



EFFECTS OF A CHLORHEXIDINE GLUCONATE ORAL RINSE ON THE INCIDENCE OF ALVEOLAR OSTEITIS IN MANDIBULAR THIRD MOLAR SURGERY

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ABSTRACT

Background: The purpose of this study was to evaluate the use of 0.2% chlorhexidine gluconate for the prevention of alveolar osteitis which the most common complication in the healing of wounds following the extraction of impacted mandibular third molar teeth.

Material and methods: 80 patients were included in this study; they were divided into two groups. Group A in which the patient's mouth was rinsed with chlorhexidine gluconate 0.2% preoperatively and postoperative period, and group B in which the patient's mouth was rinsed with a normal saline (placebo)

Results: It had shown that the incidence was reduced from 7.5% in the group B to 2.5% in the group A, although data was statistically insignificant. ($p > 0.05$)

Conclusion: 0.2% chlorhexidine reduced the incidence of alveolar osteitis after the extraction of impacted mandibular third molars by approximately 30- 40%. but complete prevention was not obtained.

Key words: AO - alveolar osteitis, dry socket; alveolitis sicca dolorosa; fibrinolytic alveolitis; Paget's disease; osteopetrosis; pericoronitis.

INTRODUCTION

"Dry socket" was first described in the literature in 1896 by Crawford [1]. Since then, other terms have been used to refer to this complications, such as "alveolar osteitis", "alveolitis", "localized osteitis", "alveolitis sicca dolorosa", "localized alveolar osteitis", "fibrinolytic alveolitis", "septic socket", "necrotic socket", and "alveolgia". For routine dental extractions, the incidence of AO has been reported in the range 0.5% to 5%. The incidence of AO after extraction of mandibular third molars varies from 1% to 37.5%. It has been well documented that surgical extractions result in about 10 times higher incidence of AO. [2,4]

RISK FACTORS : Extraction of mandibular rather than maxillary teeth, Extraction of third molars especially impacted lower third molars, Singleton extractions, Traumatic and difficult extractions, Female sex especially if using oral contraception, Poor oral hygiene and plaque control, Active or recent history of acute ulcerative gingivitis or pericoronitis associated with the index tooth, diabetes, Smoking, especially if > 20 cigarettes per day, Increased bone density either locally or generally (eg Paget's disease and osteopetrosis), Previous history of dry sockets following extractions. [3]

Nitzan et al. (1983) proposed, in particular, the role for anaerobic bacteria, especially Treponema denticola, which showed Passi et al. EJDTR, 2013;3:184-186

plasminlike fibrinolytic activity in vitro. Although bacteria may play a role, no direct cause-effect relationship has been demonstrated between bacteria and dry socket [6]. Birn suggested that the etiology of AO is an increased local fibrinolysis leading to disintegration of the clot. The fibrinolysis is the result of plasminogen pathway activation, which can be accomplished via direct (physiologic) or indirect (nonphysiologic) activator substances. Direct activators are released after trauma to the alveolar bone cells. Indirect activators are elaborated by bacteria. The fibrinolytic activity is local because initial absorption of plasminogen into the clot limits the activity of plasmin. [5]

MATERIAL AND METHODS

This prospective study was conducted on patients of impacted mandibular third molar visited in the department of Oral and Maxillofacial Surgery, King George medical university, Lucknow, randomly selected for the study, irrespective of cast, creed, and sex and socio-economic status.

Inclusion criteria: Total of 80 healthy male or female subjects with simple or moderately difficult partially impacted mandibular third molar which requires removal, taken into study and divided into two groups of 40 each.

Group A -The 40 patients of this group were rinsed their mouth with 10 ml. of chlorhexidine gluconate 0.2% (**CHLORHEX plus**, Dr Reddy's

laboratories Ltd.) thoroughly before the extraction of the tooth, and postoperatively the patient was instructed to start with chlorhexidine mouth rinse after 24 hours 3 times daily for 5 days.

Group B: The 40 patients of this group were rinsed their mouth with 0.9% normal saline preoperatively and post operatively as in the experimental group

Table 1. Gender wise Distribution of Group-A and Group-B

Description		Group A (N=40)		Group B (N=40)	
		Count	Column N %	Count	Column N %
Sex	Females	22	55.0%	16	40.0%
	Males	18	45.0%	24	60.0%

Table 1 Shows gender wise distribution in both groups showing in group A there was 22 females, 18 males percentage being 55% & 45% respectively and in group B there was 16 females, 24 males % percentage being 40% & 60 % respectively

Table 2. Impacted third molar included in Group-A and Group-B

Description		Group A (N=40)		Group B (N=40)	
		Count	Column N %	Count	Column N %
Type of impaction	(disto angular)	4	10.0%	4	10.0%
	(horizontal)	2	5.0%	2	5.0%
	(mesio angular)	34	85.0%	34	85.0%

TABLE 2. Shows types of impacted third mandibular included in study. 85% patients were having mesioangular, 5% with horizontal and 10 % with disto angular type of impaction

SURGICAL PROCEDURE:

The extraction of impacted mandibular third molars was done under local anesthesia using xylocaine 2% with adrenaline 1\80,000 using standard methodology of extraction of impacted tooth. Ward's Incision was given and mucoperiosteal flap was reflected. Bone was removed on buccal and distal portion as required with surgical round bur (# 6) with copious irrigation with normal saline. The socket was then inspected, irrigated with normal saline and wound was closed with 3-0 silk sutures.

Postoperative extraction instructions were given to patients along with medications prescribed amoxyclave 625 mg TDS, metronidazole 400mg TDS, Combiflam 400 mg TDS. 0.2% chlorhex plus mouth wash for oral rinse for group A

DIAGNOSTIC CRITERIA

The patients of both groups were followed up at the fourth postoperative day for the diagnosis of dry socket. Severe and persistent pain arising 48-72 hours following tooth extraction localised to the extraction socket which is sensitive to even gentle probing. Typically the pain radiates to the ear. Absence of a normal healthy post-extraction blood clot in the socket with exposed bone which may be empty or contain fragments of disintegrating blood clot & food debris. A slough is also sometimes present. The adjacent gingivae tend to be red, inflamed, tender and oedematous. Halitosis and Trismus.

RESULTS

The analysis of data revealed that the incidence of dry socket in the group A which involved 40

patients was 2.5 % While in the group B incidence of dry socket was 7.5% although data was statistically insignificant.($p > 0.05$)

Table 3 The analysis of data revealed that the incidence of dry socket in the group A and group B incidence

(N=40)	No. of teeth extracted	No. of Dry socket	%
Experimental group Group A	40	1	2.5
Control group Group B	40	3	7.5

$P > 0.05$

DISCUSSION:

Dry socket is a self-limiting condition, the cause of which remains elusive. Management is aimed at relieving the patient's pain until healing of the socket occurs. Healing is facilitated and accelerated through reducing the insult to the wound by food debris and microorganisms, by irrigation of the socket with chlorhexidine, followed by placement of obtunding dressing like Alvogyl dressing or ZnO- eugenol, if unavailable, instructing the patient in home use of a syringe for irrigation of the socket until the socket no longer collects debris, and the prescription of oral analgesics.

Chlorhexidine has been used as a rinse and also in combination with antibiotics and it is effective in the reduction of dry socket. Also it exhibits a residual antibacterial effect with repeated use

.Chlorhexidine gluconate 0.2% exerts its antibacterial action by disruption of the bacterial cell membrane, It has both bactericidal and bacteriostatic mechanisms of action, it is effective against many gram -ve and gram +ve microorganisms, . It is also useful against fungi and enveloped viruses, though this has not been extensively investigated. [7, 8, 9] Some side effects of chlorhexidine reported are staining of teeth and tongue, an alteration in taste perception, Minor irritation and superficial desquamation of the oral mucosa, parotid gland swelling and inflammation etc.

The results of the present study revealed that chlorhexidine gluconate 0.2% mouth wash is an effective preventative of alveolar osteitis after the extraction of impacted mandibular third molars & reduced the incidence of dry socket from 7.5% to 2.5% .This is considered clinically as an acceptable limit, although data was statistically insignificant.($p > 0.05$). The relatively small sample sizes of these studies may be related to the failure to demonstrate statistically insignificant differences between the treatment groups. But complete prevention was not obtained, this is due to the fact that the most commonly etiological factors for the clot lysis and the development of dry socket are trauma and infection which causes inflammation of the marrow spaces of the alveolar bone, this gives rise to the liberation of tissue activators which converts plasminogen to plasmin, this dissolves the blood clot.

Field et al. (1987) similarly reported a significant reduction in the incidence of dry socket following irrigation of the gingival crevice and a two-minute mouth rinse with 0.2% chlorhexidine digluconate immediately prior to removal of the tooth, in comparison to the use of no irrigation or the use of saline as the irrigant [10]

The placement of 0.2% chlorhexidine gel in the socket at the time of surgery was also shown to reduce the incidence of dry socket in a randomised, double-blind study. [11]

CONCLUSION

0.12% chlorhexidine reduced the incidence of alveolar osteitis after the extraction of impacted mandibular third molars by approximately 30-40%. Chlorhexidine is associated with minimal side effects; it is suggested for patients with increased risk, such as smokers, individuals with poor oral hygiene, and women on oral contraceptives. Safety data confirmed that preoperative use was safe and that observed post-operative adverse side effects were minimal.

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