One Year Audit of In Patient Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital

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Abstract

Background The world wide pattern of oral and maxillofacial surgical conditions has rarely been reported despite its significance in ensuring quality of care. A large number of patients are managed surgically in Oral and Maxillofacial Surgery department of Dhaka Dental College Hospital but there has been no surgical audit to identify the potential problems in patient care.

Objectives The aim of this study was to identify the pattern of oral and maxillofacial conditions in patients of maxillofacial surgery of Dhaka Dental College Hospital, which would provide valuable information to build up the focus of attention, to develop a future strategy plan, to improve its clinical care and extend the academic and research field.

Patients and Methods A retrospective survey of oral and maxillofacial surgical cases managed at the inpatient Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital. All admitted patients from 1st January, 2012 to 31st December, 2012 were included in this study. The patients' data were retrieved from the wards registers and patient records. The data were recorded as

age, sex, occupation, geographic distribution, diagnosis, treatment done and operation name. These were studied to assess the prevalence of age, sex, diseases and the name of the treatment offered. Analysis of major groups of diagnosis on the basis of age and sex was also studied. Mortality was also recorded.

Results Between 1st January, 2012 and 31st December, 2012 a total of 768 patients were treated. Among them 494 patients were male while 274 were female, male female ratio was 1.80:1. The majority of the patients were from Dhaka division. The mean age of the patients was 33.20 years; peak age group was 15–30 years. The most common diagnosis was maxillofacial injuries (35 %), followed by oral squamous cell carcinoma (22 %) and odontogenic tumours and hamartomas (11 %). Maxillo-mandibular fixation or wiring was the main modality of treatment. The mortality rate was 0.26 % of total patients.

Conclusions The department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital is a busy centre for specialized maxillofacial services in Bangladesh. A good number of patients with a wide range of oral and maxillofacial surgical conditions are managed here. Maxillofacial injury and oral cancer are the two most common conditions encountered here.

Keywords Surgical audit · Oral and maxillofacial diseases · Maxillofacial trauma · Oral squamous cell carcinoma · Odontogenic cysts and tumours

Introduction

According to the Altman Committee in the United Kingdom, the term medical audit means “sharing by a group of peers of information gained from personal experience and/

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or medical records in order to assess the care provided to their patients to improve their learning and to contribute to the medical knowledge” [1]. In modern health care systems, there is growing emphasis on monitoring the outcomes of health intervention in general and surgical procedures in particulars. This is often termed as ‘Surgical Audit’ in the UK and the ‘Surgeon Profiling’ in the USA. The work of surgical departments involves varying proportions of investigation, diagnosis and treatment and the object of audit is to measure and monitor the outcome of these activities. It also serves as a secondary but important role in education, research and resource planning. But the surgical audits on maxillofacial conditions are rare in the literature. To our knowledge, this is the first surgical audit report of maxillofacial conditions from Bangladesh.

The aim was to identify the pattern of oral and maxillofacial conditions which would help to build up the focus of attention to mobilize its resources to the proper fields, to make a future strategy plan and thus to improve its clinical care and to extend the academic and research field.

Only a few reports have been published online related to the world wide pattern of maxillofacial conditions. The department of Oral and Maxillofacial Surgery, Khyber College of Dentistry [2], Peshawar offered specialized services to a large number of patients (2764) between January 2006 and December 2007. Among them 1842 were males and 922 were females. The male to female ratio was 2:1; whereas it was 1.7:1 in a study by department of Dental Surgery, Military Hospital, Port Harcourt, Nigeria [3]. Maxillofacial injuries comprised of 36.32 % ($n = 1004$) of the total patients, out of them 69.72 % were mandible fractures [2], in other studies it showed higher incidence, 46.4 % [3], 55 % [4]. Pathological lesions of the hard and soft tissue were 15.2 % of total audit. Among them, cystic lesions were more common (41.69 %), followed by fibro osseous lesions (12.53 %) and abscesses (9.64 %) [2].

Between 2000 and 2004, department of Dental Surgery, Military Hospital, Port Harcourt, Nigeria [3], a referral centre for Niger’s Delta region reported 86 patients who needed maxillofacial surgery. Out of 110 indications, 39 % were tumour and allied lesions, it was higher (21 % [4]) from another study of the same country. The main modality of treatment was MMF in 22 patients (31.9 %), followed by enucleation of cyst/tumour in 12 patients (17.4 %) and excision of lesion in 15 patients (9 %) [3].

Another study at the University of Nairobi observed 548 (53.83 % of total patients) patients of oral and maxillofacial tumours between 2000 and 2004. It showed that benign tumours peaked at the third decade and tended to affect men at a younger age. The most common benign tumour was ameloblastoma. Oral squamous cell carcinoma (OSCC) was the most common malignant tumour. Peak incidence for malignant diseases was observed in sixth decade [5].

In Iran, a study related to odontogenic tumours showed odontogenic tumours were more common in females and in the second or third decades of life. The most common odontogenic tumour was ameloblastoma (42.4 %), followed by odontoma (26.7 %), odontogenic myxoma and adenomatoid odontogenic tumour [6].

Patients and Methods

All admitted patients to the department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital from 1st January, 2012 to 31st December, 2012 were included in this study. Patients-data were retrieved from the discharge register and patient records from the male, female and paediatric wards. Data was recorded on age, sex, occupation, geographic distribution, date of admission, diagnosis, treatment done, operation name. Data were studied to assess the prevalence of age, sex, diseases and the name of the treatment offered. Analysis of major groups of diagnosis on the basis of age and sex was also studied. Mortality was also recorded.

Results

Between 1st January, 2012 and 31st December, 2012 the inpatient Department (IPD) of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital offered a specialized treatment to 768 patients. Among them 494 were males and 274 were females (Fig. 1). The male to female ratio was 1.80:1. The range of the age of the patients was from 6 months to 88 years. The mean age was 33.20 years. The distribution of age of all patients is shown in Fig. 2. The peak age group was 15–30 years. The majority of the patients reported from Dhaka Division (41 %) and the demographic distribution are shown in Fig. 2.

Maxillofacial injury was the most frequent diagnosis (35 % of total patients), followed by squamous cell carcinoma (22 %), odontogenic tumours and hamartomas (11 %) (Fig. 3). Other diagnosis is shown in Table 1. Pathological lesions were seen in 451 patients (59 %). Among the pathological lesions, 37 % were squamous cell carcinoma, 18 % odontogenic tumours and hamartomas, 10 % cystic lesions and 7 % non odontogenic tumours and allied lesions (Fig. 4). Among the tumours and hamartomas, malignant neoplasms comprised 63 %.

Among the patients of maxillofacial injury, mandibular fracture was the most predominate site (63 %). Surgical treatment was performed in 704 cases, while chemotherapy under direct supervision of an oncologist was given to 3 cases and 59 patients were referred. Maxillo-mandibular fixation (MFF) or wiring was the main modality of

Fig. 1 Distribution of gender and age group **Fig. 2** Demographic presentation **Fig. 3** Distributions of diseases

treatment (266 cases); the treatment modalities were given in Table 2. The mortality was only 0.26 % (2 cases).

Discussion

Essentially two types of audit may be encountered; national audits and local audits/hospital audits. These aim to improve quality of care, provide continuous education and guide appropriate use of health resources [7, 8]. Hospital based audits are closest to the patients. It actually represents the standard of the clinical practice of that hospital.

Oral and Maxillofacial Surgery is the surgical specialty that is concerned with the diagnosis and treatment of diseases affecting the mouth, jaws, face and neck. The department of Oral and Maxillofacial Surgery of Dhaka Dental College Hospital deals with a large number of patients of maxillofacial trauma, oral cancers, tumours, cysts, salivary gland disorders, infective disorders, developmental anomalies being the largest hospital for the patients of maxillofacial surgery in Bangladesh. In this report, 1 year surgical audit of IPD of Oral and Maxillofacial Surgery is presented. In the year 2012, the IPD of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital offered specialized service of maxillofacial surgery to 768 patients. The total number of the patients was relatively less in comparison to yearly average patients seen at the department of Oral and Maxillofacial Surgery, Khyber College of Dentistry, Peshwar, Pakistan which offered treatment in 2764 patients in 2 years (January, 2006 to December, 2007) [2]. The IPD of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital was shifted to its new building on April, 2011 at about 12 km away from the old hospital building and upgraded to 100 beds for patients from only 20 beds. So, there was an

Table 1 Oral and maxillofacial conditions seen in Dhaka Dental College Hospital

Diseases	Total
Maxillofacial trauma	266
OSCC	167
Ameloblastoma	71
Other odontogenic tumours	12
Calcified epithelial odontogenic tumour	1
Adenomatoid odontogenic tumour	2
Odontogenic myxoma	3
Ameloblastic fibroma	3
Odontome	3
Odontogenic cysts	39
Odontogenic keratocyst	17
Radicular cyst	12
Dentigerous cyst	9
Residual cyst	1
Gorlin Goltz syndrome	2
Fibro-osseous lesion	14
Fibrous dysplasia	3
Ossifying fibroma	8
Focal cemento-osseous dysplasia	3
Sarcoma	20
Ewing sarcoma/PNET	7
Osteosarcoma	8
Chondrosarcoma	1
Malignant fibrous hystiocytoma	3
Rhabdomyosarcoma	1
Non odontogenic tumours and hamartomas	17
Central giant cell granuloma	7
Myxofibroma	1
Chondromyxoma	1
Osteoma	2
Fibroma	3
Fibromatosis	1
Sublingual dermoid	1
Exostosis on condyle	1
Other cystic lesions	2
Epidermoid cyst	1
Cystic hygroma	1
Infective disorder	49
Space infection	26
Osteomyelitis	23
Salivary gland disorder	15
Sialosis	1
Sialadenitis	3
Adenoid cystic carcinoma	4
Mucoepidermoid carcinoma	2
Acinic cell carcinoma	1
Adenocarcinoma	1
Lymphoproliferative disease	1

Table 1 continued

Diseases	Total
Myoepithelioma	1
Ranula	1
TMJ ankylosis	15
Reconstruction/miniplate complication	16
Oroantral fistula	6
Developmental	10
Cleft lip and palate	3
Alveolar cleft and palate	5
Hemifacial microsomia	1
Facial deformity	1
Pyogenic granuloma	4
Other malignant lesions	14
Hodgkin lymphoma	1
Non Hodgkin lymphoma	2
Multiple myeloma	1
Malignant melanoma	4
Haemangiopericytoma	1
Verrucous carcinoma	5
Squamous papilloma	5
Oral Submucous fibrosis	1
Tubercular lymphadenopathy	1
Vascular lesions	3
Others	19
Total	768

information gap among the different hospitals from which the patients were referred to this department. Besides, in the study of Khyber College there were 35.96 % patients of dental extraction, whereas in this study it was only 10 patients, because in our department extraction of teeth were performed in minor OT wing and were not included in this study. The male to female ratio was 1.80:1 which was in between other similar studies [2, 3]. The most prevalent age group was 15–30 years (271 patients) followed by 30–50 years (227 patients) which were also similar to the study of Military Hospital, Port Harcourt (3rd decade than 4th decade) [3]. The patients were from all over the country as it is the only and the largest government tertiary level hospital. It was noteworthy that maximum number of patients had come from close proximity to Dhaka (41 % from Dhaka division, 18 % from Chittagong division, 8 % Dhaka city), while a few patients were from distant areas like Rangpur (7 %) and Sylhet division (3 %). The age range of the patients in this study was also similar to the another study which was 6 months to 90 years. [2].

Maxillofacial injuries usually constitute a great workload on oral and maxillofacial surgeons. In this study, maxillofacial injury comprised 35 % of the total patients which was also similar to the study of the Khyber College

Table 2 Treatment modalities

Name of operation	Number	Percentage
Wiring or MMF	266	34.63
Open reduction	123	
Closed reduction or wiring	143	
Enucleation or dredging	124	16.15
Excision of benign lesion	32	4.2
Excision and or bone resection and or neck dissection	185	24.08
Condylectomy and or coronoidectomy	15	1.95
Incision and drainage	26	3.38
Chemotherapy	3	0.39
Referred	59	7.68
Other	56	7.29
Mortality	2	0.26
Total	768	100

Fig. 4 Distribution of pathological lesions

of Dentistry (36.32 %) [2], in contrast the percentage was much lower than that of other studies (46.4 %) [3], (55 %) [4]. It may be explained that in the latter, the total number of patients was only 86 which may not represent the actual picture. The highest frequency of maxillofacial injuries occurred in age group between 15 and 30 years, which was similar to another study (15–24 years) [9]. This age group is more active, energetic, income generating and exposed to the various risk factors [10, 11]. Males (221 patients) were commonly affected than females (45 patients) with a ratio of 4.91:1, which was in between the other published data [12–17]. The male dominant pattern was also seen in different studies in Poland [18], Middle East [19], Turkey [20], and Pakistan [11]. Because males are predominately exposed to the outside and various risky jobs, they earn for the family and travel in different vehicles. Moreover, in Bangladesh for social and cultural restriction, the females are restricted to the home environment and less affected. Mandible was the most common site of fracture (63 % of

patients of trauma) which supports the previously published literatures [9, 10, 21]. In contrast, there were also other studies that support the high frequency of midface fractures [22, 23].

The pathological lesions were 58.72 % of the total audit. In the audit of Khyber College of Dentistry, it was 15.2 % [2]. It was because in this study, 22 % (167 cases), and 3 % (20 cases) of total patients were of OSCC and sarcoma respectively, whereas in Khyber College, it was only 30 cases and 3 cases respectively. It indicates a high prevalence of oral cancer. Moreover, in this study, there were 71 cases (9.24 % of total patients) of ameloblastoma whereas in the latter it was only 7 cases. The OSCC has significantly greater incidence (37 % of pathological lesions, 22 % of total audit, 50.76 % of tumours and hamartomas, 80.28 % of all malignant neoplasms) than the other published literatures in the world [2, 3, 5]. Male to female ratio was 1.14:1. Sex predilection for oral squamous cell carcinoma depends upon the habits and culture of that region.

Pinholt et al. [24] observed almost equivalent number between males and females (1.2:1) which was close to our observation, although other studies reported a higher ratio [25–28] from 1.5:1 to 2.4:1. In contrast, there are also other studies that showed a significant higher incidence in males [29, 30] 9.2:1 and 4.18:1 respectively. The peak age group was above 50 years similar to the other observations, 65 years [31], 52.07 years [32]. A higher age group is involved in other studies [33]. Chattopadhyay et al. [31] and Mathew et al. [34] reported that in the developing country, oral cancer may affect men and women in an younger age than that observed in the western world.

Among the other pathological lesions, odontogenic tumours and hamartomas and cystic lesions comprised of 18 and 10 % respectively. Among the odontogenic benign tumours and hamartomas, ameloblastoma comprised of 85.5 %. It was much more prevalent than other studies, 50.23 % [5] and 42.4 % [6]. Males were relatively more commonly affected (44 in comparison to 39). Peak incidence was in age group 15–30 years. This was similar to previous reports [5, 6]. In this study the prevalence of other benign tumours and cystic lesions might not represent the actual picture of this department because in our department a large number of patients with these lesions are operated in minor operation theatre under local anaesthesia and sedation as a day case and were not admitted to the IPD. So, a large number of patients of benign tumours and cystic lesions were excluded in this audit. In this audit, the prevalence of space infection was also observed to be low in frequency (6 % in comparison to 9.64 % Khyber), this was also for the same reason. In contrast to the audit report of Khyber College of Dentistry, our department encountered a significant increase in the number of sarcoma (20 cases in comparison to 3) and osteomyelitis (23 in comparison to 13) which warrants a study to identify the causes. The prevalence of sarcoma specially, the AIDS related Burkitt's lymphoma and Kaposi's sarcoma are significantly higher in Uganda and other sub Saharan countries [35], other sarcomas are less prevalent. But in this study, most frequent sarcoma was osteosarcoma, males were more affected. It supports the world wide pattern [37]. It should be mentioned again that the audit report of Khyber College of Dentistry was for 2 years.

Among the non pathological conditions, this study encountered a significantly lesser number of patients of TMJ ankylosis (only 15 cases in comparison to 145 cases in Khyber). There was also a good number of patients of reconstruction plate complications (16 cases) in this department. The actual cause could not be identified.

The main modalities of treatment were MFF or wiring for fracture management (34.63 %). Maximum number of patients were managed by closed reduction (143). Enucleation of benign lesions or deflation or dredging under 'Dredging protocol' for management of ameloblastoma or

odontogenic keratocyst was in 16.15 % of total cases, similar to another audit [3]. Normally, in our department, ameloblastoma is managed under 'Dredging protocol' [36] if the size is not large enough to preserve the continuity of the bone. Only two cases were managed by resection of jaw bone. Excision with or without bone resection and neck dissection was performed in 24.8 % of total cases which includes both benign and malignant lesions. Chemotherapy was given in three cases under supervision of an oncologist in two cases of osteosarcoma and one case of non-Hodgkin's lymphoma. Fifty-nine cases were referred, among them 50 cases were of inoperable OSCC and other were Hodgkin lymphoma, non Hodgkin lymphoma, adenoid cystic carcinoma, malignant fibrous hystiocytoma and malignant round cell tumours. Throughout the study time, only two patients died and the mortality rate was 0.26 %.

During data collection, it was seen that the patient registers management was not satisfactory. There was no data related to the surgical complications, so in this audit, the surgical complications have not been mentioned. This audit was only for the IPD and did not represent the actual picture of this department, because a large number of patients of trauma, space infections, benign cystic lesions and tumours were managed in the minor OT and casualty wings under local anaesthesia.

The lion's share of the allocations in this department should be spent in the management of trauma and oral cancer. The patient registers should be maintained, upgraded and monitored closely by the responsible authority and this type of audit should be continued every year. For the better service of the patients, more centres should be built in the other divisions of the country.

Conclusions

The Oral and Maxillofacial Surgery department of Dhaka Dental College Hospital is a busy centre for specialized maxillofacial services in Bangladesh. A good number of patients with a wide range of oral and maxillofacial surgical conditions are managed here. The most common diagnoses were maxillofacial injuries and oral cancer. The number of patients of oral cancer was significantly higher than that in other centres in Pakistan, Nigeria and Kenya. The geographic distribution of the patients indicates that patients come here from all over Bangladesh.

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