The Relation Between Trismus And Difficulty Of Mandibular 3rd Molar Impaction (Clinical & Prospective Study)

Rozh M. Hussien

BDS, MSc, Assistant lecturer, Oral and Maxillofacial Surgery Department, College of Dentistry,Hawler medical university

Dilman N. Muhammad

BDS, MSc, Assistant lecturer, Oral and Maxillofacial Surgery Department, College of Dentistry,Hawler medical university

Alan H. Mawlood

BDS, HDD(Ortho), MSc, MOMSRCPS(Glasgow), Assistant lecturer, Oral and Maxillofacial Surgery Department, Hawler University, Dentistry College.

ABSTRACT

Objective: The purpose of this clinical study was to evaluate the relation of trismus in association with removal of impacted mandibular third molars and several clinical variables (degree of impaction and difficulty of extraction & gender effect).

Method: Data were collected for all patients who underwent extraction of an impacted third molar in college of dentistry, Department of Oral and Maxillofacial Surgery, Hawler Medical University. A variety of data were collected for each patient, including age, sex, medical status at the time of the procedure ,degree of mouth opening, type of impaction and type of procedure performed. All extractions were performed under local anesthesia by the same dental surgeon. Maximal inter-incisor distance were measured preoperatively, at first, second and third day following surgery to record the occurrence and degree of truisms.

RESULTS A total of 54 patient comprising 23 male and 31 female. The age range of patients was 20-30 mean (25); statistical analysis showed that there was highly significant relation between type of impaction and preoperative opening, and showed that there was very highly significant relation between gender and preoperative opening.

Conclusion: the degree of mouth opening after surgical removal of impacted third molar is related to the difficulty of impaction, as in class A of impaction the trismus was less than that class B and class C, and degree of trismus was more in class C than that of class B and class A.

Key words: Impaction, trismus, Lower wisdom, Complications, Gender

INTRODUCTION

The mandibular third molars are the most frequently impacted teeth and surgical extraction has become one of the commonest dentoalveolar surgeries. This procedure is usually associated with post -operative complications as direct and immediate consequence of surgical procedure. Pain, swelling and truisms are the most common complications, followed by sensory nerve damage, dry socket, infection and hemorrhage. Less common complications are severe truisms, iatrogenic damage to adjacent second molar and iatrogenic mandibular fracture[1].

The Pell and Gregory classifications were used to document the position of the impacted mandibular third molars. These classifications were used to predict the surgical difficulty and to evaluate the risk of postoperative complications, in particular limitation of mouth opening, according to the type of impaction.

In Pell and Gregory classification, the difficulty is measured by the thickness of the overlying bone; that is: the degree difficulty increases as the depth of the impacted tooth increases. As the tooth becomes less accessible become more difficult to section the tooth and to prepare purchase point [2].

Class A impaction is one in which the occlusal surface of the impacted tooth is level or near level with the occlusal plane of the second molar.

Class B impaction is an impacted tooth with an occlusal surface between the occlusal plane and the cervical line of the second molar.

Class C impaction is one in which the occlusal surface of the impacted tooth is below the cervical line of the second molar. [3]

PATIENTS AND METHODS

Data were collected from 54 patient attended the oral and maxillofacial surgery department, college of dentistry between the December 2011 till March 2013, age of patient were between (31), female and (23) male.

Measurement procedure Maximal mouth opening was measured using calibrated calibers; all patients were measured with their heads supported in a neutral position. Patients were asked to open their mouth as wide as possible, while avoiding excessive pain [4]. The maximal inter-incisal distance measured in four separated readings, the first measurement was before the surgery, the measurements were recorded in millimeters which ranged from(35mm-39mm) in female, and (35mm-40mm)in male in pre-operative day, the second reading was at the first post-operative day which ranged from (24mm-35mm) in female and(24mm-38 mm)in male, the third measurement was at second postoperative day which ranged from

(24mm-38mm) in female and (28mm-39mm) in male ,the fourth measurement was at the third post-operative day which ranged from(33mm-39mm)in female and (33mm-40mm)in male. All patients had panoramic image prior to surgery. Medical history was taken, all patient were healthy.

Surgical procedure: All patients were given local anesthesia, inferior alveolar nerve block technique with long buccal nerve block technique. An envelope incision is made which extended from the mesial papilla of the mandibular second molar around the neck of the tooth, to the disto-buccal line angle of the same tooth and then posteriorly and laterally to the anterior border of the mandibular ramus .If the impacted tooth was deeply imbedded in the bone and requires more extensive bone removal, a releasing incision was made. After flap reflection, bone was removed using straight surgical hand piece with external cooling system, the amount of bone removed and tooth sectioning depended on the degree of difficulty of tooth impaction. After tooth extraction, wound was debrided, irrigated with normal saline and sutured, Post-operative instruction was given to all patients. In The first post-operative day the inter-insical distance was taken using calibrated caliber following the same criteria of taking the inter-incisal distance prior to surgery, and then was repeated at the second and third postoperative day, the 4 measurement were documented for all patients.

Statistical analysis: t- Test and chi-square test were used in this study

RESULTS

Regarding the preoperative mouth opening day , The statistical analysis showed there was high significant difference between type A and B (.003) (*p VALUE ≤0.05)*, very highly significant difference, between type A and type C (.000) and significant difference between type B and C (.022).

In the 1st post-operative mouth opening day, there was very highly significant difference between type A and B(.000), very highly significant difference between type A and C(.000), and very highly significant difference between type B and C(.000).In the 2nd postoperative mouth opening day, there was very highly significant difference between type A and B(.000), there was very highly significant difference between type A and C(.000) and no significant difference between type B and C (.201)In the 3rd postoperative mouth opening, there was highly significant difference between type A and type B (.004). There was very highly significant difference between type A and C (.000), and significant difference between type B and type C (.050). As shown in table (1)

Table (1) relation between type of impaction and postoperative mouth opening

Type of Impaction		*Mean*	*Std. Deviation*	*t-test P-Value*	*Decision*
Preoperative Opening (mm)	Type A	39.73	.799	.003	HS
	Type B	38.22	1.734		
Post Operative Opening (mm) 1st Day	Type A	37.40	.910	.000	VHS
	Type B	30.33	3.881		
Post Operative Opening (mm) 2nd Day	Type A	37.80	.676	.000	VHS
	Type B	32.22	3.766		
Post Operative Opening (mm) 3rd Day	Type A	38.67	.724	.004	HS
	Type B	37.50	1.339		
Preoperative Opening (mm)	Type A	39.73	.799	.000	VHS
	Type C	36.95	1.532		
Post Operative Opening (mm) 1st Day	Type A	37.40	.910	.000	VHS
	Type C	25.62	1.596		
Post Operative Opening (mm) 2nd Day	Type A	37.80	.676	.000	VHS
	Type C	30.71	3.408		
Post Operative Opening (mm) 3rd Day	Type A	38.67	.724	.000	VHS
	Type C	36.48	1.806		
Preoperative Opening (mm)	Type B	38.22	1.734	.022	S
	Type C	36.95	1.532		

Type of Impaction		Mean	Std. Deviation	t-test P-Value	Decision
Post Operative Opening (mm) 1st Day	Type B	30.33	3.881	.000	VHS
	Type C	25.62	1.596		
Post Operative Opening (mm) 2nd Day	Type B	32.22	3.766	.201	NS
	Type C	30.71	3.408		
Post Operative Opening (mm) 3rd Day	Type B	37.50	1.339	.050	S
	Type C	36.48	1.806		

The statistical analysis showed presence of highly significant difference between 1st and 2nd postoperative mouth opening(.004),very highly significant difference between 1st and 3rd (.000) and very highly significant difference between and 3rd (.000) as shown in t (table 2)

Table (2) Relation between mouth opening and the days following surgery

GRP		Mean	Std. Deviation	t-test P-Value	Decision
Post Operative Opening (mm)	1st Day	30.46	5.379	.004	HS
	2nd Day	33.19	4.221		
Post Operative Opening (mm)	1st Day	30.46	5.379	.000	VHS
	3rd Day	37.43	1.655		
Post Operative Opening (mm)	2nd Day	33.19	4.221	.000	VHS
	3rd Day	37.43	1.655		

The chi-square test showed presence of significant relation between preoperative mouth opening and 1st day postoperative mouth opening (.011), significant relation between preoperative mouth opening and 2nd day postoperative mouth opening (.015), and very highly significant relation between preoperative mouth opening and 3rd day postoperative mouth opening (.000).The chi-square test showed presence of highly significant relation between per -operative mouth opening and all types of impaction (.004) as shown in table (3)

Table (3) relation between per -operative mouth opening and all types of impaction

	Chi-Square Value	Df	P-Value	Decision
Post Operative Opening (mm) 1st Day Preoperative Opening (mm)	116.499[a]	84	.011	S
Post Operative Opening (mm) 2nd Day * Preoperative Opening (mm)	114.749[a]	84	.015	s
Post Operative Opening (mm) 3rd Day * Preoperative Opening (mm)	129.737[a]	49	.000	VHS
Gender * Preoperative Opening (mm)	27.713[a]	7	.000	VHS
Type of Impaction * Preoperative Opening (mm)	32.020[a]	14	.004	HS

Regarding gender, in preoperative mouth opening day, statistical analysis t-test showed present of highly significant difference between male and female(.000),in 1st post-operative day mouth opening showed present of highly significant difference between male and female(.000),2nd post operative mouth opening day showed present of highly significant difference between male and female(.000),3rd post –operative day mouth opening day showed present of highly significant difference between male and female(.000).and there highly significant difference between male and female and type of impaction(.000) as shown in table(4)

Table (4) Relation between gender and mouth opening

Gender		Mean	Std. Deviation	t-test P-Value	Decision
Preoperative Opening (mm)	Male	39.36	1.350	.000	VHS
	Female	37.10	1.496		
Post Operative Opening (mm) 1st Day	Male	33.40	5.401	.000	VHS
	Female	27.93	3.927		
Post Operative Opening (mm) 2nd Day	Male	35.48	3.676	.000	VHS
	Female	31.21	3.658		
Post Operative Opening (mm) 3rd Day	Male	38.36	1.319	.000	VHS
	Female	36.62	1.498		
Type of Impaction	Male	1.64	.757	.000	VHS
	Female	2.52	.634		

DISCUSSION

The extraction of mandibular third molars is one of the most common surgical events. Thus, despite the diversified demands of practice, dental surgeons still face the problem of the removal of impacted mandibular third molars. Both the patient and dentist must therefore have scientific evidence-based information concerning the estimated degree of surgical difficulty in each case [5]

There are a number of previous studies carried out to evaluate surgical difficulty in the extraction of impacted mandibular third molars. However, most of these studies are only based on dental factors determined through radiologic assessments. While opinions may vary, most authors agree that these radiologic factors play some role in estimating difficulty. Other authors believe it is difficult to estimate difficulty through radiologic methods alone and that actual difficulty can only be estimated intraoperatively[6]. This study improve the idea that preoperative radiograph will give the surgeon a clue about difficulty of extraction but actual difficulty will be estimated intraoperatively.

Normal mouth opening Range is 40-60 mm

(avarageg-35mm) There was also a relation between tooth position based on the Gregory classification and the appearance of post- operative trismus. Oral surgical procedures especially extraction of lower molar teeth may cause trismus as a result either of inflammation involving muscles of mastication or direct trauma to the TMJ [7]

The most common postoperative complications found in this study were swelling, pain and trismus. Similar results were reported by Khan *et al* and Jaffar *et al*. Some authors consider them as transient complications and are expected with surgery. Although transitory, these conditions can be a source of anxiety for the patient. [8]

Deeper impaction leading to greater likelihood of tissue disturbance and longer operation times, which explained the tendency for more complications than other positions [9]

Susarla SM etal reported in their study that Trismus is often the result of surgical trauma, secondary to masticatory muscle and facial inflammation. Trismus gradually resolves and the ability to open the mouth returns to normal by 7-10 days post operatively. [10]

All patients with surgical extraction impacted lower third molar experienced post- operative inflammatory discomfort in form of pain, trismus and swelling [11]

CONCLUSION

the degree of truisms is strongly correlated to the difficulty of impaction, as in class A of impaction the trismus was less than that class B and class C ,and degree of trismus was more in class C than that of class B and class A.

REFERENCES

1. Woldenberg Y, Gatot I, Bodner L. (2007) iatrogenic mandibular fracture associated with third molar removal. Can it be prevented? Med Oral Patol Oral Cir Bucal. 12: 70-2.
2. François Blondeau, Nach G. Daniel (2007), Extraction of Impacted Mandibular Third Molars: Postoperative Complications and Their Risk Factors, CAD-ADC j. Vol. 73, No.
3. Hupp JR, Ellis III E, Tucker MR.(2008) Contemporary oral and maxillofacial surgery , 5th ed, St. Louis, Missouri, Mosby Elsevier 153-78.
4. Hira Ayaz, Atta-Ur-Rehman, Fahim-Ud-Din (2012) Oral & Dental Journal Vol 32, No. 3
5. Thiago de Santana-Santos, Jadson A. de Souza-Santos,Paulo R. Martins-Filho,Luiz C. da Silva,Emanuel D. de Oliveira e Silva, and Ana C. Gomes (2012) . Prediction of postoperative facial swelling, pain and trismus following third molar surgery based on preoperative variables Published online December 10. doi: 10.4317/medoral.18039
6. Gbotolorun OM, Arotiba GT, Ladeinde AL. (2007) Assessment of factors associated with surgical difficulty in impacted mandibular third molar extraction. J Oral Maxillofac Surg.65:1977–83.
7. McGrath C, Comfort MB, Lo ECM, Luo Y(2003) Changes in life quality following third molar surgery- the immediate postoperative period. Dent J 194: 265-68.
8. Khan A, Khitab U, Khan MT. (2010) Impacted mandibular third molars: Pattern of presentation and post operative complications. Pak Oral Dent J.30: 307-12
9. Kim JC, Choi SS, Wang SJ and Kim SG (2006). Minor complications after mandibular third surgery: type, incidence, and possible prevention. Oral Surg Oral Med Oral Pathol Oral Radiol Endod, 102(2): e4-e11.
10. Susarla SM, Blaeser BF, Magalnick D. Oral Maxillofacial Surg Clin N Am 2003; 177-86.
11. Obitade S. Obimakinde (2012) An audit of impacted mandibular third molar surgery Orient Journal of Medicine, Vol 24 (1-2).