Oral surgical procedures and prevalence of oral diseases in Oral Surgery Department in Faculty of Dentistry Sarajevo

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ABSTRACT

Introduction: The aim of this study is to determine prevalence of oral diseases and oral surgical procedures at Department of Oral Surgery, Faculty of Dental Medicine, University in Sarajevo.

Methods: The current study is retrospective analysis of oral surgical procedures performed from January 2011 to December 2012 at Department of Oral Surgery, Faculty of Dental Medicine, University in Sarajevo. The data were statistically analyzed by T-test of independent samples and using Chi-squared test. P value lower than 0.001 was considered to be statistically significant.

Results: A total of 1299 patients were included in study. The age range is from 18 to 84 years, with mean age ± SD= 35±15 years. There were 42 different clinical diagnoses, and 13 diagnoses appeared in more than 1% of all patients. Impacted and semi-impacted teeth, periapical lesions and retained roots are the most frequent diagnoses and represent 68% of all diagnoses. Embedded and impacted teeth (35%) and diseases of pulp and periapical tissues (31%) are the most frequent diagnoses with respect of ICD-10. Impacted teeth is the most common diagnosis and removal of impacted third molars is the most common oral surgical procedure.

Conclusion: Study points out variety of dentoalveolar pathology and complexity of dental health care that often requires interdisciplinary approach in order to achieve optimal outcome for patient.

Keywords: cross-sectional studies; dental health surveys; prevalence; public health dentistry; surgery, oral

INTRODUCTION

Oral health is considered as important part of patient’s general health. Oral diseases are the most common of the chronic diseases and are important public health problems because of their prevalence, their impact on individuals and society, and the expense of their treatment (1). Therefore improvement of oral health and the quality of life is the aim of contemporary dental care. Oral health, quality of life and public health are closely related (2). Quality of dental care is based on integrity of health services and their mutually harmonization through system of primary, secondary and tertiary health care. Oral
surgery as a dental speciality that deals with diagnost- 
cistics and treatment of diseases, trauma and defects 
of dentoalveolar structures is represented in every 
level of health care. Relatively simple procedures are 
performed in dental offices by general dental practi- 
tioners according to their competence and training. 
Majority of oral-surgical procedures are performed 
by specialist oral surgeons in Departments of oral 
surgery in hospitals. The most difficult and complex 
cases are referred to specialized consultative health 
care on Department of Oral surgery Faculty of 
Dentistry University of Sarajevo. This arrangement 
of health care provides high quality of health care 
services, efficiency in the use of health technologies 
and human resources as well as optimal patient out- 
come. Because of this, epidemiological analysis of 
oral-surgical procedures is not just representation of 
prevalence of oral diseases in population, but also 
is an important indicator of quality and organiza- 
tion of health care overall. Several epidemiological 
studies are done in neighbour countries of Bosnia 
and Herzegovina. Epidemiological study of oral sur- 
gery procedures of patients reffered to Department 
of Oral Surgery at Clinical Center in Rijeka, Croa- 
tia showed the most common referral diagnosis is 
chronic osteitic processes, followed by retained roots 
and impacted teeth (3). Analysis of ambulatory oral 
surgery diagnoses at the Department of Oral Surgery 
at University Hospital Dubrava in Zagreb, Croatia 
showed retained roots, chronic periapical lesions, 
and deep caries represented 70% of all ambulatory 
diagnoses (4). This kind of epidemiological study 
has not been conducted in Bosnia and Herzegovina. 
The aim of this study is to determine prevalence of 
oral diseases and oral surgical procedures at Depart- 
ment od Oral Surgery, Faculty of Dental Medicine, 
University in Sarajevo.

METHODS

The current study is retrospective analysis of oral 
surgical procedures performed in Department of 
Oral surgery from January 2011 to December 2012. 
The total of 1584 patients from the Canton of Sarajevo 
consecutively referred to Department of Oral Surgery 
by general dental practitioners in two-year period. To ensure representative and randomized 
sample of general population in Canton of Sarajevo, 
the only exclusion criteria was patients younger than 
18 years of age, as growth is essentially completed by 
this age. All patients with indication for oral surgi- 
cal treatment accepted the invitation to participate 
in study. A total of 1299 patients were included in 
study. There were 511 males and 788 females, the 
patients’s age ranged from 18 to 84 years. After di- 
agnostics that includes complete medical and dental 
history, clinical and radiographical examination and 
blood laboratory tests, the surgical treatment was 
indicated. Medically compromised patients under- 
went internistic preparation if needed and internis- 
tic agreement was necessary for dental treatment. 
After informing patients about medical procedure 
patients signed informed consent. Study was con- 
ducted in accordance with Helsinki declaration of 
ethical principles for medical research. All proce- 
dures were performed by different surgeons in local 
anesthesia 1,8 ml Lidocain 2% Adrenalin 1:80000 
(Alkaloid", Skopje, Republic of Macedonia) in the 
same operating room under same conditions. The 
data were entered in operation protocols, and then 
in specially designed data base created for this study 
containing the following information: number of 
protocol, gender, age, age group and diagnosis. Di- 
agnosis was established according to International 
Classification of Diseases (ICD-10) (5). To ensure 
protection of privacy, patient’s names and number 
of dental form and dental charts were not record- 
ed in data base and only the main researcher had 
complete access to data-base and oral-surgery proto- 
cols. Data were processed and analyzed in statistical 
software SPSS 20.0 (SPSS Inc, Chicago, IL, USA). 
The data were statistically analyzed by T-test of inde- 
pendent samples and the comparision between the 
groups was made using Chi-squared test. P value 
lower than 0,001 was considered to be statistically 
significant.

RESULTS

The total of 1299 patients were included in this 
study: 511 males and 788 females, gender ratio 
1:1.54 in favor of females. The age range is from 18 
to 84 years, with mean age ± SD= 35±15 years. Ma- 
jority of patients is in age group 20-29 years (n=503; 
39%), followed by <19 years (n=237; 18%), 30-39 
years (n=235; 18%), 40-49 years (n=156; 12%), 
50-59 years (n=141, 11%) and >60 years (n=121;
There were 42 different clinical diagnoses, and 13 diagnoses appeared in more than 1% of all patients. Frequency of clinical diagnoses is shown in Table 1. Impacted and semi-impacted teeth (n=483; 35%), periapical lesions (n=216; 15.7%) and retained roots (n=178; 13%) are the most frequent diagnoses and represent 64% of all diagnoses. Embedded and impacted teeth (35%) and diseases of pulp and periapical tissues (31%) are the most frequent diagnoses with respect of ICD-10.

Impacted teeth are the most frequent diagnosis in younger age groups: 50% in age group 20-29 years, and 90% in age group to 39 years. Radicular cysts and periapical lesions are also the most frequent in age group 20-29: 39% and 45% of patients are in that age group, respectively. Pre-prosthetic surgery is represented in elderly age groups: 85% of pre-prosthetic surgical procedures is performed in patients older than 40 years. Diseases of maxillary sinus most commonly develop in third decade (36%), 84% of patients are in age group 20-59 years.

Mandibular third molars are the most frequently impacted teeth. Frequency of impacted teeth is shown in Figure 1. Impactions have gender-prevalence: frequency of impacted teeth (except mandibular premolars) is higher in females (p<0.001). Impacted third molars are the most frequent in age group 20-29 years (p<0.001): impacted maxillary third molars 55%, impacted mandibular third molars 53%, semi-impacted maxillary third molars 52% and semi-impacted mandibular molars 61%.

Radicular and residual cysts are more common in maxilla: 11.7% vs. 2.5% and 0.7% vs.0.4% respectively. Radicular cysts predominantly affect the anterior region of maxilla- canine to canine segment (n=139; 86%; p<0.001), while there is no statistical significance in occurrence of radicular cysts in anterior (n=20; 57%) and posterior (n=15; 43%) segment of the mandible (p>0.001). Radicular maxillary and mandibular cysts are the most common in third decade: 39% and 42%, respectively, and

<table>
<thead>
<tr>
<th>Clinical diagnose</th>
<th>Number of patients (frequency)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dens subimpactus</td>
<td>244</td>
<td>17.7</td>
</tr>
<tr>
<td>Dens impactus</td>
<td>239</td>
<td>17.4</td>
</tr>
<tr>
<td>Periodontitis periapicalis chronica</td>
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<td>15.7</td>
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<tr>
<td>Radix relicta</td>
<td>178</td>
<td>12.9</td>
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<tr>
<td>Cystis radicularis maxillae</td>
<td>162</td>
<td>11.7</td>
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<tr>
<td>Exostosis processus alveolaris maxillae</td>
<td>36</td>
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</tr>
<tr>
<td>Cystis radicularis mandibulae</td>
<td>35</td>
<td>2.5</td>
</tr>
<tr>
<td>Hyperplasia mucosa vestibuli oris maxillae</td>
<td>28</td>
<td>2.0</td>
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<tr>
<td>Sinus maxillaris apertus</td>
<td>26</td>
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</tr>
<tr>
<td>Retentio dentis</td>
<td>22</td>
<td>1.6</td>
</tr>
<tr>
<td>Dens germinatus</td>
<td>20</td>
<td>1.4</td>
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<tr>
<td>Frenulum labii superior tectolabialis</td>
<td>19</td>
<td>1.4</td>
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<tr>
<td>Exostosis pars alveolaris mandibulae</td>
<td>18</td>
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<tr>
<td>Tu buccae</td>
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<td>Cystis e retentione labii inferioris</td>
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<td>Cystis residualis maxillae</td>
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<td>Dens supernumerarius</td>
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<td>Epulis</td>
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<td>Cystis follicularis</td>
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<td>Fistula oroantralis</td>
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<tr>
<td>Odontoma</td>
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<td>Tu labii superior</td>
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<tr>
<td>Tu palati duri</td>
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<td>Osteoma</td>
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</tr>
<tr>
<td>Corpus alienum in sinus maxillaris</td>
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<td>0.1</td>
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</table>
residual cysts in fifth decade of life (50%). Higher prevalence of radicular cysts is found in male patients (p<0.001).

Majority of non-malignant oral lesions is in forth decade of life (23%). Localization of non-malignant lesions of oral cavity is shown in figure 2.

The most common disease of maxillary sinus is oro-antral communication (81%), with 9% of oroantral communications with tooth or root displaced in sinus. Oroantral fistula was identified in 14% of cases.

The cause of oro-sinus communication is extraction of maxillary first molar (56%), second molar (20%), second premolar (12%), third molar (8%) and first premolar (4%). Highest number of oroantral communication and fistula are in age groups 30-39 years (34%) and 58% in age group 20-39 years. Mucoceles of sinus presented in 2% of maxillary sinus diagnoses.

Surgical extraction including extraction of impacted teeth and retained roots is the most common surgical procedure. Table 2 shows surgical treatments performed more than 20 times.

**DISCUSSION**

Impacted teeth is the most common diagnosis and removal of impacted third molars is the most common oral surgical procedure. This is in accordance with results of other studies, thus showing increase of prevalence of impacted teeth in oral-surgical procedures (6,7). The analysis of available literature shows that in the Anglo-Saxon population groups the problems with the third molars are much more common, which may be related to lesser incidence of caries as a result of better prevention, better availability of dental health care and treatment and significantly smaller number of extractions, particularly of the first molars (6). Retained teeth and dentitio difficiilis were the most common diagnosis in younger age groups (<19 years) and impacted teeth in older age groups (20-29 years). The predominant age group for impacted teeth in our study is third decade, which is in accordance with results of other international studies (8-10). Several studies reported gender predilection in third molar impactions (11-13). Results of our study are in agreement with previous reports, since there is statistical significance in distribution of impacted teeth between females and males (p<0.001). The higher frequency reported in females is due to the consequence of difference between the growth of males and females. Females usually stop growing when the third molars just begin to erupt, whereas in males, the growth of the jaws continues during the time of eruption of the third molars, creating more space for third molar eruption (14).

Odontogenic cysts ammount for 7-13% of the lesions diagnosed in oral cavity (15-17). Radicular
cysts are the most prevalent odontogenic cysts according to all studies reviewed, with variations only in percentages (18). Radicular cysts are more common in maxilla, which is consistent with findings of other studies (18-20). Radicular cysts were more common in the third decade of life, consistent with the findings of Selvamani (20) and Souza (21). The higher prevalence of male gender in some studies may be explained by the fact that men usually have poorer oral hygiene habits and are more susceptible to trauma than women (22). The current study has some limitations and results are difficult to compare with other studies, due to different sampling methods. In our study diagnosis was based upon clinical findings, unlike other studies where roendgenographic data analysis was performed or samples were obtained periapical lesions.

Pre-prosthetic surgery is found in 9% of oral-surgical procedures. Approximately 66% of exostoses are encountered on maxilla, which is in accordance with findings of Bouquot and Gundlach (23). Same studies showed higher prevalence in older age groups, similar to our study: 37% patients in age group older then 60 years, but in our study exostoses are frequent also in younger age groups (fifth decade 29% and sixth decade 26%). Our findings suggest prevalence of exostoses is increasing after forth decade of life, which may be related with increasing of edentulism in elderly age groups. Different prevalence of exostoses in various race and ethnic groups suggests genetic factors, and higher prevalence in elderly age groups suggests environmental factors such as masticatory stress in their development (24). Recently, several authors have postulated that the etiology of tori consists of an interplay of multifactorial genetic and environmental factors (25). Prevalence of tori mandibularis is higher in males (2:1 ratio; p<0.001), which is in accordance with findings of Jainkittivong (24). Jainkittivong observed an increasing correlation between marked exostoses and a significant attrition of teeth in some older subjects. This may be a similar phenomenon as that which occurs in subpontic hyperostosis, which postulates that stress causes the crestal alveolar bone to grow under the pontic along a vector opposing the forces of occlusion. That suggest funcional influences may contribute to the development of exostoses, and possibly may explain the higher prevalence in elderly people such as cumulative effect of occlusal forces and higher prevalence in male patients since male patients have significantly larger values of occlusal forces than females (26).

Oral non-malignant lesions are most frequently localized in gingiva and buccal mucosa, similarly to other studies (27,28).

Prevalence of oroantral communication is reported in range 0.31-4.7% (29) and in our study is represented with 2.5%. Extraction of maxillary first molar (56%) is the main etiologic factor of oroantral communication, which is in accordance with Hernando (30). The maxillary sinus reaches its greatest size during the third decade of life; consequently, the incidence of oro-sinus communication is higher after that, which is in accordance with results of our study (p<0.001) and the results of other authors (29).

CONCLUSION

Present study shows variety of oral-surgical procedures is performed in Department of Oral Surgery University of Sarajevo: diagnostics and treatment of dental diseases, jaw lesions, cysts, non-malignant lesions of oral cavity, diseases of maxillary sinus, odontogenic infections and pre-prosthetic surgery. Study showed impacted teeth are the most frequent diagnosis and surgical removal of impacted mandibular third molars is the most common procedure. Radicular cysts and chronic periapical lesions are the most frequent jaw lesions. Oral non-malignant lesions are most frequently localized in gingiva and buccal mucosa. The highest prevalence of oroantral communication is in third decade of life and the most common etiologic factor is extraction of maxillary first molar. Study points out variety of dentoalveolar pathology and complexity of dental health care that often requires interdisciplinary approach in order to achieve optimal outcome for patient.

REFERENCES


