

Evaluation of the complications after mandibular third molar surgical extraction

Navvab Azam, AR. * Ezoddini, F. ** Khalesi, M. *** Gholami, L. **** Momtaz, A. *****

*Assistant professor, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Yazd University of Medical Sciences.

** Assistant professor, Department of Oral Radiology, Faculty of Dentistry, Yazd University of Medical Sciences.

***Post graduate student of Prosthodontics, Faculty of Dentistry, Hamadan University of Medical Sciences.

**** Post graduate student of Prosthodontics, Faculty of Dentistry, Hamadan University of Medical Sciences.

*****Dentist

Abstract

Statement of the problem: This study was designed to investigate the complications after surgical removal of mandibular third molars.

Patients and Methods: Six Hundreds and ninety eight lower third molars among 450 patients surgically extracted by general dentists from April 2005 to April 2006 were selected for this study. Data were recorded by completing questionnaires regarding post surgical complications based on the documents of patients. Data were coded and statistically analyzed by Chi-Square and T-student tests.

Results: Pain was the most common complication (28.5%) and mandibular fracture was a rare complication (0.04%). In relation to the angulation of the teeth, this study showed that horizontally angled molars posed the most complications.

Conclusions: Results showed that pain was the most common complication and mandibular fracture was the rarest. Prediction of operative difficulty before the extraction of the lower third molars allows a design of treatment that minimizes the risk of complications.

Keywords: Mandibular third molar, surgical complication, pain, mandibular fractures

INTRODUCTION

There are several complications following surgical removal of the mandibular third molars which include pain, secondary infection of the head and neck region, mandibular fracture, dislocation of third molars, excessive

bleeding and temporary or permanent damage to the cranial nerves. ⁽¹⁾ The age and gender of the patients in combination with the angulation and anatomical proximity of the teeth play important roles in the severity and prevalence of the complications. De Boer MP et al reported that older patients tend to suffer more often from complications after mandibular third molar surgical extraction. ⁽²⁾ On the other

Corresponding Author: M, Khalesi Address: Department of Prosthodontics, Hamadan University of Medical Sciences. Tel: 09126778160 Fax: +98(351)6250344, Email: meisamkhalesi@yahoo.com

hand, Osborn TP et al reported that removal of mandibular third molar teeth during teenage years resulted in decreased operative and postoperative morbidity.⁽³⁾ In terms of the gender of the patients, Angine Virginia CA reported that post extraction complications of third molars were more frequent in females (18%) than in males (9.3%).⁽⁴⁾ Regarding anatomical location, since the lower third molar is located near the angle of the mandible, its presence increases the risk of fracture in the mandibular angle. Krimmel M and Reinert S reported that mandibular fracture during lower third molar removal is a rare, but major, complication and major risk factors for this complication seem to be advanced age in combination with a full dentition.⁽⁵⁾ The danger of an immediate jaw fracture can be avoided by means of proper instrumentation and by refraining from excessive force on the bone. The tooth should be sectioned in such a way as to minimize the extent of bone removal and force caused by instrumentation. The danger of a late jaw fracture can be avoided by precise diagnosis in cases of patients over 25 years of age, particularly men, whose tooth roots are superimposed on or adjacent to the inferior alveolar canal on a panoramic image, any local pathology and systemic disease or medication which may impair bone strength, and patients who present bruxism and are active athletes are to be taken into consideration.⁽⁶⁾

Anatomical proximity of mandibular third molar to the cranial nerves can result in nerve damage following their surgical removal. Carmichael FA and McGowan DA reported that removal of lower third molars can result in sensorial disturbances with the percent of nerve damage to the lingual nerves following third molar surgery ranging from 0.6 % to 22%.⁽⁷⁾ Furthermore, Valmaseda–Castelon et al reported that although only 1.3% of the lower third molar extractions caused temporary inferior alveolar nerve damage, 25% of the lesions were permanent⁸. The aim of this study was to evaluate the complications occurring after mandibular third molar surgical extraction and the prevalence and severity of the complications with regard to the age and gender of the patients in combination with angulation and anatomical proximity of the mandibular third molars.

PATIENTS AND METHODS

We studied the complications of 698 lower third molars after surgical removal from a total of 450 patients. The extractions were done between April 2005 and April 2006 by general dentists. The documents of patients were reviewed and data in relation to study variables were obtained. Study variables were categorized as demographic and anatomical variables. The demographic variables were gender and age, and anatomical variables were tooth descriptors (position, location in the arch, angulation). Surgical complications in this study

included mandibular fracture, lip paresthesia, tongue paresthesia, pain lasting more than 3 days and bleeding. We designed a questionnaire in which all variables were listed, and then questionnaires were completed by the persons who reviewed the documents of the patients. The data were analyzed

RESULTS

The post surgical removal complications of 698 mandibular third molars from a total of 450 patients are researched in this study. Based on statistical results, pain was the most common complication (28.5%) followed by lip paresthesia (4.5%), tongue paresthesia (2.5%), bleeding (1.6%) and mandibular fracture (2%) (Table 1). Regarding the age of patients, there were statistically significant relations between age and the prevalence of pain and bleeding

statistically by chi-square and t-student tests. The chi-square test was used to assess the association between qualitative variables and appearance of post-extraction complications and the relation between patient age and appearance of complications was in turn evaluated by the T-student test.

.It was seen that pain and bleeding were more prevalent in older patient (over 40 year-old) (Table 2). There was no statistically significant difference in the prevalence of the complications between genders.

In relation to angulation, there were statistically significant results with respect to pain, lip paresthesia and tongue paresthesia (P <0.05). They were more prevalent where tooth was posed horizontally not vertically (Table 3).

Table1: Frequency of complications after mandibular third molars surgical extraction

Complication	Frequency	Percent
Mandibular fracture	2	0.4
Tongue paresthesia	11	2.5
Lip paresthesia	20	4.5
Pain	127	28
Bleeding	7	1.3

Table2: Frequency of complications in different age groups

Complication	Under 20		20-40		Over40		P-value
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Mandibular fracture	0	0	2	0.6	0	0	0.75
Tongue paresthesia	1	1.6	9	2.6	1	2.8	0.88
Lip paresthesia	1	1.6	16	4.6	3	8.3	0.28
Pain	22	39.4	86	24.8	19	52.8	0.001
Bleeding	0	0	5	1.4	2	5.6	0.033

*Significant

Table3: Frequency of complications in combination with the angulation of the mandibular third molar

Complication	Horizontal		vertical		p-value
	frequency	percent	frequency	percent	
Mandibular fracture	2	1.1	0	0	0.08
Tongue paresthesia	10	5.5	1	0.4	0.001
Lip paresthesia	17	9.3	3	1.1	0.000
Pain	88	48.4	39	14.	0.000
Bleeding	4	2.2	3	1.1	0.37

*Significant

DISCUSSION

In this study we wanted to evaluate the complications after mandibular third molar surgical extraction. Overall complication rates of about 10 % after third molar surgery have been reported.⁽⁸⁾ ChiaPasco M et al. Reported that the incidence of intra operative complications and side effects of mandibular third molar surgery was 1.1% whereas postoperative complication was 4.3%. Our results showed that the pain was the most prevalent complication after surgical removal of the mandibular third molar. In another study, Capuzzi P et al

reported that the extraction of lower third molars is one of the most common activities in oral surgical practice and is generally followed by side effects in the form of pain, inflammation and trismus.⁽⁹⁾ Furthermore, Avendano, et al. reported that the post-extraction complication rate of the third molars was 15.62% and pain was the most prevalent complication in their study (8.9%).⁽⁴⁾ This study also showed that mandibular fracture is a rare complication (0.4%). In another study, Krimmel M, et al. reported that mandibular fracture after lower third molar removal is a rare, but major, complication and the major risk

factor for this complications seems to be advanced age in combination with a full dentition. ⁽³⁾ This present study showed that one of the complications after lower third molar removal was the damage to cranial nerves which result in tongue and lip paresthesia (2.5% and 4.5% respectively).Valmaseda-Castellon, et al. reported that 1.3% of extraction caused temporary nerve damage to inferior alveolar .Ana Claudia Amorim Gomes, et al. showed that lingual nerve damage occurred in 9.1% in the mandibular third molar surgery in which lingual flap retraction was performed. ⁽¹⁰⁾ Our study showed that the

complications were more prevalent in older patients in regard to the effect of the age of patient on the prevalence of the complications Osborn TP et al. ⁽³⁾ Krimmel M ⁽⁵⁾, Perry PA ⁽¹¹⁾, De Boer MP ⁽²⁾ and Valmaseda-Castellon E ⁽⁷⁾ reported findings analogue to ours. In conclusion, our study suggested that the Prediction of the operative difficulty before the extraction of lower third molars allows a design of treatment that minimizes the risk of the complications and less experienced surgeons are naturally expected to have higher incidence of complications.

REFERENCES

1. Locher MC, Carls FR, Pajarola GF. Severe complications after surgical removal of wisdom teeth. *Fortscher Kiefer Gesichtschir* 1995; 40: 123-8.
2. De Boer MP, Raghoobar GM, Stegenga B, Schoen PJ, Boering G. Complications after mandibular third extraction. *Quintessence Int* 1995; 26(11): 779-84.
3. Osborn TP, Frederickson G Jr, Small IA, Torgerson TS. A prospective study of complications related to mandibular third molar surgery. *J Oral Maxillofac Surg* 1985; 43(10): 767-9.
4. Avendano, AV. Garcia, SP. Castellon, EV. Leonardo Berini Aytes, Cosme Gay Escoda. Morbidity of third molar extraction in patient between 12 and 18 years of age. *Med Oral Pathol Pral Cir Bucal* 2005; 10: 422-31.
5. Krimmel M, Reinert S. Mandibular fracture after third molar removal. *J Oral Maxillofac Surg* 2000; 58(10): 1110-2.
6. Chrcanovic BR, Custodio AI. Considerations of mandibular angle fractures during and after surgery for removal of third molars: a review of the literature. *Oral Maxillofac Surg* 2010; 14(2):71-80
7. Carmichael FA, McGowan Da. Incidence of nerve damage following third molar removal. *Br J Oral Maxillofac Surg* 1992; 30: 78.
8. Valmaseda-Castellon E, Berini-Aytes L, Gay-Escoda C. Inferior alveolar nerve damage after lower third molar surgical extraction: a prospective study of 1117 surgical extractions. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2001; 92(4): 377-83.
9. Sittitavornwong, S. Peter D. Waite, John D. Holmes, Joshua C. Kalpow. The necessity of routine clinic follow-up visits after third molar removal. *J Oral Maxillofac Surg* 2005; 63: 1278-1282.
10. Capuzzi P, Montebugnoli L, Vaccaro MA. Extraction of impacted third molars. A longitudinal prospective study on factors that affect postoperative recovery. *Oral Surg Oral Med Oral Pathol* 1994; 77: 341-3.
11. Perry PA, Goldberg MH. Late mandibular fracture after third molar surgery: A survey of Connecticut oral and maxillofacial surgeons. *J Oral Maxillofac Surg* 2000; 58(8): 858-61.