

# A Study To Evaluate Various Potential Risk Factors Associated With Dry Socket In Middle Aged Patients: An Original Research Study

Sachin Kumar<sup>1\*</sup>, Singh Priyanka Jaiprakash<sup>2</sup>, Monalisa<sup>3</sup>, Aprajita<sup>4</sup>, Chanchal Tyagi<sup>5</sup>, Abhishek Saraswat<sup>6</sup>

<sup>1</sup>Reader, Department of Oral and Maxillofacial Surgery, School of Dental Sciences, Sharda University, Greater Noida, Uttar Pradesh, India

<sup>2</sup>Assistant Professor, Department of Oral and Maxillofacial Surgery, Sumandeep Vidyapeeth Dental College, Vadodara, India

<sup>3</sup>Consultant (Oral & Maxillofacial Surgery), Noida, Uttar Pradesh, India

<sup>4</sup>Post Graduate Student, Department of Oral and Maxillofacial Surgery, School of Dental Sciences, Sharda University, Greater Noida, Uttar Pradesh, India

<sup>5</sup>Post Graduate Student, Department of Oral and Maxillofacial Surgery, School of Dental Sciences, Sharda University, Greater Noida, Uttar Pradesh, India

<sup>6</sup>Senior Lecturer, Department of Oral and Maxillofacial Surgery, Shree Bankey Bihari Dental College and Research Centre, Ghaziabad, Uttar Pradesh, India

\*Corresponding Author: Sachin Kumar

\*Reader, Department of Oral and Maxillofacial Surgery, School of Dental Sciences, Sharda University, Greater Noida, Uttar Pradesh, India. Email: Sachin.kumar1@sharda.ac.in

DOI: 10.47750/pnr.2022.13.S05.224

## Abstract

**Aim:** This prospective study was aimed to evaluate various potential risk factors associated with dry socket in middle aged patients.

**Materials and Methods:** The study included middle aged patients in the age range of 35-50 years. 54 male and 46 female patients were willingly ready to contribute in the study. The relative incidences for dry socket were noticed along with other related risk factors. While recording of the particulars of dry socket, comprehensive evaluation of the extraction was done for each patient. This included thorough case history, method and nature of extraction. All the details and relative information was entered into spreadsheet further investigation.

**Results:** Data was analyzed by statistical analysis software (SPSS). All patients were categorized into 5 age groups. Total 8 patients were in the age group of 35-38 years. 20 subjects were found in the age group of 42-44 years. Maximum 34 subjects were found in the age group of 48-50 years. Total 21 patients found with dry socket in their post operative phase after extraction. P value was highly significant for this. Standard deviation was 0.532 and standard error was 0.930. 4 patients each reported with the history of Tobacco chewing and smoking in various modes. P value was highly significant for this (0.01).

**Conclusion:** Authors concluded that dry socket is a predictable phenomenon after extractions of posterior teeth. Different risk factors are also found to be linked with it including tobacco chewing and smoking and steroid therapy.

**Keywords:** Dry Socket, Extractions, Oral Contraceptives, Steroid Therapy, Diabetes Mellitus, Tobacco.

## INTRODUCTION

In oral and maxillofacial procedure, dry socket is one of the most common post operative complications which we find. It usually occurs after extraction of tooth particularly in the posterior region. The dry socket is actually alveolar or fibrinolytic osteitis that means it's an infection and inflammation of the jaw bone associated with fibrinolytic processes.<sup>1</sup> This condition is especially denoted by severe pain in the affected region. This pain is highly subjective since it can develop immediately after extraction or may be after few days of extraction.<sup>2</sup> The exact mechanism of action is still unknown however, the major patho-physiology includes breakdown of the blood clot in the socket which is later on filled with infected debris and substances.<sup>3</sup> Literature has well evidenced about risk factors associated with the development of dry socket.<sup>4,5</sup> These are primarily tobacco smoking and tobacco chewing habits. Oral Contraceptives, Steroid Therapy and Diabetes Mellitus are some other potential risk factors which have been studied in detail by several investigators.<sup>6,7</sup> The prevalence of dry socket has been shown to vary from 1% to more than 38% and is more common following mandibular third molar extraction. As the therapeutic management, various symptomatic regimes have been experimented by investigators in the recent past.<sup>8</sup> Some of the popular ones are of antiseptic mouthwashes, anti-fibrinolytic agents, antibiotics, steroids, clot supporting agents and other intra-alveolar dressings and medicaments. Therefore, this prospective study was aimed to evaluate various potential risk factors associated with dry socket in middle aged patients.

## MATERIALS AND METHODS

The study was planned and completed in the department of oral and maxillofacial surgery of the institute wherein authors aimed to see the various potential risk factors associated with dry socket in middle aged patients. The raw data was obtained from the existing patients those who underwent atraumatic dental extraction. Inclusion criteria included middle aged patients in the age range of 35-50 years, patients of both genders and patients belonging to the nearby vicinity of the institute (similar geographical area). Total 100 patients were studied in detail for predefined objectives. 54 male and 46 female patients were voluntarily ready to participate in the study. Only maxillary and mandibular molars (first, second, third of either side) regions were studied for dry socket. Only one extraction site per patient was included in the studied to avoid any operational bias. All extractions were atraumatic and performed under local anesthesia. Any kind of surgical extraction or impaction was not included in the study. Thorough medical history was also taken into consideration before execution of the study. Exclusion criteria included patients with loss of follow up and patients on previous medications for other disease. The relative incidences for dry socket were recorded along with other associated risk factors. During recording of the details of dry socket, comprehensive assessment of the extraction was done for each patient. This included detailed case history, method and nature of extraction. Special emphasis was ascertained on the development and pattern of dry socket. All the details and relative information was entered into spreadsheet further analysis.

## STATISTICAL ANALYSIS AND RESULTS

Data was processed by statistical analysis software (SPSS) statistical package for the Social Sciences version 21.0 for Windows. Out of total 100 patients of dry socket, 54 were male and 46 were female. Table 1 shows age wise allocation of study participants. All willing patients were categorized into 5 age groups. Total 8 patients were in the age group of 35-38 years. The p value was not significant in this age group. 12 subjects were found in the age group of 39-41 years. 20 subjects were found in the age group of 42-44 years. Maximum 34 subjects were found in the age group of 48-50 years. P value was significant for this (0.01). Table 2 illustrates essential statistical explanation for incidence. Total 21 patients reported dry socket in their post operative phase after extraction. P value was highly significant for this. Standard deviation was 0.532 and standard error was 0.930. Table 3 shows about essential statistical explanation for risk factors of dry socket. 4 patients each reported with the history of Tobacco chewing and smoking in various modes. P value was highly significant for this (0.01). 4 female patients confirmed the ongoing therapy of Oral Contraceptives. 3 patients reported and confirmed the history of dry socket for some other tooth region. Maximum 5 patients confirmed the history and problem of gingival infections. One patient was already on steroid therapy and 2 patients were having active Diabetes Mellitus. Graph 1 illustrates about various risk factors associated with dry socket.

**Table 1:** Age & gender wise allocation of patients

Age Group (Yrs)	Male	Female	Total	[%]	P value
35-38	4	4	8	8%	0.10
39-41	8	4	12	12%	0.09
42-44	10	10	20	20%	0.50
45-47	14	12	26	26%	0.30
48-50	18	16	34	34%	0.01*
<b>Total</b>	54	46	100	100%	<b>*Significant</b>

**\*p<0.05 significant**

**Table 2:** Essential statistical explanation for incidence

Parameters	Incidence %	Std. Deviation	Std. Error	95% CI	Level of Significance (p value)
Dry Socket	21	0.532	0.930	1.63	0.01*
Total Patients	100	0.037	0.035	1.45	0.28

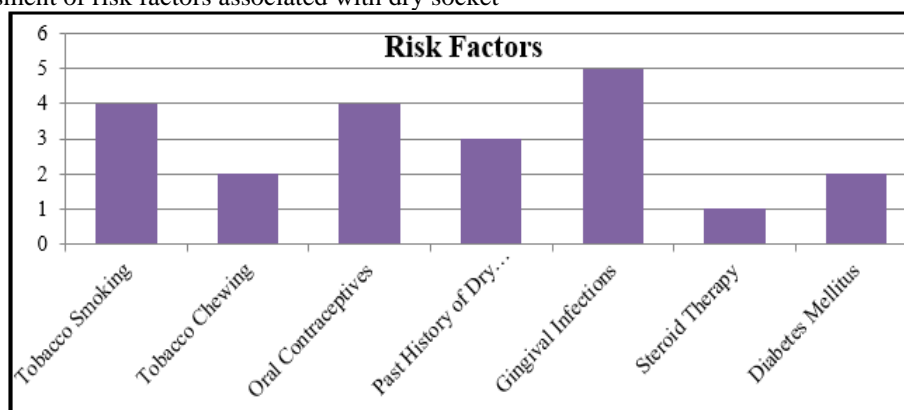
**\*p<0.05 significant**

**Table 3:** Essential statistical explanation for Risk Factors of dry socket

Sr. No	Parameters	Incidence %	Std. Deviation	Std. Error	95% CI	Pearson Chi-Square Value	df	Level of Significance (p value)
1	Tobacco Smoking	4	0.387	0.372	1.53	1.036	1.0	0.01*
2	Tobacco Chewing	2	0.837	0.031	1.93	2.732	1.0	0.20
3	Oral Contraceptives	4	0.456	0.243	1.91	2.994	2.0	0.30
4	Past History of Dry Socket	3	0.834	0.603	1.52	1.204	1.0	0.70
5	Gingival Infections	5	0.309	0.054	1.44	2.564	1.0	0.09
6	Steroid Therapy	1	0.211	0.254	1.95	2.954	2.0	0.20
7	Diabetes Mellitus	2	0.523	0.324	1.56	1.943	1.0	0.40

**\*p<0.05 significant**

**Graph 1:** Assessment of risk factors associated with dry socket



## DISCUSSION

Dry socket is a common dental complication seen after extraction. The exact etiology of dry socket is still unknown however researchers have highlighted some contributory factors.<sup>9,10</sup> So it is imperative to know them so as to initiate exact treatment and medications. Apparently, the precise management of dry socket is not complicated. It primarily involves cleaning and irrigation of the affected socket, and insertion of a medicated pack.<sup>11,12</sup> Some of the researchers have tried some antifibrinolytic agents applied topically in the extraction area. It was demonstrated to decrease the incidence of dry socket.<sup>13</sup> At the Jordan University of Science and Technology, the first ever study on dry socket was conducted in its dental teaching centre. There authors aimed to assess the prevalence and risk factors associated with dry socket. They also attempted to explain about the clinical presentation of the dry socket condition.<sup>14,15</sup> It is a well known fact that the prevalence of dry socket increases with the increase in extraction complexity. This could be explained on the basis of release of direct tissue activators secondary to bone marrow inflammation.<sup>16,17</sup> The higher occurrence of dry socket among smokers may also be attributed to their negligence to follow the postoperative instructions. Few of the investigators have clearly mentioned that patients who smoked on the same day of surgery had a higher prevalence of dry socket than those who smoked on the second day postoperatively.<sup>18</sup> In the literature, usage of the penicillins and metronidazole were highly suggested to prevent dry socket development.<sup>19</sup>

## CONCLUSION

Within the limitations of the study, authors concluded that dry socket is an unavoidable phenomenon after extractions of posterior teeth. Almost one fifth of the studied patients developed dry socket after extraction. Various risk factors are also found to be associated with it including tobacco chewing and smoking. Inferences of this study must be clinically correlated wherever utilized for different demographic populations.

## REFERENCES

1. Nijakowski K, Cieřlik K, Łaganowski K, Gruszczynski D, Surdacka A. The Impact of the COVID-19 Pandemic on the Spectrum of Performed Dental Procedures. *Int J Environ Res Public Health*. 2021;18:3421.
2. Cagetti MG, Balian A, Camoni N, Campus G. Influence of the COVID-19 Pandemic on Dental Emergency Admissions in an Urgent Dental Care Service in North Italy. *Int J Environ Res Public Health*. 2021;18:1812.
3. Farooq Z, Waqar A, Saeed A. Incidence and Treatment of Complications in Patients Who Had Third Molars or Other Teeth Extracted. *Indoam J Pharm Sci*. 2018;5:8540–8545.
4. Cahen PM, Frank RM, Turlot JC. A Survey of the Reasons for Dental Extractions in France. *J Dent Res*. 1985;64:1087–1093.
5. Nusair YM, Younis MHA. Prevalence, Clinical Picture, and Risk Factors of Dry Socket in a Jordanian Dental Teaching Center. *J Contemp Dent Pract*. 2007;8:53–63.
6. Abu Younis MH, Abu Hantash RO. Dry Socket: Frequency, Clinical Picture, and Risk Factors in a Palestinian Dental Teaching Center. *Open Dent J* 2011;5:7–12.
7. Grossi GB, Maiorana C, Garramone RA, Borgonovo A, Creminelli L, Santoro F. Assessing Postoperative Discomfort after Third Molar Surgery: A Prospective Study. *J Oral Maxillofac Surg*. 2007;65:901–917.
8. Bouloux GF, Steed MB, Perciaccante VJ. Complications of Third Molar Surgery. *Oral Maxillofac Surg Clin N Am* 2007;19:117–128.
9. Saravanan K, Santhosh Kumar MP. Assessment of Post Extraction Complications in Indians. *Bioinformation*. 2021;17:1120–1125.
10. Akinbami BO, Godspower T. Dry Socket: Incidence, Clinical Features, and Predisposing Factors. *Int J Dent*. 2014;2014:796102.
11. Ghosh A, Aggarwal VR, Moore R. Aetiology, Prevention and Management of Alveolar Osteitis-A Scoping Review. *J Oral Rehabil*. 2022;49:103–113.
12. Bortoluzzi MC, Manfro R, De Déa BE, Dutra TC. Incidence of Dry Socket, Alveolar Infection, and Postoperative Pain Following the Extraction of Erupted Teeth. *J Contemp Dent Pract*. 2010;11:33–40.
13. Giorgetti APO, César Neto JB, Casati MZ, Sallum EA, Nociti Júnior FH. Cigarette Smoke Inhalation Influences Bone Healing of Post-Extraction Tooth Socket: A Histometric Study in Rats. *Braz Dent J*. 2012;23:228–234.
14. Jiang Y, Zhou X, Cheng L, Li M. The Impact of Smoking on Subgingival Microflora: From Periodontal Health to Disease. *Front Microbiol*. 2020;11:66.
15. Chou HH, Lu SL, Wang ST, Huang TH, Chen SLS. The Association between Bone Mineral Density and Periodontal Disease in Middle-Aged Adults. *Int J Environ Res Public Health*. 2021;18:3321.
16. Ramôa CP, Eissenberg T, Sahingur SE. Increasing Popularity of Waterpipe Tobacco Smoking and Electronic Cigarette Use: Implications for Oral Healthcare. *J Periodontal Res*. 2017;52:813–823.
17. Ralho A, Coelho A, Ribeiro M, Paula A, Amaro I, Sousa J, Marto C, Ferreira M, Carrilho E. Effects of Electronic Cigarettes on Oral Cavity: A Systematic Review. *J Evid Based Dent Pract* 2019;19:101318.

18. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, Shamseer L, Tetzlaff JM, Akl EA, Brennan SE, et al. The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews. *BMJ*. 2021;372:n71.
19. Kuśnierek W, Brzezińska K, Nijakowski K, Surdacka A. Smoking as a Risk Factor for Dry Socket: A Systematic Review. *Dent J (Basel)*. 2022;10(7):121.