A Comparative Study of Surgical Morbidity Associated with Mandibular Third-Molar Surgery in Young and Aging Populations

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Abstract

Aim: Prophylactic surgical extraction of impacted third molars is a common practice throughout the world justified on the presumption that the risk of surgical morbidity increases with increasing age, among other reasons. The aim of this study was to analyze and compare surgical morbidity associated with third-molar extractions in young and aging populations.

Methods and Materials: A review of records for all patients who underwent the surgical extraction of impacted third molars between April 2001 and June 2006 at the Lagos University Teaching Hospital was carried out.

Results: A total of 506 patients had surgical extractions of impacted third molars under local anaesthesia during the period of the study. Of these, 470 (92.9 percent) patients were below the age of 40 years (Group A) and 36 (7.1 percent) patients were 40 years of age and older (Group B). No incidences of severe intraoperative complications (excessive bleeding or mandibular fractures) were recorded in either group, but other postoperative complications were reported in 70 (13.8 percent) patients. Of these 70 patients, 65 (92.9 percent) were from Group A and 5 (7.1 percent) were from Group B, and their complications included infected socket, dry socket, paraesthesia, and buccal space abscess.

Conclusions: No significant difference in postoperative complications following surgical removal of mandibular third molars was found between patients 40 years old and greater and those below age 40. Prophylactic surgical extraction of impacted mandibular third molars, based on the assumption that surgical morbidity increases with age, may not be justifiable.

Clinical Significance: Age does not predispose patients who had surgical extraction of mandibular third molars above 40 years of age to any additional surgical complications when compared to patients below the age of 40 years receiving comparable treatment.

Keywords: Surgical morbidity, third-molar surgery, young, aging population, comparative study

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Therefore, the aim of this study was to analyze and compare the surgical morbidity associated with third-molar surgery in young (less than 40 years) and aging (40 years and above) populations at the Lagos University Teaching Hospital, Nigeria.

The null hypothesis was that the surgical morbidity associated with third-molar surgery in patients 40 years of age and above is no different from those patients below the age of 40.

Methods and Materials

A retrospective review of treatment for patients who had surgical extraction of impacted mandibular third molars between April 2001 and June 2006 at the Lagos University Teaching Hospital was carried out. All cases were identified through patient records. Data collected included patients’ age, gender, teeth extracted, indication for extraction(s), types of impaction(s), and surgical morbidity (intra- and post-operative complications). Only patients who had surgical extraction of at least one mandibular third molar were included in the study. Data were compared between patients <40 years (Group A) and those ≥40 years (Group B).

The surgical procedure in all cases included the standard buccal guttering technique using rotary instruments under local anaesthesia.11 All patients returned for follow-up at one week. Patients without complications were discharged one week postoperatively after suture removal, and those...
Results

A total of 506 patients (age range, 16–68 years) had surgical extraction(s) of impacted mandibular third molars under local anaesthesia during the study period. Of these, 470 (92.9 percent) were below the age of 40 years (Group A) and 36 (7.1 percent) patients were 40 years or above (Group B). Mean age (SD) of patients <40 years was 25.8 ± 4.6 years (range, 16–39 years) and those of patients ≥40 years was 47.6 ± 7.2 years (range, 40–68 years). Table 1 shows the gender distribution of patients in both groups (p>0.05). The most common type of impaction (angulation) in both groups was mesioangular impaction (Table 2). Recurrent pericoronitis (87.9 percent) was the major reason for surgical extractions in both groups followed by dental caries (only 9.3 percent) (Table 3).

Minor intraoperative complications (tooth/root fractures) were recorded in a few patients and were evenly distributed in the two groups (p>0.05). No cases of excessive bleeding, mandibular fractures, or other severe intraoperative complications were recorded, but

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Male</th>
<th>Female</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (&lt;40 years)</td>
<td>239</td>
<td>231</td>
<td>470 (92.9)</td>
</tr>
<tr>
<td>B (≥40 years)</td>
<td>16</td>
<td>20</td>
<td>36 (7.1)</td>
</tr>
<tr>
<td>Total</td>
<td>255</td>
<td>251</td>
<td>506 (100)</td>
</tr>
<tr>
<td>p&gt;0.05</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Impaction</th>
<th>Number of patients in each group</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesioangular</td>
<td>A (&lt;40 years) 271 B (≥40 years) 18</td>
<td>289 (57.1)</td>
</tr>
<tr>
<td>Horizontal</td>
<td>A (&lt;40 years) 79 B (≥40 years) 6</td>
<td>85 (16.8)</td>
</tr>
<tr>
<td>Distoangular</td>
<td>A (&lt;40 years) 57 B (≥40 years) 4</td>
<td>61 (12.0)</td>
</tr>
<tr>
<td>Vertical</td>
<td>A (&lt;40 years) 47 B (≥40 years) 7</td>
<td>54 (10.7)</td>
</tr>
<tr>
<td>Linguo-angular</td>
<td>A (&lt;40 years) 2 B (≥40 years) 1</td>
<td>3 (0.6)</td>
</tr>
<tr>
<td>Not indicated</td>
<td>A (&lt;40 years) 14 B (≥40 years) 0</td>
<td>14 (2.8)</td>
</tr>
<tr>
<td>Total</td>
<td>470 36</td>
<td>506 (100)</td>
</tr>
</tbody>
</table>
minor postoperative complications were reported in 70 (13.8 percent) patients. These complications were recorded in 65 out of 470 (13.8 percent) patients in Group A and in 5 out of 36 (13.9 percent) patients in Group B \((p>0.05)\). The most common postoperative complication was an infected socket (58.6 percent). Table 4 shows different types of postoperative complications in both groups. Simple regression analysis of the entire studied population showed no significant positive correlation between age of patients and postoperative complications \((R^2=0.002, p=0.263)\).

Patients with dry socket, infected socket, and a buccal space abscess were treated and followed for one to four weeks until the symptoms resolved. Resolution of lower-lip paresthesia in Group A was observed between four and six weeks postoperatively. No resolution of the paresthesia occurred in the only patient in Group B after three months. Furthermore, this patient was subsequently lost to follow-up.

Table 3. Indications for surgical extraction.

<table>
<thead>
<tr>
<th>Indications</th>
<th>Number of patients</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (&lt;40 years)</td>
<td>B (≥40 years)</td>
</tr>
<tr>
<td>Pericoronitis</td>
<td>415</td>
<td>30</td>
</tr>
<tr>
<td>Caries on M3*</td>
<td>39</td>
<td>5</td>
</tr>
<tr>
<td>Caries on M2*</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Abscess</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Prophylactic</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Not Indicated</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>470</td>
<td>36</td>
</tr>
</tbody>
</table>

*M2=mandibular second molar; M3=mandibular third molar.

Table 4. Postoperative complications following third-molar surgery.

<table>
<thead>
<tr>
<th>Complications</th>
<th>Number of patients</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (&lt;40 years)</td>
<td>B (≥40 years)</td>
</tr>
<tr>
<td>Infected socket</td>
<td>38</td>
<td>3</td>
</tr>
<tr>
<td>Dry socket</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>Paresthesia</td>
<td>3</td>
<td>1*</td>
</tr>
<tr>
<td>Buccal abscess</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>5</td>
</tr>
</tbody>
</table>

\((p>0.05)\)

*Persistent for three months until lost to follow-up.

Discussion

During the pre-penicillin era, prophylactic removal of impacted wisdom teeth used to be the order of the day because of morbidity associated with pathologies related to these teeth.\(^2\) In recent times, prophylactic surgery has been justified on the basis that third molars have no definite role in the mouth\(^12\) and the need to minimize the risk of disease (cysts and tumors) development associated with the retention of these teeth.\(^7,9\) In fact, between 18 and 56.5 percent of all third molars that have been removed by oral surgeons in the United Kingdom and the United States were disease free.\(^13,14\) Moreover, it has been shown that the incidence of cyst and tumor development associated with impacted third molars is low.\(^15,16\) Two other major arguments made by supporters of the prophylactic removal include the “relative” ease with which third molars can be extracted in younger people and the improved morbidity compared with an older age group.\(^12\)
There are conflicting reports in the literature regarding age-related surgical morbidity following third-molar surgical extraction. Chuang et al.\(^1\) recently reported that increased age (≥25 years) appears to be associated with a higher complication rate for third-molar extraction. In fact, patients 25 years of age and over were statistically significantly more likely to experience a complication compared with their counterparts under the age 25 of years.\(^1\) This outcome contrasts sharply with findings from this and other reports that found no increased morbidity with increasing age following third-molar surgery.\(^14,18\) In fact, the present study found no significant difference in postoperative complications following surgical removal of mandibular third molars between patients 40 years old and greater and those below age 40. Complications occurred in 13.9 percent and 13.8 percent in Groups A and B, respectively. A previous report explored the outcome of third-molar surgery and concluded that third-molar surgery in patients 25 years of age or older is associated with minimal morbidity, low postoperative complications, and minimal impact on the patients’ quality of life.\(^15\) In other words, patients age 25 years or older can undergo third-molar surgery with minimal anticipated complications.\(^15\) Jerjes et al.\(^16\) also found no difference in complication between younger and older patients but a higher incidence of complications in patients treated by less-experienced surgeons. It is noteworthy that a simple linear regression analysis of the entire studied population showed no significant correlation between age of patients and postoperative complications.

The overall postoperative complication rate in the present study was 13.8 percent and, as stated previously, this outcome was equally distributed in both groups of patients. Because postoperative pain, swelling, and trismus were present in all patients, albeit at different degrees, they were, therefore, not considered a postoperative complication but rather surgical sequelae. Earlier studies have reported postoperative complications ranging from 14.2 to 29.3 percent.\(^1,18,21\) The most common complications in the present study were an infected socket and dry socket. In fact, dry socket has been reported as the most common complication of surgical extraction of impacted third molars.\(^1,18,19\) The incidence of inferior alveolar nerve injury leading to paresthesia of the lower lip was low in the present study, an outcome consistent with most previously published reports.\(^1,18,19,21\) Furthermore, all cases of paresthesia involved the inferior alveolar nerve. This is similar to another report in which the buccal surgical approach with the use of burs was used.\(^19\) However, severe complications following third-molar surgery are rare.\(^1,14,18,19\)

Proponents of prophylactic removal believe that many asymptomatic impacted third molars, if left in situ, would eventually require removal later in life.\(^15\) But how many of these impacted third molars, if left untreated, would develop symptoms or pathology sufficient to warrant surgical removal later in life? Brickley et al.\(^22\) in a study on the prevalence of third molars in an adult population, suggested that a large number of patients can expect to retain their mandibular third molars beyond the age of 35 years and that in many cases a conservative “wait and see” policy for mandibular third molars of patients in their early 20s is appropriate. It also has been reported that IMTM that have not been infected may be more likely to remain intact compared with other teeth at potential risk.\(^23\) In addition, about one in five people in their 30s has at least one unerupted third molar, which can remain in situ throughout life without undergoing pathological changes.\(^24\)

In the present study, just 7.1 percent of patients requiring removal of impacted third molars were 40 years and above. Previous authors also have noted a low incidence of third-molar surgical extraction in patients over 40 years of age.\(^25,26\) Obiechina et al.\(^25\) reported that less than 3 percent of patients requiring lower-third-molar surgery were over 40 years of age.
Kaminishi et al., 26 in a 2006 study in the United States, found that 10.5 percent and 17.3 percent of patients requiring removal of symptomatic impacted third molars over two study periods, 1992–1997 and 1997–2002, respectively, were more than 40 years old.

Mesioangularly impacted third molars were the most frequently seen in the present study, a finding that was in agreement with earlier studies from Nigeria, 18,25,27 and elsewhere. 28,29 In this study recurrent pericoronitis was the major indication given for extraction. In contrast, recurrent pericoronal infection is considered the single most common indication for surgical removal of impacted third molars in all age groups. 11,25,27,28

Clinical Significance

Age alone does not predispose patients 40 years old and older who undergo surgical extraction of mandibular third molars to any additional surgical complications as compared to patients below the age of 40 years.

References

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