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Original Article

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Frequency of dry socket among patients undergoing dental extraction presenting to Ayub Teaching Hospital

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ABSTRACT

BACKGROUND & OBJECTIVE: Tooth extraction is the most common procedure performed at the dental office. A very well recognized and recurrent post tooth extraction complication that dental surgeons face is Dry Socket (DO) also introduced as alveolar osteitis, localized osteitis, or simply alveolitis. The objective of this study is to ascertain the frequency of dry socket among patients undergoing dental extraction at Ayub Teaching Hospital.

METHODOLOGY: This descriptive cross-sectional study was performed in the department of Oral and Maxillofacial Surgery, Ayub Teaching Hospital, Abbottabad for six months. A sample size of 203 patients was predetermined using WHO a calculator. Patients of either gender from 18 to 65 years were selected. Following the standard extraction technique, detailed postoperative instructions were given. The patients were educated about the symptoms of dry socket and were requested to report immediately if he/she felt any of the said symptoms. Those patients that reported dry socket, were identified, and their data was noted on structured proforma. Statistical Package for Social sciences (SPSS) version 21 was used to analyze the data obtained.

RESULTS: The Mean age recorded in present study was 35±12.00. Gender distribution showed that 155 (76.35%) patients were male and 48 (23.64%) patients were female. Mean number of days elapsed for dry socket was 5±0.57 Frequency of dry socket recorded was 12 (05.91%) patients. No statistical association found among the variables.

CONLCUSION: In this study, the results collected were found to be statistically insignificant on the accounts of trends such as female preponderance and dry socket distribution posteriorly in the mandible. Our study was in accordance with the studies in literature.

KEYWORDS: Dry Socket, Prevalence, Smoking, Surgical Extraction, Alveolar Osteitis.

INTRODUCTION

Alveolar Osteitis (dry socket) is the most commonly occurring complication of tooth extraction. Chances of dry socket are higher after the extraction of the third molar tooth in the mandibular region. The characteristics presentation includes a sharp pain that originates from inside or around the tooth, often observed between the 3rd and the 5th day of extraction [1,2]. The term "Dry socket"was coined by Crawford in 1896, since then, similar terms have also been used to describe dry socket which includes, alveolar osteitis (AO), fibrinolytic alveolitis, alveolitis sicca dolorosa, postoperative alveolitis, alveolalgia, septic socket, necrotic socket, localized osteomyelitis, fibrinolytic alveolitis, and delayed extraction wound healing [1,2].

Different studies have reported different results in terms of incidence of dry socket after tooth extraction. In one of local study, the overall Dry Socket incidence was 5%-30%, following a surgical tooth extraction [3], with females being 2.37 times more susceptible to dry socket than male counterparts Moreover, dry socket was found to be 2.94 percent more prevalent in mandibular extractions than in the maxillary extractions [2].

In AO the underlying bone is left unprotected and devoid

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of barriers against the oral environment. Several factors have been believed in the etiology of dry socket, some of them are immediate vicinity of extraction, menstrual cycle, oral contraceptives consumption, infection and smoking habits [4].

Literature also exhibits evidence that the subjects requiring teeth extractions for therapeutic causes, for instance (infection, cystic lesions, caries and further pathologies) are more likely to develop alveolar osteitis than the subjects who undertook the surgery, addressing purely prophylactic reasons (e.g orthodontic and prosthetic indications) [5,6].

Smoking is strongly associated to alveolar osteitis development as Some authors report that smokers are at a significantly higher risk for developing alveolar osteitis than the non-smokers [7,8]. The use of oral contraceptives in female population has also been signified to contribute to a risk escalation of alveolar osteitis by twofold, contrasted with males [4].

The purpose of the study is to find the frequency of dry socket and its relation to various factors. The results in turn would help the health professionals in taking necessary precautions to reduce this post-operating complication.

METHODOLOGY

This descriptive cross-sectional study was conducted in Oral and Maxillofacial Surgery Department, Ayub Teaching Hospital, Abbottabad. The study was completed in six months from 06/07/2017 to 06/01.2018 after taking the approval (DSG-2016-010-1800). A sample size of 203 patients was calculated using WHO calculator (using 5% frequency of dry socket2,95% confidence level and 3% margin of error) Consecutive Non-Probability sampling technique was used for the study. Patients of either gender from 18 to 65 years coming for tooth extraction were selected while those patients in whom dry socket has been ruled out after meticulous evaluation were excluded from the study.

A prior approval from the institutional research and ethical board was sought before conducting our study. Informed written consent was taken from the patients. Those who met the inclusion criteria were arranged for the extraction procedure after being debriefed about the study. A standard extraction protocol was followed comprising of local anesthesia administration, gingival reflection, elevator luxation and force delivery. Patient's particulars like age, gender, address, date of extraction, site of extraction, contact information, smoking status and diabetes mellitus (based on HbA1C level) was noted on a structured proforma. Detailed post-operative instructions were given to patients all of whom were instructed to contact in case of any complications arising or pain.

Post-operative medications comprising of a combination of antibiotics (Co-Amoxiclav 1gm BD or Erythromycin in case of allergy to Penicillin and Metronidazole 400mg TDS) and an analgesic (Naproxen Sodium 550MG BD) were given to the patients. The patients were educated with the symptoms of dry socket and were requested to report immediately if he/she felt any of the said symptoms. All patients were contacted through telephone call on the third, fifth and seventh post-operative day and if symptoms of dry socket were present, they were called for clinical examination after which final determination of dry socket was made and proforma filled accordingly. Where dry socket was seen, a standard treatment was done including the use of local NS irrigation, analgesics-based pain management and a surgical dressing comprising of eugenol.

The data acquired was entered in Statistical Package for Social sciences (SPSS) version 21 (SPSS, Inc, Chicago, IL, USA) and results were analyzed as following. Mean ± standard deviation (SD) was used to determine quantitative variables i.e., age and number of days elapsed. Frequency and percentage were used for categorical variables like gender, site of tooth extraction and diagnosis of dry socket. Data was stratified on the basis of age, gender, number of days elapsed, diabetic status, smoking status and post stratification chi square test was used at a 5% level of significance.

RESULTS

The Mean of ages recorded in present study was 35±12.00 with 99 (48.76%) patients in 18-30 years in current study 155 (76.35%) patients were male and 48 (23.64%) patients were female. Mean number of days elapsed for dry socket was 5±0.57 Frequency of dry socket recorded was described in Table-I. Stratification of dry socket with age, gender, number of days elapsed, diabetes mellitus and smoking status showed statistically insignificant results (Table:II-VI).

Table-I: Frequency of dry socket.

Dry Socket	Frequency	Percentage
Yes	12	05.91%
No	192	94.08%

Table-II: Stratification of dry socket with age.

Age	Dry Socket	Frequency	Percentage	p-value
18-30 Years	Yes	04	01.97%	
	No	95	46.79%	
31-45 Years	Yes	03	01.47%	0.491
	No	43	21.18%	
46-65 Years	Yes	05	02.46%	
	No	53	26.10%	

Table-III: Stratification dry socket with gender.

Gender	Dry Socket	Frequency	Percentage	p-value
Male	Yes	09	4.43%	
	No	146	71.92%	
Female	Yes	03	01.47%	0.909
	No	45	22.16%	

Table-IV: Stratification of dry socket with number of days elapsed.

Number of Days Elapsed	Dry Socket	Frequency	Percentage	p-value
< 5 Days	Yes	11	5.41	
	No	128	63.05	0.746
> 5 Days	Yes	01	0.49	
	No	63	31.03	

Table-V: Stratification of dry socket with diabetes mellitus.

Diabetes Mellitus	Dry Socket	Frequency	Percentage	p-value
Diabetic	Yes	07	3.44	
	No	95	46.79	0.563
Non-Diabetic	Yes	05	2.46	
	No	96	47.29	

Table-VI: Stratification of dry socket with smoking status.

Smoking Status	Dry Socket	Frequency	Percentage	p-value
Smoker	Yes	08	03.94	
	No	96	47.29	0.270
Non-Smoker	Yes	04	01.97	
	No	95	46.79	

DISCUSSION

Formation of alveolar osteitis, post a tooth extraction procedure, is a complication of exodontia which has long been a source of substantial disquiet and a varying amount of uneasiness for the patients and subsequently, of disappointment for dentists. It is also a widely recognized drawback of mandibular third molar extraction [8].

Alveolar osteitis (dry socket) is a disorganization of the healing mechanism at the vicinity of extraction proceeding a clot formation and before the wound establishment, identified by a mild to severe pain at the extraction region that generally starts on the 2nd or 3rd day post the surgery, often observed with a foul smell along with a colored discharge8. The pain is often refractory to the common postoperative analgesics, with 45% of clinical subjects necessitating multiple (2- 4) postoperative visits before the resolution of the symptoms is seen [8].

As per the earlier reports, the frequency of AO varies between 5% to 30% 3. However, this study has recorded an incidence of 4.1% for all extractions conducted in our department during the study period. This value is lower than the values reported in a study conducted in Iran which projected that the frequency of AO formation postsurgical removal of mandibular impacted tooth was 23.45% [3].

Tobacco smoking/consumption is extensively reported to have numerous unfavorable effects and has been associated in several diseases, primarily involving CVS and pulmonary systems. It is also considered to be linked with surgically unfavorable outcome and the establishment of drawbacks during and after many surgical procedures. The risk for complications after surgery is reported to be 1.2–5.5 times higher in smokers [9]. While it is broadly documented that smoking has unfavorable effects in many types of surgery, little recent data is available on whether it has any influence on exodontia [9].

According to the present study, the development of alveolar osteitis in smokers was only 3.94% (p=0.270 non-significant), similarly, a study conducted in the year 2016 in Bangladesh reported a non-significant relationship (p=0.227) between smoking and the development of alveolar osteitis [9]. Localized tissue ischemia may be believed a contributing factor. Nicotine may result in delaying wound healing via vasoconstriction and furthering platelet aggregation with the establishment of thrombotic microvascular occlusion [10, 11].

Contrary to the previous reports, which had a strong female preponderance in the study, the present study did not have a significant relation of gender to the occurrence of the alveolar osteitis as the figures obtained reflected only a 3 out of 45 females with the said complication, proving no specific association between the gender and the formation of the postoperative complication. However, an observation was made by Nilesh and Pisal in India in the year 2019, that the incidence of alveolar osteitis in females on oral contraceptive drugs was approximately twice (16.66%), compared to the females not on oral contraceptive drugs and males [12].

Literature provided evidence and quoted by Suri and Dutta in India in 2020 that the age of an individual patient exhibits a substantial part in the incidence of alveolar osteitis formation [13]. According to Blondeau et al, they stated that age is indeed a contributing factor to an incidence of alveolar osteitis as it has been observed that old aged individuals are more prone to developing dry socket in contrast to the lesser aged ones [14]. The results obtained from this study indicate a prevalence of dry socket to be the highest in the fourth to sixth decade window of life which was in contrast with the results obtained by Singh S in 2019, in Lucknow who found no considerable relationship between the age and the said complication [15].

CONCLUSION

The incidence of dry socket established in our study was in correspondence with the occurrence reported in the literature. No preponderance of gender, age, side or, any other factor was found to be statistically significant.

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Author's Contribution:

Muhammad Shakeel Saeed: Data collection and analysis.
Alaf Khan: Data interpretation.
Saniya Sohail: Analysis, or interpretation of data for the work.
Muhammad Jamal: Drafting the work or revising it critically for important intellectual content.
Anam Jawed: Final approval of the version to be published.
Misbah Murtaza: Substantial contributions to the conception or design of the work.

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