

Effectiveness of Two Different Methods used for Dry Socket Management: A Comparative Study

¹Rabi A Gafoor, ²Kiren B Thaliyath, ³Joyce Thomas, ⁴Sujay Gopal, ⁵Joseph Joy, ⁶Aravind Ashok

ABSTRACT

Introduction: Dry socket remains among the most commonly encountered complications following extraction of teeth. It occurs during the healing phase of extraction sockets, and some investigators regard it as the commonest postextraction complication.

Aim: The aim of the present study was to evaluate the effectiveness of two different methods used for dry socket management.

Materials and methods: The current study consisted of 40 subjects aged between 21 and 35 years who reported with a severe pain following forceps tooth extraction. The subjects were randomly allotted to two different groups: I and II. Group I consisted of zinc oxide eugenol pack method and group II consisted of debridement method. Patient satisfaction was assessed subjectively using a graded scale from very satisfied to very unsatisfied. Visual analog scale (VAS) was utilized to record the degree of pain.

Results: As a result, mean age of zinc oxide eugenol pack method group was found to be 26.40 ± 2.42 years and the mean age of debridement method group was found to be 28.06 ± 2.25 years. Hence, there was no statistical variation for the mean age between the groups in the study. Mandibular first molar was affected more (30%) when compared with the other sites. Both the groups proved satisfactory in the procedure levels. There was no significant difference found on days 1 and 5 among group I and II in the VAS score.

Conclusion: It is to be concluded that the safe and reliable method to treat dry socket is through debridement method.

Keywords: Dry socket, Extraction of tooth, Severe pain, Visual analog scale.

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INTRODUCTION

After tooth extraction, dry socket is the most common complication. For the clinical analysis of a dry socket, around 17 different definitions are available.¹ Blum² 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.

Dry socket is a very common condition arising on extraction of mandibular molars; it is associated with postoperative pain in and around the extraction site, accompanied by a partially or totally disintegrated blood clot within the alveolar socket, with or without halitosis. Few new cases of dry socket ranging between 0.5 and 5% for all routine extractions can reach up to 38% on extraction of impacted mandibular third molars.³ Dry socket usually starts from 1st and 3rd day after tooth extraction and remains for 5 to 10 days. The incidence of dry socket is higher in the mandible, occurring up to 10 times more often for mandibular molars compared with maxillary molars. The name of "dry socket" was stated in 1896. It is also called as alveolgia, alveolitis sicca dolorosa, alveolar osteitis, localized osteitis, osteomyelitis, necrotic socket, septic socket, and localized fibrinolytic alveolitis.⁴

Bacteria plays a major role in the disintegration of the clot.⁵ This is supported by an increased incidence of dry socket being seen in patients with poor oral hygiene, higher pre- and postoperative microbial counts, in particular anaerobic bacterial counts, and, in the presence of periapical infection, pericoronitis or periodontitis pre-extraction. Nitzan⁶ stated that plasmin-like fibrinolytic activity was more in dry socket which was caused by *Treponema denticola*. Although bacteria may play a role, no direct cause-effect relationship has been demonstrated

¹Associate Professor, ²Professor, ^{3,5,6}Senior Lecturer, ⁴Oral Implantologist

¹Department of Oral and Maxillofacial Surgery, Government Medical College, Kollam, Kerala, India

²Department of Oral and Maxillofacial Surgery, Educare Institute of Dental Sciences, Malappuram, Kerala, India

³Department of Prosthodontics, Al Azhar Dental College Thodupuzha, Kerala, India

⁴Sujay's Dental Care, Bengaluru, Karnataka, India

⁵Department of Conservative Dentistry and Endodontics, Mar Baselios Dental College, Ernakulam, Kerala, India

⁶Department of Public Health Dentistry, Government Dental College, Thrissur, Kerala, India

Corresponding Author: Rabi Abdul Gafoor, Associate Professor Department of Oral and Maxillofacial Surgery, Government Medical College, Kollam, Kerala, India, e-mail: drrabi@hotmail.com

between bacteria and dry socket. In order to evaluate the efficiency of the two methods used for the treatment of dry socket, the current research was carried out.

MATERIALS AND METHODS

The present study comprised 40 subjects, aged between 21 and 35 years, who reported with dry socket following forceps dental extraction. Those patients who reported to the department with conditions, such as diabetes mellitus, sickle cell disease, peptic ulcer, on steroid therapy, oral contraceptives and other local and systemic medical and surgical conditions adversely affecting wound healing or bone physiology and metabolism were excluded from the study.

Written consent was taken after explaining the benefits of the treatment to the participants. The diagnostic criteria for dry socket was based on history of extraction of two or more days and pain, clinical examination for sensitivity on gentle probing of the extraction socket, trismus, halitosis and condition of tooth socket, and radiographic examination for the presence of a broken root.

The subjects were randomly allotted to two different groups:

Group I: With zinc oxide eugenol pack method

Group II: Debridement method

Group I subjects were treated by irrigation of socket with diluted hydrogen peroxide to remove necrotic tissue, and dressing with gauge-impregnated zinc oxide eugenol was done. The dressing was changed each day until the pain was reduced as the participants were told to visit every alternative day.

Group II subjects were treated by debridement. In order to achieve the analgesia at the site of the dry socket 2% lignocaine with 1:80,000 adrenaline was given before starting the treatment. Then the socket was irrigated with diluted hydrogen peroxide and the clot-devoided socket was thoroughly curetted, both from the floor of the socket and from the bony walls, the sharp margins were trimmed and rounded to ensure bleeding. To ensure comfortable bleeding through all the dry areas of the bony socket, gingival margin was created. To prevent the clot formation the gingival margins were stitched. Subjects were given routine dental postextraction instructions. Subjects were recalled the next day for review. Patient satisfaction was assessed subjectively using a graded scale from very satisfied to very unsatisfied. The VAS was utilized to record the degree of pain.

Data were analyzed by Statistical Package for the Social Sciences version 17. Descriptive statistics were used. Mean and standard deviation for age were tabulated; $p < 0.05$ was considered as statistically significant. Chi-square test and Fischer exact test were used to find a difference between the two methods.

Table 1: Comparison of mean age among the study groups

Groups	N	Mean	Standard deviation	t-value	p-value and significance
Zinc oxide eugenol pack method	20	26.40	2.42	1.667	0.214 NS
Debridement method	20	28.06	2.25		

$p > 0.05$, NS: Nonsignificant

Table 2: Sites affected

Site	Number of patients	Percent
Mandibular 3rd molar	10	25
Mandibular 2nd molar	3	7.5
Mandibular 1st molar	12	30
Mandibular 2nd premolar	4	10
Mandibular 1st premolar	2	5
Maxillary 3rd molar	4	10
Maxillary 1st molar	2	5
Maxillary 2nd premolar	1	2.5
Maxillary 1st premolar	2	5

Table 3: Comparison of subjects' satisfaction of the procedure

Patient satisfaction grade	Group I (n = 20)	Group II (n = 20)	Fischer exact test
Very satisfied	5 (25%)	8 (40%)	$\chi^2 = 1.215$
Fairly satisfied	10 (50%)	8 (40%)	$p = 0.261$ NS
Fairly unsatisfied	5 (25%)	4 (20%)	
Very unsatisfied	0	0	

$p > 0.05$, NS: Nonsignificant

RESULTS

The mean age of group I subjects was 26.40 ± 2.42 years as shown in Table 1 and 28.06 ± 2.25 was the mean age of group II. Hence, for the mean age between the groups, there was no statistical difference.

The sites that have impacted with the dry socket are shown in Table 2. Mandibular first molar is affected more (30%) when compared with the other sites. Upper second premolar was less affected.

Subject satisfaction was assessed using a grading scale. Both the group showed satisfactory state in procedure levels that were used without any statistically significant difference as shown in Table 3.

Table 4 shows that the VAS score is used to record the increase of pain. There was no significant difference found on days 1 and 5 among groups I and II in the VAS score. However, the number of subjects with severe pain was more in group II.

DISCUSSION

Dry socket pain occurs because of release of kinins that are immediately available following tissue trauma, exposure of nerve endings to air, food, and fluids in bare bone of the

Table 4: Evaluation of pain (VAS) between subjects

Duration and groups		No pain	Slight pain	Mild pain	Severe pain	Very severe pain	Fischer exact test
Day 1	Group I	0	4	9	4	3	$\chi^2 = 5.810, p = 0.221$ NS
	Group II	0	2	8	6	4	
Day 2	Group I	0	8	7	3	2	$\chi^2 = 12.788, p = 0.004$ S
	Group II	0	6	9	2	3	
Day 3	Group I	0	8	9	3	0	$\chi^2 = 11.091, p = 0.211$ NS
	Group II	1	8	9	2	0	
Day 4	Group I	3	10	7	0	0	$\chi^2 = 8.085, p = 0.044$ S
	Group II	8	9	3	0	0	
Day 5	Group I	10	10	0	0	0	$\chi^2 = 5.238, p = 0.155$ NS
	Group II	14	6	0	0	0	

S: Significant; NS: Nonsignificant

extraction socket, and infectious process which releases tissue activators and pain mediators.⁷

Majority of the patients developed pain in the second and third decades. Prevalence of pain in this age group can be attributed to more solid nature of bone which is relatively disease free (e.g., periodontal diseases) and can lead to difficult and hence traumatic extraction. The number of cases increases with difficult extraction and surgical trauma.⁸

Dry socket was more common in mandible than maxilla, which was in accordance with the results shown by Nusair and Younis⁹ ($p = 0.045$). According to the present study, mandibular molar area was the most common site for development of dry socket, which is consistent with other international studies.^{10,11} The study could not match the results of Nusair and Younis⁹ and others due to the frequent involvement of mandibular first molar.¹² This might be a result of extraction of mandibular first molar mostly by undergraduates in the present study (less experienced operators), which resulted in the development of dry socket mostly at this site.

The methods used to manage the patients in this series provided aerobic condition within the extraction sockets due to hydrogen peroxide being an oxidizing agent. The uneventful healing process is improved using amoxicillin, metronidazole, and ibuprofen in the radical group. This resulted in the reduction of the duration of treatment, patient discomfort, and morbidity. The usage of eugenol-containing dressing for the treatment and prevention of dry socket is also promoted by some authors.¹³ However, it is also found that the delay in wound healing and irritant local effect of eugenol due to packing of the socket has been recorded in the literature.¹⁴ Other few topical products with a positive impact in the treating and preventing of dry socket include 0.12% chlorhexidine gluconate, betadine mouthwash, benzocaine, topical antimicrobials (iodoform), platelet-rich plasma, topical antibiotics, such as tetracycline, clindamycin, or a combination of bacitracin, neomycin, and tetracycline.¹⁵

Surgical debridement was done in the form of administering anesthesia, curettage, and irrigation of the socket

to cleanse it of necrotic bone, tooth fragments, induce bleeding, and primary closure to protect the clot and enhance healing by primary intention. This procedure provided immediate pain relief and reduction in duration of treatment to the patient and less discomfort to the patient.⁸ The present study also shows better improvement after debriding the tissues.

CONCLUSION

It is to be concluded that a safe and reliable treatment for dry socket is debridement method that can be used by practitioners who run a busy clinic or for patients who cannot come to the clinic every other day for treatment.

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