

# The extraction of impacted lower third molar

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## Abstract

This study is about the <sup>35</sup> extraction of the lower third molar <sup>3</sup> in Baghdad the capital of Iraq. The epidemiology and outcomes of lower third molar in one of the maxillofacial departments in Baghdad had characterized in this study. The goal of this study was to classify the lower third molar concerning extraction age, gender, and anatomical position. The study population considered (983) cases of extraction of lower third molar in (497) male and (486) female in a prospective investigation study. Age, gender, difficulty, and postoperative complaining had been <sup>3</sup> registered. The patient records in the oral and Maxillofacial Department at Alsheq Omar dental center in Alrasafa, <sup>3</sup> Baghdad were reviewed and retrospectively analyze from the beginning of 2016 to the end of 2019.

Keywords: The lower third molar, impaction, Al Rasafah, Al Shaiq Omar

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## Introduction

Tooth impaction is a pathological condition that occurs when a tooth fails to return to its normal functional position. In normal dental practice, impacted third molars are a common occurrence. Third molars have a higher rate of an impaction as compared to other teeth. Mandibular third molar impaction is hypothesized to be caused by insufficient space between the distal of the second mandibular molar and the anterior border of the ascending ramus of the jaw. Impacted teeth might be painless or cause considerable discomfort. In ordinary dental practice, impacted third molars are quite common.

Impacted teeth might be asymptomatic or cause pathologies such as caries, pericoronitis, cysts, tumors, and root resorption of the next tooth. Impacted wisdom teeth are a condition in which the third molars (wisdom teeth) do not erupt into the mouth. This can occur as a result of a physical barrier, such as adjacent teeth, or when the tooth is tilted away from a vertical position [1]. unerupted wisdom teeth normally cause no symptoms, however, they can occasionally form cysts or neoplasms, w Wisdom teeth that have partially erupted can develop cavities or pericoronitis. In the case of specific illnesses, such as irreversible caries or cysts, removal of impacted wisdom teeth is indicated [1]. Antibiotics, local debridement, or surgical removal of the gum overlying the tooth can be used to treat infection caused by impacted wisdom teeth. Most of these treatments eventually fail, and patients develop recurring symptoms. Wisdom tooth extraction is the most common treatment for recurrent pericoronitis. The risks associated with wisdom tooth extraction are roughly proportional to the difficulty of the extraction. Up to 72 percent of the Swedish population is affected by the condition [2]. Plato's and Hippocrates' writings, Darwin's works, and the first dental textbooks all mention wisdom teeth. The convergence of sterile technique, radiography, and anesthetic in the late nineteenth and early twentieth centuries made it possible to treat impacted wisdom teeth more routinely [3].

The depth of the affected tooth in relation to the height of the neighboring second molar is the next categorization system for identifying the complexity of impaction removal. This category, the Pell and Gregory system, is proposed by Pell and Gregory classifications A, B, and C. This study employed The degree of difficulty determined by the thickness of the overlying bone; as the depth of the impacted tooth increases, so does the difficulty level [4]. If the affected lower third molar is surgically removed, the chances of developing new periodontal abnormalities in the distal second molar increase throughout the years [5].

GTR technology creates a barrier between the bone defect location and the surrounding tissues, preventing gingival epithelium and connective tissue from intruding on the root surface during the healing process while allowing periodontal cells to migrate selectively into the defect. As a result, new cementum and periodontal ligament fibers are produced, as well as new adhesive healing [6]

## Methods

A retrospective analysis was performed using the medical graphs of patients seen at Al Shaiq Omar dental center in the Oral and Maxillofacial Surgery department Clinic which provides coverage the surgical treatment in the eastern part of Iraq's capital, Baghdad. The x-ray method is used in all patients for orthopantomographic radiographs. Age, gender, treatment modality, and postoperative complications, all patients admitted to treatment in the operating room, were included in this investigation were surgically treated, Just 4.9% of these patients experienced postoperative complications after surgery and required further treatment. Methods' reports and the radiographs of all patients were reported to the dental center. Patient information was obtained using a medical data type specifically intended for this analysis. In cases of infection, the data relating to age, and sex. The data analysis using GraphPad Prism 9.2.0. Chi-square test was used to determine if there is a significant association between the variables. P values of <0.05 were considered significant.

## Results

During the study period, (983) patients received third molar extraction treatment. Most of the Patients were (500) male (51%), with (483) women accounting for (49%) as shown in Table (1), the patients were divided into two age groups, the first group (Group I) was (18-25) year of age and the second group (Group II) was ( $\geq 26$ year).

**Table 1. Percentage of Impacted Third molar according to gender**

number of females out of 983	Female %	number of males out of 983	Male %

483	49	500	51
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**Table (2) Percentage of impaction degree (i.e. partially or completely) of impacted third molar regarding age group.**

<b>P-value</b>	<0.0001
<b>P-value summary</b>	****
<b>Statistical test</b>	Chi-square

**The percentage of impaction degree (i.e. partially or completely) of impacted third molar regarding age group**

In (Group I), where the age group (18-25) was (755) patient there are 680 about 90% was partially impacted while 75 patient was completely impacted by about 10%, as shown in Figure (1), and Table (2).

**Table (2) Impacted the third molar on Group I**

Total number of the impacted tooth in age group 18- 25 year	Partially		Completely	
	Number	Percentage	Number	Percentage
755	680	90%	75	10%

In the second group of age (**Group II**), group  $\geq 26$  years, the total number was 228 the Partially impacted was 105 =46% and the Completely impacted was (123) = 54%, the P-(2) value was <0.0001 that means significant as shown below in Table (3), and Figure

**Table (3) Impacted the third molar on Group II**

Total number of impacted tooth of age group $\leq 26$ year	Partially		Completely	
	Number	Percentage	Number	Percentage
228	105	46%	123	54%

**Percentage of impacted third molar according to the side of tooth location (According to gender and age group)**

**✚ (Group I) age group 18-25 year**

Male of age group 18-25 year was 360 the right was 156 =(43%), and the left was 204 =(57%), as explain in Table (4), and Figure (3).

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**Table (4) Percentage of impacted third molar according to the side of tooth location for Male in Group I**

Total number of male of age 18-25 year	Right		Left	
	Number	Percentage	Number	Percentage
360	156	43%	204	57%

For the female of the age group 18-25 years, the result was as follows the total number was 395, the right was 178 = (45%), and the left was 217 = (55%) as shown in Table (5), and Figure (4).

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**Table (5) Percentage of impacted third molar according to the side of tooth location for females in Group I**

Total number of the female of age 18-25 year	Right		Left	
	Number	Percentage	Number	Percentage
395	178	45%	217	55%

**Group I**

**✚ Group II age group  $\geq 26$  year** while in the male age group  $\leq 26$  years the number was 140, the right was 68 (49%), and the left was 72 about (51%) as shown in Table (6), and Figure (5).

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**Table (5) Percentage of impacted third molar according to the side of tooth location for males in Group II**

Total number of males	Right		Left	
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of age $\geq 26$ year	Number	Percentage	Number	Percentage
140	68	49%	72	51%

While the female of age group  $\leq 26$  years the total number of a female aged  $\leq 26$  years was 88, the right was 46 = (52%), and the left was 42 = (48%) as explained in Table (7), and Figure(6).

**Table (7) Percentage of impacted third molar according to the side of tooth location for females in Group II**

Total number of a female of age $\leq 26$ year	Right		Left	
	Number	Percentage	Number	Percentage
88	46	52%	42	48%

**Percentage of impacted third molar according to the tooth direction according to age group** The result of tooth direction for Group I for the age group 18-25 years can be demonstrated in Table (8), and Figure (7).

**Table (8) teeth direction for Group I**

Tooth direction of age group 18- 25 year	Distoangular	Mesioangular	Horizontal	Vertical	Transverse	Total number
Number	50	334	23	330	18	755
Percentage	7%	44%	3%	44%	2%	

Age group  $\geq 26$  years total number is 228 the distoangular 24 = 11% and the Mesioangular was 129 = 57% the horizontal was 13 = 6% the vertical was 54 = 24% and the transverse was 8 = 2%

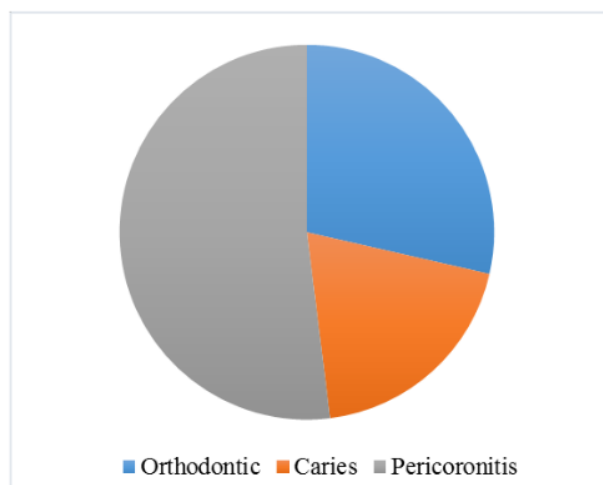
**Table (9) teeth direction for Group II**



Tooth direction Of age group ≥26year	Distoangular	Mesioangular	Horizontal	Vertical	Transverse	Total number
Number	24	129	13	54	8	228
Percentage	11%	57%	6%	24%	2%	

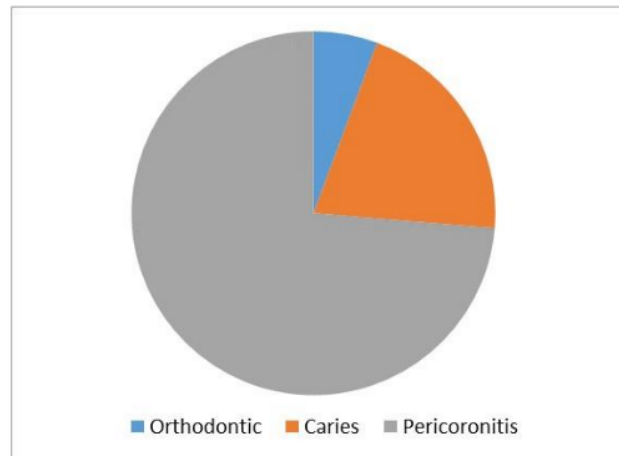
**Percentage of causes for surgical operation of impacted third molar concerning age group**

Percentage of causes for surgical operation of impacted third molar regarding age group, for (Group I) age group 18-25 year total number was 755 the orthodontic cause was 216 = 29% and the caries was 147 = 19% while the pericoronitis cause was 392 = 52% as shown in Figure (9).



**Figure (9) Percentage of causes for surgical operation (Group I)**

in age group ≥26 years, the result was as follows the total number is 228 the orthodontic cause was 13 = 6% and caries cause was 47 = 21% and the pericoronitis was 168 = 74% as cause to the extraction of the tooth the p-value was <0.0001 that means significant as seen below in Figure (10).



**Figure (10) Percentage of causes for surgical operation (Group II)**

Percentage of surgical operation difficulties of impacted third molar regarding age group

For Group I age group 18-25 years, the DA was 569 = 74%, the DB was 184 =25% DC was only 2 =1% as explained in Figure (11) and Table (10).

**Table (10) Percentage of surgical operation difficulties for Group I**

Post-operation difficulties for age group 18-25 year	DA	DB	DC	Total number
Number	569	184	2	755
Percentage	74%	25%	1%	100%

While in the agegroup  $\leq 26$  years the result was a total number of 228, the DA was 183 =61%, (12) the DB was 87 = 38%, and the DC was 3=1% as explained in Table (11), and Figure

**Table (11) Percentage of surgical operation difficulties for Group II**

Post-operation difficulties for age group $\geq 26$ year	DA	DB	DC	Total number
Number	138	87	3	228
Percentage	61%	38%	1%	100%

**Percentage of post-surgical operation complications of impacted third molar regarding age group**

(Group I) where age group 18-25 years the total number was 755 and as explained in Table (12) and Figure (13). Post-surgical operation complications classify according to pain, bleeding, trauma, and dry socket.

**Table (12) Percentage of post-surgical operation complications of impacted third molar in Group I**

Post-operation complication for age group 18- 25 year	Pain	Bleeding	Truma	Dry socket
Number	656	34	32	33
Percentage	85%	4%	4%	4%

While in the - Agegroup $\geq$ 26years the result showed the total number was 228, the pain was 195 = 82% and the bleeding was 7= 3% the trauma was 11 = 5%, and the dry socket 15 = 6% as explained in Table (13), and Figure (14).

**Table (13) Percentage of post-surgical operation complications of impacted third molar in Group II**

Post- operation complication foragegroup $\leq$ 26 year	Pain	Bleeding	Trauma	Dry socket	Total
Number	195	7	11	15	288
Percentage	82%	3%	5%	6%	

**Discussion**

This study aimed to investigate a wide, modern, diverse population of lower third molar removal and provide a more general evaluation of demographic causes, types, and postoperative complications, <sup>6</sup> The duration of surgery affects the acute postoperative symptoms and signs after the lower third molar extraction.

<sup>12</sup> In oral and maxillofacial surgery, extraction of impacted molars is still one of the most common surgeries. In this study, which lasted for 4 years, Pell and Gregory class 2 or 3 ramus and dense, inelastic bone, and the <sup>14</sup> contact with the second molar also if the tooth is

close to the inferior alveolar canal and complete bony impaction makes the extraction more difficult. The results were as follows: the proportion of males was higher in number than females in the patients who underwent lower wisdom tooth extractions. The study was divided into two groups according to the age (group I) the age from 18-25 years and (group2) age from 26 years and older, with the purpose of understanding a statistical analysis of the number of patients, the reason for tooth extraction, the type of tooth and its classification according to the side and the angle in which it is located, and type of impaction partially or completely impacted. the result was in (group I) shows only 10% of patients have completely impacted and 90% was partially impacted the low percent of completely impacted and the high percentage of partially impacted teeth is agreed with all studies about the impacted lower third molar teeth tooth while in (group II) the completely impacted was 54% and the partially impacted was 46% (P <0.0001). The patients visits to the center are frequently motivated by pain, and as a result, many elderly people have many teeth that are not subject to treatment is the cause of large number of completely impacted teeth was in (group II), the ratio of the right teeth is more than the left one, with the exception of the group of women in second group, the left teeth was more than the right, tooth direction, in (group I) mesioangular 57%. In mesioangular type recorded in this study is similar to the reports from earlier studies [7,8] caries in the distal portion of the corresponding second molar have been linked to partly or completely erupted Mesioangular wisdom teeth. Prophylactic removal of third molars was important, however, multiple investigations have demonstrated that there is little evidence to justify this practice [9-11].

The vertical type was 24% which is less difficult in tooth removal and with fewer complications.

The distoangular type was 7%, which makes the extraction more difficult and the horizontal was 3%, the tooth is typically in direct touch with the next second molar if it is a distoangular or horizontal impaction. To carefully remove the third tooth while avoiding injury to the second molar, while the transverse type was only 2%.

The causes of extraction were as follows, in both groups pericoronitis was the most important cause of tooth extraction as in (group I) Pericoronitis was the main cause of extraction 52% and the second cause was orthodontic treatment 29% while the caries was 19% in (group II) the cause of extraction was as following Causes of surgical operation,

the Pericoronitis 74 % the second cause was Caries 21% and for Orthodontic treatment was 6% P-value was <0.0001.

The difficulties during operations The patient's age is the best indicator of bone density. Patients under the age of 18 have bone densities that are ideal for tooth extraction. The bone is less thick, more malleable, and less prone to break. Extends and bends slightly, allowing the socket to be moved around. So Patients beyond the age of 35, on the other hand, have a lot of problems. Another type of difficulty in tooth removal was according to Gregory classification in this study we only use (type one) difficulty was determined by the thickness of the overlying bone, for (group I) was DA 74% DB 25% and DC 1% while in the second group (group II) the result was DA 61% DB38% DC was only 1%,

The causes of extraction were as follows, in both groups pericoronitis was the most important cause of tooth extraction in (group I) Pericoronitis was the main cause of extraction 52% and the second cause was orthodontic treatment 29%.

while the caries was 19% in (group II) the cause of extraction was as follows Causes of surgical operation, the Pericoronitis 74% the second cause was Caries 21% and for Orthodontic treatment was 6% (P<0.0001). Pericoronitis can be avoided by having impacted third molars extracted before they penetrate the oral mucosa and become noticeable. Although operculectomy, or excision of surrounding soft tissue, has been proposed as a way to avoid pericoronitis without removing the affected tooth, it is unpleasant and unsuccessful. Because the soft tissue excess drapes over the impacted tooth and encourages regrowth of the operculum, it tends to reoccur. The second reason for tooth removal was orthodontic treatment to prevent lower incisor crowding, as orthodontists and oral and maxillofacial surgeons "usually" or "sometimes" recommended the removal of mandibular third molars. In a recent study, the differences in orthodontists' and oral and maxillofacial surgeons' perceptions concerning the relationship between third molar eruption and crowding development were found to be strongly linked to their graduation year. Newly graduated orthodontists were less likely to offer third molar removal as a preventative measure to alleviate crowding [4]. Many proponents of removing impacted third molars say that they are assisting these kids because they will eventually develop third molar illness [12,13]. Because of odontogenic tumors, cysts, and mandibular angle fractures that can occur from impacted third molars, it would appear difficult to justify the systematic removal of asymptomatic third molars [14, 15].

26 Prophylactic removal of third molars to reduce crowding was less likely to be recommended by newly graduated orthodontists. Many proponents of preventive removal of impacted third molars argue that they are helping these patients since they will acquire the third molar associated disease eventually, in the future, it would appear difficult to justify the systematic removal of asymptomatic third molars because to odontogenic tumors, cysts, and mandibular angle fractures that can arise from impacted third molars.

The third cause for lower third molar extraction is caries, Caries on at least one-third of molar was detected in around one-third of individuals with erupted third molars, according to. Caries at the third molar are unlikely to occur if the first and second molars are caries-free. Most writers agree that a mesioangular tilt is strongly linked to the development of caries, whereas vertical, distoangular, or ectopic impactions are unlikely to cause this disease. horizontal angulation may be a significant risk factor [16].

10 The impact of the second and third molar contact point position on the establishment of second molar distal caries has been extensively established in the literature, with findings that are comparable to those of our sample. The effect of the second and third molar contact point position on the establishment of second molar distal caries [17-21]. Distal caries shows the prevalence of caries in the lower third molar relative to Winter's angulation. Third molar caries were significantly associated with mesioangular third molars similar to [10] other studies and the horizontal group, which was slightly smaller in our study

In postoperative complications the result was as follows, for (group I), the Pain was about 85% as we recorded any type of complication the pain was simple in most cases to moderate in a few cases no severe pain was detected. When comparing the distribution of impaction types and their effects on pain, distoangular impaction is substantially related to a higher degree of pain than the other forms of impaction [22].

Bleeding postoperatively was 4%, in all cases, bleeding was simple and controlled in a few hours after surgery Trauma 4% mostly show trismus postoperatively in some of the difficult cases and Dry socket 4% is also seen in some difficult cases postoperatively and was treated simply while in (group I) the result was for (group II), shows more Pain 82% Bleeding 3% Trauma 5% and Dry socket 6%. This research discovered that age has a substantial impact on postoperative discomfort and complications after surgical extraction of impacted third molar teeth. Patients with advanced age had a higher degree of trismus and facial edema [23].

This finding is consistent with findings from some research looking into the impact of age in postoperative morbidity linked with mandibular third molar surgery, which found that individuals over the age of 35 had higher edema and trismus. After the removal of their third molar, older patients appeared to have more postoperative symptoms than younger ones [24].

### Conclusions

In oral and maxillofacial surgery, extraction of impacted molars is still one of the most common surgeries. Most of the cases were vertical and mesioangular. The distoangular and the horizontal type makes the extraction more difficult. In postoperative complications, the cause of extraction was mostly Pericoronitis and Orthodontic treatment, caries was the third cause and was significantly associated with mesioangular third molars was similar to other studies and the horizontal group. The postoperative complication was mostly very simple and the Pain was recorded as the most typical of the postoperative complications, and distoangular impaction is substantially related to a higher degree of pain than the other forms of impaction, a higher degree of trismus and facial swelling was recorded in patients with advancing age.

### Acknowledgment

First, I would like to express my deep sense of gratitude and indebtedness to (the Department of Dentistry, Esraa University College), for their invaluable encouragement, suggestions, and support from the early stage of this work and for providing me with extraordinary experiences throughout the work.

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