

Effect of Oral Contraceptive Drugs on the Incidence of Dry Socket after Surgical Extraction of Mandibular Third Molar

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Abstract: Dry Socket (DS) is a common complication following mandibular third molar (M3) surgery. There are various risk factors predisposing the patient to develop DS after surgery. The aim of the present study was to evaluate the effect of taking oral contraceptive (OC) drugs on the incidence of DS following impacted M3 extraction. The inclusion criteria of patients were 18-30 years of age, minimum difficulty level of surgery based on Pederson's scale. Patients in the study group were taking low dose (LD) OC drug and participants in control group were not taking any OC drugs. 94 patients (47 in each group) participated in this study. The incidence of DS in control group (10.6%) was significantly (P -value = 0.044). Based on the results of the present study taking OC drugs increases the rate of DS following surgical extraction of impacted M3.

Keywords: Dry Socket, Oral Contraceptives, Mandibular Third Molar.

I. Introduction

Dry socket (DS) is the most common postoperative complication after impacted mandibular third molar (M3) surgery. The incidence of this complication varies between 1 and 4 percent in normal extractions of M3. However, the incidence of DS in surgical extraction of impacted M3 is 5 to 30 percent [1-4].

DS initiates 1 to 3 days after extraction or surgery and may last for 10 days before complete resolution. Severe and progressive pain, regional lymphadenitis, halitosis, and foul taste are signs and symptoms of DS [1-4].

Various risk factors have been reported to affect the incidence of DS; age, gender, amount of trauma during surgery, surgery difficulty, experience of surgeon, post-extraction socket irrigation, and oral contraceptive use [3]. Oral contraceptive (OC) drugs enhance the fibrinolysis activity within extraction socket and result in clot loss and increased risk of developing DS [5].

The aim of the present study was to evaluate the effect of oral contraceptive drugs use on the incidence of DS following surgical extraction of impacted M3 extraction.

II. Materials And Methods

The present research was performed at the oral and maxillofacial clinic of Mashhad Dental school between January 2014 and May 2014. Ethical board of Mashhad University of Medical Sciences approved the study protocol and informed consent was explained to and signed by each participant.

2.1 Study Population:

94 female patients with an impacted mandibular third molar in need of surgical extraction participated in this study. Female gender, age range of 18 to 30 years, minimum difficulty level of surgery based on Pederson's scale, score I or II according to American Society of Anesthesiologists (ASA) physical status, taking low dose (LD) which consists of 0.03 mg of ethinyl estradiol and 0.15 mg of levonorgestrel were the study inclusion criteria.

The exclusion criteria were presence of periapical lesion in panoramic radiograph, pregnancy or lactating status, smoking habits, and receiving a regimen of systemic antibiotics during the previous two weeks.

2.2 Study Groups:

Patients were allocated into two groups based on OC use. Study group consisted of patients taking LD pills and control group consisted of patients not taking any type of OC drugs.

2.3 Surgery Procedure:

Same surgeon performed surgeries and same protocol was applied for all surgeries: local anesthesia achieved using 2% lidocaine + 1:80000 epinephrine cartridges, access to impacted tooth was made with mucoperiosteal envelop flap, alveolar bone removal and tooth sectioning was performed with surgical handpiece under sufficient irrigation, socket irrigation was performed with 60 ml of sterile normal saline, and the flap sutured using 3-0 silk sutures. Patients were instructed to take a regimen of Acetaminophen (500 mg, every 8 h) to control the postoperative pain.

2.4 Data Collection:

The study variables were the use of OC drugs, incidence of DS, and age of the patients.

Criteria to detect DS were severe and progressive pain initiated 24 to 72 postoperative hours, clot loss, halitosis, foul taste and regional lymphadenitis.

In order to manage DS, alveolar socket was irrigated with sterile normal saline. Alvogyl iodoform dressing (Septodont, Cambridge, Canada) was applied in extraction socket.

2.5 Statistical Analysis:

Data were analyzed in SPSS version 11.5 software using chi-square and t-test and the significance level was set at 0.05.

III. Results

94 patients with mean age of 23.66 ± 3.49 participated in this study. According to the t-test no significant difference was observed between the mean age of patients in study and control groups (Table 1).

17 patients developed DS after surgical extraction of M3. The incidence of DS in control group was 10.6% (5 cases out of 47 surgeries) and was 25.5% (12 cases out of 47 surgeries) in study group. According to the chi-square test a significant difference was observed between two groups regarding the incidence of DS (Table 2).

IV. Discussion

The main goal of the current study was to evaluate the effect of OC drugs on the incidence of DS after surgical extraction of impacted M3 teeth. The results indicated a significant association between the use of OC drugs and incidence of DS.

In the present study using OC drugs led to significant increase in the incidence of DS. In accordance with the current study, Schow [6] and Lilly et al [7] reported that the incidence of DS in OC users was 2 to 3 times of its incidence in other women.

Since the introduction of OC drugs in the 1960s, the incidence of DS in women has been increased. Field et al [8] observed that the incidence of DS had no significant difference between two genders in 1971; however, it was significantly higher in women in another study in 1983 (performed by same authors in the same population) which could be due to the increased use of OC drugs within that 12 years.

The increase in the rate of DS could be due to the enhanced fibrinolytic activity following OC use. Catellani et al [9] reported that extraction of M3 during the day 1 to 22 of OC use increases the risk of developing DS in comparison to its extraction during the day 23 to 28 (during which they cease taking OC drugs). Hedlin and Monkhouse [10] reported that 1 day after taking OC drugs, the fibrinolytic activity was increased in the blood circulation.

The incidence of DS is dependent on the age of the patient [11]. The peak age of DS incidence is 20 to 40 years. In the present study no significant difference was observed between two groups according to the mean age of participants.

Another interfering variable in the incidence of DS is the experience of surgeon; surgeries performed by an experienced surgeon has lower rate of DS in comparison to the surgeries performed by oral and maxillofacial surgery residents [12]. In order to eliminate this variable all surgeries were performed by a single surgeon.

Other confounding variable is the amount of trauma to the alveolar bone and soft tissues during surgical extraction of M3. Surgeries with higher difficulty level and higher level of impaction require further bone removal which leads to higher trauma during the surgery and higher risk of developing DS in comparison to the surgeries with lower difficulty level [3, 13, 14]. In the present study all cases had impacted M3 with similar difficulty level according to the Pederson's scale.

While we tried to control interfering variables and enhance the quality of the study design, there were some limitations in the present study. Sample size was one of the limitations. On the other hand, it is recommended to evaluate the effect of OC drugs on the wound healing and other amount of hemorrhage following mandibular third molar surgical extraction.

V. Conclusion

Based on the present findings, taking OC drugs has significant effect on the incidence of DS. As a result, in female patients taking OC drugs it is necessary to reduce the risk of DS by applying further preventive means.

VI. Figures And Tables

Table 1: Demographic Variables of study and control groups

Variable	Group		P-value
	Study	Control	
Number of Cases	47	47	-
Mean Age	22.04 ± 4.12	23.94 ± 3.56	0.598*

*Based on t-test.

Table 2: Distribution of DS in study and control groups

Group	AO		P-value
	Yes	No	
Study	5	42	0.044*
Control	12	35	
Total	17	77	

*Based on chi-square test

Acknowledgements

Authors would thank the staff of Oral and Maxillofacial Surgery Clinic and also Dental materials Research Centre of Mashhad Dental Faculty.

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