

PATTERN OF IMPACTED MANDIBULAR THIRD MOLARS IN A SAUDI POPULATION

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ABSTRACT

Objective of this study was to highlight the pattern of mandibular 3rd molar impaction in Al-Qurayyat Saudi population. Two thousand eight hundred and eighty-one patients who visited the Department of Oral and Maxillofacial Surgery/Oral Medicine of Al-Qurayyat Specialized Dental Center, Al-Qurayyat, Saudi Arabia, were included in the study. The study was conducted from year 2014 to 2016. A total of 1869 (64.87%) patients out of 2881 patients who visited the Specialized Center had either unilateral or bilateral impacted lower third molar. The number of female patients were significantly ($p < 0.005$) higher than males. Mesioangular impaction was the most common presentation [809/1869 (43.3%)]. Most common depth of the impaction was Level B [1271/1869 (68%)] and most common relation of the tooth with the ramus of the mandible was class II [1009/1869 (53.98%)]. Right side of the mandible was more commonly involved than the left [1032/1869 (55.22%)]. It can be concluded that the prevalence of mandibular third molar impaction was high in Al-Qurayyat, Saudi Arabia.

Key Words: Impaction, Mandibular, Third molar, Angulation, Depth.

INTRODUCTION

By definition an impacted tooth is the one that fails to achieve its functional position in the oral cavity within the estimated time frame and remains embedded. Although almost any permanent tooth can present itself as impacted, still mandibular third molars have been proven to be the most frequently impacted permanent teeth worldwide.¹ The prevalence of impacted teeth has been documented in previous studies with in Gulf region. Previous studies have shown a wide range of 27.0-68.6%.²⁻⁵

Mandibular third molar starts its development in the ramus at the age of 7-7.5 years. Despite racial variation in age, the third molar is the last tooth to erupt in oral cavity. The pattern of eruption, degree of impaction and incidence of agenesis is dependent upon facial growth, functional masticatory apparatus, nature of diet, teeth size, genetic variation and extent of tooth attrition.^{6,7} Impacted mandibular third mo-

lar can present clinically with complaints like pain, swelling, trismus, fever, difficulty in eating, chewing and food impaction. Although clinical examination is important to determine the depth of impaction, angulation, adjacent bone density and amount, proximity to vital structures and extent of surgery; radiographs are the gold standard for most of these investigations. Only then it is possible to properly manage and plan the surgery.⁸

Surgical or non-surgical extraction of the third molars is one of the most common procedures performed in the maxillofacial surgical units across the world.⁶ According to our knowledge there is no previous data on third molar impaction available in Al-Qurayyat, Saudi Arabia. Therefore, the purpose of our study was to determine the prevalence and pattern of impacted mandibular molars in Saudi population of Al-Qurayyat City.

METHODOLOGY

This study was conducted at Qurayyat Specialized Dental Center, Al-Qurayyat, Saudi Arabia, from year January 2014 to January 2016. It was a cross-sectional study. The patient's data record register, electronic data base and log books of the authors in the dental center were used to extract the required details. The record of a total of 2881 patients presented in the Department of Oral and Maxillofacial Surgery/ Oral Medicine of dental center during the study period was searched; and

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patients with impacted mandibular 3rd molar(s), were included in the study. The study was approved by the Institutional Ethical Committee. A written informed consent was obtained from the patients. Patients were excluded if they had any pathological lesion in the mandible, craniofacial syndrome, dento-facial trauma, less than 19 years of age, incomplete root formation of impacted molar tooth and history of previous 3rd molar extraction. All the examinations were performed by the authors themselves. Dental and medical history was taken from all the patients and; then clinical oral examination was performed according to the WHO guidelines.⁹

A questionnaire was also completed about patient's name, age, gender, address, main complaints, general health of the patient, drug history, habits and socioeconomic status. Orthopantomogram (OPG) was taken for every patient in the Department of Radiology at our hospital. The department has standardized routine for taking OPG. Following variables were record based on the clinical examination and OPG.

Impaction classification:

To label a 3rd molar as impacted, the must not have functional occlusion and the root must be completely formed.¹⁰

Relation with ramus of the mandible:

Relationship of the distal part of the crown of the

third molar tooth with the anterior border of ramus was categorized into 3 classes as described by mentioned by Pell & Gregory.¹¹ Class I: Anterior to the border; Class II: Half of the crown is covered by the border; Class III: Crown completely embedded into the ramus.

Depth of the impacted tooth:

Pell & Gregory¹¹ classified the depth of the impacted tooth by setting a relationship between the cemento-enamel junction (CEJ) of third molar with the bone level. Level A: not buried; Level B; partially buried if CEJ was lower than the alveolar bone level; Level C: completely buried in the bone (Fig 1).

Angulation of impaction:

According to the Winter's classification used by Hashempour et al¹², the angle between 2nd and 3rd molar was measured by protractor. Vertical: 10° to -10°; Mesioangular: 11°-79°; Distoangular: -11° to -79°; Horizontal: 80°-100°; Others: 111° to -80°; Buccolingual: when crowns and roots were superimposed.

The results were analyzed using SPSS 22. A confidence level of 95% was used. Mean, standard deviation and frequencies were computed. In order to analyze the qualitative variables, a chi-square test was performed.

RESULTS

Out of 2881 patients presented, 1869 (64.87%) had either unilateral or bilateral impacted mandibular mo-

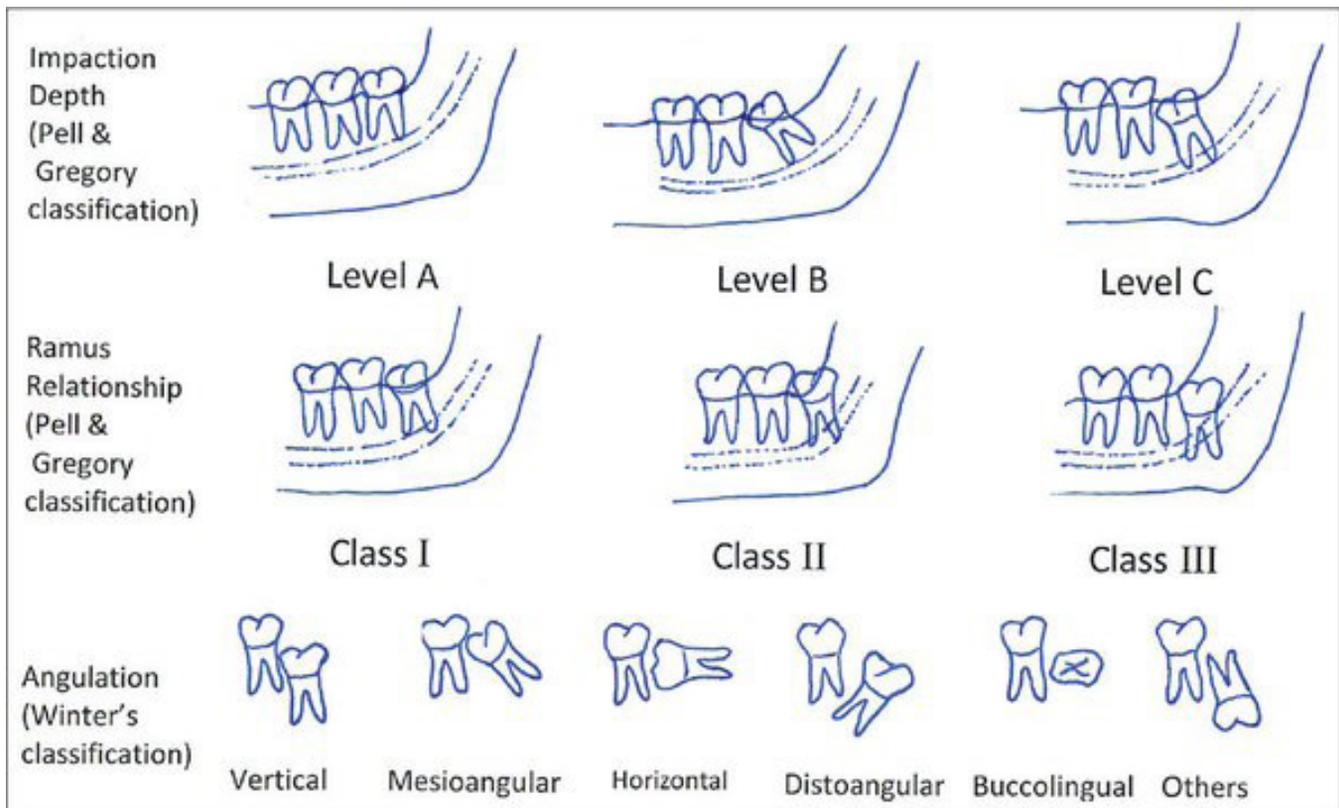


Fig 1: Pell & Gregory and Winter's Classification

lar. The number of female patients with the impacted molars [1158/1869 (61.96%)] was significantly ($p < 0.005$) high than males patients [711(38.04%)]. Age range of the patients with impacted mandibular third molar was 19-28 years with the mean and standard deviation of 23.64 ± 2.58 .

TABLE 1: DISTRIBUTION OF PATIENTS ACCORDING TO THE ANGULATION OF THE IMPACTION

Angulation of the impacted mandibular third molars	Frequency	Percentage
Mesioangular	809	43.3%
Horizontal	439	23.5%
Distoangular	283	15.14%
Vertical	209	11.2%
Buccolingual	103	5.51%
Others	26	1.4%
Total	1869	100%

Shows significant difference, P value = 0.000

TABLE 2: DISTRIBUTION OF THE PATIENTS ACCORDING TO THE DEPTH OF THE IMPACTION

Depth of impacted mandibular third molars	Frequency	Percentage
Level A	422	22.58%
Level B	1271	68%
Level C	176	9.42%
Total	1869	100%

Shows significant difference, P value= 0.001

TABLE 3: DISTRIBUTION OF THE PATIENTS ACCORDING TO THE RELATIONSHIP OF THE WISDOM TOOTH WITH THE RAMUS OF THE MANDIBLE

Relation of the mandibular third molars tooth to the ramus of the mandible	Frequency	Percentage
Class I	642	34.35%
Class II	1009	53.98%
Class III	218	11.7%
Total	1869	100%

Shows significant difference, P value = 0.001

TABLE 4: DISTRIBUTION OF THE PATIENTS ACCORDING TO SIDE OF IMPACTION

Side of impacted mandibular third molars	Frequency	Percentage
Right	1032	55.22%
Left	837	44.78%
Total	1869	100%

Shows significant difference, P value = 0.014

DISCUSSION

It was proposed in 1954 that an impacted tooth is the one which is obstructed or prevented from eruption into normal occlusion due to malposition.¹³ Then Peterson¹⁴ elaborated few years later that teeth which fail to erupt with in expected time are labeled as impacted. Therefore, collectively impacted teeth are defined as; the teeth which fail to erupt completely into a normal functional position within the normal or expected eruption time due to insufficient space in the dental arch by obstruction or malposition. Third molars are the most often congenitally absent and impacted teeth in the dental arch; and account for 98% of all the impacted teeth.^{15,16,17} Pathological conditions like dental caries, root caries, apical lesions, osteomyelitis, pericoronitis, cysts and malignancies can co-exist with the impacted teeth. Due to this reason, planning for surgical extraction needs routine panoramic radiographs to determine the difficulty of the surgical removal as well as to rule out any associated pathology which might change the treatment modality.¹⁸

The present study found impacted mandibular third molars to be more prevalent in females as compared to the males. This is consistent with studies carried in the past.^{1,19} However, there are some studies which differ with this notion; reporting that higher percentages of patients with the impacted third molars were males.^{6,20}

Our study showed that according to the Pell and Gregory classification¹¹ most of the impacted teeth were in Level B and Class II positions. This is consistent with study conducted by Eshghpour et al.²¹ Many studies across the globe have shown contradicting results. A study conducted by Fábio et al²² mentioned the depth of impaction was level B (46.54%) and the tooth relationship with the mandibular ramus was identified as class I (55.26%) in most of the patients. Gupta et al²³ study also revealed that majority of patients had level A impacted teeth. Shujaat et al²⁴ on the other hand showed that level B and class I was the most common pattern of impacted mandibular third molars.

Worldwide, mesioangular impaction has been reported to be the most common.^{1,12,25,26} The present study also showed that mesioangular impaction was the most common. However, Almendros- Marqués et al²⁷ reported that vertical impaction was the most common pattern of impacted mandibular 3rd molars. This difference might be due to the use of the different classification systems to determine the angulation of the teeth. There was no significant gender difference in terms of the angulation of the mandibular third molar impaction.

All these clinical and radiographic variables are important to consider prior to the surgery. They will help determine the difficulty of surgical procedure, duration

of the surgery, expected post-operative complications, type of anesthesia and selection of the pre-operative or post-operative medications. Pattern of impaction has never been studied previously in population of Al-Qurayyat, Saudi Arabia; so the present study would help in patient's evaluation. This study also underlines a need to understand the variations of pattern of impacted molar globally.

CONCLUSION

The pattern of the mandibular third molar impaction in Saudi population of Al-Qurayyat, Saudi Arabia was characterized by a high prevalence rate of level B depth, Class II molar relationship and mesioangular position.

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