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The Effect of Gender in Extractions of Impacted Mandibular Third Molar: A Retrospective Cross-Sectional Study

Gömülü Mandibular Üçüncü Molar Diş Çekimlerinde Cinsiyetin Etkisi: Retrospektif Kesitsel Bir Çalışma

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Abstract

Aim Removing the impacted mandibular third molar is the most common surgical procedure in oral and maxillofacial surgery. The removal times and complications can be affected by many factors, and this study evaluated the removal time and complications of the impacted mandibular third molar between genders

Material and Method This study included 40 patients, 20 female and 20 male patients. In the extraction of impacted mandibular third molar with the same operative difficulty score (score 4), operation times and complications were evaluated in terms of gender.

Results With the descriptive statistical analysis, the average age of the patients was 26.85 ±8.37, the removal time of the female patients was 19.65 ± 10.63 minutes, and the average duration of the male patients was 14.30 ± 5.55 minutes. Postoperatively, 4 (10%) of the patients had alveolitis. Dehiscence was not seen. In the extraction of an impacted mandibular third molar with the same operative difficulty score, there was a statistically significant difference between genders in terms of operation time ($p < 0.05$).

Conclusion In terms of postoperative complications, no statistically significant difference was found between genders. In the impacted mandibular third molar extraction, gender affects the duration of the surgery.

Keywords Gender, third molar, time

Özet

Amaç *Gömülü mandibular üçüncü molar dişin çekimi oral ve maksillofasiyal cerrahide en sık uygulanan cerrahi işlemdir. Çekim süreleri ve komplikasyonları birçok faktörden etkilenebilmektedir ve bu çalışmada cinsiyetler arasında gömülü mandibular üçüncü molar dişin çekim süresi ve komplikasyonları değerlendirildi.*

Gereç ve Yöntem *Bu çalışmaya 20 kadın ve 20 erkek olmak üzere 40 hasta dahil edildi. Aynı operatif zorluk skoruna sahip gömülü mandibular üçüncü molar çekiminde (skor 4), ameliyat süreleri ve komplikasyonlar cinsiyet açısından değerlendirildi.*

Bulgular *Tanımlayıcı istatistiksel analiz ile hastaların ortalama yaşı 26.85 ±8.37, kadın hastaların ortalama diş çekimi süresi 19.65 ± 10.63 dakika, erkek hastaların ortalama diş çekim süresi 14.30 ± 5.55 dakika olarak bulundu. Ameliyat sonrası hastaların 4'ünde (%10) alveolit görüldü. Dehissens görülmedi. Aynı operatif zorluk skoruna sahip gömülü mandibular üçüncü molar diş çekiminde, ameliyat süresi açısından cinsiyetler arasında istatistiksel olarak anlamlı bir fark bulundu ($p<0.05$).*

Sonuç *Postoperatif komplikasyonlar açısından cinsiyetler arasında istatistiksel olarak anlamlı fark bulunmadı. Gömülü mandibular üçüncü molar diş çekiminde cinsiyet, ameliyatın süresini etkilemektedir.*

Anahtar Kelimeler *Cinsiyet, üçüncü molar, süre*

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INTRODUCTION

Removing impacted third molars is one of the most common surgical operations in oral and maxillofacial surgery[1]. Although low morbidity is generally expected, various complications such as pain, edema, trismus, secondary bleeding, loss of sensation, difficulty in swallowing, alveolitis, dehiscence, and periodontal destruction in the adjacent second molars may occur[2-4].

Complications during or after surgery vary between 4.6% and 21.5%[5]. Even though complications are rare, several risk factors related to surgery and patient could be associated with complications. The Operative Difficulty Score (ODS) was described for clinical prediction and measured by a scale of 0 to 6 scores; 0: no extraction, 1: non-surgical erupted, 2: surgical erupted, 3: soft tissue impacted, 4: partial impacted in the bone, 5: full impacted in the bone, 6: full impacted in the bone, but difficult to reach (complicated or difficult bony impacted)[6,7].

The prolonged removal time increases the risk of complications[8,9]. Removal time varies according to the surgeon's experience, depth of impacted third molar, angulation, follicle and periodontal ligament width, age, gender, and emotional status[10-13].

The null hypothesis of the study is that there is a difference between the genders on operation time and postoperative complications after impacted mandibular third molar surgery due to anatomical variations. This study aims to evaluate gender-related results after impacted third molar surgeries.

MATERIALS and METHODS

This study included patients with fully impacted mandibular third molars who were admitted to the Eskisehir Osmangazi University Faculty of Dentistry Department of Oral and Maxillofacial Surgery with complaints of impacted mandibular third molar between January 2019, and March 2019, which were used after ethical approval was obtained (Ethical Committee Decision No: 114/2019). Clinical and radiographic examinations of patients were performed. Patients with impacted mandibular third molar extraction indication with an ODS of 5, who did not experience pain, swelling, or mouth opening restriction before the operation, who had no systemic disease and filled in the informed consent form were included in the study. Patients were excluded if they had systemic disease, allergy to drugs to be used in operation or postoperatively, pregnancy or breastfeeding, local pathological lesions in the operation area, and temporomandibular joint problems that would cause restricted mouth opening.

Impacted mandibular third molars were operated under local anesthesia with 2-4 ml solution (1: 100.000 epinephrine addition Articaine HCl (Ultracain D-S Fort bulb Aventis, Istanbul, Turkey)) by a single experienced surgeon. Regional anesthesia of the nervus mandibularis inferior and buccal infiltration anesthesia was applied to the patients to be removed the impacted mandibular third molar. After local anesthesia, the incision was made from the base of the ascending ramus toward the second molar tooth level. The full-thickness flap was elevated using the periosteal elevator. The bone was exposed. In order to reach the impacted mandibular third molar, the bone tissue around the impacted third molar was removed using round and fissure burs (Fig. 1). After removing the impacted mandibular third molar, the extraction socket was irrigated with saline. After the bleeding was under control, the wounds were closed primarily with 3-0 silk sutures. The same surgical protocol was applied to all patients. Postoperatively, patients were prescribed appropriate antibiotics (amoxicillin 1000 mg 2 times a day), analgesic (dexketoprofen 25 mg 3 times a day), and mouthwash (2% chlorhexidine gluconate three times a day). Sutures were removed on the seventh postoperative day.

Figure 1. Extraction of impacted mandibular third molar

The clinical intraoperative and postoperative examinations and measurements were carried out by a single, blinded researcher who had no information about the study design or patients' study groups. Processing times are noted separately for each tooth; The time from the start of the first incision to the passive deployment of the flap was calculated and noted in minutes and seconds. On the seventh day of removal of the sutures, the presence of dehiscence in the region was noted regardless of the width of the dehiscence. Alveolar osteitis data were recorded as "yes" or "no". Diagnosis of alveolar osteitis was made when the patient presented with a necrotic socket 2-5 days after the removal, with a painful, no suppuration, surrounded by intact gingival tissues. The limitations of our study are the small number of cases.

Statistical Analysis

Statistical analysis was performed using the IBM SPSS Statistics 20 package program (IBM Corp, Armonk, NY). The Shapiro-Wilk test was used to determine normal distribution, and the independent t-test was used to compare variables between the genders. The test result was considered statistically significant if the p-value was < 0.05.

RESULTS

In our study, 20 patients (%50) were male, and 20 (%50) were female. The age range of the patients is between 18 and 45, and the mean age is 26.85 ± 8.37. The ages of females are minimum 18, and maximum 45 (mean 28.1 ± 8.38), the age of males are minimum 18 and maximum 44 (mean 25.6 ± 8.38). Removal times are between 4 and 45 minutes and the mean removal time is 16.97 ± 8.80 minutes. The mean operation time of females is 19.65 ± 10.63 minutes, the mean operation time of males is 14.30 ± 5.55 minutes. There was no significant difference in age between the genders (p>0.05). Removal times between genders were statistically significant (p<0.05). Removal times were longer in female patients than in male patients (Table 1). In our study, when complications were evaluated after the removal of the impacted third molar, alveolar osteitis was observed in 4 of 40 cases (10%). 2 cases were seen in male (%50), and 2 cases were seen in female (%50). Dehiscence was not seen in any case.

Table 1. Comprarison of age and removal times between genders

	Gender	n	Mean	Std. Deviation	p-Value
Age	Female	20	28.10	8.38	.35
	Male	20	25.60	8.38	
Removal times (minute)	Female	20	19.65	10.63	**<0.05**
	Male	20	14.30	5.55	
Significance level: p<0.05					

DISCUSSION

The removal time of the impacted mandibular third molar is related to the degree of the impacted mandibular third molar, angulation, proximity to the alveolar canal, mouth opening, the patient's age, surgical technique, and the surgeon's experience[12,14]. Bone density also increases as a result of increasing age. The removal time of patients over 30 years of age was higher than younger patients[15]. In our study, the average age of female is 28.10 ± 8.38, and the average age of male is 25.60 ± 8.38 (p> 0.05). Patients with a similar age group were included in the study to eliminate the age-related removal times. The surgeon's experience is also important for the removal times and the development of complications[16]. Renton et al.[12] recorded an average of 14.6 minutes of impacted third molar extraction in his

study and reported that experienced surgeons performed dental extraction in a shorter time and with fewer complications. In our study, a single experienced surgeon operated, and the factors related to the surgical experience were eliminated.

Operation difficulty is another factor affecting the removal times[17]. In studies, Lang et al.[6] and Saruhan et al.[18] determined the ODS value between 0 and 6 for each tooth and examined their distribution. It has been identified. In our study, patients with ODS 4 were included to eliminate the operation times associated with ODS.

It has been reported that the patient's emotional state (anxiety, dental phobia, etc.) is also effective in tooth extraction time[13,19]. It has been reported that complications experienced in dental treatment, dental fear, negative expectations, and negative patient-physician relationship increase anxiety pain expectations[20]. Increasing anxiety complicates treatment, causes loss of time, and reduces the success and quality of the treatment. Studies have reported higher anxiety levels in females than males[21,22].

In our study, female patients' impacted mandibular third molar removal times (mean 19.65 ± 10.63) were higher than male patients' impacted third molar removal times (mean 14.30 ± 5.55), and this difference was statistically significant ($p<0.05$). Psychological factors and/or the mouth opening and facility of access to the surgical area could be responsible for this difference. It is well documented that the mouth opening measured for females is smaller than males due to anatomical features such as physical bigness depending on gender. Thus, the facility of access to the surgical area is difficult on females than males[23-25].

In this study, the mean removal time of 16.97 minutes for impacted third molar is favorable compared to previous studies. The complication rates after the removal of the impacted third molar are relatively low (usually <5%), and most complications are minor and temporary[26]. Alveolitis is one of the most common postoperative complications after removing the impacted third molar27. Alveolitis has been reported in the literature at 0.4-36% following impacted third molar surgery[27-29]. In our study, alveolitis was observed in 4 of 40 cases (10%). Gender is an important risk indicator for the development of alveolitis. Benediktsdóttir et al.[30] found alveolitis development higher in females than males. In our study, alveolitis was seen in 2 female patients (50%) and two male patients (50%). One of the complications seen after removing the impacted third molar is dehiscence[31]. Khan et al.[32] found dehiscence development after removing the impacted third molar as 10%. In our study, no dehiscence was observed in any of the patients, and it was favorable compared to studies.

CONCLUSION

It was presented that gender is an influential factor in surgical removal times of impacted mandibular third molar. In order to evaluate the removal times between genders in more detail, studies with a high number of data are needed. The limitations of our study are the small number of cases and psychological factors associated with surgeons or patients could not be considered.

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