oral SCC.



Fig.-2.2: Immediate post-operative.



Fig.-2.3: Ten days after surgery.



Fig.-3.1: Eighteen month after surgery.



Fig.-3.2: Mouth opening eighteen month after surgery.

Discussion:

After Ariyan's⁵ description in 1979, the pectoralis major myocutaneous flap has been the workhorse for head and neck reconstruction. Easy reach of the flap, reliable vascularity, technical simplicity, coverage of the exposed vessels by muscle after neck dissection and the ability to provide bulk made it a popular option amongst oncoreconstructive surgeons. Although the introduction of micro vascular flap have superseded the utilization of the PM flap in the reconstruction of oral defects by virtue of its pliability and less bulk. One stage reconstruction, no need to change the patient's position, and the large cutaneous island are most favorable reasons to select the PM flap for head neck reconstruction.

Total flap necrosis observed in 2 patients (5%) while Shah et al. (1990)⁶ and Kroll et al. (1990)⁷ showed total flap necrosis occurred extremely seldom.

In our study partial flap necrosis found 5% (2 in number), in the published reports by shah et al. (1990)⁶ who reported 29% of partial flap necrosis and Mehta et al. (1996)⁸ with 25% of partial flap necrosis.

Other minor complications like wound dehiscence, wound infections were found in 4 patients (10%) and all of them recovered by local wound care. In case of fistula formation

of 2 cases (5%) local debridement and secondary closure solved the issue.

Functional result was good and aesthetically later we found good color and texture matching and thread like scar mark over the face.

Although reduced mouth opening found ranging from 22 mm to 30 mm, but it is adequate for daily dietary intake. The speech was found to be hampered little in comparison to preoperative stage.

Incidence of donor region complication was 5 % (2 patients) in this series. As the donor sites were always closed primarily may lower the incidence of donor site complications than in previously published data. Biller et al. (1981)⁹ reported 7%, Baek et al. (1982)¹⁰ 5% and Ossoff et al. (1983)¹¹ 8% of donor site complications.

Like other flap it has few disadvantages. Neck recurrences may remain hidden initially under flap which makes delay in detection of early recurrence. Violation of breast symmetry and often inclusion of breast tissue in the flap occurs in female.

Conclusion:

Despite the increased use of free flaps, PM flap still remains as an excellent choice for oral reconstruction especially in the centers of limited facilities. Large number of patients

could be useful in assessment of the final functional and the aesthetic outcome of the PM flap as compared to the free flaps.

References:

1. M. Ao, K. Asagoe, M. Meeta, F. Nakagawa, R. Saito and Y. Nagase, Combined anterior thigh flaps and vascularised fibular grafts for reconstruction of massive composite oromandibular defects, *Br J Plast Surg* **51** (1998), pp. 350–355.
2. F. Demikran, H.C. Dheu, F.C. Wie, H.H. Chen, S.G. Jung and S.P. Hau *et al.*, The versatile anterolateral thigh flap a musculocutaneous flap in disguise in head and neck reconstruction, *Br J Plast Surg* **53** (2000), pp. 30–36.
3. Ariyan S: The pectoralis major mycutaneous flap. *Plast Reconstr Surg* **63**:73-81,1979.
4. Shindo M, Costantino P, Friedman C, et al: The pectoralis major myofascial flap for intraoral and pharyngeal reconstruction. *Arch Otolaryngol Head Neck Surg* **118**:707-711,1992
5. Ariyan S. The pectoralis major myocutaneous flap. A versatile flap for reconstruction in the head and neck. *Plast Reconstr Surg* 1979; **63**:73–6.
6. Shah JP, Haribhakti V, Lore TR, Sutaris P. Complications of the pectoralis major myocutaneous flap in head and neck reconstruction. *Am J Surg* **160**:352-355,1990.
7. Kroll SS, Goepfert H, Jones M, Guillamondegui O, Schusterman M. Analysis of complications in 168 pectoralis major myocutaneous flaps used for head and neck reconstruction. *Ann Plast Surg* **25**:93-97,1990.
8. Mehta S, Sarkar S, Kavarana N. Complication of the pectoralis major myocutaneous flap in the oral cavity. A prospective evaluation of 220 cases. *Plast Reconstr Surg* **98**:31-37,1996.
9. Biller HF, Baek SM, Lawson W, Krespi YP, Blaugrund SM. Pectoralis major myocutaneous island flap in head and neck surgery - analysis of complications in 42 cases. *Arch Otolaryngol* **107**:23-26,1981.
10. Baek SM, Lawson W, Biller HF. An analysis of 133 pectoralis major myocutaneous flaps. *Plast Reconstr Surg* **69**:460-467, 1982.
11. Ossoff RH, Wurster CF, Bertold RE. Complications after pectoralis major myocutaneous flap reconstruction of head and neck defects. *Arch Otolaryngol* **109**:812-814,1983.

A study on dental caries and oral health care practice among the primary school children in Puthia upazilla under Rajshahi district

Parvin N¹, Shoheli S²

Abstract:

Background: Bangladesh is a low-income developing country with many children suffering from malnutrition and poor health, especially among the deprived sectors of the population. Dental caries is a common problem among children in Bangladesh and our country has very limited facilities for dental treatment and a high population to dental provider ratio (100,000/2). **Objectives:** Attempt has been made to determine the oral hygiene status and dental caries experience of primary school going children in Puthia Upazilla under Rajshahi District. **Methodology:** A community based cross-sectional type of descriptive study was conducted over 301 students of class I to Class V in government primary school of Puthia Upazilla, Rajshahi where the students come mainly from the neighboring locality. Face to face formal interview and clinical examination of the oral cavity was done, and a pre-tested questionnaire was used to collect data. **Results:** Among all the respondents, 33.89% of them brush their teeth once daily, 59.47% brush their teeth twice daily, 6.31% brush their teeth more than two times in a day and only 0.33% brush teeth irregularly. Among the boys (49.50%) had dental caries and among the girls (50.50), 44.74% had dental caries. **Conclusion:** Parents should know about the problems of teeth and oral cavity and must visit dentist regularly. Children should be properly instructed about maintaining oral hygiene.

(Bangladesh Dental Journal 2015; 31: 15-19)

Introduction:

Dental caries are most common oral diseases showing striking geographic variations, socio-economic patterns and severity of distribution all over the world. Though many studies are conducted in different parts of the world, the review of literature indicates that there is a great deficiency in baseline data concerning the oral health of Bangladeshi school going children. There is lack of sufficient information regarding the frequency and prevalence of dental caries and oral hygiene status in many parts of Bangladesh, especially in the rural areas.

Bangladesh is a low-income developing country with many children suffering from malnutrition and poor health, especially among the deprived sectors of the population. Dental caries is a common problem among children in Bangladesh and our country has very limited facilities for dental treatment and a high population to dental provider ratio (100,000/2). This could possibly contribute to further deterioration of the oral hygiene status of the children in

Bangladesh. So an attempt has been made to determine the oral hygiene status and dental caries experience of primary school going children in Puthia Upazilla under Rajshahi District.

In our country perspective, in the rural area a large number of primary school going children are the sufferers mainly from dental caries and lack of oral hygiene. It may be due to their improper oral health care practice and chewing habit in their school premises. There is lack of studies on dental health status in Bangladesh. There have been no population-based survey done in the country over the past years and thus, no or insufficient statistics on dental health problems or seeking dental healthcare is available which again reminds us of the necessity of a study for policy making and planning of a preventive programme on dental health care for different segments of the population. So, in this field in depth studies should be carried out to find out the prevailing situation and the associated risk factors. This exploratory study is expected to find out the risk factors associated with dental caries and oral health, which might help in reducing the knowledge gap towards designing a preventive measure for maintaining proper oral health care at primary healthcare level.

Methodology:

A community based cross-sectional type of descriptive study was conducted over 301 students of class I to Class V in government primary school of Puthia Upazilla, Rajshahi

1. Dr. Nishat Parvin, BDS, DDS, Assistant Professor, Department of Dental Public Health, Rajshahi Medical College Dental Unit, Rajshahi.

2. Dr. Shahina Shoheli, BDS, Lecturer, Rajshahi Medical College Dental Unit, Rajshahi.

Address of Correspondence: Dr. Nishat Parvin, BDS, DDS, Assistant Professor, Department of Dental Public Health, Rajshahi Medical College Dental Unit, Rajshahi.

where the students come mainly from the neighboring locality. Face to face formal interview and clinical examination of the oral cavity was done, and a pre-tested questionnaire was used to collect data. The questionnaire consisted of socio-demographic information e.g. age, grade, sex, religion, literacy status of both mother and father, questions regarding practice of oral hygiene and with the help of a check-list the oral hygiene was examined for the status and dental caries by the data collector. The questionnaire covered the following indicators of oral hygiene, i.e. frequency of tooth-bruising, material used for tooth-bruising, technique of bruising, type of cleaning method of mouth and chewing habit of the respondents. Each student was observed thoroughly to assess their status of oral hygiene as stated above.

Data were analyzed manually with the help of a master sheet and calculator. For frequency distribution descriptive statistics were used, Result were presented by tables and charts. Relationship was assessed between dependent & independent variables.

Results:

Table-I

Distribution of the respondents according to age and sex

Age in years	Respondents		Total No. (%)
	Boys No. (%)	Girls No. (%)	
>6	0(0.0)	5(100)	5(1.66)
7-8	41 (46.59)	47 (53.41)	88 (29.24)
9-10	71 (45.51)	85 (54.49)	156 (51.83)
11-12	29 (55.77)	23 (44.23)	52 (17.27)

Table-I shows sex distribution of the respondents. Out of 301 respondents, 47.18% were boys and 52.82% were girls. About more than half of respondents {156 (51.83%)} age were in between 9 & 10 years, Less than 2 percent were e'6 years old, 88 (29.24%) were in between 7 & 8 years and 52 (17.27%) were in between 11-12 years.

Table-II

Distribution of the respondents according to Parents' education of the respondents

Levels of literacy	Parents		Total No. (%)
	Fathers No. (%)	Mothers No. (%)	
Illiterate	47 (46.53)	54 (53.47)	101 (16.78)
Up to class V	85 (42.50)	115 (57.50)	200 (33.22)
Class VI to HSC	127 (54.74)	105 (45.26)	232 (38.54)
Above HSC	42 (60.87)	27 (39.13)	69 (11.46)
Total	301 (50.0)	301 (50.0)	602 (100)

Total-II shows education status of the parents of the respondents. Among 101 illiterate parents, 46.53% were fathers and 53.47% were mothers. About 33% of the parents had primary education, 38.54% had secondary education and 11.46% had graduation or more educational degree.

Table-III

Distribution of the respondents by chewing habits

Chewing materials	Respondents	
	No.	%
Chocolate	209	69.43
Chewing gum	76	25.25
Others	16	5.32
Total	301	100

Table-III shows the distribution of the respondents by chewing habits. Here it was found that out of 301 respondents, 69.43% had habit of chocolate chewing 25.25% had habit of chewing gum and 5.32% had habit of chewing other materials.

Table-IV

Distribution of respondents by oral hygiene practices

Frequency of Tooth-Bushing	Respondents	
	No.	%
Once Daily	102	33.89
Twice Daily	179	59.47
>2 Times	19	6.31
Irregular	01	0.33
Total	301	100
Technique of Tooth-Bushing		
To & fro both surface	230	76.41
Up & down Both surface	48	15.95
Outer surface only	23	7.64
Total	301	100
Cleaning instruments		
Tooth Brush	298	99.01
Wood Stick	0	0.0
Finger	2	0.66
Others	1	0.33
Total	301	100
Cleaning Materials		
Tooth paste	258	85.72
Tooth powder	42	13.95
Charcoal	1	0.33
Others	0	0.0
Total	301	100

Table-IV shows the distribution of respondents by frequency of tooth brushing. Among all the respondents, 33.89% of them brush their teeth once daily, 59.47% brush their teeth twice daily, 6.31% brush their teeth more than two times in a day and only 0.33% brush teeth irregularly. Out of 301 respondents, 76.41% of them brush their teeth to and fro both surface, 15.95% brush their teeth up and down both surface and 7.64% brush their teeth outer surface only. Among all the respondents, (99.01%) of them clean their teeth with toothbrush, 0.66% use finger and only 1 student (0.33%) brush his teeth by other method. Here out of 301 respondents, 85.72% of them use toothpaste for brushing 13.95% of them use toothpowder and only one student i.e. 0.33% use charcoal for brushing.

Table-V
Distribution of respondents by dental caries

Respondents	Dental caries		Total No. (%)
	Present	Absent	
Boys	72 (48.32%)	77 (51.68%)	149 (49.50)
Girls	68 (44.74%)	84 (55.26%)	152 (50.50)
Total	140	161 (53.49%)	301 (100)

Table-V shows that among the boys (49.50%) had dental caries and among the girls (50.50), 44.74% had dental caries.

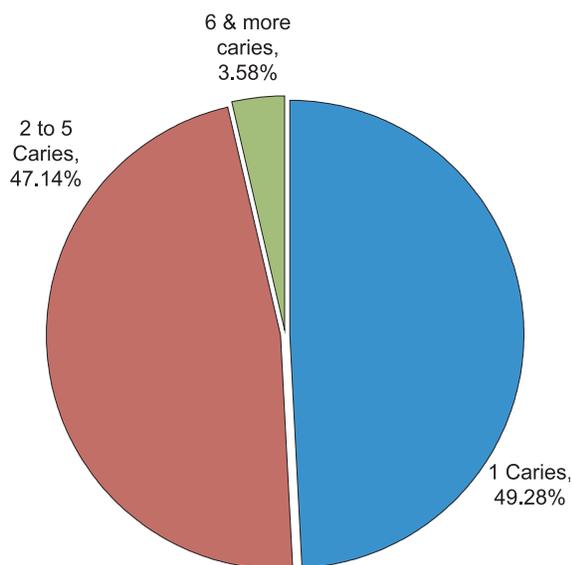


Fig.-1: *Distribution of respondents by dental caries*

Figure -1 shows the condition of Dental caries among the respondents. Here it was found that 49.28% of the respondents had at least one dental caries, 47.14% of them

had 2 to 5 dental caries and only 5 student's i.e.3.58% had 6 and more dental caries.



Fig.-2: *Distribution of respondents by no. missing teeth*

Figure 2 shows the number of missing teeth. Here it was found that out of 301 students 92 had missing teeth and among them 65.21% had at least one tooth missing, 32.61% of them had 2 to 5 teeth missing and only 2 students i.e. 2.18% had 6 and more teeth missing.

Table-VI
Distribution of respondents by number of filled teeth

Number of filled teeth	Respondents	
	No.	%
At least 1	4	100
2 to 5	0	0
6 and more	0	0
Total	4	100

Table-VI shows that only 4 students had filled teeth and all of them one tooth filling.

Discussion:

This study was carried out among the primary school children in a selected primary school at Puthia Upazilla under Rajshahi District to observe oral hygiene practice and dental caries. The general Prevalence rate of positively detected cases of any level of dental caries was 83% among children in both the first and fourth grades for the 2 years (Gandeh & Millat, 2000). It can be seen from both table that female children showed higher rates in both grades. Rates of dental caries showed significant difference according to social class. Low social classes had a significantly higher rate in both sexes ($P < 0.0001$) (Adekoye CA et al, 2006). In this study, the dental caries among different age group of the respondents. Here it was found that among the children aged 6 years or less, 40% had dental caries, 67.03% had dental caries in the age group of 7 to 8 years or less, 40% had dental caries, 67.03% had dental caries in the age group of 7 to 8 years, 36.77% had dental caries in the group of 9 to 10 years and 44% had dental caries in the age group of 11 years or more. The prevalence of caries was 13.9% and the mean DMFT was 0.14. The mean DMFT was low in both public (0.08) and

private (0.18) schools. The decayed component (D) of the DMFT accented for 77.2% while filling (F), missing teeth (M) accounted for 15.8% and 7% respectively. The probability of having caries experience DMFT > 0 was significantly associated with the type of school $P > 0.05$ (Petersen PE and Esheng Z 1998).

In this study it was found out of 301 respondents, 76.41% of them brush their teeth to and fro both surface, 15.95% brush their up and down both surface and 7.64% brush their teeth outer surface only. Here it was found that 49.28% of the respondents had at least one dental caries, 47.14% of them had 2 to 5 dental caries and only 5 students i.e. 3.58% had 6 and more dental caries. In a study it was found that at age 6, 86 percent of the children were affected by dental and age 12 the mean DMFT index was 1.0. (Datta P, Datta PP, 2013).

Some studies showed that 72% student had dental caries, Prevalence of dental caries was assessed according to different socio-demographic parameters. It is seen that 61.2% of the students aged 13 years, and 80% of the students aged more than 13 years had dental caries, So, prevalence of dental caries increased with increase in age and this difference is statistically ($p=0.027$). It was seen that 68.8% of boys had dental caries as compared to 76% girls having the same problem. However, this difference is not significant statistically (Gladwell C, 2012; Heba, 2014).

Students were asked about their habit of brushing the teeth. It is seen that 47.4% the students who used to brush twice a day had dental caries as compared to 76.84% of the students having habit of brushing the teeth either once daily or not every-day suffered from dental caries. This difference is statistically significant. 56.41% of the students having habit of washing mouth after taking food always or most of the time had presence of dental caries. The prevalence is 80% among students who rarely used to wash mouth after taking food. This difference is again statistically significant (Dania EA, 2013). Caries prevalence and mean dmft/DMFT score of 5-6-year-olds was 52%, 1.59 and 41%, 0.84 respectively (Joshi N, 2013)

The study reported low dental visit with 93% of children having never visited a dentist or a health care service. Although 61% children reported receiving oral health education, 82% did not know about fluoride and its benefit on dental health. About 50% children reported bacteria as the main cause of tooth decay and 23% as not brushing teeth for gingivitis. Among the 361 school children clinically examined, overall dental caries prevalence was 45% (Brighton TM, 2013)

The prevalence of dental caries was significantly higher in Nairobi West District (37.5%) than in Mathira West District (24.0%) (OR=1.9 CI=1.3-2.7). The major portion of caries experience for both districts was decayed teeth (Jahani Y, 2013). The national prevalence of dental caries and its severity in children in Saudi Arabia was estimated to be approximately 80% for the primary dentition with a mean dmft of 5.0 and approximately 70% for children's permanent dentition with a mean DMFT score of 3.5 (Rebecca H, 2004). The prevalence of dental caries was 69.12%. The present study showed a high prevalence of dental caries in both urban (59.5%) and rural (40.8%) children. The mean DMFT in urban and rural areas was 1.29 and 0.66 respectively. Furthermore, data showed a general lack of knowledge on oral health issues by the participants.

Conclusion:

This cross sectional type of descriptive study was carried out among the primary school children at Puthia. Most of the school going children used tooth brush and paste for cleaning their teeth. Among the children 46.51% had dental caries, 30.56% children had missing teeth and 1.33% of them have taken conservative dental treatment as filling. Parents should have the proper education about oral hygiene of their children specially of growing age like school going children. Parents should know about the problems of teeth and oral cavity and must visit dentist regularly. Children should be properly instructed about maintaining oral hygiene.

References:

1. Adekoya-Sofowora, CA Nasir, WO Oginni, AO and Taiwo, M. Dental caries in 12-year-old suburban Nigerian school children. *Afr Health Sci* 2006; Sep 6(3): 145-150.
2. Brighton, TM Lovemore, M Benford, M. Dental caries and oral health practice among 12 year old school children from low socio-economic status background in Zimbabwe. *Pan African Med J* 2013; 14:164
3. Datta, P and Datta, PP. Prevalence of Dental Caries among School Children in Sundarban, India. *Epidemiol* 2013; 3:135.
4. Dixit, LP Shakya, A Shrestha, M and Shrestha, A. Dental caries prevalence, oral health knowledge and practice among indigenous Chepang school children of Nepal. *BMC oral Health* 2013; 13:20.
5. Gandeh, MBS and Millat, WA. Dental caries among schoolchildren: report of a health education campaign in Jeddah, Saudi Arabia. *East Mediterranean Health J* 2000; 6(2/3): 396-401.
6. Gathecha, G Makokha, A Wanzala, P Omolo, J and Smith, P. Dental caries and oral health practices among 12 year old children in Nairobi West and Mathira West Districts, Kenya. *Pan African Med J* 2012; 12:42.

7. Gladwell, G Anselimo, M Peter, W Jared, O and Perry, Smith. Dental caries and oral health practices among 12 year old children in Nairobi West and Mathira West Districts, Kenya. *Pan African Med J* 2012; 12:42.
8. Heba, A A Richard, G Watt HP Aubrey, S and Georgios, T. Dental Caries and Growth in School-Age Children. *Pediatrics* 2014; 133(3):e616-e623.
9. Jahani, YR Eshraghian, M Foroushani, A Nourijelyani, K Mohammad, K Shahravan, A and Alam, M. 2013. Effect of socio-demographic status on dental caries in pupils by using a multilevel hurdle model. *Health* 5:1110-1116.
10. Lonim, P D Ajay, S Manah, S and Ayush, S. Dental caries prevalence, oral health knowledge and practice among indigenous Chepang school children of Nepal. *BMC Oral Health* 2013; 13:20.
11. Park K. *Park's Textbook of Preventive and Social Medicine*. 22nd ed. Publisher: Banarsidas Bhanot, 1167, Prem Nagar, Jabalpur, India. 2013: 486,638.
12. Petersen, PE and Esheng, Z. Dental caries and oral health behavior situation of children, mothers and schoolteachers in Wuhan, People's Republic of China. *Int Dent J* 1998. 48:210-216.
13. Rahman, M Alamgir, AKM Hafez, MA. Rashid, Khabir and Hyder's *Textbook of Community Medicine and Public Health*. 5th edn. MAH Publishers, Uttara, Dhaka. 2012.
14. Rebecca, Hlison, D Nicoll, P Adair, M and Cynthia, MP. Risk factors for dental caries in young children: a systematic review of the literature. *Community Dental Health* 2004; 21(Supplement), 71-85.

Pattern of use of Amoxicillin and Penicillin in Upazila Health Complex of Bangladesh

Hoque ANMN¹, Zaman R², Hoque ME³

Abstract:

Upazila health complex is one of the most important part of the government health service system. Most of the in Bangladesh live in rural area. A cross sectional descriptive type of study was conducted at the upazila health complex with the objective to determine the pattern of use of antibiotic in upazila health complex of Bangladesh. The study was conducted to determine Amoxicillin and Penicillin indented and dispersed in the upazila health complex in the last five years. The study has been provided with checklist as a data collection tools and from the hospital records of the store keeper. The store keeper has been interviewed. A focus group discussion with the doctors of that upazila health complex has been conducted to take their opinion regarding the pattern of use of antibiotics. There were sixteen types of antibiotics were being indented and dispersed in various amount. The amount of antibiotics were varied from year to year due to demand of the hospital. There were 40% Amoxicillin and 10% Penicillin used in the year of 2012. 90% of Amoxicillin and Penicillin are used in outdoor and 8% in indoor and 2% in emergency department of selected upazila health complex. Based on the results of this study, it can be concluded that the amount of indented and dispersed of different types of antibiotics in the upazila health complex of Bangladesh greatly varied.

(Bangladesh Dental Journal 2015; 31: 20-22)

Introduction:

Bangladesh is a developing country with more than 75% of population of the total population living in rural areas containing 82% of the total poor people. About 36% of the population continue to live below the national poverty line. Basic needs of living particularly health and education remain largely unmet and only less than 40% of the population has access to basic health care (Islam, 2006; WHO, 2006)¹.

The administration of primary health care by Bangladesh government is carried out through a surprisingly extensive infrastructure of facilities within each of the 64 districts. The districts are divided into 485 upazilas which are subdivided into unions. Each union consists of approximately 25000 people and health services are directed by the Ministry of Health and Family Welfare (MOHFW)². The upazilas consisting of unions, represent the rural areas

of the country. Primary health care service is offered from the union levels called 'Union Health Centers'.

In response to WHO's essential drugs concept such as access to essential medicines, quality of all medicines and rational use of drugs (WHO, 2003), Bangladesh pioneer a National Drug Policy (NDP) in 1982. Main objectives of this policy were to ensure easy accessibility to essential drugs with affordable price, standard quality of drugs through appropriate prescribing and dispensing by the health care professionals (Islam, 2006)⁴.

Despite the fact that majority of the population live in rural areas, the government health care system remains a very minor source of health care there (Roy, 1997)⁵. Treatments in the rural areas are mainly (about 45%) provided by unqualified health personnel including medical assistants, mid-wives, village doctors, community health workers in comparison to that by qualified medical graduates (only 10-20%) (Ahmed, 2005)⁶. Unskilled personnel are less aware of the deleterious effects of inappropriate antibiotic use. Over prescribing and inappropriate prescribing are very common in the country due to unethical practices of both health professionals and drug manufacturers (Ahmed, 2003)⁶.

Unqualified drug sellers offer alternative drugs when the prescribed drugs are out of stock or refill prescription without consulting the prescriber (Kigotho, 1997; Dua et al, 1994)⁷. A high proportion of patients in some developing

1. Dr. A. N. M Nazmul Hoque, BDS, MS, MCPS, MPH, Assistant Professor (Conservative Dentistry), Sylhet MAG Osmani Medical College.

2. Dr. Rokeya Zaman, BDS, MS, Assistant Professor, Comilla Medical College.

3. Professor Dr. Md. Emdadul Hoque, Professor & Head, Department of the Nutrition & Biochemistry, NIPSOM, Mohakhali.

Address of Correspondence: Dr. A.N.M Nazmul Hoque, Assistant Professor (Conservative Dentistry), Sylhet MAG Osmani Medical College. E-mail: mn.kodalia@gmail.com Mob: 01712242260

countries are treated by untrained practitioners simultaneously with oral and injectable antibiotics administered with contaminated needles and syringes (Rahman et al, 1998) for misdiagnosed noninfectious diseases (Fagbule and Kalu, 1995). In most developing countries including Bangladesh, antibiotics can be purchased without prescription, even when the practice is not legal. Drug vendors usually have little or no knowledge of required dosage regimen, indications, or contraindications (Goel et al, 1996; Hakk, 1988)¹¹. Based on the prevailing situation and practice, the present survey was conducted to have a sight at the severity of the situation while putting forward some recommendations in this regard.

The Directorate of Drug Administration (DDA) under the Ministry of Health and Family Welfare, Government of the People’s Republic of Bangladesh, is the drug regulatory authority of the country. Mission of the DDA is to ensure that the common people have easy access to useful, effective, safe and good quality essential and other drugs at affordable price. To test the quality of pre-registration and post marketed drugs and medicines, there are two government Drug Testing Laboratories in the country, one in Chittagong under the direct administrative control of the DDA and the other in Dhaka under the control of the Institute of Public Health (IPH) of the Directorate General of Health Services⁸.

Methodology:

It is a descriptive type of cross sectional study. The study was carried out at the upazila health complex of Doulotpur, Manikganj in Dhaka division. Antibiotics of Amoxicillin and Penicillin was indented and dispersed in that upazila and the service provider. A check list and a focus group discussion were prepared at the beginning of the study. The has been provided with check list or data collection tools and from the hospital records of the store keeper. In upazila health complex, a store keeper has been interviewed. Data have been collected record from the store keeper about indented antibiotics. Data have been also collected record from the pharmacist of the upazila health complex about the amount of dispersed antibiotics. A focus group conceptual structure was created to serve as the basis for the focus group discussion.

After completion of data collection, those were checked, verified and edited for consistency to reduce error. Data were analyzed to simple descriptive statistical analyses including frequency distribution, mean, standard deviation

and percentage. The results were fashioned in tubular form, graphical presentation and explained according to the findings.

Results:

After collection of data, results were prepared in tubular and graphical form and the following observations were made:

Table-I
Amount of Amoxicillin indented and dispersed

Year	2008	2009	2010	2011	2012
Indented	14,460	23,000	15,000	41,000	44,000
Dispersed	25,000	17,000	11,000	11,000	42,500

Table shows that amount of amoxicillin indented and dispersed. Indented amoxicillin in one year is increased and in another is decreased. Same time dispersed of amoxicillin dependant on demand of patient.

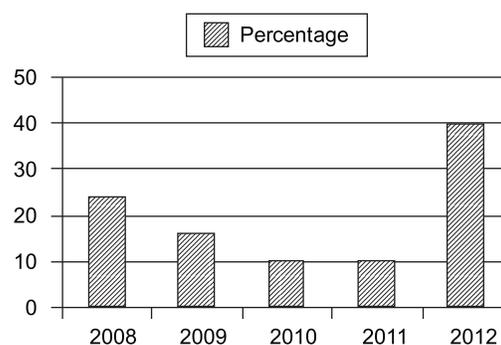


Fig.-1: Pattern of use of Amoxicillin

Figure shows the pattern of use of amoxicillin. In 2008 (24%), in 2009 (16%), in 2010 (10%), in 2011 (10%), in 2012 (40%).

Table-II
Amount of Penicillin indented and dispersed

Year	2008	2009	2010	2011	2012
Indented	12,500	12,000	12,000	25,000	10,000
Dispersed	23,000	7,100	8,000	10,500	6,000

Table shows that indented and dispersed of penicillin in 2008, 2009, 2010, 2011 and 2012 increased and decreased according to demand of the hospital.

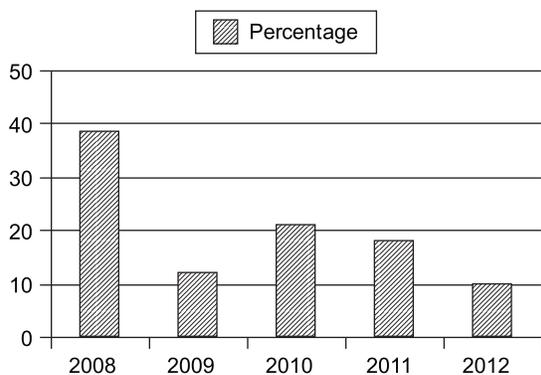


Fig.-2: Pattern of use of Penicillin

Figure shows the pattern of use of Penicillin in the last five years. 39%, 12%, 21%, 18% and 10% respectively in the year of 2008, 2009, 2010, 2011 and 2012.

Discussion:

The pattern of use of Amoxicillin and Penicillin in this survey of a rural community of Bangladesh, are generally similar to an earlier survey done on an urban population in Bangladesh. The major reason for not buying the prescribed number of antibiotics was financial.

Amount of Amoxicillin indented and dispersed were varied. Indented Amoxicillin in one year was increased and in another year was decreased. Same time dispersed of Amoxicillin also increased and decreased. So it indicates that indented and dispersed of Amoxicillin dependant on demand of the patient.

In my study it was found that the indented and dispersed of Penicillin in 2008, 2009, 2010, 2011 and 2012 increased and decreased according to the demand of the hospital.

Conclusion:

Based on the results of this study, it can be concluded that the amount of indented and amount of dispersed of different types of antibiotics in the upazila health complex of Bangladesh greatly varied. There is a gap between amount of indented and amount of dispersed of different types of antibiotics. Greater commitments are required from

the drug regulating authority to ensure effective and sound antibiotics management and utilization mechanisms.

References:

1. Abellanosa, I., Nitcher, M. (1996). Antibiotic prophylaxis among commercial sex workers in Cebu City, Philippines. Patterns of use and perception of efficacy. *Sexually Transmitted Disease*, 23, 407-412.
2. Abosede, O.A. (1984). Self-medication: an important aspect of primary health care. *Social Science and Medicine*, 1, 7, 699-703.
3. Avron, J., Harvey, K., Soumerai, S.B., Herxheimer, A., Plumridge, R., Bardelay, G., (1987). Information and education as determinants of antibiotic use: Report of Task Force 5. *Reviews of Infectious Diseases*, 9, Suppl. 3, S286-96.
4. Babaniyi, O.A. (1991). Impact on morbidity and mortality from diarrheal diseases and diarrheal treatment practices. *Journal of Tropical Pediatrics*, 32, 57-63.
5. Barden, L.S., Dowell, S.F., Schwartz, B., Lackey, C. (1998). Current attitudes regarding use of antimicrobial agents: result from physicians' and parents' focus group discussions. *Clinical Pediatrics*, 37, 665-672.
6. Bartoloni, A.m Cutts, F., Leoni, S., et al. (1998). Patterns of antimicrobial use and antimicrobial resistance among healthy children in Boliviam *Tropical Medicine and International Health*, 3, 2, 116-123.
7. Bledsoe, H.C., Goubaud, F.M. (1985). The reinterpretation of western pharmaceuticals among Mende of Sierra Leone. *Social Science and Medicine*, 21, 3, 275-282.
8. Bojalil, E., Calva, J.J. (1994). Antibiotic Misuse in diarrhea. A household survey in a Mexican community. *Journal of Clinical Epidemiology*, 47, 2, 147-156.
9. Bosu, W.K., Ofori-Adjei, D. (1997). Survey of antibiotic prescribing pattern in government health facilities of the Wasa-west district of Ghana. *East African Medical Journal*, 74, 138-142.
10. Buckwold F.J., Ronald A.R. (1979) Antimicrobial misuse: effects and suggestions for control. *Journal and Antimicrobial Chemotherapy*, 5, 129.
11. Burghart, R. (1988). Penicillin: An ancient ayurvedic medicine. In: van der Geest S and Whyte SR (eds.) 1988. The context of medicines in developing countries: Studies in pharmaceutical anthropology. Dordrecht: Kluwer, pp. 298-297.

Mandibular condylar fractures: Treatment modalities and their outcomes

Islam MW¹, Kumar S², Rahman AFMS³, Howlader LB⁴, Begum T⁵, Ahmed M⁶

Abstract:

This was a cross-sectional study conducted in the department of Oral and Maxillofacial Surgery of Dhaka Dental College and Hospital from January 2009 to September 2010 presenting with mandibular condylar fractures. The main objective of the study was to assess demographic characteristics to find the causes and site, to ascertain the existing treatment modalities and to observe the treatment outcome.

In the present study majority of patients were male and age belongs to 21 to 30 years. Road traffic accident was the main cause and unilateral fractures were more frequent. Subcondylar region was the most frequent site. Majority of the patients treated by close reduction. Preoperatively anterior open bite, posterior gagging and cross bite were present in 22, 3 and 1 patient respectively but postoperatively after 3 months anterior open bite and posterior gagging were present in only one patient and no patient had cross bite.

(Bangladesh Dental Journal 2015; 31: 23-26)

Introduction:

Injuries of maxillofacial complex represent one of the most important health problem worldwide. Particular interest is created by high incidence and diversity of facial lesions. Moreover maxillofacial fractures are often associated with severe morbidity, loss of function, disfigurement and significant financial cost.¹ In the past 50 years the incidence of mandibular fractures are increasing which is possibly related to changes in reporting of data but more likely is a result of advancement in the field of diagnostic imaging that allow a more accurate detection of these fractures. In any event fracture involving the condylar process are by no means uncommon and probably make up between one quarter and one third of all mandibular fractures.² Mandibular condylar fractures are common in maxillofacial traumas, accounting for 20% to 52% of all mandibular fractures.³ According to Kelly, 1991 the most common unilateral fracture is of the condyle and the most common bilateral fractures is of the condylar heads.⁴

According to Villarrel et al, 2004 they are the most controversial fracture regarding diagnosis and management.⁵ Most of the condylar fractures are not caused by direct trauma but follow indirect forces transmitted to the condyle from above elsewhere. Consequently condylar fractures are those commonly missed.^{6,7}

There are two types of fractures intracapsular and extracapsular, but for practical purposes the anatomical level of the fractures is divided into three sites; the condylar head (intracapsular), the condylar neck (extracapsular) and the subcondylar region.^{6,8,9,10,11} The fracture is classified as; undisplaced, deviated, displaced (with medial and lateral overlap or complete separation) and dislocated (outside the glenoid fossa). Lindhal (1977) also classified head fractures into horizontal, vertical and compression types.⁸ Condylar head dislocation is more frequent in children.¹²

The proper management of fractured mandibular condyle is one of the most controversial in maxillofacial trauma. This controversy is reflected in the wide variety of opinions and proposed treatment modalities offered in literature. The commonly accepted and generally agreed on the goal of treatment is reestablishment of preoperative function of the masticatory system. This restoration typically involves the reestablishment of the preoperative relationship of the fractured segments, the occlusion and maxillofacial symmetry.²

It is believed that conservative approach should be regarded as the first choice of treatment for condylar fractures because as long as there is contact between proximal and distal bone fragments union will take place with an acceptable functional result. Closed reduction provide good results, conservative methods of treatment

1. Dr. Mohammad Wahidul Islam, BDS, FCPS (OMS), Assistant Professor, Oral and Maxillofacial Surgery Department, Dhaka Medical College and Hospital.
2. Dr. Shyamal Kumar, BDS, MS, Assistant Professor, Dept. of OMS, Dhaka Dental College, Dhaka.
3. Dr. A.F.M. Shahidur Rahman, BDS, MS, FCPS, Associate Prof. and Head, Oral and Maxillofacial Surgery Department, Shaheed Suhrawardy Medical College.
4. Dr. Liton Bhushan Howlader, BDS, PGD (HE), MSS(HE), MS(OMS), Lecturer, Dental Unit, ShSMC, Dhaka.
5. Dr. Taslima Begum, MBBS, MPhil, Associate Professor, Holy Family Red Crescent Medical College, Dhaka.
6. Prof. Dr. Mohiuddin Ahmed, FCPS, PhD, Principal, Sapporo Dental College.

Address of Correspondence: Dr. Mohammad Wahidul Islam, Assistant Professor, Oral and Maxillofacial Surgery Department, Dhaka Medical College and Hospital. Cell: 01711152706, E-mail: wahidul.prince@gmail.com

are technically simpler and can offer reduced overall morbidity with satisfactory functional results with infrequent ankylosis and avascular necrosis. A favorable conservative outcome depends on: a growing patient upto puberty, a fragment which is confined within the temporomandibular joint space. The duration of immobilization ranges from 2 to 4 weeks.¹³ Early rehabilitation of jaw and functional rehabilitation as an essential part of the treatment.¹² In contrast surgical treatment is indicated primarily for adults with displaced fractures or dislocation of condylar head.

The complications of condylar fractures include pain, restricted mandibular movement, muscle spasm and deviation of mandible, malocclusion, facial asymmetry and an ankylosis irrespective of whether treatment was performed or not.¹⁴

As there is no systematic study in Bangladesh about prevalence of condylar fractures and their management, this would help us in getting more information about demographic characteristics, etiology, site, treatment modalities and outcome of condylar fractures in the perspective of Bangladesh.

Materials and Methods:

It is a cross sectional study from January 2009 to September 2010 in Department of Oral and Maxillofacial Surgery, Dhaka Dental College and Hospital. Patients admitted to hospital and attended to outpatient department with mandibular fractures irrespective of age and sex.

A standardized structured data collection instrument was used to collect necessary information of the patients those who were examined in Oral and Maxillofacial Surgery Department of Dhaka Dental College and Hospital, which includes-

1. History of the patient : a questionnaire would use for demographic data and clinical history.
2. Clinical examination, radiological findings will be recorded in a check list.

Data analysed by SPSS Ver. 15 statistical software.

Results:

Table-I
Age distribution of the patients (n = 26)

	Frequency	Percent
0-10 years	3	11.5
11-12 years	7	26.9
21-30 years	10	38.5
31-40 years	4	15.4
41-50 years	1	3.8
More than 50 years	1	3.8
Total	26	100

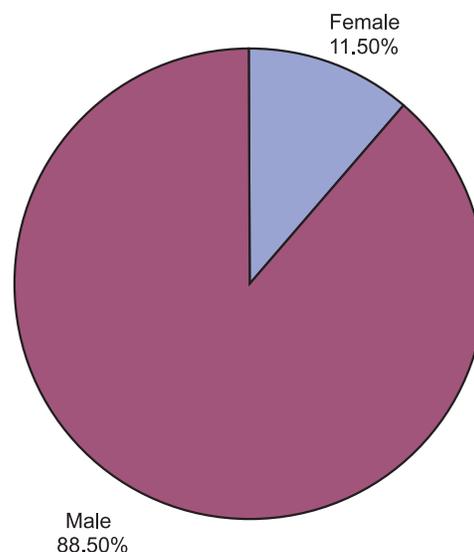


Fig.-1 : Sex distribution of the patients (n=26)

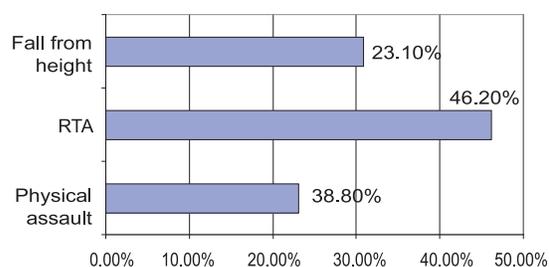


Fig.-2 : Causes of mandibular condylar fractures (n = 26)

Table-II
Prevalence of mandibular condylar fractures

Mandibular fracture	Condylar fractures	Percent
174	26	14.94%

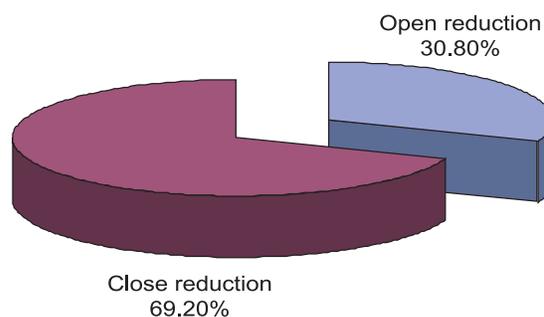


Fig.-3: Treatment modalities of mandibular condylar fractures (n = 26)

Table-III
Pre and postoperative occlusion (n = 26)

	Preoperative occlusion	Postoperative occlusion		
		1 st month	2 nd month	3 rd month
Anterior open bite	22	6	3	1
Posterior gagging	3	2	1	1
Cross bite	1	1	0	0

Above table shows preoperatively ant. Open bite, post. gagging and cross bite were present in 22, 3 and 1 of patients respectively but postoperatively after 3 months anterior open bite, posterior gagging and cross bite were present 1,1 and 0 of patients respectively.

Discussion:

Bangladesh is a developing country with 150 million people and road traffic system is very poor. Thus the prevalence of mandibular condylar fractures are significantly high due to road traffic accident. Epidemiological survey of condylar fractures in Bangladesh though not yet been done but several cross-sectional study on jaw fractures have been done.

This cross-sectional study was carried out in the department of Oral and Maxillofacial Surgery from January 2009 to September 2010 with a sample size of 26 patients presented with condylar fractures of mandible. The current study to investigated the pattern, causes and management of condylar fractures of mandible.

In current study regarding age distribution it was found that highest percentage (38.5%) of patients were in the age ranges of 21-30 years followed by in the age group of 11-20 years(26.9%). The finding is almost similar with other studies. In 2009 Sawazaki in a case series of 263 patients of condylar fractures reported mean age of 28.4 years.¹⁵ In 2004 Ahmed found in his study treated 230 patients with maxillofacial trauma that men 20-29 years of age sustained the most maxillofacial fractures.¹⁶

In this study condylar fractures patients were mostly male(88.5%). Male and female ratio was 7.67:1. Other studies also showed that majority of the patients were male but there was dissimilarity in the ratio of male and female. Sawazaki, 2009 found in his study male/female ratio was 3.05:1.¹⁵

In this study road traffic accident was found to have been the leading etiological factor(46.2%) followed by physical assault (30.8%) and fall from height (23.1%). Road traffic accident is the commonest cause of condylar

fracture. It is due to overcrowding, unsecured road, violation of traffic rules and unskilled driving. The most common cause of condylar fracture was road traffic accident(57.8%).

In this study prevalence of condylar fracture among all mandibular fractures were 14.94%. Rahman, 2008 found in his study that condylar fractures among all mandibular fractures were 14%.¹⁷

In this present study among 26 patients majority 18(69.2%) when treated by close reduction and 8(30.8%) by open reduction. In other studies similar pictures was noted at different centre. Ahmed, 2004 treated 230 patients and more than half of all cases were treated by close reduction (67%).¹⁶ Sawazaki, 2009 treated 263 patients and among them 78.5% managed by close reduction and 21.5% were treated by open reduction.

In this study preoperatively anterior open bite , posterior gagging and cross bite were present in 22, 3 and 1 patients respectively. Postoperatively after 3 months anterior open bite and posterior gagging were present in only 1 and 1 patient respectively. Postoperatively no patient had cross bite at the end of 3 months. 30% of their condylar process fractures treated closed had persistent deviation on opening.⁶ Macclennan, 1952 followed 180 cases for 14 to 37 months reported an overall complications rate of approximately 20%, including 29 patients with deviation on opening, on 7 with visible deformity.¹⁸ Lyons, 1947 found functional disturbances of any kind (deviation on opening , interocclusal malrelationship and mild giant noise during function) in 5.8% of cases.

Conclusion:

This was a cross- sectional study conducted in the department of Oral and Maxillofacial Surgery of Dhaka Dental College and Hospital from January 2009 to September 2010 presenting with mandibular condylar fractures. The main objective of the study was to asses demographic characteristics to find the causes and site, to ascertain the existing treatment modalities and to observe the treatment outcome.

In the present study majority of patients were male and age belongs to 21 to 30 years. Road traffic accident was the main cause and unilateral fractures were more frequent. Subcondylar region was the most frequent site. Majority of the patients treated by close reduction. Preoperatively anterior open bite, posterior gagging and cross bite were present in 22, 3 and 1 patient respectively but postoperatively after 3 months anterior open bite and posterior gagging were present in only one patient and no patient had cross bite.

References:

1. Brasileiro B.A, Passeri L.A. Epidemiological analysis of maxillofacial fractures. *Oral Surgery, Oral Medicine, Oral Pathology and Endodontology*. 2006;102(Issue 1):28-34.
2. Kademani D., Rombach D.M., Qunin P.D. Trauma to the temporomandibular joint region. In: R.J. Fonseca ed. *Oral and maxillofacial trauma*. 1. 3rd. U.S.A: Elsevier. 2005; 523-562.
3. Biglioli F., Colleli G. Transmasseter approach of condylar fractures by mini-retromandibular access. *American Journal of Oral and Maxillofacial Surgery*. 2009;67:2418-2424.
4. Killey. Fractures of the condylar region. In: P. Banks ed. *Killey's fractures of mandible*. 4th. Bombay: Varghese publishing house. 1991; 94-105.
5. Villareal P.M., Monje F., Junquera L.M., Mateo J., Morillo A.J., Gonzalez C. Mandibular condylar fractures: determinants of treatment and outcome. *Journal of Oral and Maxillofacial Surgery*. 2004;62:155-163.
6. Silvennoinen U., Lizuka T., Lidqvist C., Oikarinen K. Different pattern of condylar fractures; an analysis of 382 patients in a 3 years period. *Journal of Oral and Maxillofacial Surgery*. 1992;50: 1032-1037.
7. Pereira M.D., Marques A., Ishizuka M., Keira S.M., Brenda E. Wolosker A.B. Surgical treatment of the fractured and dislocated condylar process of mandible. *Journal of Cranio Maxillofacial Surgery*. 1995;23: 369-376.
8. Lindal L. and Hollender L. Condylar fractures of mandible. *International journal of Oral Surgery*. 1997;6:153-156.
9. Laskin D.M. Establishing new standards. *Journal of Oral and Maxillofacial Surgery*. 1991;49:1141.
10. Zhang X. and Obeid G. A comparative study of the treatment of unilateral fractured and dislocated mandibular condyles in the rabbit. *Journal of Oral and Maxillofacial Surgery*. 1998;49:1181-1190.
11. Newman L. A clinical evaluation of the long term outcome of patients treated for bilateral fracture of the mandibular condyles. *British Journal of Oral and Maxillofacial Surgery*. 1998;36:176-179.
12. Zachariades N., Mezitis M., Mourouzis C., Papadakis D. and Spanou A. Fractures of the mandibular condyle. *Journal of Cranio-Maxillofacial Surgery*. 2006; 34(Issue 7):421-432.
13. Yasuoka T. and Oka N. Histomorphologic study of trabecular bone remodeling during condylar fracture healing in the following period. *Journal of Oral and Maxillofacial Surgery*. 1991;49:981-988.
14. Valiati R., Ibrahim D., Abreu M.E.R., Heitz C., Oliveria R.B. Pagnoncelli R.M., Silvia D.N. The treatment of condylar fractures: to open or not to open? A critical review of this controversy. *International Journal of Medical Sciences*. 2008;5(6):313-318.
15. Sawazaki R., Junior S.M.L., Asprino L. Incidence and pattern of mandibular condyle fractures. *American Journal of Oral and Maxillofacial Surgery*. 2009;64:1016.
16. Ahmed H.E.A., Jaber M.A., Fanas S.H.A., Karas M. The pattern of maxillofacial fractures in Sharjah, United Arab Emirates: A review of 230 cases. *Oral Surgery, Oral Medicine, Oral Pathology and Endodontology*. 2004;98(Issue2): 166-170.
17. Rahman A.F.M.S. Study on jaw fractures in maxillofacial trauma patients. FCPS dissertation, BCPS, 2008.
18. MacLennan W.D. Fractures of mandibular condylar process. *British Journal of Oral and Maxillofacial Surgery*. 1969;7:31-39.

Food behavior and Oral health among the children aged 6 to 12 years at Dhaka City in Bangladesh

Ahmed S¹, Lima FR², Kabir MH³

Abstract

A cross sectional study was carried out to determine the prevalence of dental diseases and to observe the relationship between dental diseases and regular food intake pattern of children aged 6 to 12 years at Dhaka city during the period of July 2013 to September 2013. Oral examination was done to identify dental diseases for a sample of 123 children from different schools. A structured questionnaire was used for collecting relevant information by face to face interview. Result shows that most prevalent dental disease was dental caries (52.8%) which was found to be decreased with the increase of age ($p < 0.05$). Bottle feeding, the major cause of teeth decay among children, were found to be significantly related with dental diseases ($p < 0.05$). Only 13.8% children used toothpaste containing Calcium (Ca) and/or Fluoride (F) had less diseases percentage ($p < 0.05$). Following the correct manner of tooth brushing (right way), brushing frequency (two times) and gargling (regularly) reduced the probability of dental problems. The study also revealed that children had less dental problems (33.4%) whose parents had some preventive knowledge of dental diseases.

Key Words: Food behavior, oral health, 6 to 12 years aged children.

(Bangladesh Dental Journal 2015; 31: 27-30)

Introduction:

Oral health has been defined as “the standard of health of the oral and related tissues which enables an individual to eat, speak and socialize without active disease, discomfort and embarrassment and which contributes to general well-being”. Oral health has strong biological, psychological and social projections, because it affects our aesthetics and communication, and the quality of life is affiliated with oral health status¹. Good oral health is also important for proper mastication, digestion, appearance, speech and health. Oral health is linked to happiness and good general health and there is evidence that aesthetically acceptable and functionally adequate dentitions affect self-esteem, confidence and socialization².

Childhood is the most important period particularly from 6 to 12 years of age which is very significant for tooth development and maintaining good oral health. In these years, children experience dental caries, pulpitis, gingivitis and some other dental problems also. The underlying factors responsible in children may be due to their

indiscriminate eating of particularly sugary and sticky foods such as crackers, pre-sweetened cereals, muffins, cookies, chips, sweetened dairy products, candies, lollipops, ice-creams which ultimately results prolonged sugar exposure in mouth and make favorable environment for microorganisms that producing acids cause a drop in salivary pH to less than 5.5 to initiate the demineralization process if no oral hygiene measures are introduced within 2 hours. Others factors are lower rate of saliva flow, greater stagnation of food on tooth surface, poor oral hygiene, frequent eating habit, crowding that is irregularities of teeth pattern. In children, bottle feeding is one of the most important factors associated with high rate of dental caries or tooth decay. Breastfed infants who fall asleep during breastfeeding period are also at risk of dental caries.

Dental caries is the most common oral disease. According to the Surgeon General's 2000 Report on Oral Health, caries is seven times more common than hay fever and five times more common than asthma³. In adults, caries usually progresses slowly and a small cavity may take several months to develop. By contrast, childhood caries, particularly of deciduous teeth, may be so rapid that the pulp becomes exposed long before the tooth is due to be shed⁴. The ultimate effect of caries is to break down enamel and dentine thus open a path for bacteria to reach the pulp. The consequences are inflammation of the pulp and later of the peripheral tissues. As inflammation progress pain becomes more persistent and there may be prolonged attacks of toothache⁵. Prevalence of dental diseases is high in Bangladesh and is being rising with time. In a study prevalence of dental plaque, calculus, dental caries and periodontitis were found 99.1%, 61.3%, 44.1% and

1. Dr. Shahabuddin Ahmed, Junior Consultant (Dental), Dhaka Dental College Hospital, Dhaka.
2. Farzana Rahman Lima, Assistant Professor, Food and Nutrition, NCHE, Dhaka & PhD Researcher, INFS, Dhaka University, Dhaka.
3. Dr. Md. Humayun Kabir, Associate Professor and Head, Dental Unit, Shaheed Suhrawardy Medical College and Hospital, Dhaka.

Address of Correspondence: Dr. Shahabuddin Ahmed, Junior Consultant (Dental), Dhaka Dental College Hospital, Dhaka, E-mail: shahabferdous@yahoo.com

8.6% of the high school girls' respectively⁶. Oral health and overall health is related. As mouth is the gateway to enter food into the body, it is important to maintain proper oral hygiene. The impact of oral conditions on quality of life can be profound⁷.

Methodology:

A cross sectional study was conducted among 6 to 12 years aged children at Dhaka city from different schools having dental problem during the period of July 2013 to September 2013. This age category represents the mixed dentition period which is very significant for tooth development and maintaining good oral health. Different schools from different locations were selected purposively in Dhaka city for expected homogeneity of socio-economic status and availability of the participants in the study.

In order to obtain relevant clinical, socio-economic and dietary data, a structured questionnaire was developed. The questionnaire was pre-tested, modified where necessary and standardized for data collection. Selected child was examined using dental apparatus such as mirror, tongue depressor, caries probe and twiser by the investigators. The oral problems were observed and the findings were recorded on the questionnaire. The dietary consumption pattern of various common foods such as rice, bread, fried rice (muri), fish, meat, pulse, vegetables, candy chocolate, chewing gum, ice-cream, chips, sweets, milk with sugar, fruit juice, soft drinks, deserts, chanachur and so on was collected. Food intake of the child during last 24 hours (recall method) was collected to obtain their regular dietary pattern. The data were collected by probing both the mother and the children using the questionnaire by face to face interview.

Before finalization of the data for computer entry, each questionnaire was cross checked for final editing. After completion of necessary coding and editing, the analysis was undertaken using SPSS 17.0 software package. The output was then presented in figures and tabular forms on the basis of frequency distribution. Statistical significance was set at $p < 0.05$ and confidence interval at 95% level.

Results:

The prevalence of dental caries among children was 52.8%, which was highest than any other dental disease. In contrast, the prevalence of gingivitis was found to be 8.9%, 18.7% was of pulpitis whereas it was 19.5% in other cases such as hereditary anomalies, oral mucosal lesion and so on (Figure-1). Dental caries was most prevalent in children of below 8 years (38.2%) and it decreased with the increase of age (Figure-2). Again 61.7% of the study subjects had dental problems who were bottle fed and for that reason they more prone to dental caries (Figure-3). Chips, milk with sugar, sweetmeat, chocolate, soft drinks all are the cariogenic foods which causes dental caries were consumed by 50.4%, 48.8%,

10.6%, 52.9% and 30.9% children respectively among the total 123 study subjects (Table-1).

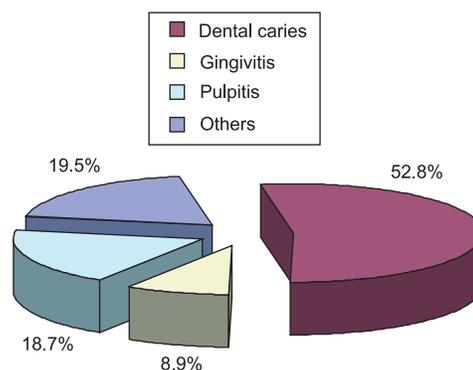


Fig-1: Percent distribution of the children according to dental problems (n=123)

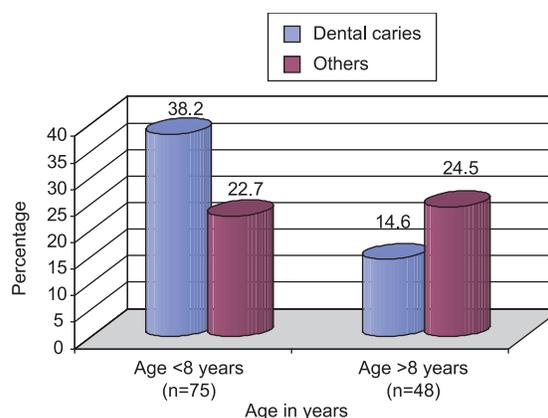


Fig-2: Distribution of the children according to age and dental problems (n=123)

P value = 0.005

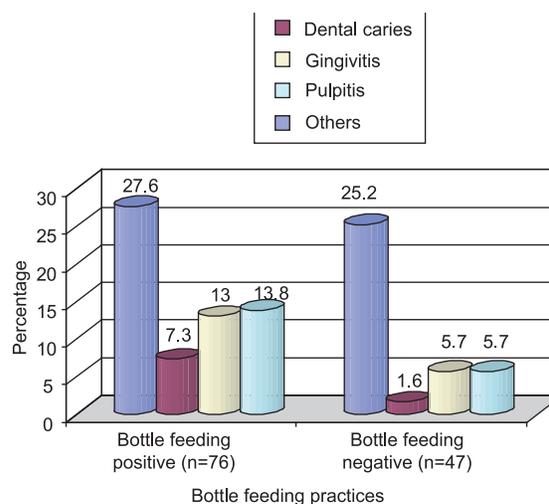


Fig-3: Distribution of the children by bottle feeding practice and dental problems (n=123)

P value = 0.01

Table-I
Distribution of the children by consumption of selected food items and dental problems (n=123)

Selected Food Items	Dental Problems			
	Dental Caries		Others	
	Yes (%)	No (%)	Yes (%)	No (%)
Chips	62(50.4)	3(2.5)	57(46.3)	1(0.8)
Milk with sugar	60(48.8)	5(4.1)	54(43.9)	4(3.2)
Sweet	13(10.6)	51(41.5)	10(8.1)	49(39.8)
Chocolate	65(52.9)	0(0)	58(47.1)	0(0)
Soft drinks	38(30.9)	27(22.0)	40(32.5)	18(14.6)

Regarding cleaning of tooth majority of the subjects (79.6%) had dental problems who brush only one time or irregularly in a day. Study showed that children who followed the right brushing pattern (up-down) had less dental problems (5.7%) than those who did not (94.3%). The study also showed that majority group who did not gargle after each meal (65.9%) had the highest susceptibility

of having dental caries (36.6%). Children using toothpaste that contains Calcium (Ca) and/or Fluoride (F) had only 13.8% dental problems comparing with others (86.2%) who did not use such toothpaste (Table-II). According to the study result, only 33.4% parents had disease prevention knowledge and of course their children were less prone to disease (Figure-4).

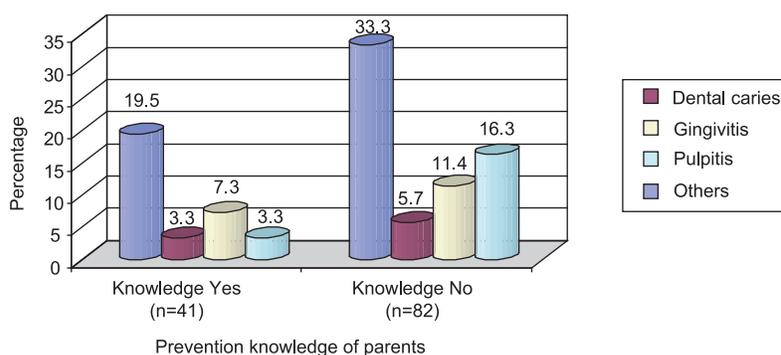


Fig.-4: Distribution of the children by dental problems and disease prevention knowledge of parents (n=123)

Table-II
Distribution of the children by tooth cleaning practices and dental problems (n=123)

Tooth cleaning practices		Dental problems	
		Caries	Total
Gargling	No or Irregularly	36.6%	65.9%
	Regularly	16.3%	34.1%
Brushing frequency	One time or Irregular	46.6%	79.6%
	Two times or Regular	6.5%	20.4%
Brushing pattern	Right way	4.1%	5.7%
	Wrong way	48.8%	94.3%
Tooth paste content	With Ca and/or F	12.2%	13.8%
	Without Ca and/or F	40.7%	86.2%

Discussion:

A study conducted in Bangladesh found the prevalence of dental caries was 37.8% in 7 to 12 years aged children of an urban school in Dhaka city⁸. The present prevalence rate was found to be 52.8% which were higher than the rate found in the previous study. It may be due to changes of food habit and increased consumption of sticky and fermentable carbohydrates like chocolate, ice-cream and so on. In a study of Singapore dental caries were found in 1088 out of 2052 children from 56 kindergartens⁹. The total number of decayed teeth was 4487 with a prevalence of 53.02%. Another study found that about 40% children (26%, 37% and 49% for 3-4 years, 4-5 years and 5-6 years, respectively) were affected by caries. The attitude of mothers towards their children's oral health and its relation with caries prevalence was noted among 200 subjects. The prevalence of dental caries was 54.1%¹⁰, which is almost similar to the present study. There is a significant relationship ($p < 0.05$) exists between increasing age of children and dental caries. According to the study, children aged more than 8 years had less percentage of dental caries and vice versa. A study found that prevalence of dental caries is gradually decreased as the age increased¹¹. Study revealed that babies those are bottle-fed suffer more dental problems. In this study, 61.7% children had dental problems those are bottle fed ($p < 0.05$). The prevalence of baby bottle tooth decay is about three times more among poor urban children, even in communities with a fluoridated water supply¹². The children who were given either breast or bottle feeding for a longer duration are more prone to dental caries¹³. Breastfed infants are usually not at risk of baby bottle tooth decay unless they feed for extended period. To prevent baby bottle tooth decay, let not the children sleep with milk since it is known to cause maximum damage and the bottle should be taken away as soon as mealtime is over¹⁴. Fermentable carbohydrates are creating the environment for decay. Oral bacteria cannot utilize dietary protein and can not produce acid and hence it acts as a buffer against demineralization¹⁵. Regarding cleaning of tooth 79.6% children have dental problems who brush only one time or irregularly in a day. Brushing is a routine activity but most of the people do not know the chemistry behind the cleaning of teeth. This study shows that children who followed the right brushing pattern (up-down) had less dental problems (5.7%) than those who did not (94.3%). Children whose are not gargle after each meal (65.9%) have the highest susceptibility of dental caries (36.6%). Fluoride helps to replace hydroxypatite of tooth with fluorapatite which is much stronger as well as resistant to caries and calcium prevent demineralization. Children using toothpaste that contain Ca and/or F had only 13.8% dental problems comparing with others (86.2%) who did not use such toothpaste. Only 33.4% children suffer in dental problems whose parents have some prevention

knowledge. Parental literacy, particularly maternal literacy is influencing dental caries prevention in children¹⁶.

Conclusion:

Family is the first school and mother is the first tutor for children. Parent may help to prevent such dental problems of children by allowing them the correct manner to keep their tooth healthy. Time to time Oral Health Education Programme by dental personnel will enhance the success of regaining better oral health for our children.

References:

1. Gabre P, Martinssorr T, Gahnberg L. Incidence and reasons for tooth mortality among mentally retarded adults during a 10 years period. *Acta Odontol Scand*, 1999; 57: 55-61.
2. Fiske J, Davis DM, Frances C, Gelbier S. The emotional effects of tooth loss in edentulous people. *Br Dent J*, 1998; 184: 90-93.
3. Andrew M Sicklick. Dental health and children. December 11, 2006; 12.
4. Cawson RA and Odell EW. Oral Pathology and Oral Medicine. Dental Caries, 2002; 7: 36-52.
5. Cawson RA and Odell EW. Oral Pathology and Oral Medicine. Pulpitis, apical periodontitis, resorption and hypercementosis, 2002; 7: 54.
6. Bhuiyan AM. Prevalence of dental diseases in Bangladesh. *Bangladesh Dental Journal*, 1988-89; 5(49): 2.
7. Locker D. The burden of oral disorders in populations of older adults. *Community Dent Health*, 1992; 9: 109-124.
8. Karamat Ali SM. Healthy survey of student of a primary school. *Bangladesh Medical Research Council Bulletin*, 1977; 3(2): 124-129.
9. Shang Xiao-hong, Li Da-lu, Huang Yi, Sun Ruo-peng. Prevalence of dental caries among preschool children in Shanghe Country of Shandong. *Chinese Medical Journal*, 2008: 121(22).
10. Mahejabeen R, Sudha P, Kulkarni S, Anegundi R. Dental caries prevalence among preschool children of Hubli, Dharwad city, January 2006.
11. Alam MM. Epidemiology of dental caries among the primary school children at a school of semi-urban area of Bangladesh. MPH thesis, National Institute of Preventive and Social Medicine, 1984.
12. Von Burg MM et al. Baby Bottle Tooth Decay: A Concern for All Mother. *Pediatric Nursing*, 1995; 21: 515-519.
13. Haque ME, Shahidullah. Prevalence of dental caries in urban children and its relation to feeding pattern. *Bangladesh Medical Research Council Bulletin*, 1985; 11(2): 55-62.
14. Johnsen D and Nowjack-Raymer R. Baby Bottle Tooth Decay (BBTD): Issues, Assessment, and an Opportunity for the Nutritionist. *Journal of the American Dietetic Association*, 1989; 89: 1112-1116.
15. Olojugba OO, Lennon MA. Sugar consumption in 5 and 12 year old school children in Ondo State, Nigeria in 1985. *Community Dental Health*, September 1990; 7(3): 259-265.
16. Chestnutt IG, Schafer F, Jacobson AP, Stephen KW. The influence of tooth brushing frequency and post-brushing rinsing on caries experience in a caries clinical trial. *Community Dentistry and Oral Epidemiology*, February 1998; 26(6): 406-411.

Clinical evaluation between Micro Ceramic Composite Crown and Metal Ceramic Crown in single damaged tooth

Islam S¹, Hassan GS², Osmani MSA³, Shikder AHMZ⁴, Haque MR⁵, Islam P⁶

Abstract:

Esthetic is one of the most important concern for patients appearance during the restoration of tooth by artificial crown. This study was done to evaluate and compare the clinical performance of micro ceramic composite crown and metal ceramic crown. This randomized clinical trial was done in the Department of Prosthodontics, BSMMU, Dhaka, during the period of May 2013 to April 2014. Total 56 patients were included in equal two groups. After cementation of restoration, data were collected and recorded on a pre-design data collection sheet on the basis of color match by using the modified USPHS (United States Public Health Service) criteria. During data collection, evaluation was done by two clinicians and recorded in the sheet. The marginal accuracy and wear resistance of micro ceramic composite crown was better than that of conventional metal ceramic crown. Within the limitations of the study, it can be concluded that the micro ceramic composite crown is better than the metal-ceramic crown.

Key words: Artificial crown, Micro ceramic composite crown, Restoration, Wear, Metal ceramic crown.

(Bangladesh Dental Journal 2015; 31: 31-37)

Introduction:

The available choice currently for esthetic materials for restoring teeth is limited to resin composite, porcelain/ceramic or porcelain fused-to-metal. Resin composite seems to be utilized more than other restorations for a number of reasons. During last decade esthetic dental materials, technology, science and practice have upgraded dramatically, greatly expanding and improving the choice of materials.¹

The wear resistance and marginal fit are important criteria for long-term success of a prosthesis. Fracture resistance of composite resin crowns was significantly improved by

increasing the occlusal thickness of the crowns, by using resin cement, and by reducing the total convergence angle.²

Metal-ceramic materials still dentistry's state of the art. These materials can be used in any situation, in a single-unit restoration or in the most complex complete fixed or implant prosthesis, provided that there is enough space to ensure that the prosthesis will have the strength necessary to withstand dental forces. Metal-ceramic technique is continuing to advance but a problem in the traditional metal-ceramic design was the poor esthetic effects of metal visibly underlying ceramics at the margin. Practitioners continued to use this technique because of the belief that metal provided the best marginal seal.³

Marginal accuracy is considered a crucial factor in the success and longevity of an indirect restoration because an inadequate adaptation of the restoration may be detrimental to both the tooth and supporting periodontium. There have been many studies regarding the marginal fit of crowns. McLean and von Fraunhofer proposed a restoration would be successful in marginal gaps and cement thickness of less than 120 μm could be achieved. Testing Celay In-CeramTM, beschnidt et al reported mean marginal gaps of 78 μm in maxillary incisor crowns.⁴

Though porcelain is considered superior to all types of restorative materials used in Prosthodontics its main

1. Dr. Saiful Islam, BDS, MPH, MS (Prosthodontics), Lecturer & Prosthodontist, Dhaka Dental College, Dhaka.
2. Prof. Dr. Gazi Shamim Hassan, BDS, PhD, Professor & Chairman, Department of Orthodontics, Faculty of Dentistry, BSMMU, Dhaka.
3. Dr. Md. Shabbir Ahmed Osmani, Vice Principal & Associate Professor, Department of Prosthodontics, Dhaka Dental College, Dhaka.
4. Dr. AHM Zakir Hossain Shikder, Assistant Professor, Dept. of Conservative Dentistry & Endodontics, BSMMU, Dhaka.
5. Dr. Md. Rezzakul Haque, Associate Professor, Dhaka Dental College, Dhaka.
6. Dr. Piarul Islam, Lecturer, Department of Prosthodontics, Dhaka Dental College, Dhaka.

Address of Correspondence: Dr. Saiful Islam, Lecturer & Prosthodontist, Dhaka Dental College, Dhaka. Cell No. 01622-440000, 01819-290354, Email: saifulsdental@gmail.com

disadvantages are brittleness, tendency to fracture and break away from metal, lesser edge strength, high hardness resulting in more impact to the opposing teeth during mastication and also abrasion of enamel of the natural opposing and adjacent teeth.

Prosthodontists developed a technique that provided better esthetic results without compromising marginal accuracy. This was done by cutting back the metal from the margin area and up the axial wall to permit an increased zone of a 360-degree buccal ceramic shoulder. This technique has proved beneficial in areas in which esthetics are a major concern, but using it requires increased skill and still have a chance of fracture of the ceramic.⁵

Over the last decade, the use of composite material as indirect restoration has increased remarkably. This scenario may be due to progressive increase in both mechanical and handling properties of the composite materials as well as esthetic demand by the patient. One of such material applicable for indirect tooth-colored restoration is "The Estenia material". (Kuraray Medical Inc., Tokyo, Japan). Laboratory evaluation expressed that this indirect type of material is superior in color stability, wear resistance⁷, and strengths. Therefore indirect composite is currently used for single esthetic restorations, fixed partial dentures (FPDs), as well as super structure of implant-supported prostheses.⁷

Now a days, indirect composite restorations are extensively used in esthetic dentistry as a less expensive and less technique sensitive alternative to ceramic crown. Moreover, the indirect technique improves the control of marginal adaptation, proximal contacts, anatomic form and polymerization shrinkage, compared to the other techniques. Even fracture resistance of composite resin crowns was significantly improved by increasing the occlusal thickness of the crowns, by using resin cement, and by reducing the total convergence angle.²

There are indirect new-resin based composite brands available for indirect composite restorative technique. In this case the indirect restorative materials that is most modern and are commercially called "Ceramage" (SHOFU INC, Japan). Ceramage has been setting new standards in indirect composite resin technology by combining unsurpassed esthetics, superior strength, less wear on opposing dentition and color stability which are specially indicated for veneer, inlay, onlay, crown, and bridge.

Ceramage is a Micro Ceramic Polymer System with 73% of Zirconium Silicate filler (PFS filling materials, Progressed Fine Structured Filler) supported by an inorganic polymer matrix which ensures a durable surface quality with excellent polish ability and high resistance to plaque. This structure shows properties similar to porcelain making it an ideal choice for both metal supported and metal-free anterior or posterior crowns. It has the physical properties of light transmission very close to that of natural dentin and enamel. Therefore Ceramage combines a natural colour reproduction with extraordinary strength, elasticity and has high color stability which is also biologically not harmful.⁸

This study has been designed to observe clinically to evaluate, the properties of micro ceramic composite materials and to focus on this newer generation of indirect restorative material for crown to achieve better service for the patient with improved technology. By this study, a new dental material and technique will be introduced in our country to fabricate most esthetic restorations with improved properties such as - High fractural strength, good adhesive bonding capacity, better marginal fitness, easy fabrication technique and cost effective. which can serve a better esthetic as well as functional restoration and can be used as a durable restoration instead of metal ceramic restoration.

Materials and methods:

The randomized clinical trial was done above 56 patients having single damaged tooth in equal two groups over a period of 12 months in the Department of Prosthodontics, Faculty of Dentistry, BSMMU, Dhaka, to compare the Marginal integrity and Wear of restoration between micro ceramic composite crown and metal ceramic crown. The study population was the peoples required full veneer crown in a single damaged tooth. Following proper administrative procedures with all the ethical issues were considered to collect the samples and carried out the research work. Sampling was done by simple random sampling procedure. Patients were selected from OPD of Dept. of Prosthodontics by lottery method, among the patient who were came for wear a single artificial crown. All the restoration was evaluated using modified United States Public Health Services (USPHS) or Ryge's direct criteria at baseline and thereafter at an interval of 03, 06 and 12 months. Each restoration was evaluated by two clinicians trained in the technique.

Table-I
Evaluation Criteria: (Modified USPHS Criteria for direct clinical evaluations).

<i>Criteria</i>	<i>Test Procedure</i>	<i>Rating</i>	<i>Charecterstics</i>
Marginal integrity	Visual inspection with explorer and mirror	A	No visual evidence of a crevice along the margin & explorer does not catch when drawn across the surface of the restoration toward the tooth.
		B	The explorer catches & there is visible evidence of a crevice, into which the explorer penetrates (indicates that the restoration does not adapt closely to the tooth structure).
		C	The explorer penetrates a crevice defect.
Wear of restoration	Visual inspection with explorer and mirror	A	The restoration is a continuation of existing anatomic form.
		B	A surface concavity is evident (slightly flattened).
		C	There is loss of restorative substance such that a surface concavity is evident (Replacement is required).

Here, A=Alpha, B=Bravo, C=Charlie.

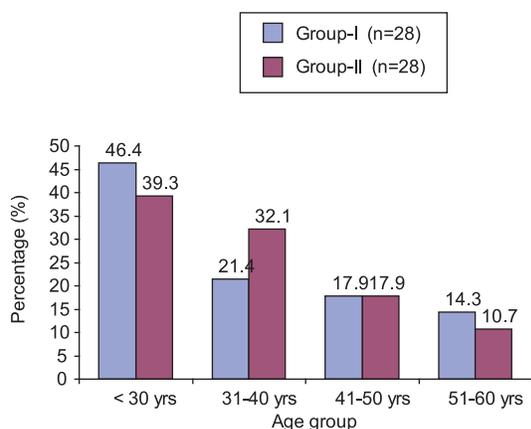
Table-II
Research materials: Trade name, Composition and Manufacturer of Research materials

Material	Trade Name	Composition	Manufactures
Micro ceramic composite	Ceramage	1)73% Zirconium Silicate filler –PFS filler (Progressed Fine Structured Filler). 2) Inorganic polymer matrix	SHOFU Inc, Japan.
Resin Cement	Resicem	Paste A: Fluoroaluminosilicate glass, initiator. Paste B: Fluoroaluminosilicate glass, Carboxilic acid monomer. Primer A: Water,Acetone, Initiator. Primer B: Carboxilic acid monomer, Acetone.	SHOFU Inc, Japan.
Porcelain	Vintage	1) Silica (Sio ₂) – 60% 2) Alumina (Al ₂ O ₃) 3) Soda 4) Potash 5) Boric oxide 6) Zinc oxide 7) Zirconium oxide	SHOFU Inc, Japan.
Ni-Cr Alloy	Vera Bond	1) Ni - 77.95% 2) Be – 1.95% 3) Cr – 12.60%	Aalba Dent, USA.

Result:

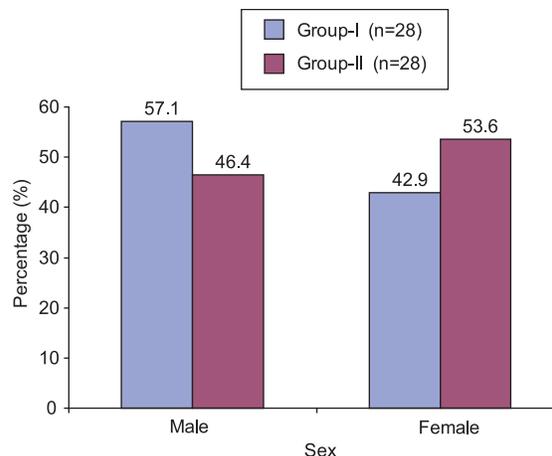
This randomized clinical trial was conducted among the patients who were treated at Bangabandhu Sheikh Mujib Medical University, in the Department of Prosthodontics, Faculty of Dentistry, during the period of May 2013 to April 2014. Total fifty six patients with 56 restorations were included in this study, among them 28 patients were treated

with Micro ceramic composite crown (Ceramage) and another 28 patients were treated with Metal ceramic crown. All the patients willingly agreed to participate in the study. This study reflected the result of the given restoration after 03, 06 and 12 months. This study was mainly conducted to evaluate the restorations for Marginal integrity and wear of re of the restoration with the natural tooth.



Group I: Micro ceramic composite crown.
Group II: Metal ceramic crown.

Fig.-1: Age distribution of the study patients



Group I: Micro ceramic composite crown.
Group II: Metal ceramic crown.

Fig.-2: Sex distribution of the study patients

Table-III

Distribution of the patient according to marginal integrity of the restorations in Group I and Group II (n=56)

Marginal integrity	Group-I (n=28) No. (%)	Group-II (n=28) No. (%)	p value
Baseline			
A	28(100.0%)	28(100.0%)	-
B	0(0.0%)	0(0.0%)	
C	0(0.0%)	0(0.0%)	
After 3 months			
A	28(100.0%)	25(89.3%)	0.07 ^{ns}
B	0(0.0%)	3(10.7%)	
C	0(0.0%)	0(0.0%)	
After 6 months			
A	28(100.0%)	23(82.1%)	0.02 ^s
B	0(0.0%)	5(17.9%)	
C	0(0.0%)	0(0.0%)	
After 12 months			
A	27(96.4%)	22(78.6%)	0.04 ^s
B	1(3.6%)	6(21.4%)	
C	0(0.0%)	0(0.0%)	

A=Alpha, B=Bravo, C=Charlie

Group I: Micro ceramic composite crown.

Group II: Metal ceramic crown.

Data were expressed in number and percentage.

Statistical analysis was done by Chi-square test

The test of significance was calculated and p values < 0.05 was accepted as level of significance.

s = Significant ns = Not significant n = Number of samples.

A No visual evidence of a crevice along the margin & explorer does not catch when drawn across the surface of the restoration toward the tooth.

B The explorer catches & there is visible evidence of a crevice, into which the explorer penetrates (indicates that the restoration does not adapt closely to the tooth structure).

C The explorer penetrates a crevice defect.

Table-IV
Distribution of the patient according to wear of restorations in Group I and Group II (n=56)

Wear of restoration	Group-I (n=28) No. (%)	Group-II (n=28) No. (%)	p value
Baseline			
A	28(100.0%)	28(100.0%)	-
B	0(0.0%)	0(0.0%)	
C	0(0.0%)	0(0.0%)	
After 3 months			
A	28(100.0%)	27(96.4%)	0.31 ^{ns}
B	0(0.0%)	1(3.6%)	
C	0(0.0%)	0(0.0%)	
After 6 months			
A	27(96.4%)	25(89.3%)	0.29 ^{ns}
B	1(3.6%)	3(10.7%)	
C	0(0.0%)	0(0.0%)	
After 12 months			
A	27(96.4%)	24(85.7%)	0.15 ^{ns}
B	1(3.6%)	4(14.3%)	
C	0(0.0%)	0(0.0%)	

A=Alpha, B=Bravo, C=Charlie

Group I: Micro ceramic composite crown.

Group II: Metal ceramic crown.

Data were expressed in number and percentage.

Statistical analysis was done by Chi-square test

The test of significance was calculated and p values < 0.05 was accepted as level of significance.

s = Significant ns = Not significant n = Number of samples.

A The restoration is a continuation of existing anatomic form.

B A surface concavity is evident (slightly flattened).

C There is loss of restorative substance such that a surface concavity is evident (Replacement is required).

Table-III shows comparison of marginal integrity between Micro ceramic.

Composite and Metal ceramic restorations during follow up period. At the baseline all patients(100%) of both groups were categorized alpha. After 03 months there observed no change. After 06 months 28(100%) restorations rated Alpha in group I, where 3(10.7%)categorized Bravo and 25(89.3%) rated Alpha in group II. After 12 months in group I, 27(96.4%) rated Alpha and 1(3.6%) rated Bravo, in group II 22(78.6%) rated Alpha and 6(21.4%) rated Bravo. No Charlie rating were rated in any Group I among whole evaluation period. Between USPHS ratings of two groups, the p-value was absent after 03 months but after 06 and 12 months the differences in marginal adaptation was significant ($p>0.05$) in Chi square test.

Table-IV shows comparison about wear of restoration between micro ceramic Composite and metal ceramic restorations during follow up period. At the baseline all patients (100%) of both groups were rated alpha. After 03 months 28(100%) restorations of group I was categorized as Alpha and in group II, 27(96.4%) restorations rated Alpha

other 1(3.6%) restorations rated as Bravo. After 06 months restorations 27(96.4%) rated Alpha and 1(3.6%) rated Bravo in group I, where 3(10.7%) categorized Bravo and 25(89.3%) rated Alpha in group II. After 12 months in group I, there was no change from the rating of 06 months but in group II 24(85.7%) rated Alpha and 4(14.3%) rated Bravo. No Charlie rating were rated in any Group, among whole evaluation period. Between USPHS ratings of two groups, there was no significant differences obtained ($p<0.05$).



Fig.-3 : Initial Photograph of damaged tooth.



Fig.-4 : *Cemented micro ceramic composite crown in upper central incisors with good marginal integrity.*



Fig.-5 : *Impression taken with Silicone impression material.*



Fig.-6 : *Material kit of Micro ceramic composite (Ceramage).*

Discussion:

Now a days, peoples are interested to maintain their esthetics by wearing the best color matching restoration

to increase quality of life in the society. It influences the development of oral health as well as functional efficacy. So, when damage of any tooth occurs, a restoration is essential. Most of the discolored and heavily damaged teeth are restored with full veneer crown, but color match and longevity is the most prime things that we have to consider during fabrication of the crown.

In this study the primary objective was to evaluate the esthetic outcome of micro ceramic composite crown and compare the results with that of conventional metal ceramic crown which was conducted between two groups, where each group contained 28 patients.

The methodology that was followed in this study allowed collection of data as per parameter of this study, Marginal integrity and Wear of the restoration from the individual samples. This, in turn, permitted accurate analysis of the results, which was indicated for the comparative evaluation of the variables between the samples of group I and group II. All the restorations were evaluated using modified United States Public Health Services (USPHS) or Ryge's direct criteria. Each restoration was evaluated by two clinicians trained in the technique. The age range of both groups was from 18 to 60 years. The highest number of patients was in the age of <30 years in both groups. In this study out of 56 patients, 29 were male and 27 were female and male female ratio was 1.07:1.

Tanoue N.et al.⁷ showed that One of such material applicable for indirect tooth-colored restoration is "The Estenia material". (Kuraray Medical Inc., Tokyo, Japan). Laboratory evaluation expressed that this indirect type of material is superior in color stability, wear resistance and strengths. Therefore indirect composite is currently used for single esthetic restorations, fixed partial dentures (FPDs), as well as super structure of implant-supported prostheses.

Changes in marginal integrity:

In this study the marginal integrity of Micro ceramic composite crown was better than Metal ceramic crown. After 03 months the difference was not statistically significant ($p=0.07$), however after 06 and 12 months the difference was significant ($p<0.05$) in chi square test. According to marginal adaptation after 03 and 06 months, it showed that all the patients of group –I were in Alpha i.e. no visual evidence of a crevice along the margin & explorer was not caught when drawn across the surface of the restoration toward the tooth. After 12 months 27(96.4%) were in Alpha and only 1(3.6%) restoration was categorized Bravo, i.e. the explorer was caught & there

was visible evidence of a crevice, into which the explorer penetrated. Where in group II, after 03, 06 and 12 months consequently 25(89.3%), 23(82.1%), 22(78.6%) were in Alpha and 3(10.7%), 5(17.9%), 6(21.4%) restorations were observed in the category Bravo.

Shino et al.⁷, showed good marginal integrity with the Micro ceramic composite (Ceramage) crown, which coincide with this study, here the result was found with sub-gingival deep chamfer finish line. The study by Ayad MF⁴, showed that the shoulder finish line had higher marginal opening value than the chamfer finish line incase of fibre reinforced composite crown. However, other contradicting studies, of L. Cho et al.⁹, evaluated better marginal adaptation of composite crowns with a shoulder finish line and D Irio D. et al.¹⁰, showed improved biomechanical performance with a shoulder margin in posterior single crown.

Changes in wear of restoration:

In case of wear of the restoration, after 03 months all the patients of group-I were in Alpha i.e. the restoration is a continuation of existing anatomic form. After 06 months 27(96.4%) restoration was rated as Alpha and the left 1(3.6%) was categorized as Bravo, i.e. a surface concavity was evident (slightly flattened), and after 12 months the result was same. On the other hand, in group-II after 03 months 27(96.4%) restorations were in Alpha and 1(3.6%) in Bravo, after 06 months 25(89.3%) and 3(10.7%) in Bravo. After 12 months 24(85.7%) restorations rated Alpha and 4(14.3%) were Bravo. The percentage of wear of restoration of metal ceramic crown was higher than Micro Ceramic Composite crown. The differences were not statistically significant ($p= 0.15$, after 12 months) in chi square test. Here in composition of Ceramage the amount of zirconium silicate is 73% which might enriched the material to become more wear resistant.

A similar findings has been reported in study conducted by Tanoue N. et al.⁶, where Abu Tayeb Md. Ahsanullah found no attrition of opposing tooth after wearing the restorations.

Conclusion:

The Micro ceramic composite (Ceramage) crown presented a valuable development in the field of Prosthodontics. This study represents, those crown provides better Marginal integrity and Wear of the restoration . As well as it is a less time consuming procedure, easy to repair and

cost effective. So Micro ceramic composite crown can be a better alternative than the Metal-ceramic crown.

Recommendations

Within the limitations of this study, it is strongly recommended that the clinician can use micro ceramic crown (Ceramage) to ensure better marginal fit which is healthy and esthetically pleasant restoration, as an alternative to metal-ceramic crown.

The following recommendations are put forward for the establishment of the procedure:

1. Further research and long-term follow-up investigations are necessary to elicit the best clinical outcome of micro ceramic crown.
2. The study conducted only at BSMMU among the small group of patients, the additional study with large sample size should be done for further conclusion of this result.

References:

1. Richard Van Noort, Mosby(2007). *Introduction to Dental Materials*. 3rded,94-95.
2. Ohlmann et al.(2008). Optimizing preparation design for Metal-free composite resin crowns. *Jour Prosthet Dent*. 100(3):211-19.
3. Stein RS.,Kuwata M. A.,(1977). Dentist and a dental technologist analyze current ceramometal procedures. *Dent Clin North Am*1977;21:729-49.
4. Ayad, M.F, (2008), 'Effect of the crown preparation margin and die type on the marginal accuracy of fiber-reinforced composite crowns', *Journal of Contemporary Dental Practice* vol. 9, no.2, pp 1-5.
5. Chaffee NR, Lund PS, Aquilino SA, Diaz-Arnold AM.(1991). Marginal adaptation of porcelain margins in metal ceramic restorations. *Int Jour of Prosthodont* ;4:508-16.
6. Tanoue N, Matsumura H, Atsuta M.,(2000). Wear and surface roughness of current prosthetic composites after tooth brush / dentifrice abrasion. *Jour of Prosthet Dent*. 84:93-7.
7. Shiono H, Koizumi H.,(2003). Clinical performance of a premolar jacket crown made of a highly loaded indirect composite and seated with an adhesive luting agent: a clinical report. *Int Chin J Dent* . 3:100-4.
8. Shofu,(2012). Unlimited possibilities in the composite technology - *Manual of the Company* , www.shofu.com.
9. Cho L, Choi J, Yi, YJ., Park C.J, (2004), 'Effect of finish line variants on marginal accuracy and fracture strength of ceramic optimized polymer/fiber-reinforced composite crowns', *J Prosthet Dent* vol. 91, pp 554-60.
10. Di Irio D. et al (2008), Effect of margin design on the fracture resistance of provera all ceram cores: an in vitro study. *Jour of Contemp Den Pract*. 9(2); 001-008.

Evaluation of canine retraction and anchorage loss in fixed orthodontic treatment

Aktar S¹, Hassan GS², Kabir MH³, Islam MR⁴, Khan AMSA⁵, Khanom SR⁶ Asaduszaman M⁷

Abstract:

Introduction: Anchorage loss is one of the main problems of orthodontic treatment. Treatment desires maximum anchorage and minimal anchorage loss of extraction cases. Mesial migrations of anchor teeth or anchorage loss lead to prevent correction of anteroposterior malocclusion and diminish facial esthetic.

Aim: The aim of this study to detect the amount of mesial migration of anchor tooth or anchorage loss and the amount of canine retraction or extracted space closure.

Materials and Methods: 136 patients were selected for the study who were treated in the Department of Orthodontics, Faculty of Dentistry, Bangabandhu Sheikh Mujib Medical University. The patient were either class I malocclusion with crowding which need extraction of first premolar to relieve the crowding; or class I or class II malocclusion. Those patients have overjet more than 5 mm and need extraction of first premolar. The patient was selected above 12 years. This study was developing from pre and post treatment study cast of each sample or patient. All the measurement have been done on the pre and post treatment dental casts by using vernia.

Result: The result showed that, type of malocclusion was an important factor of anchorage loss. Class II malocclusions have greater anchorage loss than Class I crowding. The male have higher canine retraction than female. The growing group showed larger canine retraction than non growing group.

Conclusion: The type of malocclusion is an important factor which affecting anchorage loss and canine retraction.

Key Words: Anchorage loss, Canine retraction, Fixed orthodontic treatment.

(Bangladesh Dental Journal 2015; 31: 38-43)

Introduction:

Crowded, irregular and protruding teeth have been a problem, which attempts to correct this disorder go back at least to 1000 BC¹. In 1728, the French pioneer Fauchard introduced the first appliance and noted that, to exert mechanical pressure by the means of an apparatus, sufficient resistance to the force must be exerted. Today anchorage control is a major concern in the orthodontic treatment.

Anchorage is the resistance to unwanted tooth movement and is commonly described as the desired reaction to

posterior teeth to space closure mechanotherapy to achieve treatment goals. Based on the anchorage demand if extraction case i.e. maximum anchorage, moderate anchorage and minimum anchorage.^{1,2}

Anchorage loss is a reciprocal reaction that reduces the success of orthodontic treatment by complication the anterior posterior correction of malocclusion and aesthetic problem.

Orthodontic tooth movements are based on the ability of bone to react to mechanical stresses with the deposition and resorption of alveolar bone.³

The concept of a well-interdigitated occlusion acting to enhance molar anchorage accepted dogma. Greekmore (1997) found that the posterior teeth occupy one-third to one-half of extraction space first and second premolar extraction, respectively.

The rate of tooth movement during orthodontic treatment is dependent on a number of mechanical and biologic variables. The variables implicated in bracket-wire friction included bracket material and quality of manufacture, slot size, wire alloy type, wire size, ligature material and force of ligation. Careful selection of appropriate brackets, wire and ligatures may be used to predictably control the relative rates of tooth movement and to enhance or reduce anchorage.⁵

1. Dr. Salma Aktar, BDS, MS (Orthodontics).
2. Prof. Dr. Gazi Shamim Hassan, BDS, PhD, Prof. & Chairman, Department of Orthodontics, BSMMU.
3. Dr. Md. Humayun Kabir, BDS, DDS, Associate Professor, Head, Dental Unit, Shaheed Suhrawardy Medical College, Dhaka.
4. Dr. Mohammad Rafiqul Islam, BDS, MS (Orthodontics), Lecturer, Dental Unit, Shaheed Suhrawardy Medical College, Dhaka.
5. Dr. Abu Mohammad Shareeful Alam Khan, BDS, MPH, MS (Phase-B Resident), Department of Orthodontics, BSMMU.
6. Dr. Sultana Razia Khanom, BDS, MS (Phase-B Resident), Department of Orthodontics, BSMMU.
7. Dr. Md. Asaduszaman. BDS. MS - Resident, Department of Conservative Dentistry & Endodontics, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.

Address of Correspondence: Dr. Salma Aktar, BDS, MS (Orthodontics), E-mail: dr.salma82@yahoo.com

Space closure requiring precise anchorage control is more difficult in extraction cases. Control of molar position is an obvious necessity in space closure. Inadvertent anchorage loss can prevent correction of anteroposterior malocclusions. This can be especially important in extraction space closure associated with class II correction. Mesial movement of the maxillary posterior teeth may make it very difficult to obtain correction of the malocclusion.⁶

If on upper canine is to be retracted with bodily movement using fixed appliance, the force applied to the tooth will be approximately 100 gm. Force in the opposite direction varying from 67 gm on the first molar to 33 gm on the second premolar resist this. Low level will produce negligible tooth movement and in the effect of a light force of 100 gm would be to retract the canine with minimal anterior unwanted movement of anchored teeth. However, if the force level is increased to 300 gm the force level on the anchored teeth increased dramatically to the level where unwanted teeth movement will occur⁷. So, optimal force should be used for tooth movement. The current concept of optimal force is on the hypothesis that a force of a certain magnitude and temporal characteristics would be capable of producing a maximum rate of tooth movement without tissue damage and maximum patient comfort.¹

Anchorage loss depend on some factors such as malocclusion, type and extent of tooth movement, root angulations and length, missing teeth, intraoral/extra oral mechanics, patient compliance, crowding, overjet, extraction site, alveolar bone contour, inter arch interdigitation, skeletal patten, third molars and pathology(ankylosis, periodontitis) affect anchorage loss. Most of the anchorage loss studies focus on biomechanical solution.^{7,8,9,10,11,12,13}

Vasquez *et al.* (2001) suggested several clinical principles that can be followed to enhance anchorage in adult patients.

1. Incorporating more teeth in the anchor unit, thus distributing the force over a greater root area.

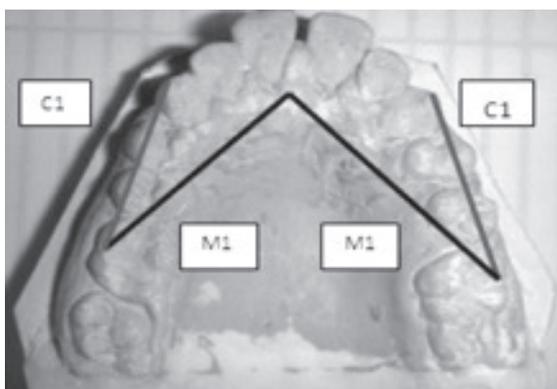


Fig-1: Pre-treatment measurements

2. Tying the anchor unit together more rigidly.
3. Varying the movement-to-force ratio so that the active unite is tipped while the anchor unit is translated.
4. Applying forces to the anchor unit that could be neutralized by occlusal forces.

Force levels between the active and anchor unit is to vary due to the friction. Since the force that acts at the root surface is the result of applied force, minus the force or reduce the force due to friction.

In recent years, endosseous implants have been used as orthodontic anchorage.¹⁴

Materials and methods:

136 patients were selected for the study which was treated in the Department of Orthodontics, Faculty of Dentistry, Bangabandhu Sheikh Mujib Medical University (BSMMU). The patient was either class I malocclusion with crowding which need extraction of first premolar to relieve the crowding; or class I or class II malocclusion. Those patients have overjet more than 5 mm and need extraction of first premolar. All the patients above 12 years received orthodontic treatment.

The treatment method, all the patient was treated with edge-wise fixed appliance using stainless steel 0.018 x 0.025 inch Roth brackets and according to standardized moderate anchorage control.

The two maxillary first premolars was extracted, the space closure by individual sliding of canine using round stainless steel wire 0.016 inch for canine retraction. Canine retraction by using elastic chain was change every 3 weeks. Then, the en-mass incisors retraction using 0.017 x 0.025 inch rectangular arch wire containing tear-drop loops activated 1 mm every 3 weeks, this regimen of activation produce initial force of 150 gm per side.^{15,16} The arch wire activated with tip back bend mesial to the first molars. After finishing and completion of the treatment, another study cast was taken for each sample or patient. So there was pre and past treatment study cast.

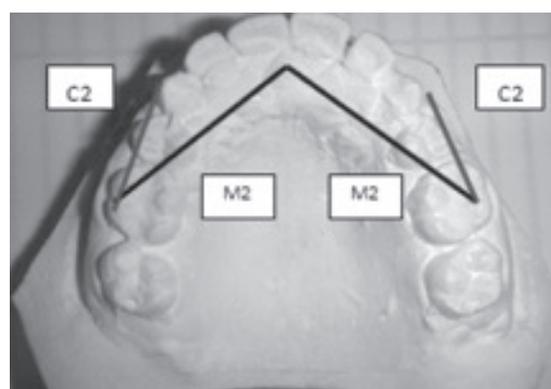


Fig-2: Post-treatment measurements

Procedure for collecting data:

All the measurement had been done on the pre and post treatment dental casts by using vernia. Those measurements are-

Distance of Canine (C): The length between tip of the canine to the buccal groove of the first molar. The difference of canine distance (C) between pre-treatment (C1) and post- treatment (C2) which will give the amount of canine retraction (distal movement of canine)

Distance of Molar (M): The length between the buccal groove of first molar to the centre of incisive papilla. This anatomical landmark are taken as a constant reference point that not affected by teeth movement (Agha, 2006; Haruki & Little, 1998; Hoggan & Sadowsky, 2002). So, the difference of molar distance between pre-treatment (M1) and post treatment (M2) record will give the amount of anchorage loss, or mesial migration of first molar.



Fig.-3: Measurement of pretreatment and post-treatment dental cast by vernier caliper in mm.

Result:

In this study 136 cases were include 40 male, 96 female and who were treated with fixed orthodontic appliance. Data were obtained from the pre-treatment and post – treatment dental cast of 136 patients, 68 Angle class I crowding and 68 Angle class II increase overjet.

Table -I shows, the age group minimum 12 y maximum 32 years. The mean value of canine retraction was 5.25 mm and anchorage loss 3.16 mm.

Table-II demonstrated the comparison between male and female. Canine retraction in male higher mean value than female and the difference also was significant (P vlue-0.03). Anchorage loss in female had greater mean value than male but not significant.

Table-III Showed the difference between the class I and Class II, the canine retraction in class I (mean 6.09) was higher than class II (mean 4.41) but not significant. Anchorage loss was higher in class II (mean 3.91) than class I (mean 2.40) malocclusion, was not significant.

Table-IV demonstrated the comparison between male and female in class II malocclusion. Canine retraction and anchorage loss was not significant.

Table-V showed the comparison between male and female in class I malocclusion. Canine retraction and anchorage loss was not significant.

Table-VI demonstrated the comparison between growing and non growing group. Canine retraction in growing group (mean 5.38 mm) higher than the non growing group (mean 5.12) and the difference was significant (P=0.03). Anchorage loss in growing and non growing was not significant.

Table-I

Description of the age, canine retraction and anchorage loss

	Mean	N	Std. Deviation	Minimum	Maximum	Range
Age	19.43	136	4.698	12	32	20
Canine retraction	5.254	136	1.4049	2.3	8.9	6.6
Anchor loss	3.160	136	1.1157	.7	6.2	5.5

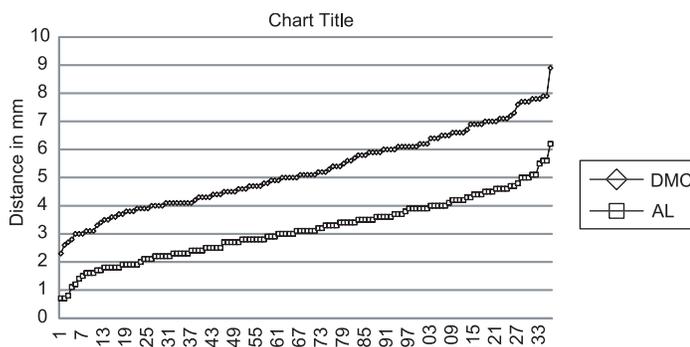


Fig.-4: Canine retraction and anchorage loss of individual case arranged in increasing order.

Table-II*Comparison between male and female in canine retraction and anchorage loss*

	Sex	N	Mean(mm)	Std. Deviation	p value
Canine retraction	Male	40	5.410	1.6380	0.033
	Female	96	5.189	1.2995	
Anchor loss	Male	40	3.030	1.3086	0.060
	Female	96	3.214	1.0276	

Table-III*Comparison between class I crowding & class II increased overjet in canine retraction and anchorage loss.*

	Malocclusion	N	Mean(mm)	Std. Deviation	p value
Canine retraction	Class I crowding	68	6.093	1.2605	0.066
	Increase overjet	68	4.415	.9795	
Anchor loss	Class I crowding	68	2.409	.7940	0.445
	Increase overjet	68	3.910	.8566	

Table-IV*Comparison between male and female in class II malocclusion*

	Sex	N	Mean(mm)	Std. Deviation	P value
Canine retraction	Male	17	4.312	1.0529	0.753
	Female	51	4.449	.9624	
Anchor loss	Male	17	4.135	.8544	0.621
	Female	51	3.835	.8525	

Table-V*Comparison between male and female in class I malocclusion.*

	Sex	N	Mean(mm)	Std. Deviation	P value
Canine retraction	Male	23	6.222	1.5261	0.107
	Female	45	6.027	1.1142	
Anchor loss	Male	23	2.213	.9290	0.278
	Female	45	2.509	.7058	

Table-VI*Comparison between growing & non growing group in canine retraction and anchorage loss.*

	Growth	N	Mean(mm)	Std. Deviation	P value
Canine retraction	growing	66	5.389	1.5353	0.039
	non growing	70	5.126	1.2676	
Anchor loss	growing	66	3.139	1.1758	0.158
	non growing	70	3.179	1.0642	

Discussion:

Relatively few studies have measured the amount of canine retraction and anchorage loss. This study was aimed at evaluating the canine retraction and anchorage loss in class I crowding and class II malocclusion overjet more

than 5 mm. 5% to 50% of the total extraction space can be taken up by an anchor unit made up of the first molar and second premolar when used to retract a canine¹⁷.

In this research, anchorage loss in class I crowding and class II malocclusion, the female had larger mean value

than male group. The deference between male and female group in anchorage loss was not significant. The male have higher canine retraction (mean 5.41) than female (mean 5.81) and the difference was significant. This finding was supported by Agha (2006). But further study is required supporting the findings.

In anchorage loss, the class II malocclusion had greater mean value (3.91) than class I crowding (2.40). The same finding was reported by Agha (2006). He found greater anchorage loss occur in treatment of class II than class I malocclusion. This may be due to the amount of arch length deficiency. Less anchorage is required to relieve crowding than to reduce overjet. So, the greater the crowding lowers the anchorage loss. Gerons *et al* (2003) and Ong & woods (2001) supported the interpretation of the present research because on account of less crowding they reported greater anchorage loss. But the statement contradict the other author, Differential moment have been reported to reduce anchorage loss by 0.6-0.7 mm. When maximum anchorage is required, anchorage loss was greater in class I (0.60mm) than in class II (0.28 mm) malocclusion.^{7,8}

The age of the patient considered as an important factor in orthodontic treatment. In this research, the anchorage losses in non-growing group had greater mean value (3.17) than growing group (3.13), with no significant net difference. The same finding was reported by Gerons *et al*. (2003). They found greater anchorage loss was in the adult group when postero-anterior maxillary growth was compared with adolescent group. But Harris *et al*. (1991) they found growing patient had greater anchorage loss (2.55 mm) than non-growing patient (0.2 mm), which suggests that this factor merits further study.

The growing group had larger mean value (5.38) for canine retraction than non-growing group (5.12). The growing patient had greater bone remodeling cells than adult and facilitate tooth movement.

Conclusion:

The type of malocclusion is important in affecting anchorage loss. There was higher record of anchorage loss in class II malocclusion than class I crowding, but not significant. The male had higher canine retraction than female. The growing patient showed larger canine retraction than non-growing patient.

References:

1. Proffit WR, CV Mosby Co, St Louis. (2000). Contemporary Orthodontics. 3rd ed :295-362.

2. Graber TM, CV Mosby Co, St Louis. (2000). Orthodontics Current Principles and Techniques, 3rd :565-640.
3. Bourauel C, Kob D, Jagar A, Vollmer D. (1999). Simulation of orthodontic tooth movements, A comparison of numerical models. *J Orofac Orthop.* 60(2):136-151.
4. Greekmore TD. (1997). Where teeth should be positioned in the face and jaw and how to get them? *J Clin Orthod.* 31: 586-608.
5. Vaughan D, Nanda R, Currier B. (1995). Kinetic frictional forces between brackets and wires. *Am J Orthod Dentofac Orthop.* 108:20-27.
6. Nanda R. (2004). Biomechanics and Esthetic strategies in Clinical Orthodontics. 1st ed . 10:194-210.
7. Hart A, Taft L, Greenberg SN. (1992). The effectiveness of differential moments in establishing and maintaining anchorage. *Am J Orthod Dntofac Orthop,* 102:434-442.
8. Rajcich MM, Sadowsky C. (1997). Efficacy of intra-arch mechanics using differential moments for achieving anchorage control in extrac-tion cases. *Am J Orthod Dentofacial Orthop.* 112:441-448.
9. Ziegler P, Ingervall B. (1989). A clinical study of maxillary canine re-traction with a retraction spring and with sliding mechanics. *Am J Orthod Dentofacial Orthop.* 95:99-106.
10. Lotzof LP, Fine HA. (1996). Canine retraction: a comparison of twopreadjusted bracket systems. *Am J Orthod Dentofacial Orthop.* 110:191-196.
11. Gianelly AA. (1998). Distal movement of the maxillary molars. *Am jorthod Dentofacial Orthop.* 114:66-72.
12. Bondemark L, Kurol J. (1998). Class II correction with magnets and su-perelastic coils followed by straight-wire mechanotherapy. Occlu-sal changes during and after dental therapy. *J Orofac Orthop.* 59:27-38.
13. Byloff FK, Darendeliler MA. (1997). Distal molar movement using thependulum appliance. Part 1. Clinical and radiological evaluation. *Angle Orthod.* 67:249-260.
14. Vasquez M, Calamo E, Becerra F, Ossa J, Enriquez C, Fresneda E. (2001). Initial stress differences between sliding and sectional mechanics with an endossous implant as anchorage. *Angle Orthod.* 71(4): 247-256.
15. Robest H, Sandy J. (2004). Anchorage control and distal movement. *Br Dent J.* 196:255-263.
16. Ren Y, Maltha JC, Van H, Kuijpers AM. (2004). Optimum force magnitude for orthodontic tooth movement: A mathematical model. *Am J Orthod Dentofac Orthop* 125(1):71-79.
17. Storey E, Smith R. (1952). Force in orthodontics and its relations to tooth movement. *Aust J Dent,* 56:11-18.
18. Agha. NF.(2006). Anchorage loss and distal teeth movement. *Al-Rafidain dent J.* 6(1):78-83.
19. Ong HB, Woods MG. (2001). An occlusal and cephalometric analysis of maxillary first and second premolar extraction effects. *Angle Orthod.* 71: 90-102.

20. Badry thiruvkatachai, A. Pavithranand, K. Rajasigamani, and Hee Moon Kyung. (2006). Comparison and measurement of anchorage loss of the molar with and without the use of implant anchorage during canine retraction. *American Journal of Orthodontics and Dentofacial Orthopedics*. 129 (4): 551-554.
21. Haruki T, Little RM. (1998). Early versus late treatment of crowded first premolar extraction cases. *Angle Orthod*. 68:61-68.
22. Hoggan BR, Sadowsky C. (2002). The use of the palatal rugae for assessment of antero-postior tooth movement. *Am J Orthod Dentofac Orthop*, 121, pp.482-488.
23. Ingalill Feldmann, L. Bondemark^b. (2006). Orthodontic Anchorage. *Angle Orthod*. 76:493-501.
24. K. Ravi. MR Balasubramaniam Memachery George, Sangeetha Duraisamy. (2010). Canin retraction using slide friction less ligature moduls with conventional modules. *SRM University Journal of Dental Sciences*. 1:150-155.
25. Mauricio Mezomo, Eduino S. De Lima, Luciane Macedo de Menezes, Andre Weissheimer, Susiane Allgayer. (2011). Maxillary Canine retraction with self- ligation and Conventional brackets. *Angle Orthod*. 81:292-297.
26. Mowafy MI, Zaher AR.,(2012). Anchorage loss during canine retraction using intermittent versus continuous force distractions; a split mouth randomized clinical trial, *Prog Ortho*.13: 117–125.
27. Raboud DW, Faulkner MG (1997). Three dimensional effects in retraction appliance design. *Am J Orthod Dentafac Orthop*. 112:378-392.
28. Tarek El-Bialy. (2008). Anchorage Control During Canine Retraction: Wire Bending, Destruction Osteogenesis or TADS. *PCSO BULLETIN*:19-21.
29. Tselepis B, West C. (1994). Frictional resistance between brackets and arch wires. *Am J Orthod Dentofac Ortop*. 106:131-138.

Dental health facilities in Upazilla Health Complex in Bangladesh

Akter A¹, Sarker RN², Rahman Z³, Kundu GC⁴, Parvin SMS⁵, Barua CS⁶, Islam MS⁷

Abstract :

A cross-sectional descriptive study was conducted in districts to assess the dental health facility in the upazilla health complex of Bangladesh. Four upazilla health complexes were selected. Physical facilities, organization of dental facilities and activities of the dental unit were explored in this study according to DGHS guideline from 1st April to 30th June 2012. Dental patients and their socio-economic characteristics and service provider are also considered in this study. All the relevant information were collected by face to face interview, personal observation and reviewing medical documents of the patients. The availability of the dental health facilities & dental service activities were checked with the help of check list also opinions from the service providers & respondents included. Through the dental health facilities & service were not systemically organized. The Organogram of the dental unit, dental patients flow charts, drug chart, pathology center were accessibly by direction in all UHC. The dental equipments, sterilizer are also placed in situ. The supporting service of the dental health facilities the water supply, electricity supply, drainage system were available in the most of the UHC as common utility. Few dental materials, dental health education chart, medical waste management system in Manikgang sador dental unit was better established rather than rural. The emergency dental service were not provided any of the upazila. The upgrading dental health facilities were essential to combat the burden dental care for UHC population. Dental professionals could be more careful sensitized in monitoring dental health care program and their accessibility.

Key words: UHC: Upazilla health complex, DGHS: Director General of Health Services.

(Bangladesh Dental Journal 2015; 31: 44-49)

Introduction:

Dental health refers to all aspects of the health and functioning of our mouth especially the teeth and gums. Apart from working properly to enable us to eat, speak, laugh (look nice), teeth and gums should be free from infection, which can cause dental caries, inflammation of gums, tooth loss and bad breath.¹ Good dental health is

the responsibility of individuals, communities and governments although their relative importance varies. For example in some European countries water fluoridation is not yet publicly acceptable and so responsibility for preventing tooth decay lies largely with the individual.^{2,3} Dental professionals play an essential role in monitoring dental health and treating or preventing any problems. Access to good dental care, including regular check-ups is vital. For some people, especially those from lower socio-economic groups, access to dental professionals may be limited. These groups are important targets for dental health education programmes.⁴ Schools also play an important role in educating children on the importance of good oral hygiene and diet. It's important to take care of your mouth and teeth starting in childhood. If you don't, you could have problems with your teeth and gums - like cavities or even tooth loss.⁵ Dental diseases impose both financial and social burdens as treatment is costly and both children and adults may miss time from school or work because of dental pain. Start dental care early, brush baby's teeth with a fluoride toothpaste as soon as they appear in the mouth. Visit the dentist about every 6 months for a check-up. And seek dentist's advice before

1. Dr. Afroza Akter, BDS, MPH (HM-NIPSOM), Head of the Department, Department of Basic Anatomy & Physiology, Biborton Mats.
2. Dr. Rathindra Nath Sarker, BDS, MPH(HE&HP-NIPSOM), Medical Officer, Dhaka University Medical Center, Dhaka University.
3. Dr. Zahidur Rahman, MBBS, Mphil, Secretary, The State Medical Faculty of Bangladesh.
4. Dr. Gokul Chade Kundu, BDS, MPH, Medical Officer, BSMMU.
5. Dr. S.M. Shamima Parvin, BDS, Senior Medical Officer, Dhaka University Medical Center, Dhaka University.
6. Dr. Chowdhury Sujoy Barua, BDS, Lecturer, Department of Basic Anatomy & Physiology, Biborton Mats.
7. Dr. MD. Shariful Islam, BDS, Lecturer, Department of Community Medicine, Biborton Mats.

Address of Correspondence: Dr. Afroza Akter, BDS, MPH (HM-NIPSOM), Head of the department, Department of Basic Anatomy & Physiology, Biborton Mats, House no 14, 3rd floor, Darussalam Road, Mirpur-1, Dhaka, Mobile no: 01712725257, e-mail: afrozadental@gmail.com

using aesthetic products (e.g: teeth whiteners) that could have a deleterious effect on the teeth. Sometimes problems can arise that require immediate treatment. That's why it's always a relief to know that you have somewhere to turn to when you are faced with a dental crisis. Whatever the emergency, The Dental Clinic's team of experienced dental professionals are keen to assist you should you have a need for emergency dental care.⁶ You can also rest assured in the knowledge that we offer an on-call emergency dentist service for both registered and non-registered patients. Trauma an injury to your teeth, Severe bleeding in your mouth, Swelling around your mouth are serious Dental pain. Common disease of Dental department: Gingivitis, Periodontal Disease, Periodontal Surgery, Oral & Maxillofacial Surgery, Wisdom Tooth Extraction, Pulpitis, etc Regular Dental Check-up is needed for good dental health. Public health dentistry, dental specialty concerned primarily with prevention of dental decay and of periodontal disease. Public health dentistry is practiced generally through governmentally sponsored programs, which are for the most part directed toward public-school children in the belief that their education in oral hygiene is the best way to reach the general public. The pattern for such programs in the past was a dentist's annual visit to a school to lecture and to demonstrate proper tooth-brushing techniques. The 1970s saw the emergence of a more elaborate program that included a week of one-hour sessions of instruction, demonstration, and questions and answers, conducted by a dentist and a dental assistant and aided by a teacher who had previously been given several hours of instruction.⁶ Use was also made of televised dental health education programs, which parents were encouraged to observe. A range of oral health promotion programs and projects have been implemented by Dental Health Services focusing on targeting rural communities with the greatest need. Our programs are aimed at engaging and supporting rural to reduce factors that may negatively affect their oral health. Factors which can influence oral health - Nutrition, lifestyle, social connectedness, personal health and hygiene practices, socio-economic status, education, cultural beliefs, attitudes and level of health literacy. Factors also include the level of access to oral health services and programs. Working together with partnering organisations and community groups to achieve sustainable oral health outcomes is an important part of all our programs.

Materials & Methods

- a. Type of study : It is a cross sectional description study.
- b. Place of study : NIPSOM. Site of study was conducted in four Upazila Health Complex (UHC), two UHC were near to sador & two UHC were rural based .Jhinaidha & Manikgang districts were selected of this study period .
- c. Study population: The patients who has registered the UHC for the dental treatment, Concerning dental surgeon, dental assistant, pharmacist.
- d. Sampling technique: Convenience type of non probability Sampling technique was used for data collection for this specific study.
- e. Sampling Unit & Sample size: Purposive sample was taken. Selections of four upazila were urban & rural based in two districts. The selected upazila health complexes were Manikgang sador, Ghior, Jhinaidha sador, Shuilokupa. Among 110 dental registered dental patients were taken available in the study period .
- f. Period of study :The study period is 1st April to 30th June 2012
- g. Ethical Issue :
 1. Ethical clearance was taken from ethical committee of NIPSOM.
 2. Before data collection, permission was taken from the Civil Surgeon.
 3. Informed risk, burden, benefit about the reachers, and written consent of individual the patients were taken.
 4. During data collection privacy of the patients should be maintained strictly.

Data collection instruments: Data were collected by a semi-structured questionnaire. After preliminary observation, check list & review of document, questionnaire was developed. It was protested, modified & finalized for date collection. Individual questionnaire was checked for completeness & consistency.

Data collection technique: All relevant data were collected by Personal observations, questionnaire, dental activities checked by check list, review of medical documents individual discussion with service provider.

i. Data Processing: Collected data were corrected for any irrelevancy and inconsistency. Followed by data were cleaned accordingly and post - coding was done as required. Finally data was prepared for analysis in computer.

ii. Data Analysis: Data were analyzed by computer with the help of software (SPSS).

Results:

Four upazila health complexes were selected, two upazila were near to sadar, and two upazila were rural based in the districts. Observation, check list were used to explore the physical facilities, intervention, discussion alone with the provider for the activities of dental unit. The finding were provided by tables & figures. The total of 110 patients were gave written consent were enrolled in the study. Physical facilities were dental unit room size is more or less 180sqft with toilet in each of the upazila. The dental manpower in the UHC mostly one male graduate dental surgeon, one assisted by one male dental, one pharmacist. Ticket counter, Dental equipments (extraction) are available, majority Upazila Health Complexes has Reception room, Patient waiting room, Fixed room for treatment of dental patients, Dental unit were available, few Upazila Health Complexes has Dental materials, Dental equipments (other) are available. Dental ticket counter, dental emergency patient bed were not available in UHC. Organogram and Drug chart are available in the every Upazila Health Complexes, majority Upazila Health Complexes has Organizational flow chart is available, few Upazila Health Complexes has Dental health charts for health education. Sterilization facility and Pathology and X-ray facilities are available in the every Upazila Health Complexes. Majority Upazila Health Complexes has Record keeping facility is available but Dental X-ray facility and Sterilization (Dental) facility are not available in Upazila Health

Complexes. Patients referral system is available in every Upazila Health Complexes, but Dental health education activities and Dental emergency facility are not available in Upazila Health Complexes. Majority percentages of health complex were Water supply, Electricity supply, Drainage system, Waiting room is available, but few upazila Health Complexes had Medical waste management system is available and no Generator facility is available in any upazila Health Complexes. Caries were 25(27.50%) but Deciduous tooth mobility 11 (12.10%). among the taking brush regularly were 30% and majority of the patients are not taking brush regularly 70%, health education 12 (10.9%). Disease is diagnosed in the hospital 38(34.5%), Treatment facility of the disease is available 46(41.8%), Got information regarding the disease 67 (60.9%), Free drug is available 98(89.1%). Socio-demographic data of the enrolled subject were shown in table Most of the enrolled subject was married, Muslim and service holder, housewife. In this present study, highest proportion 57% out of 110 respondents in the age group of 10-20 years, Comparison between the mean and standard deviation of the age of patient Mean \pm SD 32.82 \pm 7.49. 11.8% respondents out of 110 were illiterates and the rest were literate. Among the patients 16.4% were primary, 31.8% were HSC passed. 43.6% were service and 24.5% were businessman, 20% were house wife, 8.2% were daily labor, 3.6% were farmers.

Table-I

		Status of the Upazila Health Complex				
		Jhinaidah Sadar	Shailkopa Jhinaidah	Manikganj Sadar	Ghior Manikganj	
Manpower	Dental Surgeon is available	Male	Yes	Yes	Yes	Yes
		Female	No	No	No	No
	Medical Assistant (Dental) is available	Male	Yes	Yes	Yes	Yes
		Female	No	No	No	No
Organizational Facility	Pharmacist is available		Yes	Yes	Yes	Yes
	Receptionist is available		Yes	No	No	No
	Organogram is available		Yes	Yes	Yes	Yes
	Organizational flow chart is available		Yes	No	Yes	Yes
	Patient flow chart in UH&FPO room		No	No	No	No
	Drug chart is available		Yes	Yes	Yes	Yes
	Dental health charts for health education is available		No	No	Yes	No
Supporting Service 1	Record keeping facility is available		No	Yes	Yes	Yes
	Pathology and X-ray facilities are available	Yes	Yes	Yes	Yes	Yes
	Dental X-ray facility is available		No	No	No	No
	Sterilization (Dental) facility is available		No	No	Yes	No
Supporting Service 2	Dental emergency facility is available		No	No	No	No
	Dental health education activities are ongoing		Yes	No	Yes	No
Utility facility	Patients referral system is available		Yes	Yes	Yes	Yes
	Water supply is available		Yes	Yes	Yes	Yes
	Electricity supply is available		Yes	Yes	Yes	Yes
	Generator is available		No	No	No	No
	Drainage system is available		Yes	Yes	Yes	Yes
	Medical waste management system is available		No	No	Yes	Yes
	Waiting room is available		Yes	Yes	Yes	Yes

Table-II

Age (Yrs.)	Frequency	Percent
10-20	57	51.8
21-30	27	24.5
31-40	16	14.5
41-50	10	9.09
Total	110	100.0
Mean ± SD	32.82 ± 7.49	

Table-III

Dental Service	Yes f(%)	No f(%)
Got information regarding the disease	67 (60.9)	43(39.1)
Got dental health education	12 (10.9)	98 (89.1)
Disease is diagnosed in the hospital	38(34.5)	72(65.5)
Treatment facility of the disease is available	46(41.8%)	64(58.2)
Free drug is available	98(89.1)	12(10.9)

Table-IV

Disease	Frequency	Percent
Periodontitis	16	14.54
Broken down crown	23	20.90
Caries	25	22.72
Pulpities	17	15.45
Deciduous tooth mobility	11	10.0
Gingivitis	18	16.36
Total	110	100.0
Treatment facility	Frequency	Percent
Diagnosis	34	30.90
Extraction	27	24.5
Filling	2	1.8
RCT	1	0.90
Deciduous tooth extraction	11	10
Scaling	10	9.09
Only health education	15	13.63
Total	110	100.0

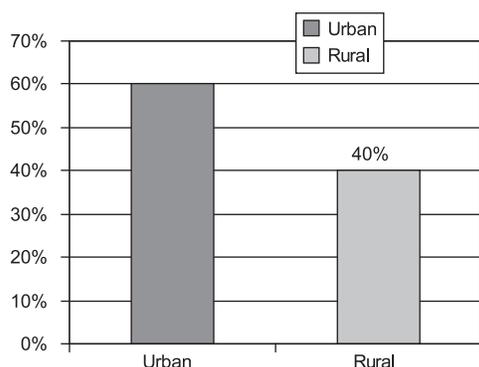


Fig.-1: Residing places of the patients

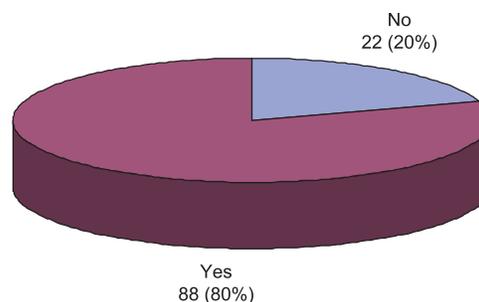


Fig.-2: Distribution of the patients by taking drug by own choice

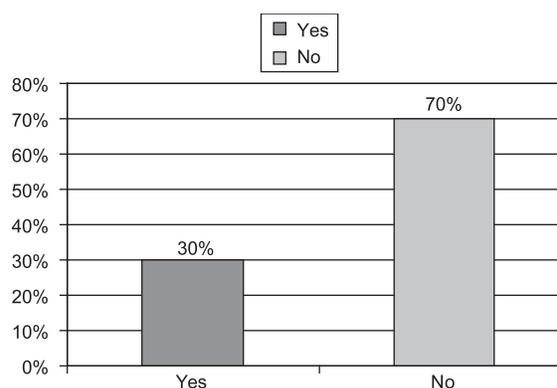


Fig.-3: Whether the patients brush teeth regularly

Discussion & Conclusion:

This study was carried off explore Dental health facilities in upazila health complex in Bangladesh. The study was conducted with a view to find out the level of knowledge about factor of total condition of upazila health complex dental department. During 1st April to 30th June 2012, 110 registered dental patients were interviewed attending four upazila health complexes two upazila were near to sador and two upazila were rural based .This study was a cross-sectional type of descriptive study.

This specific Observational Description study was conducted among hospital patients &hospital facilities in four Upazila health complex hospital. 110 registered dental patients Sample size of the study was determined four Upazilla Health Complex ,two sador ,two rural upazila out of two districts , Upazila are selected by the near to Dhaka two Upazilla Health Complex and away to Dhaka two Upazilla Health Complex conveniently considering the resource constraints and the study subjects were included on the basis of specific inclusion and exclusion criteria . All the relevant information were collected by face to face interview , observation, check list and reviewing medical documents of the patients study subjects with the help of

a questionnaire .

Dental emergency doctor, Nurses and MLSS , Medical waste management system and Generator facility are needed for dental health services any Upazila Health Complexes. Oral hygiene instruction has to be given through written documents and training which will enable both the clinicians and policy makers to formulate and implement necessary measures to combat the burden of among the UHC patients in the country.

At the end of the discussion it can be concluded that the number of patients reported in the hospital are rather limited due to various reasons.^{21,22,23} The study regarding knowledge about factors of dental facility an increased sample would be more helpful, justified. The finding of this study will help to organize preventive programs and evaluation of dental facility activities and strategies of the upazila health complex of Bangladesh.

Recommendation:

1. A detailed study with proper study design has to be undertaken to have a better understanding of the dental health facility of the upazila health complex.
2. The patient health facility and finding of the present study should further be investigated.
3. Got dental health education 10.95%, Treatment facility of the disease 41.8% Free drug is available 89.1% in this calculation we understand necessary of health care service should be provided.
4. Other manpower should be ensure for the good service of the upazila health complex.
5. Dental surgeon and medical technologist dental should be trained to identify the problem and promote health education.
6. Good manager need for good service, so arrange the good environmental room such as ventilation, electricity, water supply, drainage system, generator, x-ray, pathology, sterilization, dental unit & equipments, materials, health education matters etc in this supports are ensure for the service the hospital patients .
7. This study we found some result female doctor assistant ensure necessary, dental nurse, MLSS post are create are emergency, dental emergency are needed, emergency dental doctor , emergency dental bed, patients flow chart are needed. Other equipment such as scaler, lightcure, dental sterilizer, dental x-ray, genaretor, dental health education logistics, record

ipping system, medical waste management system, upgrading necessary. Oral hygiene instruction has to be given through written documents and training which will enable both the clinicians and policy makers to formulate and implement necessary measures to combat the burden of among the UHC patients in the country. This will definitely be helpful for the development of health program and service receiver in the UHC of Bangladesh.

References:

1. World Health Organization. Constitution of the World Health Organization - Basic Documents, Forty-fifth edition, Supplement, October 2006;36(1):41-8.
2. Huber M et al. "How should we define health?" 2011;343:10
3. Callahan D. "The WHO definition of 'health'." *The Hastings Center Studies*, 1(3), 1973 - <http://www.jstor.org/pss/3527467>, 1973 ;1(3):11-12
4. The Daily Telegraph (11 January 2009). "Mouthwash linked to cancer". *The Sunday Telegraph*. 2009;5(2):17-22.
5. Vecchia, Carlo La. Mouthwash and oral cancer risk: An update. doi:oraloncology. 2008;6(3): 10.1016/j
6. www.health care network of Bangladesh.bd.com
7. www.dghs.bd.com.Health bulatine 2011;1:43
8. www.bangladesh dental society.com
9. www.WHO. The objectives of the WHO Global Oral Health Programme (ORH)
10. WHO Glossary
11. UCLA Dept. Epidemiology: Definitions
12. CDC-Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008- 2010; 10: 100
13. Thiel, Theresa (1999). "<http://www.umsl.edu/~microbes/pdf/tyndallization.pdf>" (PDF). *Science in the Real World*. Retrieved 2007-03-06.
14. McKenzie, J., Neiger, B., Thackeray, R.. *Health Education and Health Promotion. Planning, Implementing, & Evaluating Health Promotion Programs..* San Francisco, CA: Pearson Education, Inc. 2009;5: 3-4
15. Donatelle, R. *Promoting Healthy Behavior Change. Health: The basics.* San Francisco, CA: Pearson Education, Inc. 2009;8: 4
16. Joint Committee on Terminology. Report of the 2000 Joint Committee on Health Education and Promotion Terminology. *American Journal of Health Education*, 2000 - 2001 ;32(2): 89-103.
17. World Health Organization. List of Basic Terms. *Health Promotion Glossary*. Retrieved May1, from http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf 2009;7:4-5
18. WHO - Mercury in Health Care :Amalgam is a mixture of mercury and a metal alloy page 1 item # 2, third paragraph. 2011;2:1.

19. Dental Filling Materials in the Confederacy- History of Dentistry
20. Powers, John M. Powers. *Craig's Restorative Dental Materials*, 2006;11:12-22.
21. Van Nieuwenhuysen JP, D'Hoore W, Carvalho J, Qvist V (August). "Long-term evaluation of extensive restorations in permanent teeth". 2003; 31 (6): 395-405.
22. <http://www.newelldentistry.com/pages/article-best.html> "Why gold ..." by Dentist Joseph F Newell, DDS
23. A Situational Analysis of Human Resource Issues in the Pharmacy Profession in Canada. *Human Resources Development Canada*, 2011;15:42-43.
24. *MedScape News*, Preceptors' Perspectives on Benefits of Precepting Student Pharmacists, 2011;12:62-73
25. World Health Organization. *Classifying health workers*. Geneva, 2010.
26. US Bureau of Labor Statistics. *Occupational Outlook Handbook*, "Pharmacists". 2010-11;14:7
27. Canadian Pharmacists Association *What do Pharmacists do?* 2010;11:4-13..
28. Haddow, George D.; Jane A Bullock *Introduction to emergency management*. 2003;5:12-3.
29. Vega KJ, Pina I, Krevsky B. Heart transplantation is associated with an increased risk for pancreatobiliary disease. *Ann Intern Med* 1996;124:980-3.

Traumatic pseudoaneurysm of the Superficial Temporal Artery- A case report

Rahman MM¹, Rubel ATMT², Mamood MA³, Talukder MA⁴, Bhuiyan RA⁵

Abstract:

A male patient presented with a swelling on the left preauricular region. Three weeks before he fall from his bike. A diffuse smooth lump on the left side of his face developed. Digital subtract angiograph revealed a pseudoaneurysm of the Superficial Temporal Artery (STA). The pseudoaneurysm was surgically removed and the patient recovered uneventfully. Owing to its superficial course, the STA is vulnerable to blunt head trauma. Traumatic aneurysms of the STA should be a differential diagnostic consideration in patients with a history of trauma and a swelling on their head.

(Bangladesh Dental Journal 2015; 31: 50-51)

Introduction:

Traumatic arterial aneurysms are extremely uncommon in the facial region. When they do occur, the superficial temporal artery is the most frequently affected vessel,¹ but other branches of the external carotid may be involved.¹⁻⁹ The initial injury may be relatively mild and blunt in nature and the presentation is often delayed several days or weeks. Although formal surgical treatment of the lesion is straightforward, attempts at incision and drainage of a mistakenly diagnosed lesion could have undesirable consequences. The diagnosis is usually based on the clinical findings and is confirmed by techniques such as duplex ultrasound, computed tomography (CT), or angiography.¹⁰⁻¹² This report describes a patient with a traumatic facial artery pseudoaneurysm.

Report of a case:

A 14-year-old child arrived with left preauricular region swelling at the Dhaka Dental College Hospital after having a road traffic accident. Six weeks ago he got trauma falling from bicycle and treated conservatively as close reduction and intermaxillary fixation by 26g ss wire for 3 weeks. He

was diagnosed as fracture of the left condyle and right parasymphysis of the mandible. The initial swelling after trauma was reduced but two weeks later the swelling increased and became static. It was approximately 5cm x 3cm in dimension, diffuse, non tender, non pulsatile, firm in nature. An orthopantomograph showed fracture at right parasymphysis and left condyle. Digital subtract angiography revealed a pseudoaneurysm of the STA. He got surgery by ligation of external carotid artery and resection of ramus of the left mandible and removal of lesion. After six months and one year later the patient was recalled for follow-up. We observed 33 mm mouth opening, no pain, and mild deviation of jaw towards surgical side with adapted occlusion. And then one year later the patient again came and same observation noticed.

1. Dr. Md. Masudur Rahman, BDS, MS(OMS), Assistant Professor, Dept. of Oral & Maxillofacial Surgery, DDCH.
2. Dr. ATM Tarifuzzaman Rubel, BDS, FCPS(OMS), Assistant Professor, Dept. of Oral & Maxillofacial Surgery, DDCH.
3. Dr. Md. Apel Mamood, BDS, FCPS(OMS), Registrar, Dept. of Oral & Maxillofacial Surgery, DDCH.
4. Dr. Morshed Alam Talukder BDS, MS(OMS), FNST, Associate Professor, Dept. of Oral & Maxillofacial Surgery, DDCH.
5. Dr. Rafique Ahmed Bhuiyan, BDS, Dip(OMS), Senior Consultant, Dept. of Oral & Maxillofacial Surgery, DDCH.

Address of Correspondence: DR. Md. Masudur Rahman, BDS, MS(OMS), Assistant Professor, Dept. of Oral & Maxillofacial Surgery, DDCH.



Fig.-1: Front view of patient



Fig.-2: Lateral view of patient

Discussion:

Aneurysms can be classified into true and false types. True aneurysms are localized, abnormal dilations of arteries caused by a weakening of the vessel wall and containing all three layers. False aneurysms are caused by a tangential laceration of an arterial wall by either blunt or penetrating trauma.⁴ Such lacerations result in a persistent orifice secondary to partial retraction of the vessel. Extravasations of arterial blood into the surrounding tissues under pressure then will occur. When the pressure difference between the involved artery and the hematoma equalizes, further arterial flow will cease. The hematoma will liquefy, with ensuing secondary hemorrhage from the previously injured artery. This can result in an increase in associated soft-tissue deformity and asymmetry. With liquefaction, a bruit and pulsation may develop. This would depend on the anatomic location of the injured artery as well as the nature of the covering tissues.¹² Another distinction between the two is that usually the false aneurysm produces a relentlessly expanding aneurysmal sac that compresses collateral vessels, whereas an AV shunt does not. Histologically, pseudoaneurysm is distinct from true aneurysms in which all three layers of the vessel wall remain intact.

The STA is vulnerable to blunt trauma because of its superficial course and proximity to the underlying bony structures.^{13,14} Pseudoaneurysm of the STA typically present within 2–6 weeks of a blunt injury and can usually be diagnosed on clinical grounds.^{15,16} As the pseudoaneurysm appears delayed direct questioning may be required to elicit the exact mechanism of injury.^{13, 15} Initial examination of the lesion may easily be confused with an abscess, or a haematoma. The presence of pulsation, a palpable thrill, or even a bruit, may point to the diagnosis, but as our case demonstrates these are not constant findings.¹³⁻¹⁶ Surgical ligation and excision is traditionally the treatment of choice. Further investigation with

arteriography, computed tomography, or ultrasound may rarely be indicated and are usually reserved for complicated cases. Embolization is an alternative treatment.^{13-14, 16}

Conclusion:

Aneurysms of the superficial temporal are rare and are usually degenerative because of blunt or penetrating trauma to the preauricular or temporal region. Exploration with ligation and excision is considered as a safe and definitive treatment of pseudoaneurysm of the STA. In conclusion, physicians should be aware of traumatic aneurysms of the STA in patients with a history of trauma and a swelling on their head.

References:

1. Cooperband BR, Friedel W, Bhatt GM, et al: False aneurysm of the facial artery. *J Oral Maxillofac Surg* 47:1327, 1989
2. Lutcavage GJ: Traumatic facial artery aneurysm and arteriovenous fistula: Case report. *J Oral Maxillofac Surg* 50:402, 1992
3. Wineland PL, Topazian RG, Marble HB Jr: False aneurysm of the facial artery. *J Oral Surg* 34:642, 1976
4. Akker HP van den, Lijn F van der: A false aneurysm of the facial artery as a complication of circumferential wiring. *Oral Surg Oral Med Oral Pathol* 37:514, 1974
5. Schwartz SH, Blankenship BJ, Stout RA: False aneurysm of the facial artery: Report of case. *J Oral Surg* 29:672, 1971
6. Bresner M, Brekke J, Dubit J, et al: False aneurysm of the facial region. *J Oral Surg* 30:307, 1972
7. Cohen SM: Vascular surgery and reticuloendothelium system, in Rob C, Smith R (eds): *Clinical Surgery*, vol 14. Philadelphia, PA, Lippincott, 1967, pp 140-141
8. Schwartz HC, Kendrick RW, Pogrel BS: False aneurysm of the maxillary artery: An unusual complication of closed facial trauma. *Arch Otolaryngol* 109:616, 1983
9. Cohen MA: False (traumatic) aneurysm of the facial artery caused by a foreign body. *Int J Oral Maxillofac Surg* 15:336, 1986.
10. Nemade SS, Eiman M, Blondet R, et al: Pseudoaneurysm of the superficial temporal artery. *South Med J* 89: 815, 1996
11. Fox JT, Cordts PR, Gwinn BC: Traumatic aneurysm of the superficial temporal artery: Case report. *J Trauma* 36:562, 1994.
12. Merkus JWS, Nieuwenhuijzen GAP, Jacobs PPM, et al: Traumatic pseudoaneurysm of the superficial temporal artery. *Injury* 25:468, 1994.
13. Conner WCH, Rohrich RJ, Pollock RA. Traumatic aneurysms of the face and temple: a case report and literature review. *Ann Plast Surg* 1998; 41: 321–326.
14. Sanchez F, Delgado F, Ramos M. Pseudoaneurysm of the superficial temporal artery treated by embolization: report of a case. *J Oral Maxillofac Surg* 2000; 58:819–821.
15. Cross WR, Nishikawa H. Traumatic pseudoaneurysm of the superficial temporal artery. *Emerg Med J* 1999; 16:73.
16. Peick AL, Nichols WK, Curtis JJ, et al. Aneurysms and pseudoaneurysms of the superficial temporal artery caused by trauma. *J Vasc Surg* 1988; 8:606–610.

Follicular Ameloblastoma of maxilla: A case report and review

Iqbal M¹, Nur SB², Arefin MR³, Rahman KMH⁴, Molla MR⁵

Abstract:

A 62-year-old male patient had been reported with complaint of swelling on the left side of the face for last 10 years. Provisional diagnosis of ameloblastoma was given based on clinical, radiographic findings and FNAC. Post operative histopathology confirmed the diagnosis as follicular ameloblastoma. Enucleation of cyst with surgical obturator was performed under general anesthesia. Patient has been kept under periodic follow-up. No recurrence had been reported till date.

(Bangladesh Dental Journal 2015; 31: 52-55)

Introduction:

Ameloblastoma is a rare tumour occurring in the maxilla. The first detailed description of this lesion was by Falkson in 1879, but the term 'ameloblastoma' was coined by Churchill in 1933.¹ It represents approximately 1% of oral tumours and develops from the odontogenic epithelium and its derivatives or remnants.³ Sometimes it arises from a dentigerous cyst.⁴ It occurs with a wide range of ages; a mean age in the third or fourth decade, and equal frequency between male and female,⁵ although a higher frequency in females than in males has been described.^{6,7} It has a slightly higher incidence in black races and in the Japanese.⁸ Ameloblastoma has a persistent and slow growth, spreading into marrow spaces with pseudopods without concomitant resorption of the trabecular bone. As a result, the margins of the tumour are not clearly evident radiographically or grossly during operation, and the lesion frequently recurs after inadequate surgical removal, showing a locally malignant pattern.⁹ Long term follow-up is necessary because this lesion has been shown to recur 25 and 30 years following primary treatment.^{5,8}

Resorption of the adjacent tooth roots is not uncommon. Several histopathologic types of ameloblastoma are described and include plexiform, follicular, unicystic, basal cell, granular cell, clear cell, acanthomatous, vascular and desmoplastic patterns.^{1,3,10} Ameloblastomas rarely metastasize.¹¹ The most common sites of metastases are the lungs followed by regional lymph nodes, pleura, vertebrae, skull, diaphragm, liver, parotid and small intestine.¹³

Case report:

A 62 year old man was referred to the Oral and Maxillofacial Surgery Department of The Anwar Khan Modern Hospital, Dhaka, Bangladesh, in 30th March 2015. The chief complaint was a painless and progressive swelling of the left maxilla present for ten years. The patient was apparently asymptomatic ten years back. Then he noticed a swelling on the left side of the face, which was small and painless initially and gradually increased in size. The patient was consulted at another medical college for the same complaint and an FNAC was performed from the left maxillary swelling in 17th May 2007. Histopathological report of the specimen was suggestive of odontogenic cystic lesion. There was no significant past medical history. He gave history of taking anti-hypertensive medication for last twenty years. His physical examination revealed no abnormality other than those related to the chief complaints.

On extra-oral examination, there was facial asymmetry on the left side. On palpation there was a well circumscribed, nontender, smooth surfaced swelling of hard consistency, spherical in shape and approximately 5 × 4 cm in size, present in the left maxillary region extending from midline to 5 cm anterior to the tragus. Superiorly it extended up to the infraorbital rim. Obliteration of nasolabial fold was present along with slight elevation of alar base on the left side. On superficial examination of the nostrils, the nasal floor was found to be elevated in the left nostril.

1. Dr. Mausumi Iqbal, BDS, FCPS, Oral Surgeon, Oral & Maxillofacial Surgery Dept., Anwar Khan Medical College Hospital, Dhaka.
2. Dr. Sadia Binta Nur, BDS, MPH.
3. Dr. Md. Raihan-Ul Arefin, BDS, MS, FCPS, Assistant Professor, Oral & Maxillofacial Surgery, Kumudini Medical College.
4. Dr. K. M. Hannanur Rahman, MBBS, MS (Thesis), Orthopaedics Resident, NITOR, Dhaka.
5. Professor Dr. Motiur Rahman Molla, Ph.D (Japan), FCPS, FICD, FICS, Advanced Surgical Training (Australia), BDS, Professor. Oral & Maxillofacial Surgery Dept., Anwar Khan Medical College Hospital, Dhaka

Address of Correspondence: Dr. Mausumi Iqbal, BDS, FCPS, Oral Surgeon, Oral & Maxillofacial Surgery Dept., Anwar Khan Medical College Hospital, Dhaka.

On intraoral examination (Fig. 1), expansion was present in the left maxillary vestibular area extending from midline to third molar, causing complete obliteration of vestibular fold and also extending into the palatal region from the left maxillary central incisor region to the greater palatine foramen region. Clinical examination revealed diffuse, smooth-surfaced, firm, nontender swelling on the left side of the face. It extended from the zygomatic region to the inferior border of mandible superoinferiorly, and from the corner of the mouth to the angle of mandible anteroposteriorly. It was covered with inflamed mucosa. Intraorally, the swelling extends from distal of first molar posteriorly. Swelling resulted in obliteration of the buccal vestibule.



Fig.-1: Pre-operative intra-oral photograph.



Fig.-2: Pre-operative 3D radiographic image of affected maxilla.

Computerized tomography (contrast enhanced) (Fig. 3, 4) showed a well-defined cystic area measuring 6.09cmX4.21cm in coronal scan and in axial scan measuring 4.46cmX3.91cm within the maxillary antrum. The wall of the maxillary antrum are almost intact except near the alveolar process of the left maxilla where cystic lesion shows some septation suggestive of odontogenic cyst. Pre-operative histological examination showed the features of an odontogenic cyst.

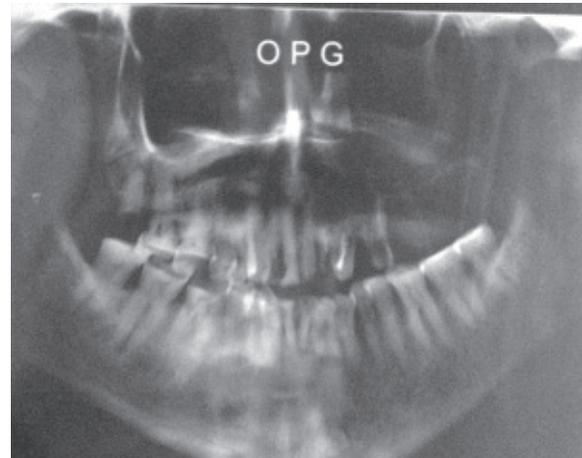


Fig.-3: Pre-operative radiograph.



Fig.-4: Pre-operative CT scan.

Under general anaesthesia enucleation of cyst with surgical obturator was performed with left sided maxillary circular incision with posterior extension. Cystic lining was dissected out from buccal and palatal periosteum and whole mass was taken out in toto. Irrigation was done with betadine and normal saline. An antibiotic soaked gauze

pack was kept in antral cavity and a surgical obturator was placed in situ. The healing was uneventful. Histological examination of the excised lesion showed cystic ameloblastoma with plexiform pattern. Hemostasis was achieved; vacuum drain was secured and closure was done in layers (Fig. 5). Antibiotics, analgesics and anti-inflammatory drugs were given postoperatively. Healing was uneventful, and sutures were removed on 7th postoperative day. Patient has been kept under periodic follow-up. No recurrence had been reported till date.

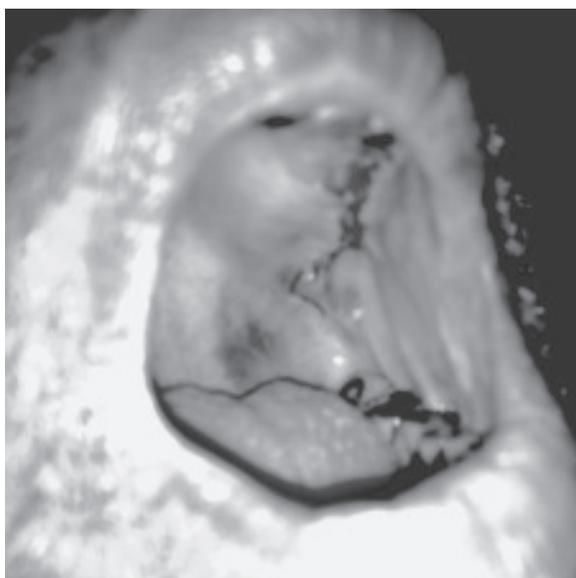


Fig.-5: *Post-operative photograph (intra-oral).*



Fig.-6: *Post-operative photograph (intra-oral).*

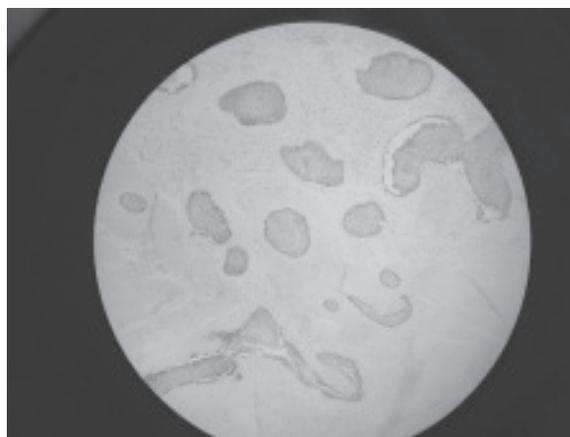


Fig.-7: *10x modification.*

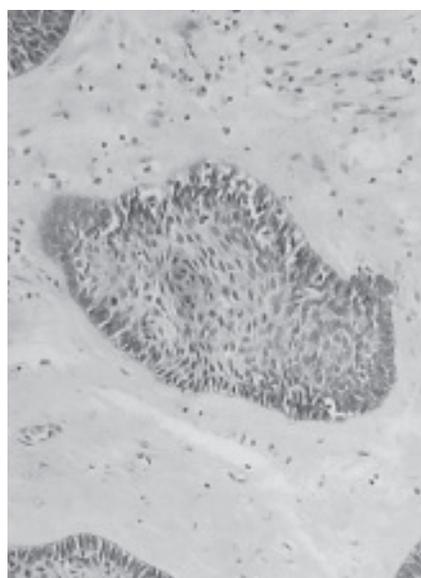


Fig.-8: *100x Modification.*

Discussion:

It is generally accepted that only 20 percent of ameloblastomas occur in the maxilla,² although some reports indicate an incidence as low as one percent in the maxilla,¹⁴ and of those 47 percent occur in the molar region, 15 percent in the antrum and the floor of the nose, 9 percent in the premolar areas, 9 percent in the canine regions and 2 percent in the palate.² Since maxillary ameloblastoma has a predominantly painless and slow growth because of the lack of a thick cortical plate, the plentiful cancellous bone and the proximity of the maxilla to the nasal cavity, nasopharynx, paranasal sinuses, orbits and skull base, there is commonly a delay in the recognition of the maxillary ameloblastoma extending into these structures and this itself may provide useful diagnostic evidence.¹⁵ In this case the ameloblastoma extended into the left maxillary

antrum up to the lower concha of the nose and the inferior orbital wall without penetrating these structures. In addition, the more abundant blood supply of the maxilla provides another possible mode of spread. Sometimes invasive maxillary ameloblastomas with extension into the orbit, frontal sinus, skull base, middle cranial fossa and petrous apex have resulted in the death of the patient.¹⁶ The most common clinical symptom of the maxillary ameloblastoma is a painless swelling of the involved part of the jaw. Pain is an uncommon finding,¹ referred in some cases,⁷ but it is not clear whether the pain is caused by the tumour itself or by a secondary infection. Ameloblastoma is an osteolytic lesion and does not produce mineralized components except in rare cases.^{10,17} As far as etiology is concerned, it may arise from the enamel organ, remnants of dental lamina, the lining of an odontogenic (dentigerous) cyst, or possibly from the basal epithelial cells of the oral mucosa.¹⁸ A few studies also showed that the human papillomavirus might have a role in the etiology of ameloblastoma.¹⁹ About 10-15% of ameloblastomas are associated with an unerupted tooth.²⁰ In the present case, a large follicular ameloblastoma was found in left maxilla. The diagnosis of follicular ameloblastoma was confirmed by excisional biopsy. Out of all the histologic variants of ameloblastoma, the incidence of plexiform variety is one-third. The term “plexiform” depicts the appearance of anastomosing islands of odontogenic epithelium in contrast to a follicular pattern.²¹ A number of modalities have been proposed in the treatment of ameloblastoma, like wide excision, curettage, enucleation, cryotherapy, cautery, laser usage, radiotherapy and chemotherapy.²² The best surgical method for the treatment of a maxillary ameloblastoma is a limited or wide excision of the tumour with a 10-15 mm margin of normal bone if available.⁹ Enucleation of the cyst with surgical obturator with was the method of choice in this case. Ameloblastoma is generally considered to be a radioresistant tumour and may be performed in cases when surgery is not considered to be the method of choice.²³ Chemotherapy, when used independently, does not seem to be effective at the present time, notwithstanding the variety of agents, schedules and routes of administration that have been reported.²⁴

References:

- Lucas RB. Pathology of tumours of the oral tissues. 4th edn. Edinburgh: Churchill Livingstone, 1984:31-59.
- Small IA, Waldron CA. Ameloblastoma of the jaws. *Oral Surg* 1955;8:281-297.
- Shafer WG, Hine MK, Levy BM. A textbook of oral pathology. 4th edn. Philadelphia: Saunders, 1983:276-285.
- Schetey A, Lustmann J, Lewin-Epstein J. The mural ameloblastoma: a review of literature. *J Oral Surg* 1978;36:866-872.
- Small IA. Recurrent ameloblastoma, 25 years after hemimandibulectomy. *Oral Surg* 1956;9:699.
- Adekeye EO. Ameloblastoma of the jaws: a survey of 109 Nigerian patients. *J Oral Surg* 1980;38:36-41.
- Gardner AF, Apter MB, Axelrod JH. A study of twenty-one instances of ameloblastoma, a tumor of odontogenic origin. *J Oral Surg* 1963;21:230-237.
- Ikemura K, Tashiro H, Fujino H, Ohbu D, Nakajima K. Ameloblastoma of the mandible with metastasis to the lungs and lymph nodes. *Cancer* 1974;29:930-940.
- Gardner DG, Pecak AMJ. The treatment of ameloblastoma based on pathologic and anatomic principles. *Cancer* 1908;46:2514-2519.
- Waldron CA, el-Mofty SK. A histopathologic study of 116 ameloblastomas with special reference to the desmoplastic variant. *Oral Surg Oral Med Oral Pathol* 1987;63:441-451.
- Madiedo GH, Choi RL, Kleinman MP, Cuninham GP. Ameloblastoma with distant metastases and hypercalcemia. *Am J Clin Path* 1981;75:585-591.
- Slootweg PJ, Muller H. Malignant ameloblastoma or ameloblastic carcinoma. *Oral Surg Oral Med Oral Pathol* 1984;57:168-176.
- Inoue N, Shimojyo M, Iwai H, *et al.* Malignant ameloblastoma with pulmonary metastasis and hypercalcemia. Report of an autopsy case and review of the literature. *Am J Clin Pathol* 1988;9:474-481.
- Seabaugh JL, Templer JW, Havey A, Goodman D. Ameloblastoma presenting as a nasopharyngeal tumor. *Otolaryngol Head Neck Surg* 1986;94:265-267.
- Crawley W, Levin LS. Treatment of the ameloblastoma. *Cancer* 1978;42:357-363.
- Komisar A. Plexiform ameloblastoma of the maxilla with extension to the skull base. *Head Neck Surg* 1984;7:172-175.
- Siar CH, Ng KH. View from beneath: Pathology in focus. Calcifying and keratinizing ameloblastoma of the maxilla. *Laryngol Otol* 1991;105:971-972.
- Ghandhi D, Ayoub AF, Pogrel MA, MacDonald G, Brocklebank LM, Moos KF. Ameloblastoma: A surgeon's dilemma. *J Oral Maxillofac Surg* 2006;64:1010-4.
- Namin AK, Azad TM, Eslami B, Sarkarat F, Shahrokhi M, Kashanian F. A study of the relationship between ameloblastoma and human papilloma virus. *J Oral Maxillofac Surg* 2003;61:467-70.
- Varkhede A, Tupkari JV, Mandale MS, Sardar M. Plexiform ameloblastoma of mandible - case report. *J Clin Exp Dent* 2010;2:e146-8.
- Reichart PA, Philipsen HP, Sonner S. Ameloblastoma: Biological profile of 3677 cases. *Eur J Cancer* 1995;31:86-9.
- Ueda M, Kaneda T. Combined chemotherapy and radiotherapy for advanced maxillary ameloblastoma. A case report. *J Craniomaxillofac Surg* 1991;19:272-274.
- Atkinson WB, Bates RE. Tissue desiccation and oral microlesions. *Gen Dent* 1984;32:190-191.
- Lanham RJ. Chemotherapy of metastatic ameloblastoma. A case report and review of the literature. *Oncology* 1987;44:133-134.

Dental management of Chronic Kidney Disease patients

Chowdhury MAP¹, Chowdhury MJR², Mahmud ME³

Abstract:

Renal disease has become important in dentistry because of the growing number of patients who as a result of improved medical care, renal dialysis or transplantation survives renal failure. Patients with chronic kidney disease (CKD) attending dental offices need special care and management for safe dental surgery and prevent complications. Special emphasis is important during prescribing drugs because most of the drugs are excreted through kidney. Patients on dialysis are heparinised and organ transplant patients receive immune suppressive drugs. These facts should be addressed during dental treatment. Chronic kidney disease may be a sequelae of diabetes and hypertension. So this should also come in consideration during dental surgery.

Key Words: CKD, Dialysis, Kidney transplant, dental management.

(Bangladesh Dental Journal 2015; 31: 56-57)

Introduction:

The most common causes of renal failure are glomerulonephritis, pyelonephritis, polycystic kidney disease, renovascular disease, drug induced nephropathy, obstructive uropathy, hypertension and diabetes mellitus.¹ Renal failure may result in severe electrolyte imbalance, cardiac arrhythmia, pulmonary congestion, congestive heart failure and prolonged bleeding². Because the dental management of patient with renal disease may need to be altered, consultation with patient's physician is necessary to determine the stage of renal disease, regimen for medical management and alteration of dental treatment.

Discussion:

The patient in chronic renal failure has a progressive disease that ultimately requires renal transplant or dialysis. The following modifications should be followed:

1. To consult with the patient's physician.
2. To monitor blood pressure (Patients in end stage renal disease are usually hypertensive).
3. Monitor hematological and Biochemical parameters: Serum Creatinine, blood Urea-nitrogen, Hemoglobin, platelet count, bleeding time etc.

4. To eliminate oral infection to prevent systemic infection:
 - Good oral hygiene should be established.
 - Periodontal health should be maintained.
 - Teeth with questionable prognosis should be extracted if medical parameters permit.
 - Frequent recall appointments should be scheduled.
5. Drugs that are nephrotoxic or excreted by kidney (phenacetin, tetracycline, aminoglycosides) should be avoided.
6. Acetaminophen is the drug of choice for analgesia and diazepam may be used for sedation.
7. Local anesthetic such as lidocaine is generally safe³.

The patients who are receiving renal dialysis require treatment planning modifications⁴. The three modes of dialysis are intermittent peritoneal dialysis (IPD), chronic ambulatory peritoneal dialysis (CAPD) and hemodialysis. Only hemodialysis patients need special precautions. These patients have a high incidence of developing viral hepatitis, anemia and prolonged hemorrhage. The risk of hemorrhage in renal dialysis patients is due to anticoagulation by heparin, heparin induced thrombocytopenia and uremia induced platelet dysfunction⁵. Hemodialysis patients have either an internal arteriovenous fistula or external arteriovenous shunt. The shunt is often located in the arm and must be protected from trauma. Thus in addition to guidelines for chronic renal disease following recommendations are made for those on hemodialysis:

-
1. Dr. Md. Akram Pervez Chowdhury BDS, DDS, MS, Associate Professor, Department of Oral and Maxillofacial Surgery, Dental Unit, Chittagong Medical College.
 2. Dr. Md. Jubayr Rashid Chowdhury BDS, Lecturer, Rangpur Dental College.
 3. Dr. Manjur-E-Mahmud BDS, FCPS (OMS), Lecturer, Dental Unit, Chittagong Medical College.

Address of Correspondence: Dr. Md. Akram Pervez Chowdhury, Associate Professor, Department of Oral and Maxillofacial Surgery, Dental Unit, Chittagong Medical College. E-mail: akpc64@gmail.com

1. Screen for hepatitis B and Hepatitis C before treatment.
2. Provide antibiotic prophylaxis to prevent end arteritis of the arteriovenous fistula or shunt. IPD and CAPD patients generally do not need antibiotic prophylaxis.
3. Patients receive heparin on the day of dialysis, therefore surgery to be planned on the day after dialysis when the effect of heparinization ceases.
4. To be careful to protect the arteriovenous shunt while the patient is seated in the dental chair. Blood pressure to be measured in the opposite arm. The limb containing the shunt should be avoided for administering intravenous or intramuscular injections. Patients having shunt located in leg should avoid sitting in the chair with legs dependant for more than one hour. Patient should be allowed to walk around for a few minutes and then resume dental treatment.
5. Refer the patient to the physician if uremic problems develop (such as uremic stomatitis, encephalopathy etc).

The greatest foe of renal transplant patients is infection. The patients with renal transplant take immunosuppressive drugs that greatly reduce their resistance to fight infection. Excessive bleeding may occur due to drug induced thrombocytopenia, anticoagulation or both. Many organ transplant centers now-a-days include dental examination

in their standard pre-transplant protocol. Teeth with severe periodontitis, furcation involvement and periodontal abscess should be extracted. In addition to the recommendations for the patients with chronic renal failure the following should be considered for the renal transplant patients:

- Hepatic B and C screening.
- Prophylactic antibiotics where appropriate.

Conclusions:

Patients suffering from Chronic Kidney Disease (CKD), on dialysis or with renal transplant can be safely managed in dental offices with special care as discussed.

References:

1. Levy HM Dental considerations for the patients receiving dialysis for renal failure. *Spec care Dent* 1998; 8:34.
2. Mealy BL periodontal implications: Medically compromised patients. *Ann Periodontol* 1996; 1: 256.
3. Rhodus NL, Little J W: Dental Management of the Renal transplant patients. *Compendium contin Educ Dent* 1993; 14: 518.
4. Martinowitz U, Mazer AL Teicher S etal. Dental extraction for patients on oral anticoagulant therapy. *Oral surg Oral Med Oral pathol* 1987; 64:379.
5. Ros LF, Genco RJ, Mealy BL Medical evaluation in Periodontal Medicine. Toronto, BC Decker, Inc 1999.



Member: FDI, APDF/CDA, SADAF

BANGLADESH DENTAL SOCIETY

EXECUTIVE COMMITTEE (2015 - 2017)

President	: Professor (Dr.) Md. Abul Kasem	
Vice-President	: Dr. Mostaque Hassan Sattar (Pinu)	(Dhaka Metropolitan)
	Professor Dr. S.M. Iqbal Hussain	(Dhaka Division)
	Professor Dr. Syed Morshed Moula	(Chittagong Division)
	Dr. Shahana Dastagir Sunny	(Rajshahi Division)
	Dr. Md. Nurul Islam Sarker (Nurul)	(Khulna Division)
	Dr. Joynal Abdin	(Barisal Division)
	Dr. Md. Ruhul Amin	(Sylhet Division)
	Dr. Md. Mosharraf Hossain Khandker Musa	(Rangpur Division)
	Dr. AKM Shariful Islam	(Mymensing Division)
		(Co-opt)
Secretary General	: Dr. Humayun Kabir Bulbul	
Treasurer	: Dr. Md. Helal Uzzaman	
Joint Secretary	: Dr. Md. Shibbir Ahmed Osmani	
	Dr. Mirza Md. Arifur Rahman	
Organizing Secretary	: Dr. Md. Mozammel Hossain Ratan	(Dhaka Metropolitan)
	Dr. Md. Helal Uddin	(Dhaka Division)
	Dr. Ripan Das	(Chittagong Division)
	Dr. Mir Nowazesh Ali (Rajib)	(Rajshahi Division)
	Dr. Refayet Ullah Sharif	(Khulna Division)
	Dr. Md. Asaduz Zaman Sarwar	(Barisal Division)
	Dr. Mehedi Md. Imtiaz Uddin Khan (Imrul)	(Sylhet Division)
	Dr. Mohammed Asik Raihan	(Rangpur Division)
	Dr. Gonopati Biswas	(Mymensing Division)
		(Co-opt)

Committee continued

Scientific Affairs Secretary	: Dr. Abu Hena Md. Zakir Hossain Sikder
Assistant Scientific Affairs Secretary	: Dr. Abdulla Al Mahmud (Shawon)
Office Secretary	: Dr. Ikramul Ahmed (Sumon)
Assistant Office Secretary	: Dr. AKM Habibullah (Mithu)
Publicity & Public Relations Secretary	: Dr. Habibul Basher (Masud)
Assistant Publicity & Public Relations Secretary	: Dr. Jyotirmoy Das
Social Welfare Secretary	: Dr. Md. Tozzammel Hossain Limon
Assistant Social Welfare Secretary	: Dr. Wahiduzzaman (Zaman)
Cultural & Entertainment Secretary	: Dr. Md. Rafiqul Islam
Assistant Cultural & Entertainment Secretary	: Dr. Azmeri Haque Badhan
Library & Publication Secretary	: Dr. Morshed Alam Talukder
Assistant Library & Publication Secretary	: Dr. Md. Amanulla Sarkar
International Affairs Secretary	: Dr. Md. Jobayr Rashid Chowdhury (Tanin)
Assistant International Affairs Secretary	: Dr. Najmul Haque Sajib
Executive Member	: Dr. Abdul Awal Talukder (Rubel) Dr. Mohammad Tanvir Islam Dr. Md. Azam Khan Dr. A H M Saifullah (Sarwaar) Dr. Mohammed Mobassir Dr. Mahmud Hossain Dr. Faria Tabassum Tanni Dr. Mahmudul Hasan (Mithun) Dr. Md. Rezaul Karim Rocky Dr. Mohammed Mahmudul Hasan Khan (Sajib) Dr. Shishir Ghosh Dr. Himangshu Bimal Roy Dr. Md. Arifur Rahman Dr. Sk. Khairur Rahman (Choton)