Pattern of Impacted Mandibular Third Molars in Patients Referring to the Department of Oral Surgery, College of Dentistry, Babylon University

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1. Introduction

Impacted teeth are the teeth that failed to erupt completely in the proper functional position in the dental arch beyond expected time (Hupp et al., 2008). Therefore, impacted teeth can be functionless, pathological or abnormal (Waite and Raynolds, 1998). Mandibular third molars have high chance to become impacted (Mwanikiand Guthua, 1996) and account 98% of all impacted teeth (Sadaterm et al., 2004). There are many factors behind high rate of impaction mandibular third molars. In general, these factors can be divided into local and systemic factors. Local factors include insufficient space in the dental arch (Bisharaand Andreasen, 1983), unfavorable angulation and abnormal path of eruption, excessive density of overlying soft and hard tissues and late eruption sequence (Peterson, 2003). Mesiodistal width of the mandibular third molar may be another factor for high tendency of impaction (Sadaterm et al., 2013). Systemic factors comprisecleidocranial dysplasia, Down’s syndrome, endocrine deficiency (hypothyroidism and hypopituitarism), febrile diseases and irradiation (Bisharaand Andreasen, 1983). Although impaction of mandibular third molar is multifactorial, the lack of space in the retromolar area is the major factor (Olive and Basford ,1981; Niedzielska et al., 2006). Some of the impacted mandibular third molars remain asympatomatic and do not need any surgical intervention (Polat et al., 2008). However, sometimes surgical removal is mandatory because patients present with caries, pain, root resorption and inability to open the mouth (Obiechina et al., 2001; Ahmed et al., 2009). The extraction of these teeth may be complicated by theirinclination or level of impaction. The pattern and level of impacted mandibular third molars can be classified by several methods. Winter’s (Winter, 1926) and
Pell and Gregory (Pell and Gregory, 1942) are the most common methods that have been used for this purpose. The aim of this study was to investigate the pattern, symptoms and pathology associated with impacted mandibular third molars of patients present to the Department of Oral Surgery, College of Dentistry, Babylon University, Iraq.

2. Patients and Methods

The study was conducted in the department of Oral Surgery, College of Dentistry, Babylon University, Iraq from September 2013 to December 2014. A total of 79 patients aged 15 and 40 years presented with impacted mandibular wisdom teeth and indicated for surgical removal. Detailed history were taken from each patient to exclude any systemic and craniofacial anomaly or syndrome. Patient's data were analyzed according to gender, age, residency and patient's complaint. Periapical radiograph and orthopantographic view of the mandible were taken for all patients. Winter's and Pell and Gregory classifications were used to classify mandibular third molar impaction. In Winter's method, the angulation of impaction of the lower third molar is determined by the angle formed between the long axis of mandibular second and third molars. Level (depth) of impaction can be classified using Pell and Gregory classifications, where the impacted teeth are evaluated according to their relationship to the occlusal surface of adjacent second molar, and their position according to anterior border of the ramus of the mandible.

3. Results

Seventy nine patients were seen. Forty five (57%) were males and 34 (43%) females. The ratio of male to female was 1.3:1. Their age ranged between 15 and 41 years with mean age 24.77 and standard deviation ±6.13. The most common cases of impacted teeth were seen in the age group (21-30) (78.5%) and the least one were the age group (31-40) (15.2%). The majority of patients were urban dwellers 62 (78.5%) and only 17 (21.5%) rural resident (Table 1).

Table 1: Distribution of pattern of impaction (Winter's classification) according to the age groups

<table>
<thead>
<tr>
<th>Age</th>
<th>11-20</th>
<th>21-30</th>
<th>31-40</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>vertical</td>
<td>14</td>
<td>24</td>
<td>7</td>
<td>45</td>
</tr>
<tr>
<td>mesioangular</td>
<td>10</td>
<td>24</td>
<td>4</td>
<td>38</td>
</tr>
<tr>
<td>horizontal</td>
<td>2</td>
<td>14</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>62</td>
<td>12</td>
<td>100</td>
</tr>
</tbody>
</table>

Hundred cases of impacted mandibular wisdom teeth were seen in the 79 patients, of these (21%) were bilateral impactions. Vertical impaction represented the most common type (45%), the mesioangular impaction was the second and comprised 38% of impacted teeth; whereas horizontal impaction was the least (17%). Table 1 shows distribution of the impacted teeth according to the age groups. Based on the level of occlusion and the relationship of the tooth to the anterior border of the ramus of the mandible, class IA represented the most common cases of impacted lower wisdom teeth (37%), followed by class IIA (22%); whereas type IIIA was the least (1%). Table 2 shows percentages of types of impacted teeth according to the Pell and Gregory classifications (Table 2).

Table 2: Percentages of pattern of impaction according to Pell and Gregory classifications

<table>
<thead>
<tr>
<th>Pell and Gregory class</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>37</td>
</tr>
<tr>
<td>IB</td>
<td>21</td>
</tr>
<tr>
<td>IC</td>
<td>8</td>
</tr>
<tr>
<td>IIA</td>
<td>22</td>
</tr>
<tr>
<td>IIB</td>
<td>6</td>
</tr>
<tr>
<td>IIC</td>
<td>3</td>
</tr>
<tr>
<td>IIIA</td>
<td>1</td>
</tr>
<tr>
<td>IIIB</td>
<td>0</td>
</tr>
<tr>
<td>IIIC</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

In this study 88% of impacted teeth induced symptom of pain. The other cases 12% were asymptomatic and disease free. The distribution of pain symptom according to the level of impaction is depicted in Table 3. The most common lesions associated with impacted mandibular third molar were pericoronitis and periodontitis (77%) and only 11% were related to carries (Table 3).

Table 3: Distribution of pain symptom according to pattern of impaction

<table>
<thead>
<tr>
<th>Type of impaction</th>
<th>No. of impaction</th>
<th>Symptom of pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical</td>
<td>45</td>
<td>41</td>
</tr>
<tr>
<td>Mesioangular</td>
<td>38</td>
<td>34</td>
</tr>
<tr>
<td>Horizontal</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>88</td>
</tr>
</tbody>
</table>

4. Discussion

Impacted mandibular third molar is the most common impacted teeth that is frequently extracted. Pre-extraction investigation should be carried out to assess angulation and level of impaction to determine difficulty of surgical removal. The results of our study indicated that the phenomenon of impacted lower third molar was predominant in male than female. These findings are in agreement with other studies (Mwanikiand Guthua, 1996; Ayaz and Rehman, 2012). However, many studies on impacted lower teeth in other countries such as Nigeria, Pakistan, Malaysia and Korea reported that the majority of impacted teeth seen in females gender (Obiechina et al., 2001; Khan et al., 2010; Jaffar and Tin, 2009; Kim et al., 2006).
The majority of impacted lower wisdom teeth were seen in the third decade of age group in this study and this finding is consistent with other studies (Ayaz and Rehmen, 2012; Ishfaq et al., 2006; Ma’aiteaandAlwrikat, 2000; Osborn et al., 1985). This might be attributed to the early removal of impacted teeth to prevent teeth crowding and irregularities and increasing awareness of oral health.

In this study the high percentage of impacted lower teeth were seen in urban dwellers compared to rural resident. This may be related to the feeding habit, as urban population tend to consume soft food and lower intensity of using masticatory apparatus. Furthermore, other study reported that impacted teeth particularly lower wisdom tooth is urban phenomenon, because the dental arch length of urban dwellers is undergoing an unnoticed transition process of disuse atrophy (Sadeta et al., 2013). Based on Winter's classification and the angulation of the impacted tooth to the long axis of mandibular second molar, the vertical impaction represented the most frequent cases followed by mesioangular impaction. These findings are in agreement with that found by (Batina et al., 2002) among Jordanian population. In contrast, the studies in Nigeria, U.S.A , Spain (Gbotolorun et al., 2007; Bui et al., 2003 ; Chaparro-Avendaño et al., 2005) indicated that the mesioangular impaction was predominant followed by vertical impaction. The difference between our findings and other studies may be attributed to the various methods used to classify angulation of impacted lower third molar sand the number of data.

According to the relationship of impacted teeth to the ramus of the mandible and level of occlusion of adjacent tooth, Class IA impaction represented the most common cases in this study, followed by class IIA impaction. These findings are consistent with that found by (Ayaz and Rehmen, 2012) among Pakistani population. Class IIIA is the least impaction among other cases in this study. (Bui et al., 2003) found that class IA and IB impaction were the most frequent cases of impacted mandibular third molars. Other studies showed that class IIA was the most frequent impaction among Malaysian, Nigerian and Italian populations (Jaffarand Tin, 2009; Obiechina et al., 2001; Monaco et al., 2004). In contrast to these studies, class IIB impaction was the most common cases among Spanish populations (Almendros-Marques et al., 2006).

In fact, the Winter's and Pell and Gregory classifications not only used to determine angulation, depth and position of impacted teeth, but also to predict the difficulty of surgical removal of these teeth (Sadeta et al., 2013). The results of our study indicated that the crown of most impacted teeth lies anterior to the ramus of the mandible, and within or below the level of the crown of mandibular second molar. Therefore, most impacted teeth in this study were classified as moderately difficult and can be removed surgically under local anesthesia.

The majority of impacted mandibular third molars in this study present with pain. Few cases (12%) are asymptomatic and the impacted mandibular third molars were removed for prophylactic reasons or orthodontic purposes. Studies showed that pericoronitis is the most common pathology associated with impacted mandibular third molar (Khan et al., 2010; Jaffarand Tin, 2009). The most common lesions associated with impacted mandibular third molars were pericoronitis and periodontitis, followed by caries. These findings are similar to that found by (Obiechina et al., 2001) in Nigerian population. However, (Adeymeo et al., 2006) stated that caries was the major cause of surgical removal of impacted mandibular third molars, followed by pericoronitis and periodontitis.

**Conclusion**

Among the patients attended to the Department of Oral Surgery, College of Dentistry, Babylon University, Iraq, impacted mandibular third molars were predominant in males and gender. The majority of patients in their third decade. Impacted mandibular third molars were most common in urban populations. Vertical and class IA appear to be the most common types of impaction. Most cases present with symptom of pain and the majority associated with pericoronitis and periodontitis. The pattern of impaction suggests that the majority of impacted mandibular third molars are moderately difficult and can be removed surgically under local anesthesia. Future studies should be conducted to correlate between epidemiological data and postoperative complications associated with impacted mandibular third molars.

**Research Highlights**

Pattern of impacted mandibular third molars influences their surgical removal. Different techniques can be used to classify impacted mandibular third molars. Residency and feeding habits influence the occurrence of impacted mandibular third molars. Removal of mandibular third molars for pathological and non-pathological reasons.
Limitations

This research was conducted at the Department of Oral Surgery, College of Dentistry, Babylon University, Iraq.

Acknowledgment

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References


Sadeta Šecic et al., 2013. Incidence of impacted mandibular third molars in population of Bosnia and Herzegovina: a retrospective radiographic study Journal of Health Sciences, 3(2), 151-158.
