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EVALUATION OF RISK FACTORS FOR DRY SOCKET - A RETROSPECTIVE STUDY

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ABSTRACT

The most common and oldest oral surgical procedure is extraction. Dry socket is one of the common post extraction complications. As long as the exact etiology of dry socket is not correctly established, management of dry socket cannot be properly established. The aim of the study was to evaluate the risk factors for dry socket in patients undergoing extractions of permanent teeth in Saveetha Dental college and Hospitals. This retrospective study was conducted among dental patients in the department of oral and maxillofacial surgery, Saveetha dental college and hospital, Saveetha university, Chennai. Inclusion criteria for the study were all the patients above 18 years of age who underwent extractions of permanent teeth. Our study consisted of 60 adult patients which included 30 patients with dry socket, and 30 patients without dry socket after dental extractions. Demographic details like age, gender, systemic diseases, presence of smoking habits and post extraction complications like dry socket were also recorded from digital case records, clinical photographs and radiographs. Retrieved data was analysed using IBM SPSS Software Version 23.0. Descriptive statistics and tests of association for categorical variables by Chi square tests were done and results were obtained. P value < 0.05 was considered statistically significant. Most of the extraction patients in the study were in the age group of 31-40 years (36.67%),

followed by 51-60 years (16.67%). Males underwent more extractions (65%) than females (35%) in our study population. Dry socket predominantly occurred in males than in females. However there was no statistically significant association between dry socket and gender (p=0.564); dry socket and smoking (p=0.544); dry socket and systemic diseases (p=0.106). Within the limits of the study, dry socket was predominantly observed in the age group of 31-40 years with a predilection for males. However, gender, smoking habits and systemic diseases had no influence on the occurrence of dry socket.

Keywords: Complications, Dry socket, Extraction, Irrigation, risk factors, smoking

INTRODUCTION

The most common and oldest oral surgical procedure is extraction. Advanced periodontal disease, abscess, phlegmon, non restorable caries, residual roots, tooth fracture, failed endodontic treatment, periapical granuloma, third molar impaction are some of the common indications for extractions **[1]**. Factors influencing extraction include age, gender, medical history, poor oral hygiene, smoking, type of impaction, surgical technique, surgeon's experiment, post operative antibiotics, topical antiseptics, intra socket medications, and anesthetic techniques. Dental anxiety and fear are said to enhance pain during dental treatment. It may interfere with patients' compliance during treatment resulting in poor dental and oral health.

Most frequent complications of tooth extraction include infected socket (90.9%), alveolar osteitis (4.6%) **[2]**. Rare complications include Oroantral fistula (0.008-0.25%), maxillary tuberosity fractures (0.6%), mandibular fractures (0.0049%) **[3]**. Dry socket is defined as post operative pain in and around the extraction site which increases in severity between one to three days after dental extraction accompanied by partially or totally disintegrated blood clot with or without halitosis. Since the painful condition of dry socket requires multiple post operative appointments several methods have been advocated to reduce the incidence of dry socket which includes antiseptic mouthwash, antifibrinolytics agents, other intra alveolar dressing and medicaments **[4, 5]**.

As long as the exact etiology of dry socket is not firmly established, management of dry socket cannot be properly established. Common management of dry socket includes irrigation of infected socket, reassurance of patients, insertion of medicaments pack with regular follow up **[6, 7]** Only a few articles observed the effect of medical history, systemic disorder,

amount of anaesthesia, and extraction site in occurrence of dry socket. This study aims to document biographic data, systemic illness, post operative diagnosis and habits in the presentation of dry socket in patients undergoing dental extraction in Saveetha Dental college, thereby our population specific risk factors or any iatrogenic factors for dry socket can be identified. Over the past few years, our team has conducted numerous surveys **[8, 9]**, clinical studies **[2, 10, 11]** and systematic review **[2, 12, 13]** to analyse post extraction complications and the risk factors for dry socket. At present we are focussing on epidemiological studies. In this context, this study aims to assess the risk factors for dry socket and its association with age and gender of the patient.

The aim of the study was to evaluate the risk factors for dry socket in patients undergoing extractions of permanent teeth in Saveetha Dental College and Hospitals.

MATERIALS AND METHODS

Study design and study setting

This retrospective study was conducted in the department of oral and maxillofacial surgery, Saveetha Dental College and Hospital, Saveetha University, Chennai, to evaluate the risk factors for dry socket among patients undergoing extractions of permanent teeth from June 2019 to March 2020. The study was initiated after approval from the institutional review board.

(SDC/SIHEC/2020/DIASDATA/0619-0320) Pros of the study included enormous digital data, and less time consumption for retrieval of data. Cons of the study included that study population is limited to a certain geographic location.

Study population and sampling

Inclusion criteria for the study were all the patients above 18 years of age who underwent dental extractions. The exclusion criteria were missing or incomplete data. After assessing details of dental patients reported to our institution from June 2019 to March 2020 in the university patient data registry, about 60 adult patients were included in the study by a simple random sampling method to minimise sampling bias. These included 30 patients with dry socket, and 30 patients without dry socket after dental extractions. Cross verification of data for errors was done with the help of an external examiner.

Data collection and tabulation

A single calibrated examiner evaluated the digital case records of the extraction patients collected from June 2019 to March 2020 who reported with and without dry sockets in the postoperative review period and evaluated for the presence of various risk factors. Demographic details like age, gender, systemic diseases, presence of

smoking habits and post extraction complications like dry socket were also recorded from digital case records, clinical photographs and radiographs. Data was entered in excel and imported to SPSS. The variables were defined.

Statistical Analysis

The collected data was validated, tabulated and analysed with Statistical Package for Social Sciences for Windows, version 23.0 (SPSS Inc., Chicago, IL, USA) and results were obtained. Categorical variables were expressed in frequency and percentage; and continuous variables in mean and standard deviation. Chi-square test was used to test associations between categorical variables. P value < 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

In the current study, the mean age group of participants in the study were 45 years. Most of the extraction patients in the study were in the age group of 31-40 years (36.67%), followed by 51-60 years (16.67%), 21-30 years (13.33%) and 41-50 years (13.33%). Least extractions were carried out in 11-20 years (10%) and 61-70 years (10%) age group. Thus most of the patients in the age group 31-40 years (36.67%) underwent extractions in our study population **[Figure 1]**. In our study, 65% were male patients and 35% were female patients. Thus males underwent more extractions than females in our study population **[Figure 2]**.

Association between gender of the patients and dry socket was evaluated. Among male patients, (35%) presented with a dry socket and (30%) had no dry socket. Among Female patients, (18.33)% presented with a dry socket and (16.67%) had no dry socket. Chi-square test was done and the results were statistically not significant (Pearson Chi-square value =0.012; p=0.564). Thus there was no statistically significant association between gender of the patients and dry socket complications; and gender had no influence on dry socket **[Figure 3]**.

Association between systemic diseases of the patients and dry socket was evaluated. Among patients with systemic disease, (16.67%) presented with dry socket and (6.67%) had no dry socket complication. Among patients without systemic diseases, (36.67%) presented with dry socket and (40%) had no dry socket complication. However the results were statistically not significant. Chi-square test was done and the results were statistically not significant (Pearson Chi-square value = 2.402; p=0.106). Thus there was no statistically significant association between systemic diseases of the patients and dry socket; and systemic disease had no influence on dry socket **[Figure 4]**.

Association between smoking and dry socket was evaluated. Among patients with smoking habit, (8.33%) presented with dry socket and (8.33%) had no dry socket complication. Among patients without smoking habit, (45%) presented with dry sockets and (38.33%) had no dry socket complication. However the results were statistically not significant. Chi-square test was done and the results were statistically not significant (Pearson Chi-square value = 0.054; p=0.544). Thus there was no statistically significant association between smoking habit and dry socket; and smoking had no influence on dry socket **[Figure 5]**.

In our study among extraction patients, dry sockets predominantly occurred in male patients than in female patients. This is similar to findings of Mac Gregor *et al* who reported higher incidence of dry socket in males with a female to male ratio of 2:3 **[2, 14]**. Findings of our study showed that incidence of dry socket was more in the age group of 31-40 years. This is contradictory to the study by Field AE *et al* and Pelli *et al* who stated that incidence of dry socket was predominantly seen in the age group between 18- 33 yr **[2, 15]**. Oginni *et al* reported that presence of well developed alveolar bone and less frequency of periodontal disease at this age could be a possible reason for very less incidence of dry socket in patients below 18 yrs of age.

Results of our study showed no significant association between smoking and incidence of dry socket. Contrary to our study findings, a study showed that a dose dependent relationship exists between smoking and occurrence of dry socket **[2, 16]**. Increased prevalence of dry socket in smokers due to irregularity in adherence to post extraction instructions has been reported by many studies. Results of our study showed no significant association between incidence of dry socket and presence of systemic disease. Milora *et al* reported systemic conditions do not contribute to the occurrence of dry sockets. However considerations must be pointed out for the patient's age which hinders the repairing and healing process **[2, 17]**. Thus in our study smoking habits and systemic diseases of the patients were not the risk factors for the occurrence of dry socket.

Limitations of the study include less sample size and patients from a particular geographic location. The future scope of the study is that, further longitudinal prospective studies are required to prove this hypotheses.

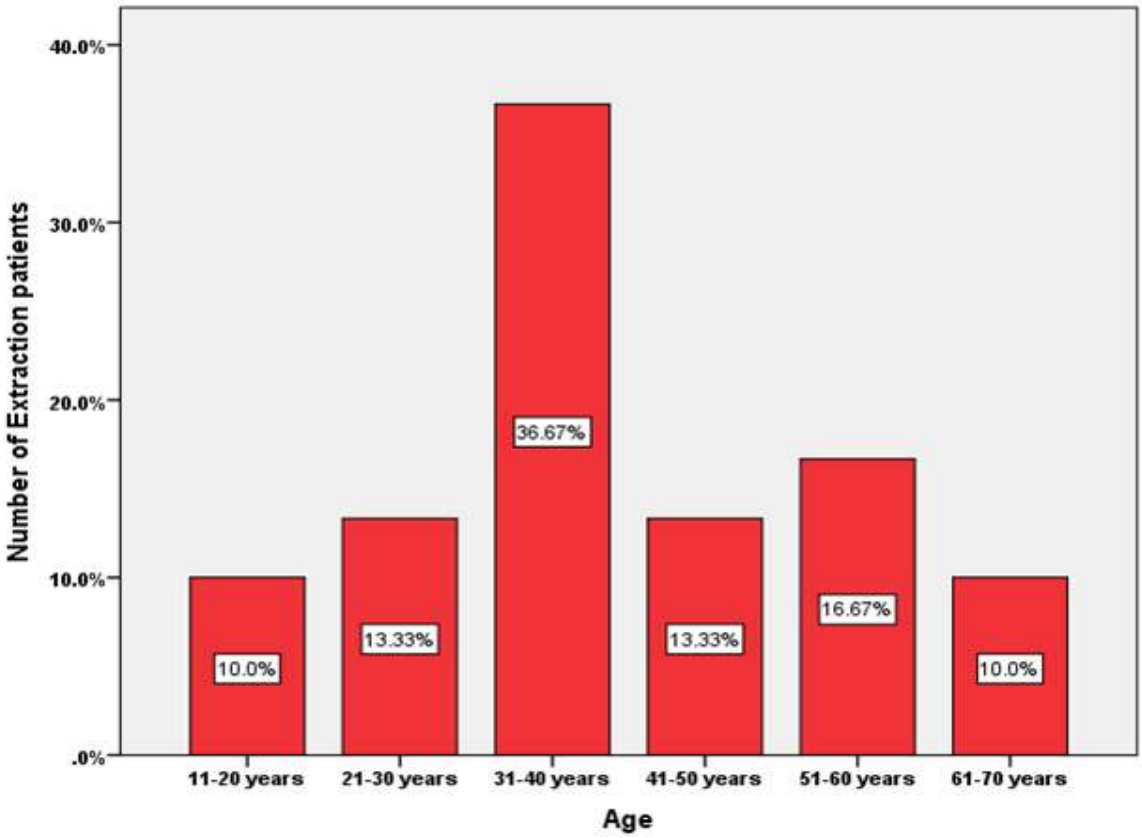

Figure 1: Bar graph depicting age wise distribution of extraction patients in our study population. X axis denotes age of the patients in years; Y axis denotes number of extraction patients. Most of the patients in the age group 31-40 years (36.67%) underwent extractions in our study population.

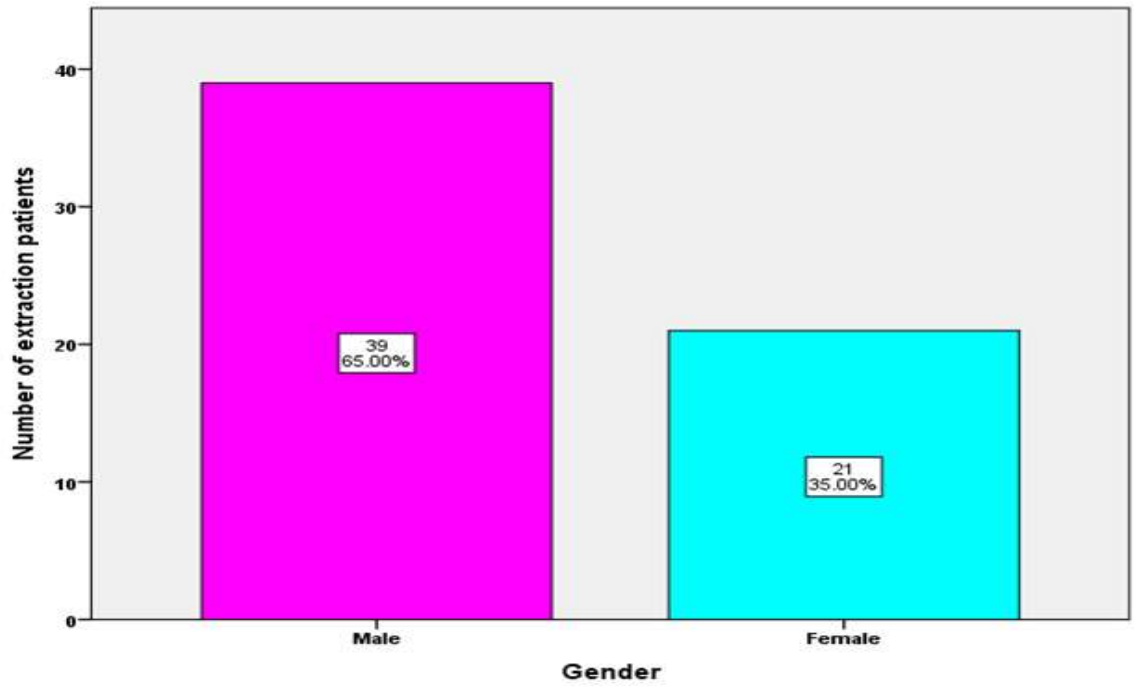

Figure 2: Bar graph depicting gender wise distribution of extraction patients in our study population. X axis denotes Gender of the patients; Y axis denotes number of extraction patients. Males underwent more extractions (65%) than females (35%) in our study population.

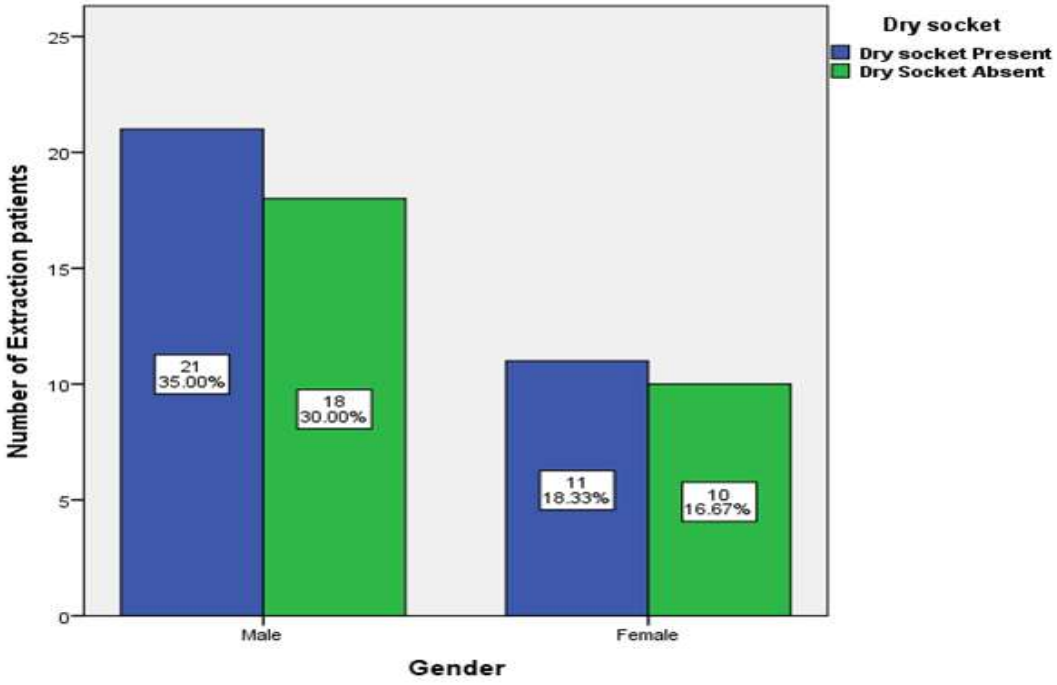

Figure 3: Bar chart showing association between Gender of the patients and Dry socket. X-axis denotes Gender; Y axis- number of patients with presence or absence of dry socket. Chi-square test was done and the results were statistically not significant (Pearson Chi-square value = 0.012; p=0.564). Thus, there was no statistically significant association between gender of the patients and occurrence of dry socket. Gender has no influence on dry socket. It was observed that dry socket occurred predominantly among male patients (35%) than in females (18.33%). However the results were statistically not significant.

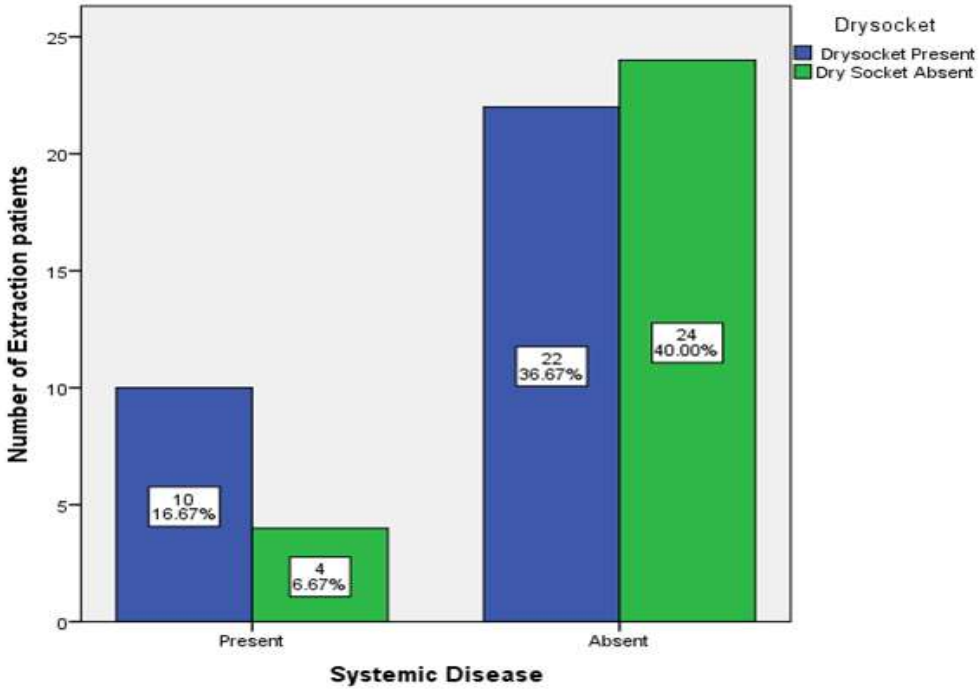

Figure 4: Bar chart showing association between Systemic diseases of patients and Dry socket. X-axis denotes presence or absence of Systemic diseases; Y axis denotes number of patients with presence or absence of dry socket. Chi-square test was done and the results were statistically not significant (Pearson Chi-square value = 2.402; p=0.106). Thus there was no statistically significant association between systemic diseases of patients and the occurrence of dry socket complication. Systemic disease has no influence on Dry socket. Among patients with systemic diseases, 16.67% presented with dry sockets and in patients without systemic diseases 36.67% had dry socket complications. However the results were statistically not significant.

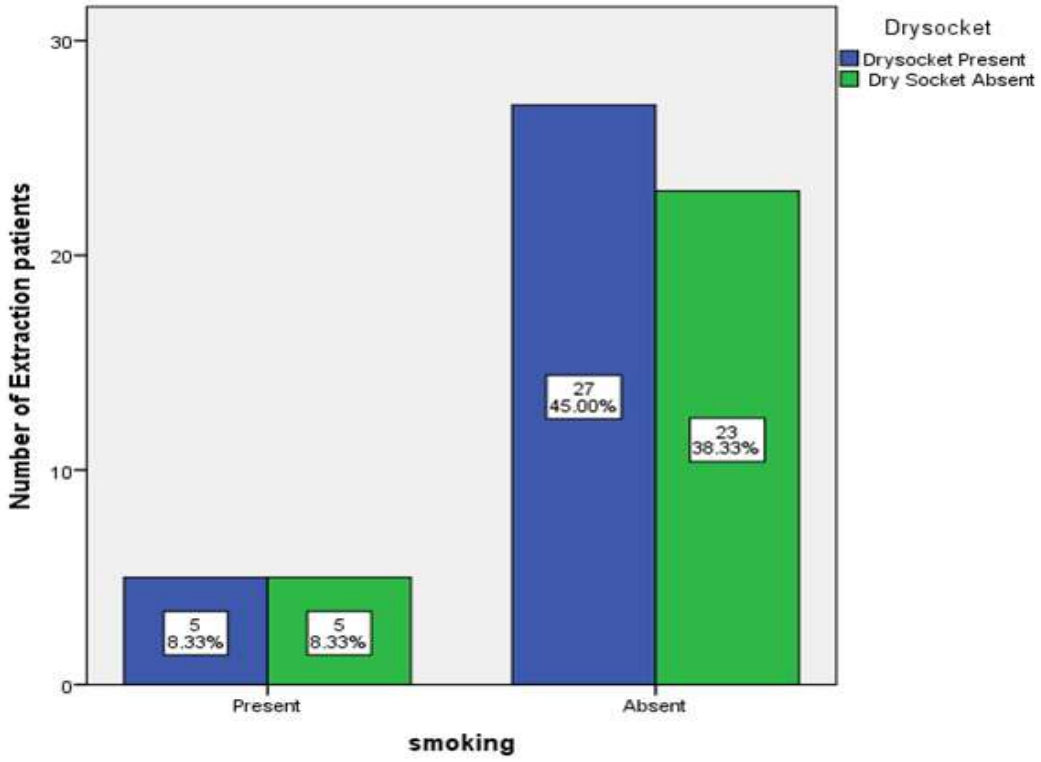

Figure 5: Bar chart showing association between Smoking habits and Dry socket. X-axis denotes presence or absence of smoking; Y axis denotes number of patients with presence or absence of dry socket. Chi-square test was done and the results were statistically not significant (Pearson Chi-square value = 0.054; p=0.544). Thus there was no statistically significant association between smoking habits of the patients and the occurrence of dry socket complication. Smoking has no influence on Dry socket. Among patients with smoking habits 8.33% had dry sockets and in patients without smoking habits 45% presented with dry socket. However the results were statistically not significant.

CONCLUSION

Within the limits of the study, dry socket was predominantly observed in the age group of 31-40 years with a predilection for males. However, gender, smoking habits and systemic diseases have no influence on the occurrence of dry socket.

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AUTHORS CONTRIBUTIONS

First author Keerthika S performed the analysis, interpretation and wrote the manuscript. Second author Santhosh Kumar M.P contributed to conception, study design, analysis and critically revised the manuscript.

Conflicts of Interest

None declared

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