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# Periodontal Health Assessment of Retromolar Area following Mandibular Third Molar Extraction

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**Abstract**: ***The aim of this study was to evaluate the periodontal pocket depth and clinical attachment loss after various trans alveolar extractions in different type of impactions and also to evaluate pre and post-surgical alveolar bone height using radiographs. 12 eligible sujects between the age group of 20-50 years with mesial impaction, distal impaction, horizontal impaction and vertical impactions of the third molar were enrolled in the study. Clinical parameters such as periodontal pocket depth, clinical attachment loss and radiographic evaluation was done before and after the surgical procedure.***

**Keywords:** Alveolar Bone loss, Clinical attachment loss, Impaction, Intraoral radiograph, Periodontal pocket, Transalveolar extraction

## 1. Introduction

The third molar have received the fair amount of interest in literature. It has been blamed for problems such as lower incisor crowding, atypical pain, Pericoronitis, dental caries on the distal surface of second molar, cyst or tumors. They are considered as functionally non-essential for masticatory purposes, specifically when the opposing teeth are not present. (1,2)

Complications in third molar eruption, particularly of the lower molars, are attributable to their late formation and to the phylogenetic evolution of the mandible, which results in a lack of available space for normal eruption. (3,9)

According to Hattab & Abu Alhaiha, the retromolar space was significantly greater in patients with erupted lower third molars, as compared to the group of patients who presented these teeth still non-erupted. And among the variables studied by the authors, the lack of space was the main cause for the third molars not to erupt. (4,5,6)

Extraction of third molar is the most common surgical procedure performed in the oral surgery department. Numerous indications and contraindication for surgical extraction of third molars have been outlined, one of which is the prevention and improvement of periodontal defects in adjacent second molars. (4,7) The effects of impacted third molar extraction on the periodontal health of the adjacent second molar by (Ash:1964, Zeigler 1975, Kugelbergeal 1985)-contrarily few studies demonstrated loss of attachment and reduction of alveolar bone height by (Stephens et al 1983, Knutson et al 1996) (8,10).

The purpose of this study to evaluate the periodontal status distal to the adjacent second mandibular molar following the pre-and post extractions of different types of impaction such as mesial, distal, vertical and horizontal both clinically by assessing periodontal pocket depth, clinical attachment loss, radicular bone height, alveolar bone height by the help of radiographs.

## 2. Aims

To evaluate the periodontal pocket depth and clinical attachment loss after various trans alveolar extractions in different type of impactions and also to evaluate pre and post-surgical alveolar bone height using radiographs

## 3. Materials and Methods

Patients reporting to the Deptartment of oral and maxillofacial Surgery (Amrita school of Dentistry) were examined for mesial impaction, distal impaction, horizontal impaction and vertical impactions of the third molar. After the approval from the ethical committee, study subjects were provided with an informed consent to participate in the study. 12 eligible sujects between the age group of 20-50 years were enrolled in the study. Clinical parameters and radiographic evaluation was done before and after the surgical procedure.

### 3.1 Clinical Evaluation

Clinical parameters such as the assessment of sulcular depth in relation to second mandibular molar, periodontal pocket depth and clinical attachment loss were assessed. The clinical attachment loss and periodontal pocket depth were measured using acrylic stent attached to the probe.

### 3.2 Radiographic Evaluation

Radiographic analysis was done by evaluating the type of impaction and alveolar bone height. Radiographic findings were compared before and after trans alveolar extraction to assess the alveolar bone height. Two independent observers assessed the radiograph using predetermined radiographic grid.

## 4. Stastical Analysis

Stastical analysis done using SPSS version 17 software. Study variable values (pocket, CAL, Alveolar boneloss) were described as mean and standard deviation. The difference between Pre-operative and post operative were analysed using Mann Whitney u test.

## 5. Results

There was significant decrease in the pocket depth post extraction for vertically impacted teeth($p \leq 006$) (Table 2). There was mean decrease from (4.20±0.837 to 2.60±0.548). In the case of mesio angular impaction there is significant

decrease in pocket depth (p≤.010) (Table2). There was mean difference from (7±0.707 to 5± 0.707) and alveolar bone shows gain in bone height (p≤.049). But there is no much difference in the case of horizontal impaction. Even the other variables of vertical and mesio angular does not show any significant difference.

**Table 1:** Characterstics of Study participants

| | | |
|---|---|---|
| No of Participants | Vertical | 5 |
| | Horizontal | 2 |
| | Mesio Angular | 5 |
| Mean age of Participants | | 25.83±3.88 |
| Gender of the Participants | Male | 7 |
| | Female | 5 |

**Table 2:** Comparison of pre-operative and post operative values of study variables

| Groups | Variables | VISIT | | | | | | P Value |
|---|---|---|---|---|---|---|---|---|
| | | PRE-OP | | | POST-OP | | | |
| | | N | Mean | SD | N | Mean | SD | |
| V | Pocket | 5 | 4.80 | .447 | 5 | 2.60 | .548 | .006 |
| | CAL | 5 | 4.20 | .837 | 5 | 3.40 | .548 | .118 |
| | Alveolar Bone loss | 5 | 1.40 | .548 | 5 | 1.00 | .000 | .134 |
| H | Pocket | 2 | 5.50 | .707 | 2 | 4.00 | .000 | .102 |
| | CAL | 2 | 5.50 | .707 | 2 | 5.00 | .000 | .317 |
| | Alveolar Bone loss | 2 | 2.00 | .000 | 2 | 1.00 | .000 | .083 |
| MA | Pocket | 5 | 7.00 | .707 | 5 | 5.00 | .707 | .010 |
| | CAL | 5 | 6.40 | 1.140 | 5 | 5.80 | .837 | .831 |
| | Alveolar Bone loss | 5 | 5.20 | 1.095 | 5 | 3.80 | .837 | .049 |

## 6. Discussions

Third molar impcation is very common issue in adults. Impacted third molar cause problems to periodontal health at the distal side of the adjacent molar. Surgical removal of third molar will help to improve the periodontal health of the adjacent teet. There were few articles published regarding the effects of lower third molar removal on periodontal health at the
distal side of the adjacent second molar (11).

In this study we evaluate the periodontal pocket depth and clinical attachment loss after various trans alveolar extractions in different type of impactions and also to evaluate pre and post-surgical alveolar bone height using radiographs.

In this study the participants were 7 males and 5 females. In our study in which the assessment was done 2 months after the removal of the tooth. Gröndahl and Lekholm (1973) study, the duration was 12 months while in our study the duration was only 2 months.

The age range of subjects(20-60year) in Krausz et al. (2005) study was wider than in our study (with an average of 25.83±3.88) which may give different outcomes of the study.

In our study, there were multiple types of impactions (vertical, horizontal and mesioangular) of lower third molar while other study (Dodson, 2005) only included the mesioangularly and horizontally impacted lower third molars.

Our study found that mesioangular impaction and vertical impaction of lower third molars were more common followed by horizontal impactions. However, there were no distoangular impactions of lower third molars in both our study Wong Soo Yee (2009) and Dodson (2005).

From our results, we found that there were significant changes of periodontal pocket depth (PPD), and alveolar bone height (ABH) at thedistal surfaces of the adjacent second molar before and after vertical and mesio angular impacted lower third molar removal, CAL does not show any significant changes both in vertical and mesio ngular impaction. But there is no much difference seen in horizontal impaction.

From Table 2, there were no gross changes of CAL before and after the third molar extraction for distal surface of adjacent teeth our study similar to the result of Richardson and Dodson (2005) they found that clinical attachment level on the distal side of second molar 6 months post removal of impacted eights were clinically insignificant. Pocket depth in vertical and mesio angular impaction shows statistically significant (p> 0.006 and.010). While for Alveolar bone height the significance seen only on mesio anguar impaction(p≤0.049). Horizontal impaction does not show any significance in any variables because due to small sample sizes.

## 7. Limitations

There were a few limitations in our study. One of it was small sample size, so because of that horizontal impaction does not show much changes in periodontal parameters. In our study, only short-term changes of PPD and ABH could be evaluated. Longer duration of time is needed in order to observe the long-term changes of alveolar bone height. The second limitation of our study is that only disto buccal area was assessed on the distal surface of the second molar. The other limitation was patients' compliance as many patients refused to come post operatively because they felt that the extraction side did not have any pain or signs and symptoms.

## 8. Conclusions

From our study, we concluded that there were significant changes of periodontal pocket depth (PPD) and alveolar bone height (ABH) at the distal aspect of the adjacent second molar after surgical removal of partially or fully impacted lower third molars. But there is no significance in Clinical attachment level(CAL)

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