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ORIGINAL RESEARCH

Evaluation of risk factors associated with dry socket in adults- A clinical study

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ABSTRACT:

Background: Extraction of teeth is indicated in case of non restorable teeth. The most common complication of extraction is dry socket which in turns depends upon various factors. The present study was conducted to assess the risk factors associated with dry socket. **Materials & Methods:** This study was conducted on 320 patients requiring extraction of teeth. Smoking status, systemic diseases were recorded and risk factors of dry sockets were recorded. **Results:** Out of 320 patients, males were 180 and females were 140. Out of 320 patients, 25 (7.8%) had dry socket. Risk factors were diabetes mellitus in 8, hypertension in 9 and smoking in 12 patients. **Conclusion:** Dry socket is one of the complications observed following mandibular third molar extraction. Other risk factors such as diabetes mellitus, hypertension and smoking were risk factors of dry socket.

Key words: Dry socket, Smoking, Diabetes mellitus

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INTRODUCTION

Extraction of teeth is indicated in case of non restorable teeth. The most common complication of extraction is dry socket which in turns depends upon various factors.¹ Dry socket (DS) is defined as "postoperative pain in and around the extraction site, which increases in severity at any time between one and three days after the extraction, accompanied by a partially or totally disintegrated blood clot within the alveolar socket, with or without halitosis." It is also known as "alveolitis sicca dolorosa" or "alveolalgia".²

The main complaint of affected patient is severe pain that causes impairment in daily activities. This pain can be referred to forehead, ears and neck and is resistant to pain relief drugs.³ The pathogenesis of this pain after extraction is not completely known, but several factors have been suggested as predisposing factors including trauma to the alveolar socket, infection at the site of tooth extraction, presence of vasoconstrictor in local anesthesia, smoking, intake of oral contraceptive pill (OCP), menstruation, residual foreign bodies, root segments in alveolar bone, extra irrigation or severe curettage, ejection of saliva after extraction. The numbers of tooth extractions and the amount of bleeding may also be effective.⁴

Although DS is a self limited complication, various methods have been proposed for treatment of this phenomenon. However, prevention is more effective in DS. DS occurs when blood clot dissolves following increased fibrinolytic activity and the exposure of alveolar bone happens. The fibrinolysis is the result of plasminogen pathway activation, which can be accomplished via direct or indirect activator substances.⁵ The present study was conducted to assess the risk factors associated with dry socket.

MATERIALS & METHODS

This study was conducted in department of Oral and Maxillofacial Surgery. It consisted of 320 patients requiring extraction of teeth. All were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study.

General information such as name, age, gender, smoking status, systemic diseases were recorded. Risk factors were recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 320		
Gender	Male	Female
Number	180	140

Table I shows that out of 320 patients, males were 180 and females were 140.

Table II Prevalence of dry sockets

Total	Prevalence	Percentage
320	25	7.8%

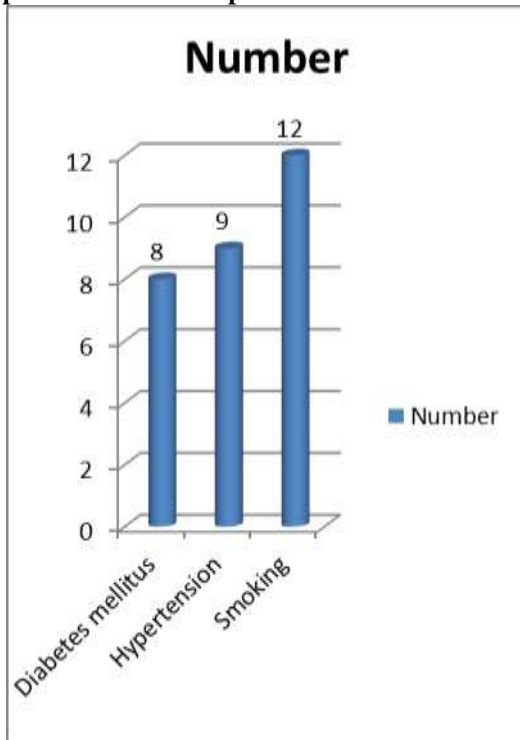
Table II shows that out of 320 patients, 25 (7.8%) had dry socket.

Table III Risk factors in patients

Risk factors	Number	P value
Diabetes mellitus	8	0.01
Hypertension	9	
Smoking	12	

Table III shows that risk factors were diabetes mellitus in 8, hypertension in 9 and smoking in 12 patients respectively.

Graph I Risk factors in patients



DISCUSSION

Dry socket (DS) is a painful condition that may occur after a dental extraction and is often distressing to the patient. Although the exact pathogenesis of dry socket is not fully understood, it is thought to occur from increased fibrinolytic activity resulting in blood clot disintegration. The most common complication after tooth extraction is

dry socket.⁶ A distinct etiology is not determined, but generally increase of fibrinolytic activities is considered as main etiologic factor that can dissolve the blood clot. When some anti-fibrinolytic agents were placed at the site of tooth extraction, incidence of dry socket was reduced.⁷ The present study was conducted to assess the risk factors associated with dry socket.

In present study, out of 320 patients, males were 180 and females were 140. Out of 320 patients, 25 (7.8%) had dry socket. Sharma et al⁸ in their study, a total of 1073 teeth included in this study. 46.11% of patients were male and 53.89% were female. The mean age of participants was 32.68 ± 17.63 years. Total of 31 patients (2.89%) were diagnosed with dry socket. Smoking and oral contraceptives intake had significant association with incidence of DS. In contrast, age, gender, medical status, tooth location, number of anesthetic carpules, anesthetic technique, pre-extraction antibiotic consumption, and academic year of students had no significant association with the incidence of DS. All cases with DS treated and were followed until resolution of DS.

We found that risk factors were diabetes mellitus in 8, hypertension in 9 and smoking in 12 patients.

Momeni et al⁹ cross-sectional prospective study was carried in which four thousand seven hundred and seventy nine patients were selected. Characteristics such as: age, gender, site of extraction, number of extracted tooth, trauma during extraction, oral hygiene, smoking, systemic disease, menstrual cycle, history of dental infection and oral contraceptive pill intake were determined. Over the two-month period of the study, among of 4,779 patients, 28 patients returned with dry socket phenomena. Our results showed that the incidence of dry socket was 0.6% and females were more common involved than males (0.08% versus 0.04%). The ratio of mandible to maxilla was 2.5 to1 and mandibular third molars were more often involved than other teeth. Trauma, poor oral hygiene and smoking had increased the incidence of dry socket.

Amaratunga et al¹⁰ conducted a study and found that incidence of mandible was 2/5 times was 3 times more than maxilla. This can be attributed to better blood supply to the maxillary tooth. Some researchers believe that the etiology of more incidence of dry socket in lower jaw is related to more bone density, lower blood supply and reduced capacity of granulation tissue production. Wagaiyu et al¹¹ found that thirty-one teeth (5.6%) of a total of 554 teeth extracted during the period of the study developed dry socket. The mean age (SD) of the 27 patients who developed dry socket was 32.2 +/- 13.0 years, (m; f ratio of 1: 4.4). Most (44.5%) of the patients who presented with dry socket were in the 3rd decade of life, with more than half (59%) of them presenting on the 3rd day following extraction. Mandibular and maxillary teeth were equally affected. Molars and premolars were exclusively affected. Difficulty of extraction was significantly associated with the development of dry socket.

Nusair YM et al determined the prevalence, clinical picture, and risk factors of dry socket at the Dental

Teaching Center of Jordan University of Science and Technology (DTC/JUST). Two specially designed questionnaires were completed over a four-month period. One questionnaire was completed for every patient who had one or more permanent teeth extracted in the Oral Surgery Clinic. The other questionnaire was completed for every patient who returned for a post-operative visit and was diagnosed with dry socket during the study period. There were 838 dental extractions carried out in 469 patients. The overall prevalence of dry socket was 4.8%. There was no statistically significant association between the development of dry socket and age, sex, medical history, medications taken by the patient, indications for the extraction, extraction site, operator experience, or the amount of local anesthesia and administration technique used. The prevalence of dry socket following non-surgical extractions was 3.2%, while the prevalence following surgical extractions was 20.1% ($P < 0.002$). The prevalence of dry socket following surgical and non-surgical extractions was significantly higher in smokers (9.1%) than in non-smokers (3%) ($P = 0.001$), and a direct linear trend was observed between the amount of smoking and the prevalence of dry socket ($P = 0.034$). The prevalence of dry socket was significantly higher in the single extraction cases (7.3%) than in the multiple extraction cases (3.4%) ($P = 0.018$). The clinical picture and management of dry socket at DTC/JUST were similar to previous reports in the literature. The prevalence of dry socket, its clinical picture, and management at DTC/JUST are similar to those reported in the literature. Smoking and surgical trauma are associated with an increased incidence of dry socket.¹²

CONCLUSION

Dry socket is one of the complications observed following mandibular third molar extraction. Other risk factors such as diabetes mellitus, hypertension and smoking were risk factors of dry socket.

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