

Surgical removal of impacted lower third molars ,classification and complication. A clinical study.

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Summary

Background Surgical extraction of third molars is often accompanied by pain, swelling, trismus, and general oral dysfunction during the healing phase. Careful surgical technique and scrupulous preoperative care can minimize the frequency of complications and limit their severity.

Aims. was to investigate classification and most common complication of surgical extraction of impacted lower third molars.

Patients and methods. Eighty patients was treated 34 males and 46 females their age between (20-32) years, complaining of either pain ,badly carious lower 3rd molars , recurrent pericoronitis or cyst, The patients were gathered from January 2009 to July 2012.

Results. A total eighty patients had surgical extraction of lower third molars under local anesthesia during the period of study. The mean age of the patients was (26) years range between (20- 32). Our results reveals that Mesioangulation was the most frequently (42.5%) followed by verticalangulation (26.25%), Distoangulation was (21.25%) and horizontal angulations was (10%). **Conclusion.** Surgical removal of impacted lower third molars was accompanied with post-operative complication especially infection and most frequency rate was associated with mesioangulation of impaction,

Key words: impacted lower third molars, common complication.

الخلاصة

عملية رفع سن العقل المظمو في الفك الأسفل غالبا ما تكون مصحوبة بالآلام او تورم انتفاخي او صعوبة فتح الفم مع اضطراب وظيفة الفم العامة خلال فترة التئام الجرح .العناية بالعمل الجراحي والاهتمام بالتحضيرات قبل العمل الجراحي تقلل سلسلة المضاعفات و تقلل من خطورتها .

الهدف هو معرفة التصنيف و اغلب المضاعفات فيعملية رفع سن العقل المظمو في الفك الأسفل . **المرضى و طرق العمل** ثمانون مريضا أربعة وثلاثون ذكور وستة و أربعون إناث أعمارهم بين 20 -32 . يشكون إما من الآلام او التسويس الكثير لسن العقل المظمو في الفك الأسفل او التهاب ما حول سن العقل المتكرر او الأكياس .النتائج ثمانون مريضا اجري لهم عملية رفع سن العقل المظمو في الفك الأسفل تحت التخدير الموضعي . معدل أعمارهم 26 سنة تتراوح بين 20 -32 . **أظهرت النتائج** انحراف سن العقل المظمو نحو خط الوسط ميزوانكوليشن الأكثر تكرارا (42.5%) يتبعه سن العقل المظمو عموديا (26.25 %) ثم سن العقل المظمو المائل بعيدا عن خط الوسط (% 21 . 25) ثم سن العقل المظمو افقيا (10 %) .

الاستنتاج عملية رفع سن العقل المظمو في الفك الأسفل غالبا ما تكون مصحوبة بمضاعفات ما بعد العملية خاصة الالتهابات و اكثر تكرارا معسن العقل المظمو نحو خط الوسط ميزوانكوليشن .

Introduction

Impaction is defined as failure of tooth eruption caused by a physical obstacle in the eruption path or the abnormal position of the tooth¹. The most commonly affected are third molars, followed by maxillary canines and mandibular second premolars^{2,3}. According to Andreasenet al.⁴, three main causes have been distinguished for eruption disturbances: ectopic position, obstacles in the eruption path, and failures in the eruption mechanism. Failure of tooth eruption is associated with various systemic and local factors⁵. Heredity is also mentioned as an etiologic factor. Recently, mutations in parathyroid hormone receptor 1 (PTH1R) have been identified in several familial cases of primary failure of eruption^{6,7}. Local factors related to the failure of eruption include malocclusion disturbances of the deciduous dentition, the position of the adjacent teeth, space deficiency in the

dental arch, idiopathic factors, supernumerary teeth, odontomas, or cysts^{2,5}. Third molars account for 98% of all impacted⁸.

be associated with various pathological processes ranging from caries and pericoronitis, pressure effects and resorption of adjacent II molars, to cysts and neoplastic lesions. It plays at least some role in crowding and in severe cases, removal of lower 3rd molars could be recommended⁹. Third molars exhibit great variation in size, shape, position, root formation, time of development, and path of eruption¹⁰. Impacted third molars may be responsible for various problems within the oral cavity¹¹. The arrested eruption of the lower second and third molars can determine disturbances of mastication and aesthetics¹². Impacted wisdom teeth may also be categorized on whether they are still completely encased in the jawbone. If it is completely encased in the jawbone, it is a bony impaction. If the wisdom tooth has erupted out of the jawbone but not through the gum line, it is called a soft tissue impaction⁹.

Classification of impacted lower third molars.

The position of the impacted third molar was determined by orthopantomogram and or periapical radiograph. The angulations of impacted third molar was recorded based on Queck S L et al 2003¹³ method, to classify vertical impaction (100 to -100), mesioangular impaction (11 to 79), horizontal impaction (800 to 1000), distoangular impaction (-11 to -79). The depth of third molar in relation to occlusal plane (level A, B, C) was documented according to Queck S L et al 2003, level A that the crown is on the same level as the occlusal plane and the cemento-enamel junction lies above the alveolar bone, level B that the crown lies between the occlusal plane and the cemento-enamel junction of the second molar and the cemento-enamel junction of the third molar lies below the border of the alveolar bone (the crown not completely embedded in the bone), level C that the tooth lies completely embedded in bone below the cemento-enamel junction of the second molar⁷.

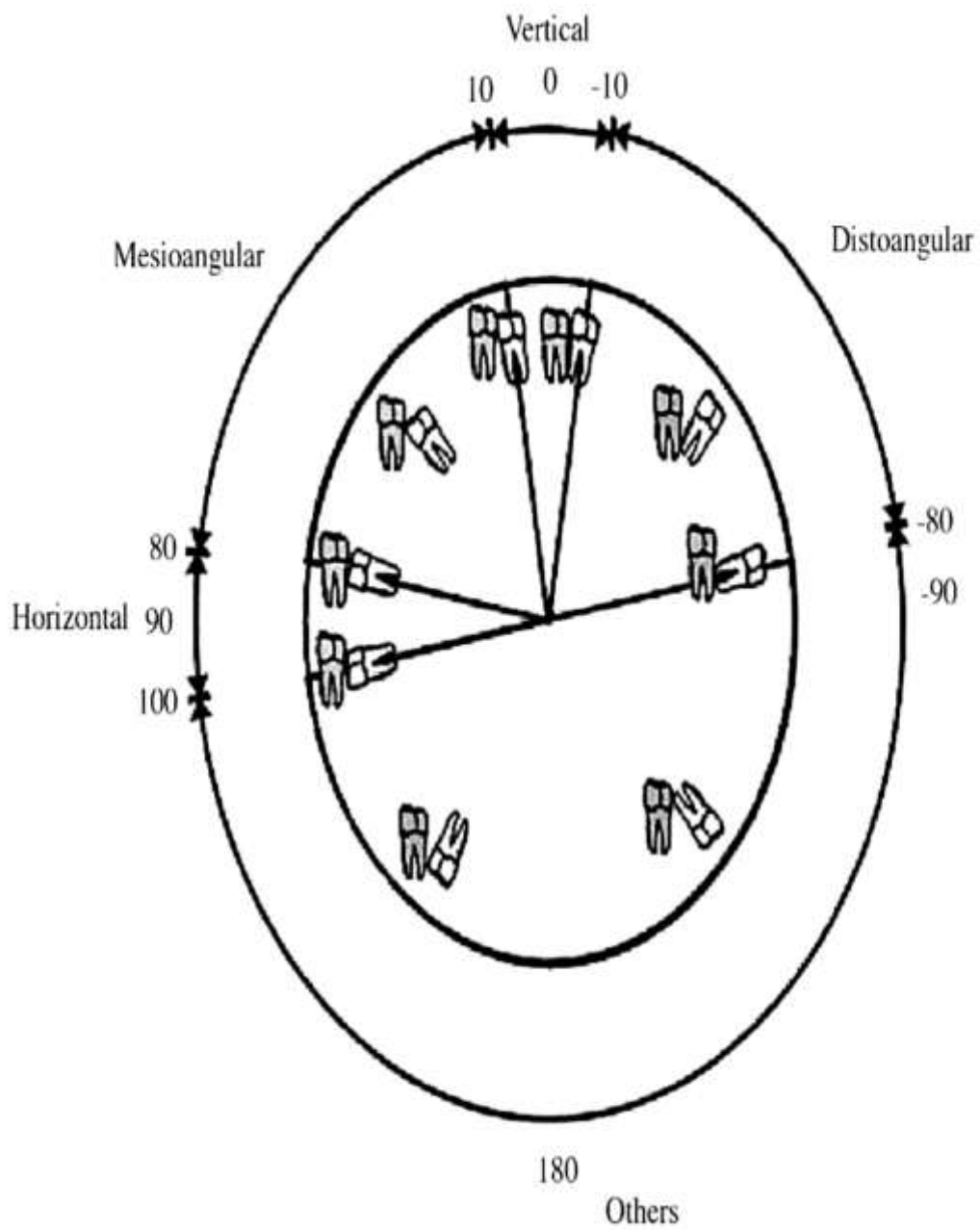


Figure (1) Classification of angulations of impaction according to Queck S L et al 2003¹³ .

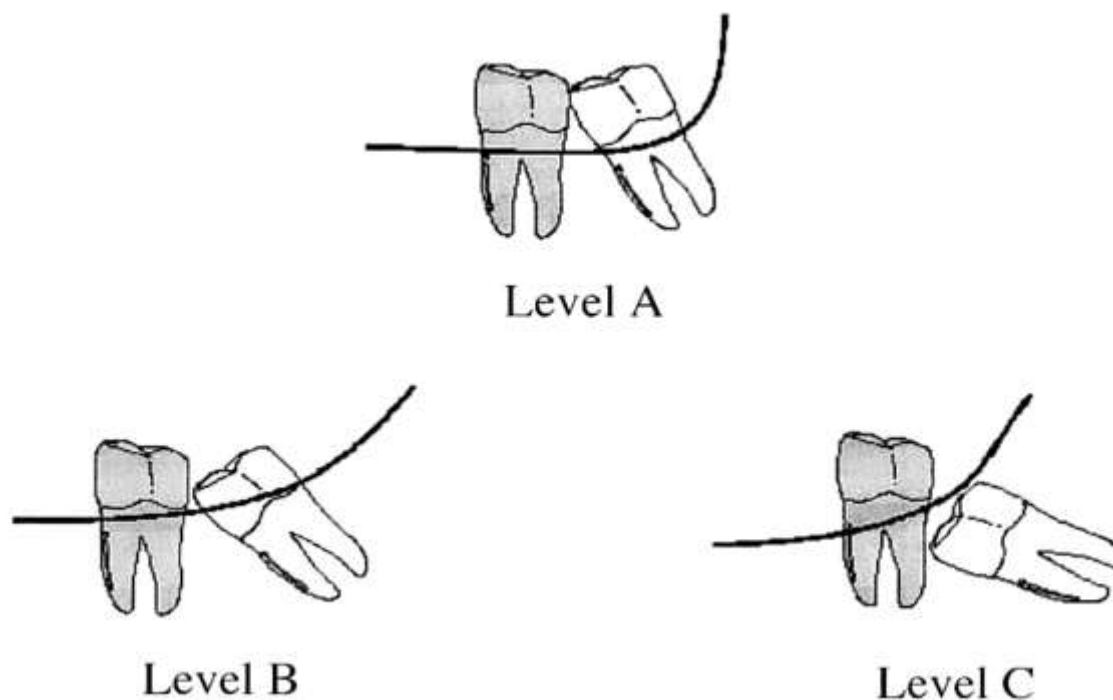


Figure (2) Classification of depth of impaction according to Queck S L et al 2003¹³.

Indication for removal of wisdom teeth (Royal college of surgeons of England 1997¹⁴).

1. Over or previous history of infection including pericoronitis.
2. Unrestorable caries.
3. Non treatable pulpal or periapical disease , or both.
4. Cellulitis , abscess and osteomyelitis.
5. Periodontal disease.
6. Orthodontic abnormalities.
7. Prophylactic removal in the presence of specific medical and surgical conditions.

Treatment options for an impacted molar include extraction, orthodontic up righting, surgical up righting, transplantation, surgical-orthodontic approach, and dental implant replacement.¹⁵⁻¹⁹ Many orthodontic appliances and techniques have been suggested for up righting impacted molars. A bonded attachment with a spring fixed in a vertical lingual sheath, push coil springs, interarch vertical elastics, a removable appliance with an up righting spring, and miniscrews/miniplates have all been used for the up righting of impacted molars²⁰⁻²². Most of the aforementioned methods, however, have limitations in the approach of deeply impacted teeth or in the site of installation. Treatment options for an impacted molar by surgical extraction by the “Piezosurgery”-device (Mectron)²³.

The aim of the present study was to investigate classification and most common complication of surgical extraction of impacted lower third molars.

Patients and methods :-

Eighty patients were treated 34 males and 46 females their age between (20-32years), complaining of pain, badly carious lower 3rd molars, recurrent pericoronitis or cyst. The patients were gathered from January 2009 to July 2012 which were presented to oral and maxillofacial department kufa university and privet clinic.

Surgical extractions were performed under local anesthesia without any kind of sedation (oral, nasal or venous) and were standardized to as great an extent as possible. local anesthesia (lidocain with Ad.or nor Ad.) was used for the inferior alveolar and buccal nerve blocks. Patient was instructed for

using chlorhexidin gargle. A standard incision was used, from the anterior border of the ramus to the distobuccal corner of the second molar, following the buccal gingival sulcus along the second molar. A vertical incision was made from the mesiobuccal corner of the second molar to the mucogingival line. After periosteal elevation, bone on the buccal and distal sites was removed with a round bur using abundant saline irrigation. In all cases, the third molar was carefully extracted. Following the extraction, the pericoronal tissue was carefully curetted, and the soft tissue was sent for histopathological analysis. Closure was done with 3/0 silk sutures patient was instructed for good oral hygiene.

Results.

A total eighty patients had surgically extracted of lower third molars under local anesthesia during the period of study. The mean age of the patients was (26) years range between (20- 32)

Table No (1) Age distribution in study sample.

Age	No. of patients	M	F
20 -29	57(71.25%)	26	31
30-39	23(28.75%)	8	15
Total	80(100%)	34(42.5)	46(57.5%)

Our results reveals that Mesioagulation was the most frequently (42.5%) followed by vertical (26.25%) , Distoangulation was (21.25%) and horizontal angulations was (10%) table (2).

Table No. (2) Frequency rates for types of mandibular impacted third molars which was surgically extracted.

Types of impaction	Number	(%)
Mesioagulation	34	(42.5%)
Distoangulation	17	(21.25%)
Vertical	21	(26.25%)
Horizontal	8	(10%)
Total	80	(100%)

Our results reveals that Etiology for indication of surgical removal mandibular impacted third molars , 13(16.25%) patients complained from Persistent pain , 36(45%) patients complained from Infection either pericoronitis ,cellulites , abscess , osteomyelitis and periodontal disease , 22(27.5%) patients due to Unrestorable caries and 9 (11.25%) patients due to Orthodontic abnormalities table (3).

Table No. (3) Etiology for indication of surgical removal mandibular impacted third molars.

Persistent pain	13	(16.25)
Infection	36	(45%)
Unrestorable caries.	22	(27.5)
Orthodontic abnormalities	9	(11.25)
Total	80	(100%)

Our results reveals that rate of post operative complication of surgical removal of impacted mandibular third molars was (16.25%)of total number eighty patients. Post-operative pain was associated with mesioangulation 2(18.18%)and 1(9.09%) patients were associated with horizontal angulations .Mesioangulation and vertical angulations only reported swelling post operatively 1(9.09%) . Infection was observed in mesioangulations 2(18.18%) and 1(9.09%)inboth vertical and horizontal angulations .while trismus was reported in 1(9.09%)patient withmesioangulations impaction and horizontal angulations. Dry socket post operatively was seen in 1(9.09%) which withmesioangulation .parasthesia as post operative complication was seen only in **1(9.09%)** case which was vertical angulations Table No. (4) .

Table No. (4) Complication of surgical removal of impactedmandibular third molars according to the type of angulations.

Postoperative Complications	Types of angulation				
	Mesioangulation 34(42.5%)	Distoangulation 17(21.25%)	Vertical 21(26.25%)	Horizontal 8(10 %)	Total 80(100%)
Post operative Pain	2(18.18%)	0(0%)	0(0%)	1(9.09%)	3(27.27%)
Post operative Swelling	1(9.09%)	0(0%)	1(9.09%)	0(0%)	2(18.18%)
Infection	2(18.18%)	0(0%)	1(9.09%)	1(9.09%)	4(36.36%)
Trismus	1(9.09%)	0(0%)	0(0%)	1(9.09%)	2(18.18%)
Dry socket	1(9.09%)	0(0%)	0(0%)	0(0%)	1(9.09%)
Ulceration	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Parasthesia neumbness	0(0%)	0(0%)	1(9.09%)	0(0%)	1(9.09%)
Nil	27(37.93%)	17(29.32%)	18(24.13%)	7(8.62%)	69(100%)
Total	7(54.54%)	0(0%)	3(31.82%)	3(31.82%)	13(100%)



Orthopantomogrph reveal bilateral Mesioangulation of lower third molar



Periapical x- ray reveal Horizontal impaction of lower 3rd molar.



Intra operative photograph of right impacted lower 3rd molar.



After surgical removal of impaction .

Discussion.

Impaction of the 3rd molar is a high incident problem occurring in up to 73% of young adults in Europe²⁴. Such impactions are reported to be associated with complications ranging from simple caries, root resorption, localized periodontal problems, pericoronitis and infection to cysts and neoplastic lesions. These pathologic processes, along with the possible association between eruption of the lower 3rd molar and increases in lower incisor crowding, are the rationales given for the extraction of the 3rd molar by surgical procedures.

In this study of extraction of impacted mandibular third molars, the total complication rate (16.25%) compared favourably with previously reported rates, which have ranged from 2.6% to 30.9%.^{25,26}, may be due to several factors were targeted for assessment in this study, including population type, surgical technique, degree of impaction and surgeon's experience.

Our results that number of female patients was 46(57.5%) higher than male percentage 34(42.5) our results was in agreement with Muhonen A et al 1997²⁵.

Our results that frequency rates for types of mandibular impacted third molars which were surgically extracted weremesoangulation 34(42.5%) followed by vertical 21(26.25%), which was in agreement with Lago-Mendez L et al 2007²⁷, Robert R C et al 2005²⁸.

Our results high rate etiology for indication of surgical removal mandibular impacted third molars 36(45%) patients complained from Infection either pericoronitis ,cellulites , abscess , osteomyelitis and periodontal disease which was in agreement with Assael L A 2005²⁹, Tay A B et al 2004³⁰, which as disagreement with Huang I Y et al 2007³¹ they reported that caries and its squeal was the major reason of extraction , followed by pericoronitis and periodontitis .regarding second frequent indication for removing impacted mandibular third molars in our study was Unrestorable caries 22(27.5) which was in agreement with A L Ladeinde et al 2003³².

Considerable controversy exists regarding prophylactic removal of asymptomatic impacted molars, some surgeons favour a conservative approach while others opted for more interventional strategies³³.

Our results reveals that most frequent rate of post operative complication was associated with infection 4(36.36%) from total cases 13(100%) which was in agreement with Mercier P et al 1992³⁴, Srinivas M. et al 2003³⁵.

and results showed that 7(54.54%) cases of post operative complication from total cases 13(100%) was associated with mesioangulation of impaction of lower third molars

CONCLUSIONS.

Surgical removal of impacted lower third molars was accompanied with post operative complication specially infection and most frequency rate was associated with mesioangulation of impaction,

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No	Age	Gen der	me sio	dist o	verti c	hor iz	pai n	infecti on	Unrestorabl e caries	Orthodontic abnormaliti es	Post operative pain	post operative swelling	Post operative infection	trism us	Dry sock et	Ulce ratio n	par ast hes ia
1	20	F	+					+									
2	22y	M		+					+								
3	38y	F	+					+			+						
4	26y	F				+	+										
5	27y	M	+						+								
6	30y	M	+					+									
7	24y	F		+			+										
8	21y	F			+					+							
9	26y	F	+						+								
10	28y	M				+		+			+			+			
11	29y	F		+			+										
12	25y	M	+							+							
13	27y	F		+				+									
14	21y	M			+				+			+					
15	29y	M	+							+							
16	26y	M		+				+									
17	27y	F	+						+				+				
18	20y	M	+				+										
19	32y	F		+					+								
20	27y	F				+		+									
21	26y	M	+							+							
22	28y	M	+					+									
23	23y	F			+		+										+
24	30y	M	+					+									
25	26y	F				+		+									
26	37y	F		+					+								

Journal of KerbalaUniversity , Vol. 11 No.1 Scientific . 2013

27	29y	M				+	+										
28	35y	F	+							+						+	
29	21y	F		+					+								
30	24y	M	+					+									
31	32y	F	+				+										
32	29y	F	+					+									
33	31y	M	+						+								
34	21y	F			+			+									
35	20y	M		+					+								
36	21y	F	+					+									
37	34y	F		+			+										
38	38y	M			+				+								
39	29y	F			+					+							
40	23y	M	+					+									
41	20y	F		+			+										
42	28y	M	+					+									
43	30y	F			+				+								
44	26y	F	+					+								+	
45	20y	M		+						+							
46	38y	F	+						+								
47	24y	F			+			+									
48	21y	M	+					+									
49	36y	F				+	+										
50	22y	F	+					+				+					
51	38y	M		+					+								
52	29y	F			+			+									
53	36y	F	+							+							
54	29y	F			+			+									
55	27y	M	+						+								
56	21y	F		+				+									
57	32y	F			+			+									
58	36y	M			+				+								

Journal of KerbalaUniversity , Vol. 11 No.1 Scientific . 2013

59	26y	F				+	+										
60	33y	F	+					+									
61	27y	F			+				+								
62	23y	M				+		+									
63	28y	F	+						+					+			
64	34y	F			+			+									
65	22y	F		+				+						+			
66	26y	M	+							+				+			
67	20y	M			+			+									
68	31y	F	+						+								
69	32y	M			+			+									
70	29y	F	+					+									
71	23y	M			+			+									
72	35y	F			+				+								
73	27y	F	+					+									
74	23y	M			+			+									
75	27y	F		+				+									
76	35y	M	+						+								
77	25y	M			+			+									
78	21y	F		+				+									
79	26y	M	+					+									
80	24y	M			+				+								