RESEARCH ARTICLE

IS HAVING WISDOM TOOTH ALWAYS WISE.

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Abstract

Background: Third molar that fail to attain functional position may be pathologic in addition to causing potential harm to adjacent second molars. Therefore, the decision to retain or remove asymptomatic impacted or non impacted third molars presents a significant challenge.

Aim: To evaluate influence of Third Molars on Pathologies of Adjacent Second Molars.

Materials and methods: In a retrospective cross-sectional study, a total of 100 CBCT were evaluated in the age group of 17 to 60 year. Radiographic status of M3s, presence of distal caries, external root resorption(ERR), alveolar bone loss(ABL) of A-M2s were assessed by CBCT. Prevalence of A-M2 pathologies and association between N-M3s and pathologies of A-M2s were analyzed.

Results: CBCTs from 100 patients were included in the present study. Among these patients, we observed retained (both impacted and nonimpacted M3s) 3rd molars cause more caries, ERR, ABL to A-M2s compared to the A-2Ms where 3rd molars were absent. Mandibular M3s cause more ABL to A-2Ms compared to maxillary 3Ms otherwise caries and ERR do not show any significant difference. Maxillary and mandibular non impacted 3Ms compared to impacted 3Ms cause significant amount of alveolar bone loss to adjacent 2nd molars.

Conclusion: Presence of non impacted 3rd molars, even if they are asymptomatic, represents an important risk factor for periodontal health of adjacent 2nd molars. This finding should be considered during clinical decision making regarding retention or extraction of nonimpacted 3rd molars, especially when these teeth are non-functional or when their removal will not affect overall occlusal function.

Introduction:

Third molars (M3s) that fail to attain functional position may be pathologic in addition to causing potential harm to adjacent second molars (A-M2s).¹ Therefore, extraction of impacted M3s (I-M3s) is the most common operation performed in dental clinics.² Several investigations have shown that a variety of A-M2 conditions, such as dental caries, root resorption, alveolar bone resorption, and cysts and tumors, may be associated with presence of I-M3s.³⁻⁴ From a periodontal perspective, I-M3s should be removed before irreversible damage to dental or periodontal tissues of A-M2s can occur.⁵ However, consensus has not been reached regarding extraction of I-M3s, particularly when they are asymptomatic and without pathology.⁶⁻¹² Patients prefer to retain their M3s when they are asymptomatic

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and disease free. However, they should be advised about risk of M3 retention with time. At least one fourth of asymptomatic M3s might need to be removed prophylactically at a young age, although watchful monitoring may be a more prudent strategy. Nevertheless, removal of M3s, whether I-M3 or non-impacted (N-M3), improves periodontal status of A-M2s, leading to less frequent local inflammatory periodontal disease and positively affecting overall periodontal health. Therefore in this study, prevalence of A-M2 pathologies and association between N-M3s, I-M3s and pathologies of A-M2s is analyzed.

Materials And Methods:-
In this retrospective study, CBCTs were reviewed for 100 patients who underwent CBCT projection for various investigations. Minimum age for inclusion was 17 years because M3s commonly start to erupt at this age. We excluded patients with craniofacial anomalies (e.g., cleidocranial dysplasia or Down syndrome), maxillofacial cysts or tumors, trauma or fracture to the mandible/maxilla, less than two-thirds of M3 root formation, and/or incomplete records or poor quality OPGs and those undergoing orthodontic therapy were excluded. The following radiographic lesions at distal surface of M2s were recorded: 1) caries, 2) ERR, and 3) ABL.

Results:-

Table 1:-Distal Pathologies of A-M2s in Quadrants With or Without M3s(400)

<table>
<thead>
<tr>
<th>M3 status</th>
<th>Caries</th>
<th>ERR</th>
<th>ABL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>10.6%</td>
<td>1%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Retained</td>
<td>13.84%</td>
<td>1.23%</td>
<td>46.1%</td>
</tr>
</tbody>
</table>

Table 1 shows, retained (both impacted and nonimpacted M3s) 3rd molars cause more caries, ERR, ABL to A-M2s compared to the A-2Ms where 3rd molars were absent.

Table 2:-Distal Pathologies of A-M2s in Quadrants with maxillary and mandibular M3s(325)

<table>
<thead>
<tr>
<th>M3 status</th>
<th>Caries</th>
<th>ERR</th>
<th>ABL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxillary</td>
<td>12.8%</td>
<td>1.28%</td>
<td>43.5%</td>
</tr>
<tr>
<td>Mandibular</td>
<td>14.7%</td>
<td>1.18%</td>
<td>48.5%</td>
</tr>
</tbody>
</table>

This table shows that mandibular M3s cause more ABL to A-2Ms compared to maxillary 3Ms otherwise caries and ERR do not show any significant difference.

Table 4:-Influence of Presence of N-M3s on Prevalence of Distal Pathologies of A-M2s

<table>
<thead>
<tr>
<th>M3 status</th>
<th>Caries</th>
<th>ERR</th>
<th>ABL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxillary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonimpacted</td>
<td>12.8%</td>
<td>1.4%</td>
<td>45.6%</td>
</tr>
<tr>
<td>Impacted</td>
<td>12.5%</td>
<td>0%</td>
<td>41.25%</td>
</tr>
<tr>
<td>Mandibular</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonimpacted</td>
<td>15%</td>
<td>1.25%</td>
<td>48.75%</td>
</tr>
<tr>
<td>Impacted</td>
<td>14%</td>
<td>0%</td>
<td>44.4%</td>
</tr>
</tbody>
</table>

Table no. 3, shows that maxillary and mandibular non impacted 3Ms compared to impacted 3Ms cause significant amount of alveolar bone loss to adjacent 2nd molars.

Discussion:-
The present study investigates the association between presence of N-M3s & I-M3s and prevalence of caries, ERR, and ABL among A-M2s. As per table no.1 retained (both impacted and nonimpacted M3s) 3rd molars cause more caries, ERR, ABL to A-M2s compared to A-2Ms where 3rd molars were absent. Mandibular M3s cause more ABL i.e.48.5% to A-2Ms compared to maxillary 3Ms i.e. 43.5% whereas, caries and ERR do not show any significant difference (as in table 2). According to table no.3 maxillary and mandibular non impacted 3Ms (45.6% & 48.7%)
compared to impacted 3Ms (41.25% & 45.4% respectively) cause significant amount of alveolar bone loss to 
adjacent 2nd molars. These results are comparable with the study done by Zhi – Bang Li(2017)\textsuperscript{19}. In his study when 
I-M3s were present, prevalence of A-M2 caries and ERR was 14.3% and 2.4%, respectively. Overall, 41.5% of M2s 
adjacent to I-M3s presented with ABL. Prevalence of distal caries, ERR, and ABL of A-M2s was higher in 
quadrants with M3s than in quadrants without M3s where maxillary and mandibular non impacted 3Ms (45.6% & 
48.7%) compared to impacted 3Ms (41.25% & 45.4% respectively) cause significant amount of alveolar bone loss to 
adjacent 2nd molars. In present study when compared to maxillary N-3Ms, mandibular N- 3Ms cause more alveolar 
bone loss of A-2Ms.

**Conclusion:**
In present study, presence of impacted 3rd molars significantly increases risk of pathologies of adjacent 2nd molars. Presence of non impacted 3rd molars did not increase risk of pathologies like distal caries and ERR of adjacent 2nd molars but they significantly increases risk of alveolar bone resorption of 2nd molars, thereby affecting periodontal health. Regular periodic clinical examinations and radiographs of 2nd and 3rd molars may prevent alveolar bone loss, caries and external root resorption and prophylactic removal of nonimpacted 3rd molars may be advisable in patients who are susceptible to periodontal disease and in whom opposing 3rd molar is missing.

**References:**