

Original Research

Evaluation of risk factors of dry socket

Jaspreet Singh

Intern, National Dental College and Hospital, Chandigarh

ABSTRACT:

Background: To evaluate risk factors of dry socket. **Materials & methods:** A total of 100 subjects were enrolled. Previous dental infections and used methods to relief pain were noticed. Complete history was taken. 10 subjects were diagnosed with dry socket. P value ≤ 0.05 was considered significant. **Results:** The risk factors such as smoking and taking OCP increased the chance of dry socket development, but these relations did not show any significant statistical difference (P=0.9 and 0.6 respectively). **Conclusion:** Poor oral hygiene is an important factor that increase the incidence of dry socket.

Keywords: Dry socket, Hygiene, Extraction.

Received: 12 August, 2022

Accepted: 18 August, 2022

Corresponding Author: Dr. Jaspreet Singh, Intern, National Dental College and Hospital, Chandigarh

This article may be cited as: Singh J. Evaluation of risk factors of dry socket. Int J Res Health Allied Sci 2022; 8(5):48- 50

INTRODUCTION

Dry socket is the most common complication after tooth extraction.¹ The clinical features of this complication including severe throbbing pain, oral malodor and unpleasant taste. Onset of symptoms is 42-72 h after tooth extraction and there is no any redness or purulent discharge of the affected sites.^{1,2}

Dry socket may develop when the post-extraction alveolus is prematurely disintegrated, leaving the bone unprotected and exposed to the oral environment. Both bacteria and food can fill the socket, and their degradation products are believed to lead to greater dissolution of the clot.³ Thus, the essential features of dry socket are loss of the blood clot in the socket, together with exposure of the bony walls, sensitivity on probing and occasionally also fever.⁴

Dry socket lesions occur in approximately 1% to 5% of all extractions and in up to 38% of mandibular third molar extractions. Food particles that collect inside the socket may dislodge a blood clot. Bacterial biofilm and food particles inside a socket may also hinder the reformation of a dislodged blood clot by obstructing contact of a reforming blood clot with the exposed bone. Food particles and bacterial biofilm may hinder contact of the healing epithelium with the exposed bone, which may prolong the healing time of the dry socket lesion. Food particles that collect inside a dry socket can also ferment due to bacteria. This fermentation may result in the formation of toxins or

antigens that may irritate the exposed bone, produce an unpleasant taste or halitosis, and cause pain throughout the jaw. However, evidence suggests that bacteria is not the main cause of dry socket lesions.^{5,6} Hence, this study was conducted to evaluate risk factors of dry socket.

Materials & methods

A total of 100 subjects were enrolled. Previous dental infections and used methods to relief pain were noticed. Complete history was taken. 10 subjects were diagnosed with dry socket. Laboratory investigations were done. All collected data was analyzed by SPSS software using descriptive analysis and Fisher exact test. P value ≤ 0.05 was considered significant.

Results

Out of the total, 10 subjects were depicted with dry socket. Tooth infection also showed statistical significant difference (P=0.03). The risk factors such as smoking and taking OCP increased the chance of dry socket development, but these relations did not show any significant statistical difference (P=0.9 and 0.6 respectively). The incidence of dry socket differed significantly with the level of oral hygiene (0.004 respectively).

Table 1: Dry socket distribution based on tooth infection

Dry socket	Without	With	P – value
Tooth infection			
Yes	30	6	0.03
No	60	4	

Table 2: Dry socket distribution

Dry socket	Without	With	P – value
Smoking			
Upper	28	3	0.9
Lower	62	7	
Intake of OCP			
Yes	20	2	0.6
No	40	5	

Table 3: Dry socket distribution based on oral health level

Dry socket	Without	With	P – value
Health level			
Upper	40	2	0.004
Lower	10	0	

Discussion

Other factors contributing to the occurrence of dry socket are traumatic extractions, the female gender, tobacco use, oral contraceptive use and pre-existing infections.⁷ The latest published studies on this subject, involving the use of microbiological techniques, suggest that the presence of certain pathogens may be implicated in the origin of dry socket, since patients who develop alveolar osteitis after dental extraction present a microbiota different from that seen in patients without postoperative complications.^{8,9} In addition, it must be noted that a previous history of dry socket has been associated to the risk of developing the complication again in future dental extractions.^{10,11} The use of next-generation sequencing techniques can be a big help in confirming the role of the microbiota in the development of alveolar osteitis. Hence, this study was conducted to evaluate risk factors of dry socket.

In the present study, out of the total, 10 subjects were depicted with dry socket. Tooth infection also showed statistical significant difference (P=0.03). A study by Momeni H et al, over the two-month period of the study, among of 4,779 patients, 28 patients returned with dry socket phenomena. The 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. They suggested that trauma during surgery or extraction and poor oral hygiene are important factors that increase the incidence of dry socket, these factors should be considered before and after tooth extractions.¹²

In the present study, the risk factors such as smoking and taking OCP increased the chance of dry socket development, but these relations did not show any significant statistical difference (P=0.9 and 0.6 respectively). The incidence of dry socket differed significantly with the level of oral hygiene (0.004 respectively). Another study by Taberner-Vallverdú M et al, studied that during 24 months, questionnaires were filled with data on the patients seen in different public primary healthcare services in the area of Barcelona (Spain). A mandibular location of the extracted tooth, poor oral hygiene, difficult extraction, and previous dry socket increased the risk of developing this complication. In patients with dry socket in the past, the risk of developing the same complication again, adjusted for difficulty of extraction, was seen to increase 11.45-fold (OR: 11.45; 95%CI: 1.06 to 123.74; p = 0.045). The risk factors for dry socket are a mandibular location of the extracted tooth, poor oral hygiene, difficult extraction, and particularly a history of dry socket in the past. The identification of these factors the prevention of dry socket in each patient could be improved.¹³ Rakhshan V et al, showed that dry socket is a common complication of dental extraction, especially extraction of third molars. Knowledge of the frequent risk factors of alveolitis osteitis is useful in determining high-risk patients, treatment planning, and preparing the patients mentally. Unlike surgery difficulty, surgeon's experience, oral contraception use, and oral hygiene which showed stronger evidence, the influences of age, gender, and smoking were rather inconclusive. The case of female or oral contraceptive effect might relate mainly to estrogen levels (when it comes to dry socket) which can differ considerably from case to case. Many risk factors might be actually a combination of various independent variables, which should be targeted instead, in more comprehensive designs.¹⁴ The highest rate of dry socket incidence among all teeth types occurs with the extraction of mandibular third molars. Mandibular third molars are often deeply embedded in dense bone and have the highest incidence of root dilacerations among teeth.¹⁵⁻¹⁷ Mandibular third molars may have roots that are not radially co-axial with the imaginary radial axis on which the dentist places luxation forces to remove the root, especially if difficult access limits the number of possible ways of positioning luxation instruments. These factors may obligate a dentist to use heavy forceps or luxation forces, even after root sectioning, to extract mandibular third molars, and these heavy forces may transmit to the surrounding jawbone. Crawford first described dry socket lesions, using a case report where he extracted a mandibular third molar "with great difficulty," and may not have sectioned the tooth, given the limited technologies in 1896.¹⁸

Conclusion

Poor oral hygiene is an important factor that increase the incidence of dry socket.

References

1. Heasman PA, Jacobs DJ. A clinical investigation into the incidence of dry socket. *Br J Oral Maxillofac Surg.* 1984;22:115–22.
2. Swanson AE. A double-blind study on the effectiveness of tetracyclin in reducing the incidence of fibrinolyticalveolitis. *J Oral Maxillofac Surg.* 1989;47:165–7.
3. Daly B, Sharif MO, Newton T, Jones K, Worthington H V. Local interventions for the management of alveolar osteitis (dry socket) *Cochrane database Syst Rev.* 2012;12:CD006968.
4. Rastogi S, Choudhury R, Kumar A, Manjunath S, Stood A, Upadhyay H. Versatility of platelet rich fibrin in the management of alveolar osteitis - A clinical and prospective study. *J Oral Biol Craniofac Res.* 2018;8:188–193.
5. Bowe DC, Rogers S, Stassen LF. The management of dry socket/alveolar osteitis. *J Ir Dent Assoc.* 2011–2012;57:305–310.
6. Blum IR. Contemporary views on dry socket (alveolar osteitis): a clinical appraisal of standardization, aetiopathogenesis and management: a critical review. *Int J Oral Maxillofac Surg.* 2002;31:309–317.
7. Nusair YM, Goussous ZM. Quantifying the healing of dry socket using a clinical volumetric method. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2006;101:e89–95.
8. Aguilar-Durán L, Figueiredo R, Seminago R, Roig FJ, Llorens C, Valmaseda-Castellón E. A metagenomic study of patients with alveolar osteitis after tooth extraction. A preliminary case-control study. *Clin Oral Investig.* 2019;23:4163–4172.
9. Shen LH, Xiao E, Wang EB, Zheng H, Zhang Y. High-throughput sequencing analysis of microbial profiles in the dry socket. *J Oral Maxillofac Surg.* 2019;77:1548–1556.
10. Akinbami BO, Godspower T. Dry socket: incidence, clinical features, and predisposing factors. *Int J Dent.* 2014;2014:796102.
11. Reekie D, Downes P, Devlin CV, Nixon GM, Devlin H. The prevention of "dry socket" with topical metronidazole in general dental practice. *Br Dent J.* 2006;200:210–3.
12. Momeni H, Shahnasari S, Hamzeheil Z. Evaluation of relative distribution and risk factors in patients with dry socket referring to Yazd dental clinics. *Dent Res J (Isfahan).* 2011 Dec;8(Suppl 1):S84-7.
13. Taberner-Vallverdú M, Camps-Font O, Gay-Escoda C, Sánchez-Garcés MA. Previous dry socket as a risk factor for alveolar osteitis: A nested case-control study in primary healthcare services. *J Clin Exp Dent.* 2022 Jun 1;14(6):e479-e485.
14. Rakhshan V. Common risk factors of dry socket (alveolitis osteitis) following dental extraction: A brief narrative review. *J Stomatol Oral Maxillofac Surg.* 2018 Nov;119(5):407-411.
15. Hamasha AA, Al-Khateeb T, Darwazeh A. Prevalence of dilaceration in Jordanian adults. *Int Endod J.* 2002;35:910–912.
16. Malčić A, Jukić S, Brzović V, Miletić I, Pelivan I, Anić I. Prevalence of root dilaceration in adult dental patients in Croatia. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2006;102:104–109.
17. Colak H, Bayraktar Y, Hamidi MM, Tan E, Colak T. Prevalence of root dilacerations in Central Anatolian Turkish dental patients. *West Indian Med J.* 2012;61:635–639.
18. Crawford JY. Dry socket. *Dental Cosmos.* 1896;38:929–931.