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Research Article

**ANALYSIS OF EFFICACY OF SINGLE DOSE
CHLORHEXIDINE GEL APPLICATION IN MOLARS
EXTRACTION**¹Dr Tayyaba Ashraf, ¹Dr Neelam Malik, ¹Dr Iram Ramzan¹House Officer at Punjab Dental Hospital, Lahore.

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Abstract:

Introduction: Alveolar osteitis (AO) is a poorly understood form of post-operative pain located in or around the area of extracted tooth, which occurs due to a partial or total loss of a blood clot, between the first and third postoperative days.

Aims and objectives: The main objective of the study is to analyze the efficacy of single dose chlorhexidine gel application in molars extraction.

Material and methods: This cross-sectional study was conducted in Punjab Dental Hospital, Lahore during 2018 with the permission of ethical committee of hospital. The data was collected from 100 patients of both genders. Patients aged between 18-65 years visiting the outpatient department for dental extraction of 1st, 2nd and 3rd molar teeth in maxilla or mandible were included in this study. The sample was randomized using block randomization into experimental (CHX) and control groups.

Results: The data were collected from 100 patients of both genders. The mean age of the patients was 36.65 years SD ± 11 yrs. 1st molars were the most common teeth to be extracted with combine incidence of left and right side teeth making 37% of the total teeth extracted. No cases of hypersensitivity to intra-socket placement of CHX gel were reported in this study. Chi square test was applied at 0.05 level of significance of surgical flap with the incidence of alveolar osteitis. The group in which envelope flap with releasing incision was performed had highest incidence of alveolar osteitis (67.74%).

Conclusion: It is concluded that CHX gel application in the extraction socket of mandibular 3rd molar has reduced the incidence of AO.

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INTRODUCTION:

Alveolar osteitis (AO) is a poorly understood form of post-operative pain located in or around the area of extracted tooth, which occurs due to a partial or total loss of a blood clot, between the first and third postoperative days. The incidence of AO was reported to be 3–4% and its value may be extended to 45% during the extraction of an impacted tooth. AO more commonly occurs in the mandible, in women (5:1) and for posterior tooth extraction [1].

Mandibular impacted tooth extraction is a routine task carried out by dental surgeons. The procedure causes associated postoperative complications; edema, pain, trismus and AO. Even if the etiology of AO is debated, it may be multifactorial [2]. Some precipitating factors were recognized; hypovascularity due to the density of the bone, anesthetic agents (vasoconstriction), systemic conditions/disease, smoking, age, oral contraceptive (OCP) and traumatic extraction. It occurs due to an increased local fibrinolysis which leads to disintegration of the clot and characterized by severe pain [3].

The etiology of the disease is not clearly known⁵, but various predisposing risk factors have been identified such as smoking, use of contraceptives, pericoronitis, poor oral hygiene, bone remnants in the socket, trauma during extraction and dislodgement of blood clot from the socket. The level of surgical skills during extraction have also been linked with AO [4]. Systemic factors associated with AO are diabetes, vitamin C deficiency, bleeding disorders and bone diseases such as Osteosclerosis and Paget's disease etc [5]. The use of systemic antibiotic prophylaxis for the prevention of AO has been reported. Various preventive local drugs, steroids and medications have been studied which includes amoxicillin paste, methylprednisolone and dexamethasone [6]. Chlorhexidine (CHX) is an antibacterial agent with established efficacy in dentistry. Chlorhexidine is available in various concentrations and forms, such as the mouth rinse 0.12%, 0.2%, 1% and 2%; gel 0.2%. CHX has been found effective against Staphylococcus and Streptococcus species which are the major source of dental infection [7].

Aims and objectives

The main objective of the study is to analyze the efficacy of single dose chlorhexidine gel application in molars extraction.

MATERIAL AND METHODS:

This cross sectional study was conducted in Punjab Dental Hospital, Lahore during 2018 with the permission of ethical committee of hospital. The data was collected from 100 patients of both genders. Patients aged between 18-65 years visiting the outpatient department for dental extraction of 1st, 2nd and 3rd molar teeth in maxilla or mandible were included in this study. The sample was randomized using block randomization into experimental (CHX) and control groups.

Data Collection

The study was designed to have 80% power to detect 10% relative reduction of alveolar osteitis between the two groups (experimental and controls). In mandibular molars, the inferior alveolar nerve block injection technique with lingual and long buccal nerve anesthesia was used. In maxillary molars, the facial and palatal infiltration technique was used. The extractions were divided into surgical and nonsurgical extractions and recorded.

The patients were recalled on 3rd day post extraction and were assessed by a different dentist (Y). The pain was also measured on a Visual Analog Scale (VAS) ranging from 0-no pain to 10-worst pain imaginable. Any pain score above 5, in addition to clinical signs and symptoms based on Blum's criteria⁴ was diagnosed with Alveolar Osteitis by dentist (Y). The outcome assessor (Y) was blinded of the group allocation (CHX versus placebo) done by intervention provider (X).

Data Analysis

The data was analyzed using SPSS 20.0 version for windows.

RESULTS:

The data were collected from 100 patients of both genders. The mean age of the patients was 36.65 years SD \pm 11 yrs. 1st molars were the most common teeth to be extracted with combine incidence of left and right side teeth making 37% of the total teeth extracted. No cases of hypersensitivity to intra-socket placement of CHX gel were reported in this study. Chi square test was applied at 0.05 level of significance of surgical flap with the incidence of alveolar osteitis. The group in which envelope flap with releasing incision was performed had highest incidence of alveolar osteitis (67.74%). This decreased in envelope incision and nonsurgical extractions. The Chi-square test followed by Yates correction was applied to establish a statistical relationship between the two variables and was found significant (p=0.001).

Table 01: Association between Surgical Flap and Alveolar Osteitis

Surgical Flap and Alveolar Osteitis		Alveolar Osteitis		Total	Chi-square p-value	Yates Corrected p-value
		yes	no			
Surgical Flap Used	Non-Surgical Extraction	6	185	191	0.001	0.001
	Envelope Flap	3	28	31		
	Envelope Flap with releasing incision	21	10	31		
Total		30	223	253		

DISCUSSION:

Previous studies found the incidence of dry socket was highest in the third and fourth decades of life, which is in agreement with the present study where the mean age range of the patients was 24.15 ± 5.02 to 36.65 ± 11 . This might be due to the presence of well-developed alveolar bone and the relative infrequency of periodontal diseases in this age group makes tooth extraction more difficult [8].

Haraji, et al.¹⁰ found that modified triangular flap decreases the incidence of AO and expedited healing post-surgery. Goldsmith et al. found pedicle flap had no incidence of AO, as compared to five cases in envelope flap. All the mentioned studies had relatively small sample size and focused on mandibular 3rd molar region. In this study, the incidence of AO in surgical extraction was 35.6% more than non-surgical extraction [9]. There is a debate about the use of conservative dental extraction approach for ridge preservation which results in rapid wound healing and may be of a benefit during implant placement. In this study, it was seen that in molar extraction cases, the surgical trauma involved with the most invasive flap design (envelope flap with buccal releasing incision) had the highest incidence of AO. The incidence of AO was found higher in a similar invasive modified triangular flap, but this was not proven statistically significant. In another study though, the modified triangular flap design reduced the incidence of AO. Both studies had a small sample size of less than 50. The role of Chlorhexidine gel (CHX) has shown positive results in preventing AO, especially in the cases of impacted 3rd molars where the incidence of AO was reduced by as much as 70% [7]. But the side effects of use of Chlorhexidine gel in dentistry have been questioned as well. Although no cases of hypersensitivity to intra-socket placement of CHX gel were reported in this study, but several case reports are now becoming available reporting both type I and type IV hypersensitivity in topically applied CHX [10].

CONCLUSION:

It is concluded that CHX gel application in the extraction socket of mandibular 3rd molar has reduced the incidence of AO.

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