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ORIGINAL ARTICLE

RISK FACTORS FOR DRY SOCKET FOLLOWING EXTRACTION OF PERMANENT TEETH: A CLINICAL STUDY

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ABSTRACT:

Background: 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." The present study was conducted to evaluate the risk factors leading to dry socket and incidence of DS. **Materials & Methods:**. Those who underwent non surgical removal of permanent teeth were included in the study. It consisted of 820 teeth in 1040 patients (males- 580, females- 460). Patients were divided into 4 age groups. Group I- <18 years, Group II-18-30years, Group III- 31-50years and Group IV- ≥ 51. Patient's information such as name, age, gender, smoking status, systemic diseases, use of oral contraceptives, antibiotic consumption before extraction, number of carpules used for anesthesia, anesthesia technique and location of teeth extracted were recorded. The location of teeth was divided into 4 quadrants. Upper anterior (UA), upper posterior (UP), lower anterior (LA), and lower posterior (LP). Local anesthesia techniques were divided into field block and regional block. Amount of anesthesia used were classified into 2 forms 1. <2 carpules 2. >2 carpules. Patients were divided into medically fit and with systemic disorder, smoker or non-smoker. **Results:** Out 1040 patients 580 were males and 460 were females. Total patients with DS were 42/1040 and the prevalence was 4%. The number of patients with DS in <18 years was 8, 18-30 years (16), 31-50 years (14) and >50 years (4). Higher incidence was reported in age group 18-30 years and 31-50 years. The difference was non significant (P>0.05). DS was seen in males (26) and females (16). The prevalence in males 4.5% was and in females was 3.4%. The difference was non significant (P>0.05). 166 patients were medically fit. DS was seen in 6 patients and 160 were without DS. 874 patients were having systemic diseases. 838 were without DS while DS was seen in 36 patients. The difference was non significant (P>0.05). Smokers were 274 out of which 20 had DS. Nonsmokers were 766 out of which 22 had DS. The prevalence of DS in smokers was 7.2%. The difference was significant (P<0.05). 10 out of 220 oral contraceptive taker had DS. 32 out of 820 had DS. The difference was significant (P<0.05). Maximum cases of DS was seen in Lower posterior (30) followed by upper posterior (8), and upper and lower anterior (2). The difference was significant (P<0.05). 22 patients out of 532 had DS in which less than 2 carpules were used. 20 patients out of 508 had DS in which more than 2 carpules were used. Out of 514, 19 had DS who underwent extraction during field block. 23 out 526 had DS who underwent extraction during regional block. The difference was non significant (P<0.2). Pre-anaesthetic antibiotic consumption was done in 273 patients. Out of which 16 had DS while 257 were without DS. In 267 patients, Pre-anaesthetic antibiotic consumption was not done. 27 developed DS while 740 did not develop. **Conclusion:** Dry socket is complication seen following extraction of teeth. Smoking is one of the contributory factor leading to DS. Use of oral contraceptive also predisposes to develop DS.

Key words: Dry socket, Pre-anaesthetic antibiotic, Smoking

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INTRODUCTION

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".[1] It is mostly seen following tooth extraction. It is mostly prevalent in surgical extraction of mandibular third molar.

DS occurs when blood clot dissolves following increased fibrinolytic activity and the exposure of alveolar bone

happens. The fibrinolysis is the result of plasminogen path-way activation, which can be accomplished via direct or indirect activator substances. Direct activators are released after trauma to the alveolar bone cells. Indirect activators are secreted by bacteria. DS is characterized by severe and progressive pain, halitosis, regional lymphadenitis following tooth extraction.[2]

Its incidence of DS reported to be 3% for all extractions and can reach over 30% for impacted mandibular third molars. Difficult or traumatic extractions, female gender, tobacco use, site of extraction, oral contraceptives and pre-existing infection are among few contributory factors favoring dry socket. Although DS is a self limited complication, various methods have been proposed for treatment of this phenomenon (19). However, prevention is more effective in DS. Some studies reported that identification of risk factors and their elimination as much as possible while using pharmacological prophylaxis had resulted in significant decrease in the incidence of DS.[3]The present study was conducted to evaluate the risk factors leading to dry socket and incidence of DS.

MATERIALS & METHODS

This study was conducted in Department of Oral and Maxillofacial Surgery from January 2014 to June 2014. Those who underwent non surgical removal of permanent teeth were included in the study. It consisted of 820 teeth in 1040 patients (males- 580, females- 460). Patients were divided into 4 age groups. Group I- <18 years, Group II- 18-30years, Group III- 31-50years and Group IV- ≥ 51. Patient's information such as name, age, gender, smoking status, systemic diseases, use of oral contraceptives, antibiotic consumption before extraction, number of carpules used for anesthesia, anesthesia technique and location of teeth extracted were recorded.

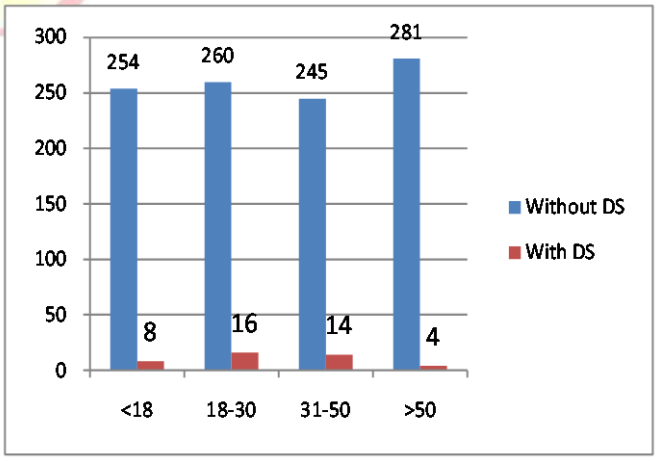
The location of teeth was divided into 4 quadrants. Upper anterior (UA), upper posterior (UP), lower anterior (LA), and lower posterior (LP). Local anesthesia techniques were divided into field block and regional block. Amount of anesthesia used were classified into 2 forms 1. <2 carpules 2. >2 carpules. Patients were divided into medically fit and with systemic disorder, smoker or non-smoker. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I shows that out of 1040 patients 580 were males and 460 were females. Graph I shows that, total patients with DS were 42/1040 and the prevalence was 4%. The number of patients with DS in <18 years was 8, 18-30 years (16), 31-50 years (14) and >50 years (4). Higher incidence was reported in age group 18-30 years and 31-50 years. The difference was non significant (P>0.05). Graph II shows that DS was seen in males (26) and females (16). The prevalence in males 4.5% was and in females was 3.4%. The difference was non significant (P>0.05). Graph III shows that 166 patients were medically fit. DS was seen in 6 patients and 160 were without DS. 874 patients were having systemic diseases. 838 were without DS while DS was seen in 36 patients. The difference was non significant (P>0.05). Graph IV shows that smokers were 274 out of which 20 had DS. Nonsmokers were 766 out of which 22 had DS. The prevalence of DS in smokers was 7.2%. The difference was significant (P<0.05). Graph V shows that 10 out of 220 oral contraceptive taker had DS. 32 out of 820 had DS. The difference was significant (P<0.05). Table II shows that maximum cases of DS was seen in Lower posterior (30) followed by upper posterior (8), and upper and lower anterior (2). The difference was significant (P<0.05). Table III shows that 22 patients out of 532 had DS in which less than 2 carpules were used. 20 patients out of 508 had DS in which more than 2 carpules were used. Out of 514, 19 had DS who underwent extraction during field block. 23 out 526 had DS who underwent extraction during regional block. The difference was non significant (P<0.2). Pre-anaesthetic antibiotic consumption was done in 273 patients. Out of which 16 had DS while 257 were without DS. In 267 patients, Pre-anaesthetic antibiotic consumption was not done. 27 developed DS while 740 did not develop.

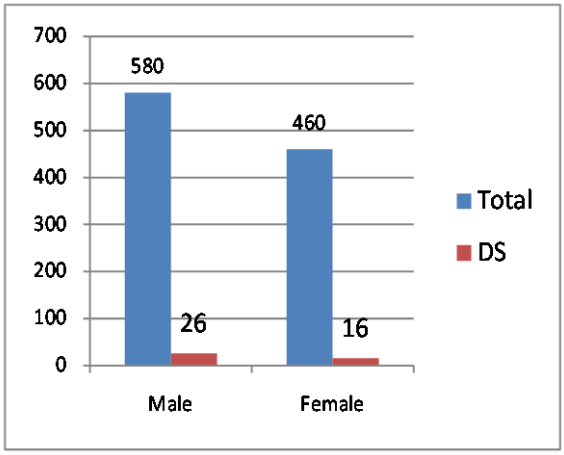
Table I Distribution of patients

Total- 1040	
Male	**Female**
580	460

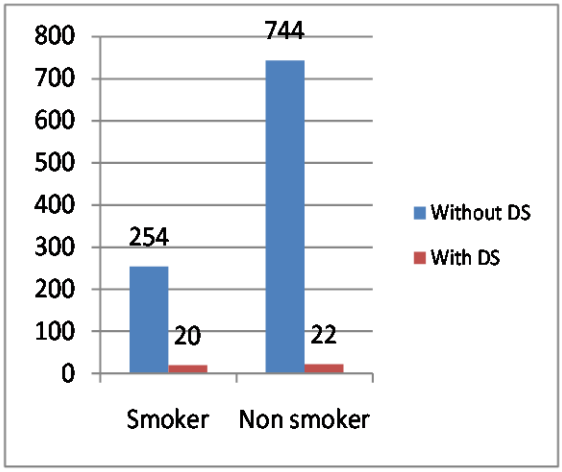


Graph I: Distribution of DS among different age groups

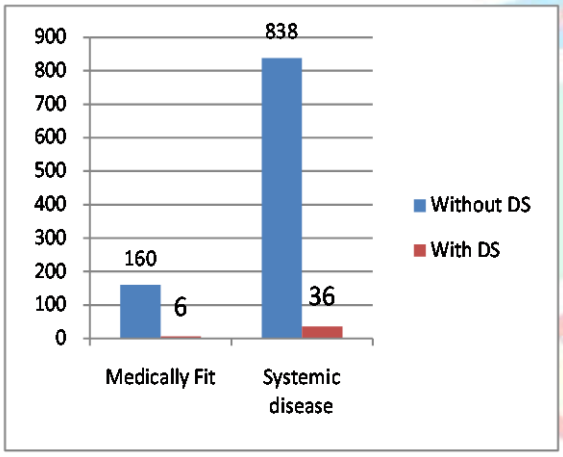
Graph II: Association of DS with gender



Graph IV: Association between smoking status and incidence of DS



Graph III Association between medical status and incidence of DS



Graph V Association between oral contraceptive intake and incidence of DS

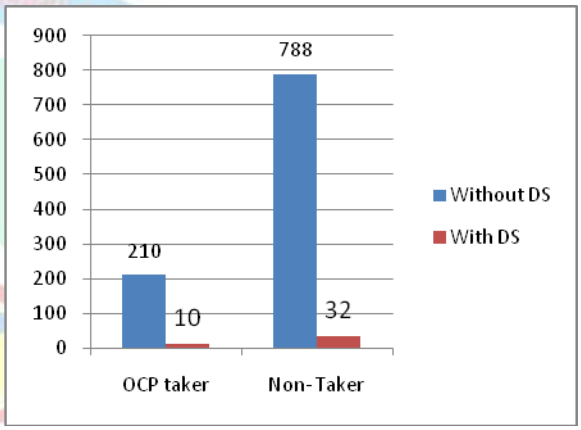


Table II Association between tooth location and incidence of DS

	UA	UP	LA	LP
Without DS	252	274	254	260
With DS	2	8	2	30

Table III Association between number of anesthetic carpules, Anaesthetic technique and pre-anaesthetic antiobiotic and incidence of DS

No. of carpules	**Without DS**	**With DS**	**P value**
<2	510	22	0.1
>2	488	20	
Anaesthetic technique	**Without DS**	**With DS**	**P value**
Field block	495	19	0.2
Regional block	503	23	
pre-anaesthetic antibiotic consumption	**Without DS**	**With DS**	**P value**
Yes	257	16	0.3
No	740	27	

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.[4]

The present study was conducted to evaluate the risk factors leading to dry socket and incidence of DS. The present study comprised of 1040 patients which included 580 were males and 460 were females. Total patients with DS were 42/1040 and the prevalence was 4%. Our results are in agreement with the results of Heasman et al.[5] However, the study conducted by Sweet JB[6] on 2076 subjects found, prevalence rate of 2.1%.

We also evaluated the number of DS cases in different age groups. Higher incidence was reported in age group 18-30 years and 31-50 years. Our results are in agreement with Meechan et al[7] who also reported similar results. Although the exact reason is unknown, fewer periodontal diseases and higher compaction of alveolar bone in this age group could lead to higher trauma during extraction and higher incidence of DS. The prevalence in males 4.5% was and in females was 3.4%. However, Cattelani[8] found the proportion of female: male 5:1. However, some other studies revealed that gender is not an effective factor in incidence of DS.

Oral contraceptives increase the circulatory concentration of estrogen and estrogen enhances fibrinolytic activity of human body. Gersel- Pedersen[9] reported that the incidence of DS among OCP takers is triple of non-taker. We also found significant result.

The prevalence of DS in smokers was 7.2%. The difference was significant ($P<0.05$). It has been observed that filling of extraction socket is significantly lower in smokers as compared to non-smokers. Our results are in agreement with Birn H.[10] We also evaluated the systemic condition and prevalence of DS but we did not get any significant difference among healthy and with disease. We found maximum cases of DS in lower posterior followed by upper posterior. The difference was significant. Al-khateeb[11] found similar results. We did not observed statistically significant association between number of local anesthetics or technique of anesthesia and DS incidence; which was in accordance with the results of Blum IR.[12] We did not find any association between aneasthetic technique used, pre- anaesthetic antiobiotic use and DS. Our results are in agreement with Naroozi AR.[13]

CONCLUSION

Dry socket is complication seen following extraction of teeth. Smoking is one of the contributory factor leading to DS. Use of oral contraceptive also predisposes to develop DS.

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