

ORIGINAL RESEARCH

Evaluation and analysis of incidence and predisposing risk factors of dry socket after tooth extraction

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ABSTRACT:

Background: Dry socket/alveolar osteitis (AO) is one of the most common and unpleasant postoperative complications following extraction of permanent teeth. The present study was undertaken for assessing the incidence and risk factors of dry socket following tooth extraction. **Materials and methods:** Two hundred patients were included in this study which was carried out in one month duration. A relevant questionnaire was prepared to assess information like age and sex of patient, site of tooth extraction, any systemic illness, history of smoking, oral hygiene status, tooth extraction technique (surgical or non-surgical). All the results were recorded in Microsoft excel sheet and were analysed. **Results:** It was observed that only 6 patients reported with dry socket. The mean age group with dry socket was 34.87 ± 16.42 years and without dry socket 45.65 ± 18.52 years. Percentage of dry socket cases was higher in surgical extraction cases. Smoking as a factor increased the chance of dry socket however it did not show a significant statistical difference. Patients with systemic diseases showed significant difference in the occurrence of dry socket. **Conclusion:** The incidence of dry socket was found to be more in the presence of predisposing factors like middle age, sex predilection, smoking and the level of difficulty during extraction.

Key words: Dry socket, Alveolar osteitis

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INTRODUCTION

Dry socket, also termed fibrinolytic osteitis or alveolar osteitis, is a complication of tooth exodontia. A dry socket lesion is a post-extraction socket that exhibits exposed bone that is not covered by a blood clot or healing epithelium and exists inside or around the perimeter of the socket or alveolus for days after the extraction procedure.¹ Dry socket is the most common complication following tooth extraction and one of the most studied complications in dentistry. There are up to 17 different definitions for the clinical diagnosis of dry socket. Blum described dry socket as the presence of "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" excluding any other cause of pain on the same side of the face.² Many factors contribute to the occurrence of dry socket. For example: low

experience level of operator preoperative infection, sex, site of extraction, use of oral contraceptives, smoking, and use of local anesthetics with vasoconstrictor. The incidence of dry socket can be reduced through the use of antibiotics, antifibrinolytic agents, mouthwashes, steroids and intra-alveolar medicaments.³⁻⁵

The increase in recovery period translates into increased cost to the surgeon as 45% of patients who develop dry socket typically require multiple postoperative visits in order to manage this condition. However, the exact pathogenesis of alveolar osteitis (AO) is not well understood. Many researchers have studied alveolar osteitis, but most concepts are still subject to significant controversy.⁴ Its incidence is approximately 3% for all routine extractions and can reach over 30% for impacted mandibular third molars and many factors have been cited as contributing to the occurrence of dry socket including difficult or traumatic extractions, female sex, tobacco use, oral

contraceptives and preexisting infection.⁵ The objective of this study was to assess incidence and identify various risk factors associated with dry socket.

MATERIALS AND METHODS

Two hundred patients were included in this study which was carried out in one month duration. A relevant questionnaire was prepared to assess information like age and sex of patient, site of tooth extraction, any systemic illness, history of smoking, oral hygiene status, tooth extraction technique (surgical or non-surgical).

Inclusion criteria

1. Permanent dentition teeth were taken into consideration
2. Patient age < 60 years

3. No history of MI IN last 6 months

Exclusion criteria

1. Deciduous dentition teeth
2. Patient age > 60
3. History of MI in last 6 months

During follow up appointments only 6 patients reported with dry socket. All collected data was analyzed by SPSS software was used to analyse the acquired data by descriptive analysis and Fisher exact test. P value ≤ 0.05 was considered significant.

RESULTS

It was observed that only 6 patients reported with dry socket during this one month study. The mean age group with dry socket was 34.87±16.42 years and without dry socket 45.65±18.52 years [Table1].

Table 1: Mean age group with dry socket

Mean age	Average age	Standard deviation	P value
With dry socket	34.87±16.42 years	14.67	0.01
Without dry socket	45.65±18.52 years	16.83	

There was a higher incidence of dry socket in females as compared to males [Table 2]. The occurrence of dry socket was also found to be more in mandibular arch as compared to maxillary arch [table 3]. Percentage of dry socket cases was higher in surgical extraction cases [table 4]. Smoking as a factor increased the chance of dry socket however it did not show a significant statistical difference. Patients with systemic diseases showed significant difference in the occurrence of dry socket.

Table 2: Gender predilection

Gender	Not present	Present	P value
Female	86	4	0.04
Male	108	2	

Table 3: Alveolar osteitis occurrence in upper and jaws

Arch	Not present	Present	P value
Maxillary teeth	65	1	0.04
Mandibular teeth	135	5	

Table 4: Role of surgical extractions

Type of extraction	Not present	Present	P value
Surgical extraction	40	3	0.006
Non-surgical extraction	160	3	

Table 5: Effect of smoking

Smoking status	Not present	Present	P value
Smoker	84	4	0.856
Non-smoker	116	2	

Table 6: Risk from systemic diseases

Systemic diseases	Not present	Present	P value
Present	33	1	0.021
Absent	167	5	

DISCUSSION

Dry socket also referred to as alveolar or fibrinolytic osteitis, is a major complication that follows extraction of tooth/teeth in oral surgery. It is an acute inflammation of the alveolar bone around the extracted tooth and it is characterized by severe pain, breakdown of the clot formed within the socket making the socket empty (devoid of clot), and often filled with food debris. There is mild swelling and redness of the gingival, halitosis, bone exposure, and severe tenderness on examination.⁶ Alveolar osteitis (AO) is one of the extraction wound healing disorder, Commonly known as “dry socket” which is one of the common postoperative problem that results in severe pain “postoperative pain” inside and around the extraction site, which increases in severity between the first and third day after the extraction, usually caused by a partial or total disintegrated blood clot within the socket, this type of extraction complications usually associated with the extraction of impacted 3rd molar teeth and mandibular molar teeth.⁷ A great clinical challenge ever since the first case was reported has been the inconsistency in documentation of etiology, risk factors, prevention and treatment modalities. Most authors believe dry socket to have a multifactorial etiology, which can be divided into general factors such as age, sex, decreased body resistance due to systemic disease, nutritional deficiency, etc., and local factors such as anatomical location, traumatic surgery, smoking, fibrinolysis of clot, local circulation, local anesthesia, and vasoconstrictors⁸. Hence the present study was undertaken was to identify and analyse various risk factors associated with dry socket.

In this study it was observed that the mean age group with dry socket was 34.87±16.42 years and without dry socket 45.65±18.52 years. Singh AS et al conducted a study to explore the predisposing factors for the development of dry socket. In this study the data was collected by means of a structured questionnaire. Of the 4077 patients that presented for dental extractions, 2% (79) developed a dry socket. The ages of the patients ranged from 12-79 years with a mean age of 35 years. There was a slight female preponderance (1.5:1). The mandibular second molar was the most common site to be affected (22%). Pain was the most common presenting symptom. Underlying systemic conditions were found in 19% of the patients, while 25% smoked, consumed alcohol or both. Identifying risk factors, attention to procedural details and patient education were found to be important in the prevention of dry socket.⁹

In the present study, higher incidence of dry socket was seen in females as compared to males. The occurrence of dry socket was also found to be more in mandibular arch as compared to maxillary arch. Parthasarathi K et al conducted a prospective community-based study to assess the factors affecting incidence of dry socket. The data they obtained was analyzed in a descriptive fashion, and the factors

affecting alveolar osteitis were assessed using logistic regression analysis. The incidence of alveolar osteitis was 2.3% of all teeth extracted, with 4.2% of all patients experiencing alveolar osteitis in a public dental setting. Multivariate analysis revealed operator experience, perioperative crown and root fractures, periodontal disease, posterior teeth, and, interestingly, the use of mental health medications to be significant independent risk factors for the development of alveolar osteitis. No alveolar osteitis was reported in patients taking antibiotics, the oral contraceptive pill, bisphosphonates, or oral steroid drugs. Smoking and extraction technique (either operative or nonoperative) were also not found to significantly affect the development of alveolar osteitis.¹⁰

In the present study, percentage of dry socket cases was higher in surgical extraction cases. Smoking as a factor increased the chance of dry socket however it did not show a significant statistical difference. Patients with systemic diseases showed significant difference in the occurrence of dry socket. V Rakhshan summarized the common risk factors of dry socket. 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.¹¹

CONCLUSION

This study concluded that the incidence of dry socket was found to be more in the presence of predisposing factors like age, sex, smoking and the level of difficulty during extraction. The incidence was also found to be higher in the mandibular arch. Further prospective studies would help to discover and eliminate such predisposing risk factors.

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