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Prevalence of alveolar osteitis and its association with surgical removal of the teeth

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Abstract

Introduction: Dry socket consider one of the most popular complications that it is formed yet the dental extraction of a permanent tooth, and its prevention is more functional than its remediation.

Aim: To examine the prevalence of alveolar osteitis and its correlation with surgical tooth extraction in patients receiving care at Baghdad's Al-Maghrib specialized dentistry center.

Materials and Methods: Cross-sectional, analytical, descriptive, and retrospective research. Data were gathered for each patient who underwent permanent tooth extraction at the Oral Surgery department during a period of (18) months, from January 2022 to June 2023.

Results: The Oral and Maxillofacial Surgery department at Al-Maghreeb street dental specialist Centers data registration book had the whole set of collected data for 2749 patients throughout the course of 18 months, from January 2022 to June 2023.

Conclusion: Smoking habit, persisting gingival pathology and traumatic extractions were the factors associated with formation of dry socket.

Keywords: Dry socket DS, Tooth extraction, Alveolar Osteitis AO

1. Introduction

The literature study states that alveolar osteitis and dry socket are the most frequent complications of wound healing following tooth extraction. The area of the maxilla or mandible that contains all teeth is referred to as the alveolar region. Osteitis refers to inflammation of the bone as a result of a number of diseases, injuries, or metabolic conditions (Costa-Reis and Sullivan, 2013) [8].

From 1986 to 2018, it was clarified in 17 different paths and was known by several names, involving; septic socket, necrotic socket, osteitis, post-operative alveolitis, localized osteomyelitis, and fibrinolytic alveolitis.

Its incidence is roughly 3% for the most orderly extractions and can surpass 30% for impacted mandibular third molars (Taberner-Vallverdú *et al.*, 2017) [19].

The toothache is most significant indication of dry socket. It can go aimlessly in frequency and assertiveness. it usually starts between three and five days after the extraction, rotted blood clot inside the alveolar socket, and or without halitosis (Cardoso *et al.*, 2010; Bowe, 2011; Taberner-Vallverdú *et al.*, 2017) [7, 4, 19].

The existing publications submits that the primary rationale of dry sockets is the lack, unnatural consistence, or early breakdown of the blood clot inside the socket pursuing tooth extraction (Khalil, 2023) [11].

Few of the characteristics that have been linked to the appearance of dry socket include: extractions that are traumatic, difficult, and lengthy; infections both before and after surgery; smoking; oral contra-ceptives; bone disorders and underlying pathologies; radiation; systemic illnesses, such as Diabetes mellitus; clotting issues; and failure to follow directive post operatively. Periodontal disorders and prior extractions with dry socket are additional risk factors (Khalil, 2023; Taberner-Vallverdú *et al.*, 2017; Loksh, *et al.* 2020) [11, 12].

Furthermore, dry socket is a self-limitation dilemma. However, certain symptomatic therapy was prescribed based on the severity of the patient's discomfort. Local socket therapies for a

dry socket are affected by the combination of treatments, which include: irrigation the area of socket with (0.12% & 0.2%) chlorhexidine rinse inserting a self-eliminating wrap like Alvogyl; which contains: eugenol, butamben, and iodoform, arranging obtundant such like zinc oxide, eugenol, and lidocaine gel) or a mix combination of these medications and with continuation of systemic antibiotics, if feasible (Bloomer, 2000; Vezeau, 2000; Fazakerley and Field, 1991) [5, 20, 10]

Method

Study Design: This is a retrospective, cross-sectional, descriptive and analytical study. Data were collected during a period of time 18 months, from January 2022 to June 2023, for each patient who had permanent teeth extraction in the Oral Surgery department after performance the Clinical examination by the specialist in oral medicine and oral pathologist in the diagnosis department in AL-Maghreb specialized dental center in Baghdad.

Through this study, 2725 permanent teeth extractions were done There were 1448 (53.1% male) patients and 1277 (46.9% female) patients. Patients who had only deciduous teeth extracted were excluded from this study.

All patient's information such as ' socio-demographic data (sex, age), teeth extracted, site of extracted teeth and procedure involved in teeth extraction were collected. Out of the 2725 extractions, only 82 patients returned with alveolar ostites phenomena.

Inclusion criteria

1. Patient without any history of bleeding disorders.

2. Patient without any history of uncontrolled disease.
3. Healthy person without any history of allergy to dental anesthesia.
4. Patient with permanent tooth indicated for dental extraction.

Exclusion criteria

1. Patient with history of bleeding disorders.
2. Patient with history of uncontrolled disease.
3. Patient with history of allergy to dental anesthesia.
4. Patient with permanent tooth indicated for dental extraction due to periodontal disease.

Iraqi ministry of health research ethics committee approved this study, (proposal/2023) with a unique registration number 117185 at 6\8\2023.

Results

The complete gathered data of patients over an 18-month period, from January 2022 to June 2023, was extracted from the data enrollment book of the Oral and Maxillofacial Surgery department of Al-Maghreeb street dental specialist facility.

Patients under the age of 15, numerous extractions, and operations other than tooth extraction were all eliminated.

This study includes 2725 dental extractions, which were classified into two groups: surgically removed teeth (429, with a percentage of 16.2) and non-surgically extracted teeth (2214), with a percentage of 83.8. Tables 1, 2, and 3 show the patient's age, gender, and the distribution of removed teeth across jaws. Illustrated in table 1, 2 and 3.

Table 1: Distribution of patients according to age

Age	Frequency	Percent
15_24	642	23.6
25_34	905	33.2
35_44	577	21.2
45_54	341	12.5
>55	260	9.5
Total	2725	100.0

Table 2: Distribution of patients according to sex.

Sex	Frequency	Percent
Female	1277	46.9
Male	1448	53.1
Total	2725	100.0

Table 3: Distribution of patients according to jaw

Jaw	Frequency	Percent
Mandible	1487	54.6
Maxilla	1238	45.4
Total	2725	100.0

Regarding the correlation between surgical extraction and dry socket, the statistical analysis using Pearson Chi-Square show

an important correlation as demonstrated in Table 4.

Table 4: illustrate Surgical extraction * dry socket Cross tabulation.

		Dry Socket		Total	0.000
		No	Yes		
Non-Surgical extraction	Count	2214	43	2257	
	% within dry socket	83.8%	52.4%	82.8%	
Surgical extraction	Count	429	39	468	
	% within dry socket	16.2%	47.6%	17.2%	
Total	Count	2643	82	2725	
	% within dry socket	100.0%	100.0%	100.0%	

Regarding the correlation between age and dry socket, the statistical analysis operating Pearson Chi-Square show a

significant impact regarding two age group range (25-44) as demonstrated in Table 5.

Table 5: Illustrate age * Dry Socket Cross tabulation

		Dry Socket		Total	
		No	Yes		
Age	15-24	Count	633	9	642
		% within dry socket	24.0%	11.0%	23.6%
	25-34	Count	873	32	905
		% within dry socket	33.0%	39.0%	33.2%
	35-44	Count	553	24	577
		% within dry socket	20.9%	29.3%	21.2%
	45-54	Count	333	8	341
		% within dry socket	12.6%	9.8%	12.5%
	>55	Count	251	9	260
		% within dry socket	9.5%	11.0%	9.5%
Total		Count	2643	82	2725
		% within dry socket	100.0%	100.0%	100.0%

Regarding the same between sex and dry socket, the statistical analysis using Pearson Chi-Square exhibit an insignificant

correlation in Table 6

Table 6: Illustrate sex * dry socket Cross tabulation

		Dry socket		Total	
		No	Yes		
Sex	F	Count	1244	33	1277
		% within dry socket	47.1%	40.2%	46.9%
	M	Count	1399	49	1448
		% within dry socket	52.9%	59.8%	53.1%
Total		Count	2643	82	2725
		% within dry socket	100.0%	100.0%	100.0%

Table 7: Regarding the correlation between jaw and dry socket, the statistical analysis using Pearson Chi-Square indicates a significant role

		Dry Socket		Total	
		No	Yes		
Jaw	Mandible	Count	1427	60	1487
		% within dry socket	54.0%	73.2%	54.6%
	Maxilla	Count	1216	22	1238
		% within dry socket	46.0%	26.8%	45.4%
Total		Count	2643	82	2725
		% within dry socket	100.0%	100.0%	100.0%

Discussion

One very significant clinical challenge is dry socket. Severe pain that begins on the second or third day after surgery serves as a sign of it. A noteworthy number of surgical extraction lead to a higher prevalence of dry sockets (Nusair and Younis, 2007) [14].

Surgical trauma and bacterial infections continue to be the most suitable beginning factors of localized fibrinolytic activity because they result in the independence of various tissue activators (Nusair and Younis, 2007; Bortoluzzi *et al.*, 2010) [14, 3].

According to our research, the prevalence of alveolar ostites after non-surgical extractions evolves to 52.4% (within totally dry socket 82 case) if surgical extractions are prohibited.

Surgical extractions were linked in the current study to a considerably greater incidence of DS (47.6% within entirely DS 82 case), which is in concert with well-documented findings in this literature and may provide some evidence supporting the role of trauma as a consequence factor in the pathophysiology of AO.

There is a negligible difference in the occurrence of dry socket between (females, males) in this study. While this is similar to the findings of Nusair and Younis, 2007 [14] and Al

Khateeb *et al.*, 2007, it differs from the findings of multiple other studies that included MacGreoger, 2014, who indicated a higher incidence of dry socket in females to male: female with ratio of (2:3).

Cattelani8, however, discovered a 5:1 female to male ratio. However, other research found that gender has no significant role in the occurrence of DS (Singh *et al.*, 2016) [17].

There were 1238 cases of dry socket in the upper arch compared to 1487 likelihoods in the lower arch when the anatomical location was taken into consideration. 45.4% of patients had dry socket after maxillary extractions, compared to 54.6% before. following mandibular extractions. This discrepancy was statistically sign. (P = 0.002). which is accepted with (Khalil, 2023) [11].

Numerous employees have provided thorough reports on the incidence of dry socket in the mandibular molar area, which is regarded as the most commonly afflicted site (Field *et al.*, 1985; Oginni *et al.*, 2003; Rood and Murgatroyd, 1979; MacGregor, 1968) [9, 15-16, 13].

Despite this, there is no proof in science that there is a precursory blood supply to the typical anatomic tissue around the mandibular molar sockets, nor is there any evidence linking dry sockets to inadequate blood flow (Birn, 1973) [2].

Some scientists suggest that this location was caused by increased bone density, decreased vascularity, and a diminished capability to make granulation tissue. Furthermore, he proposed that the language of extraction difficulty may be used to explain this location (MacGregor, 1968) [13].

The findings of this study corroborate those of many other studies, which show that the incidence of dry socket peaks in the 15–33 age range and is generally common in the (third and fourth) decades of life (1 Amaratunga and Senaratne, 1988; 10 Field EA *et al.*, 1985; 16 Oginni *et al.*, 2003; 19 Strietzel *et al.*, 2002; 14 MacGregor, 1968) [9, 15, 13, 18], and Why this reliance exists is currently unknown. The well-developed alveolar bone and the high frequency of periodontal diseases at this age, which together make tooth extraction further challenging, may offer some insight into the precise etiology of this age addiction (Blum, 2002) [6].

The majority of surgical extractions in this study were carried out on the age group, and these surgical extractions were likewise linked to a greater frequency of dry socket.

Conclusion

The incidence of alveolar infection was very low. Therefore, Severe toothache that might be kept for a more than two days may clarify a sign of a complication such as, dry sockets.

Conflict of Interest

Not available

Financial Support

Not available

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