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Pattern of maxillofacial diseases treated in two academic hospitals in Bangladesh

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ABSTRACT : The purpose of this study was to evaluate the pattern of oral & maxillofacial diseases and to identify the potential problems in providing treatment for improving patients care. The goal of the maxillofacial surgeon is to eradicate diseases of oral and maxillofacial region while preventing recurrence, complications and restore function. To achieve this goal, it is essential to identify the disease pattern of the community, so that a standardize treatment protocol could be developed to enhance the quality of care for the patients. However, there was no long-term analysis of pattern of maxillofacial diseases in Bangladesh. A total of 5663 patients managed in two academic hospitals from January 2007 to December 2016 were included in this study irrespective of age and gender. A detailed analysis of these patients revealed, 3502 cases were males and 2162 were females in a ratio of 1.6 : 1. The age range was from 1 to 90 years with the mean age of 35.57 years and the age range was from 20 to 40 years. The incidence of benign tumors (27.8%) was most common, followed by malignant tumors (21.5%) and maxillofacial trauma (20.3%) among all the patients. The incidence of oral cancer and ameloblastoma was found significantly higher in this study. Excision and/or reconstruction, "dredging method," and maxillo-mandibular fixation with wiring were the main modality of treatment. The overall morbidity and mortality rate were 3.2% and 0.07% respectively. The findings from this study are presented and discussed in this paper.

Key Words : maxillofacial disease pattern, squamous cell carcinoma, ameloblastoma, maxillofacial trauma

Introduction

The knowledge of disease pattern of any part of the human body contributes on both quantitative and qualitative aspects of its management system in a particular community. Detail analysis of the maxillofacial disease pattern has a significant impact to improve the quality of patient's care, continuous education for surgeons and guiding proper use of health resources.¹⁻³⁾ It has several advantages, eg. Collection of sufficient resources for clinical learning, training needs analysis, parameters of clinical outcomes, development of surgical protocols, understand the prognosis, identify & prevent the complications and guideline for future research. However the worldwide studies in the pattern of oral & maxillofacial diseases are scanty despite its enormous

significance in sound health of human body. One year audit of maxillofacial disease and surgical pattern was studied⁴⁾ but there is no long term surgical audit regarding the pattern of oral & maxillofacial diseases in Bangladesh. Patients with oral & maxillofacial diseases managed in two major centers of Bangladesh, Dhaka Dental College Hospital and Sapporo Dental College Hospital from January 2007 to December 2016 were analyzed in this paper.

The purpose of this study was to evaluate the pattern of Oral & Maxillofacial diseases which would help to develop different treatment modalities, improve quality of clinical care as well as to enhance the academic and research interest in our country.

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Materials and methods

All patients surgically managed in the in-patient department of Oral and Maxillofacial Surgery, in Dhaka Dental College and Sapporo Dental College Hospital, for a period of 10 years from January 2007 to December 2016 were included and evaluated in this study. A total of 5663 cases were managed by the authors with different surgical procedures during the period of review. The information of the patients were retrieved and reviewed from the record file of the respective departments. Patient's data were recorded on age, gender, admission date, diagnosis, name of operation, various complications, morbidity and mortality were recorded.

Collected data were studied and analyzed to determine the prevalence of age, gender, yearly number of patients, types of diseases, modalities of treatment and complications.

Results

A total of 5663 patients were offered surgical treatment in the oral and Maxillofacial Surgery department of Dhaka Dental College and Sapporo Dental College Hospital between January 2007 and December 2017. Among the number of patients, 3502 were male and 2162 were female. The male to female ratio was 1.6 : 1 (Fig. 1).

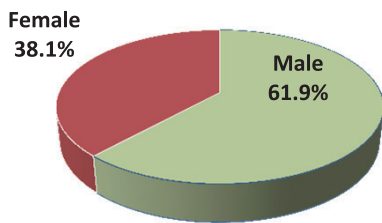


Fig. 1

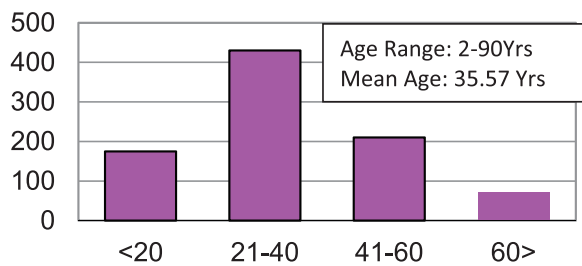


Fig. 2

The age of the youngest patient in this study was 1 years and the oldest was 90 years. Mean age of the

patients was 35.6 years with the peak in 3rd to 4th decades (Fig. 2). The numbers of patients with oral & maxillofacial pathology attending to these hospitals have increased gradually. The yearly distribution of patients is shown in Fig. 3. This study revealed benign tumor was the most common pathology comprised 27.8% of total patients (Fig. 4).

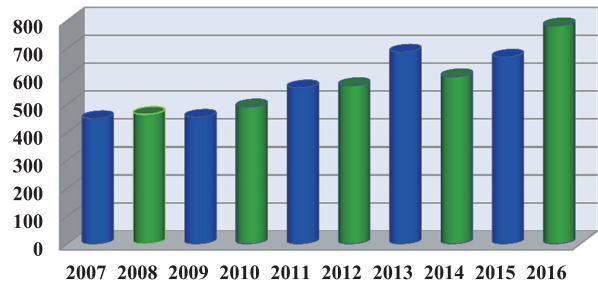


Fig. 3

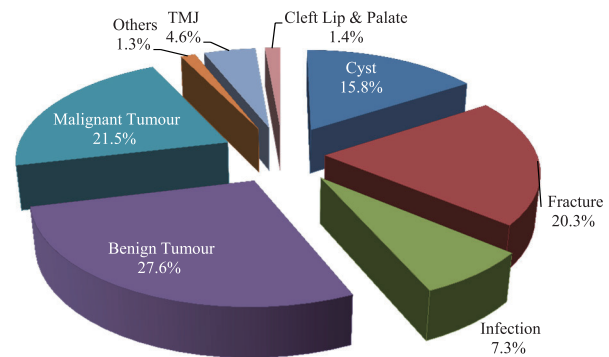


Fig. 4

Ameloblastoma was the most common lesion (58%) among benign tumors (Fig. 5). Malignant tumor consisted with 21.5%, lies the second most common lesion and squamous cell carcinoma was preponderance (62.2%) (Fig. 4, 6). This study also revealed 20.3% jaw bone fracture followed by 15.8% Cystic lesion and 7.3% infection respectively (Fig. 4).

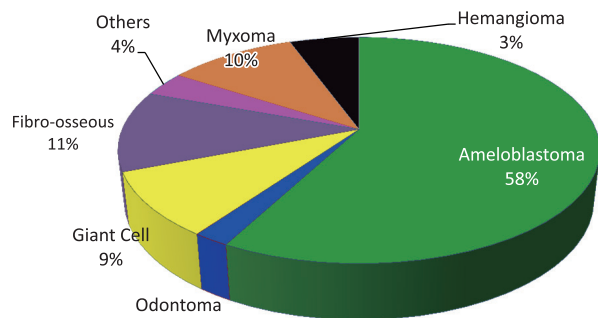


Fig. 5

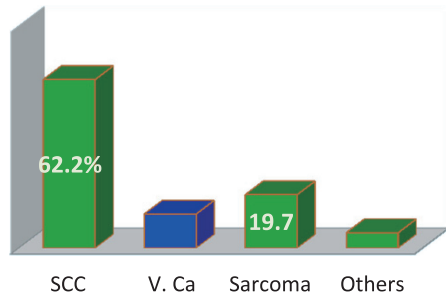


Fig. 6

The most common fractured bone was mandible (47%) (Fig. 7). The site of mandible fracture is shown in Fig. 8 and the single predominant site was the angle of the mandible followed by condyle and body. A significant number of keratocyst (33.5%) was observed in this study. (Fig. 9).

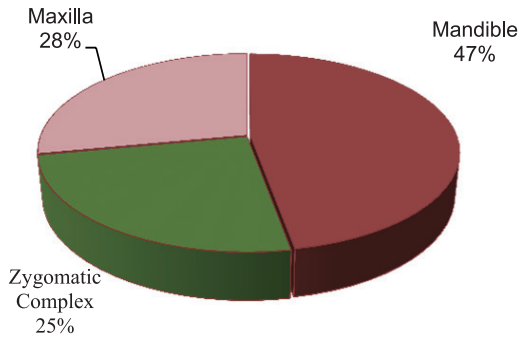


Fig. 7

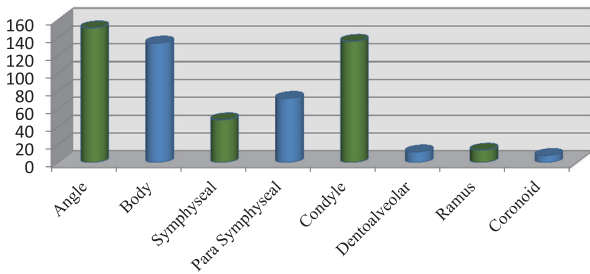


Fig. 8

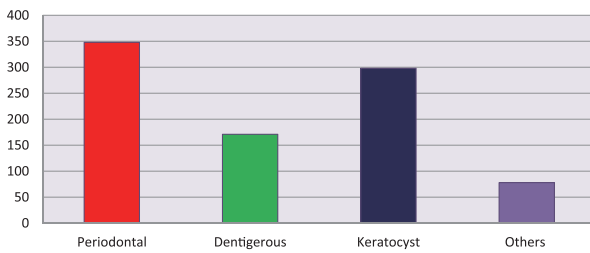


Fig. 9

“Dredging method” (Figs. 10, 11) and excision (Fig. 12) were the main treatment modalities in ameloblastoma and other benign tumors. Regarding malignant tumor, excision and/or bone resection and/or neck dissection were performed (Fig. 13).

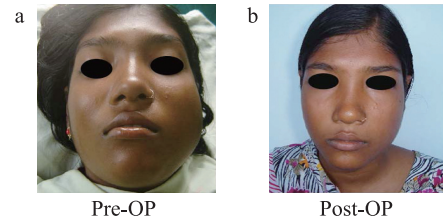


Fig. 10

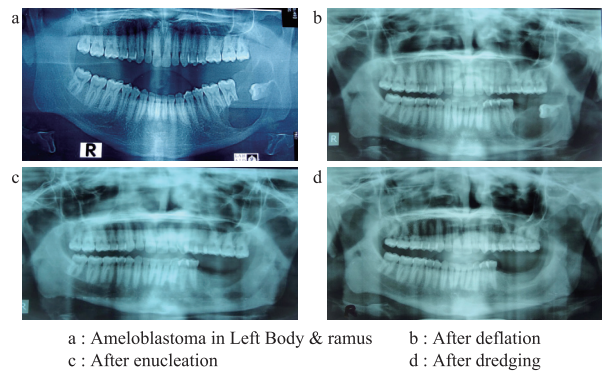


Fig. 11

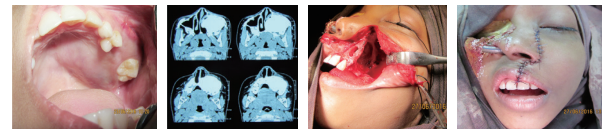


Fig. 12

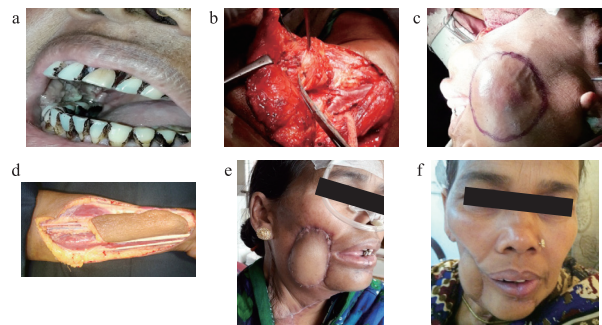


Fig. 13

Jaw bone fractures were managed by close and open reduction with IMF by arch bur wiring. Enucleation and application of “dredging method” were the main outline of treatment in case of cystic lesion. Infective lesions were treated by incision and drainage and/or

sequestrectomy. A number of 263 TMJ ankylosis patients (46%) were treated by gap or interpositional arthroplasty (Fig. 14). Few cases of orthognathic surgery were also performed and the commonest procedure was bilateral sagittal split ramus osteotomy (BSSRO) (Fig. 15) followed by Le font I osteotomy.

Only 77 pateints with cleft lip, palate and alveolus were managed in our hospitals during last 10 years. The distributions of the congenital deformities were shown in Fig. 16.

The treatment modalities are shown in Table. 1. Our study showed a total number of 161 (2.84%) patients out of 5663 presented with some sorts of complication

Table. 1 Treatment modalities

SL	Details	No. Patients	Percentage
01	Wiring or MMF Open Reduction (589), Close Reduction (560)	1149	20%
02	Enucleation	968	17%
03	Dredging Method	397	7%
04	Excision of Benign Tumor	286	5%
05	Excision & bone reduction and/or neck dissection	1934	34%
06	Condylectomy and/or coronoidectomy	179	3%
07	Incision and drainage	205	4%
08	Sequestrectomies and curettage	237	4%
09	Marsupialization	57	1%
10	Others	251	4%
Total		5663	

or morbidity and only 7 cases (0.12%) were fatal due to anesthetic problem. Common complications observed in this study were infection and fracture following bone plating, facial deformity and restricted mouth opening.

Discussion

Analysis of disease pattern and its surgical outcome contributes significantly to improve the quality of patient’s care, continuing education for surgeons and guide appropriate use of health resources.^{5, 6)} Despite its significant importance in health planning worldwide literature on oral and maxillofacial disease pattern is scanty. Unfortunately there is no long term surgical audit available in Bangladesh.

The result of this study showed almost all types of oral and maxillofacial diseases both congenital and acquired were managed in two academic hospital. It also revealed a wide variation of maxillofacial surgical procedures encountered during the period. Maxillofacial surgery is comparatively a new discipline of medical science in Bangladesh, in contrast to the developed countries. According to our observation the numbers of patients with maxillofacial pathology reporting to relevant department are increasing day by day. Previously these patients were usually managed by ENT, orthopedics or general surgeons. The male female ratio (1.6 : 1) was found almost similar comparing to other studies.^{7, 8)} The prevalence of oral and maxillofacial pathology was observed in 3rd & 4th decades (21 - 40 years), which was also similar to a study in Nigeria.⁸⁾

Benign tumor was the most common pathological lesion (27.8%) in this study and the incidence of ameloblastoma was predominant (58%), which is significantly higher than the rest of the world.^{9, 10)} Although the common age group was 3rd & 4th decades (21 - 40 years), a significant number of children and adolescent patients (8 - 20 years)



Fig. 14



Fig. 15

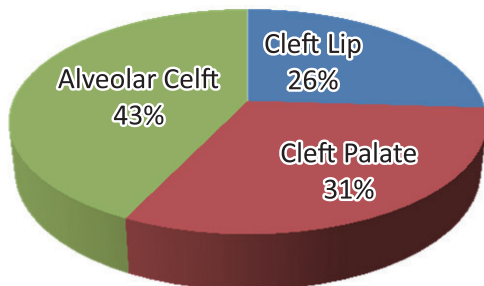


Fig. 16

were reported in our centers. The site of ameloblastoma, like the rest of the world, was found in the posterior jaw. However a significant number of cases affecting the anterior jaw was also observed like African countries.¹¹⁾ Regarding the management of ameloblastoma, we have been following mostly the "Dredging Method" protocol (7%)¹²⁾ and experienced excellent outcome. Dredging method can eradicate the tumor, regenerating total bony cavity preventing facial disfigurement by avoiding jaw bone resection which satisfies the young and female patients particularly.^{13, 14)}

Malignant lesions of the soft and hard tissues were 21.5%, and squamous cell carcinoma (SCC) was the most common (62.2%) in this group. Among the total patients, SCC has significantly greater incidence (13.3%) than the rest of the world (2-3%).¹⁵⁾ This is probably because of the generalized habit of betel quid chewing in village area. Male female ratio was 1 : 1. Sex predilection depends upon the habit and culture of that region. Pinholt et al. reported almost equivalent number¹⁶⁾ between male and female which is similar to our findings, although higher male female ratio was reported in other studies.^{17, 18)} The peak age group was 4th and 5th decades similar to other studies.^{19, 20)} Higher age group was also found in other study.²¹⁾ Excision with or without bone resection and/or neck dissection was the main treatment modality in malignant lesions.

Maxillofacial trauma remains a serious clinical concern for the surgeons and constitutes approximately 45% of the work load worldwide.²²⁾ In this study, jaw fracture comprises about 20%, which is significantly less than the world trend. The reason may be many patients with maxillofacial injuries concomitant with severe injuries of the other regions of body are admitted to orthopedics, ENT, neurosurgery and other departments. Although, the pattern of bony fracture in our study is an agreement with results from other countries.²²⁻²⁴⁾ The male predominance in our study is consistent with the findings of previously published papers.²⁴⁻³¹⁾ The male female ratio was 2.6 : 1 in this study which is a similar reflection of the worldwide reports. The frequency of maxillofacial trauma was highest in the age group from 20-40 years, which is also an agreement to other study.²²⁾ This age group is young, active and involves in various risky job.^{24, 32)} Maxillo-mandibular fixation with wiring after close or open reduction was the treatment method in our hospitals.

The prevalence of space infection and osteomyelitis

is significantly scanty (7%) in this audit, since most of the infective cases were operated in minor operation theatre under local anesthesia & sedation as a day stay case and were not admitted to the In-patient department. Pus drainage and curettage were the main outline of treatment in those patients.

Among the non-pathological condition, we encountered a significant number of TMJ ankylosis patients. The treatment of TMJ ankylosis remains challenging. In our centers, the pre auricular approach with temporal extension, popularized by Al Khayat and Bramley, was used for condylectomy. Arthroplasties were performed using either temporal muscle or fascia. Coronoidectomies were also done in those cases where mouth opening was difficult to achieve by condylectomies alone.⁷⁾

Only 77 cleft lip, palate and alveolus patients were managed in two centers within last ten years indicating very few patients reporting to our hospitals. The probable reason behind it, firstly many national and international voluntary organizations providing services to cleft lip and palate patients. Secondly many patients are also reporting to other disciplines like plastic surgery, otorhinolaryngology and pediatric surgery. We followed Chronin's Triangular flap or Millard rotation advancement flap for repairing cleft lip and push back method for closing the palate. Alveolar clefts were treated with bone graft from iliac crest.

Regarding morbidity, commonly we observed exposure, fracture and infection followed by bone plate or reconstruction plate fixation. The worldwide incidence of infections following intra osseous plate fixation is about 12 - 32%.^{7, 33)} In our cases only about 5.2% plates were removed due to various complications. Facial deformity and limited mouth opening were observed in cases after resection of huge benign and malignant tumor even after reconstruction.

Seven mortality (0.12%) cases were recorded, all occurring as a result of anaesthetic accidents.

Conclusion

This is the only study in Bangladesh which consists of a large number of patients. It indicates both academic hospitals are busy to provide maxillofacial services in our country and the attending numbers of patients are increasing day by day. Wide variation of maxillofacial surgical procedure from pus drainage to resection, reconstruction and orthognathic surgery were performed

in our centers. Benign tumor followed by malignant tumor and maxillofacial trauma were the most common diseases managed in these two academic hospitals. The numbers of oral cancer patients are significantly higher than other parts of the world.

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