

Bur Technique and Chisel Mallet Technique in Impacted 3rd Molar

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ABSTRACT

Surgical removal of impacted third molar is one of the common surgical procedures carried out in Oral and Maxillofacial Surgery set up. This study aimed at clinically assessing the three different surgical techniques (lingual split, using chisel and mallet, buccal approach techniques, using rotary instruments used in the removal of impacted mandibular third molars

Key words: Lingual split, paresthesia, trismus, swelling.

INTRODUCTION

Surgical removal of impacted third molar is one of the common surgical procedures carried out in the oral and maxillofacial surgery set up.

Surgical management of impacted third molar is difficult because of its anatomical position, poor accessibility, and potential injuries to the surrounding vital structures, nerves, vessels soft tissues, and adjacent teeth during surgeries.

The factors contributing to the post operative morbidity are many, but the most important one is the trauma from bone cutting as the procedure involve significant bone cutting, which is carried out either by chisel and mallet or by rotary cutting instruments (like surgical bur).

This study aimed at clinically assessing the three different surgical techniques (lingual split, using chisel and mallet, buccal approach techniques, using rotary instruments used in the removal of impacted mandibular third molars as regards their convenience, time taken, post operative sequel/ complications

Techniques involved

Chisel and mallet technique

1. Lingual split technique using chisel and mallet (group A)
2. Buccal approach technique using chisel and mallet (group B)

Bur technique (group C)

Lingual Split technique using Chisel and Mallet. Given by Sir William Kelsey Fry, published by T.G. Ward (1956)

First, a vertical stop cut was made distal to second molar using 3 mm chisel bevel end facing towards the second molar, which will prevent splitting of the bone along the buccal aspect of second molar, greater the depth of the wisdom tooth, longer the stop cut was made. After establishing the point of elevation, the distal bone was removed to allow the delivery of the tooth. To remove this piece of bone, a 5 mm chisel was placed distal to the third molar with the beveled side upward and cutting edge parallel to the external oblique ridge. The chisel was driven to the depth required, which varies with the depth of the wisdom teeth and when desired level is reached, the chisel is removed and replaced with the beveled side

down wards. Thus, the direction of the cut is altered from downwards to inwards towards the lingual plate without alteration in the direction of the chisel. When the bone is split, the chisel is twisted further and lingual plates breaks anteriorly at its thinnest point, this is where the crown of the third molar is nearest to the lingual surface. Then, the lingual splitted bone is removed, and the entire distolingual aspect of the impacted tooth is exposed. When the bone is split, the chisel is twisted further and lingual plates breaks anteriorly at its thinnest point, this is where the crown of the third molar is nearest to the lingual surface. A wedge shape piece of bone is removed. With an elevator, the tooth is elevated and delivered in the lingual direction.

Buccal approach technique using chisel and mallet

First, a vertical stop cut was made distal to second molar using 3 mm chisel bevel end facing towards the second molar, which will prevent splitting of the bone along the buccal aspect of second molar, greater the depth of the wisdom tooth, longer the stop cut was made. After establishing the point of elevation, the distal bone was removed to allow the delivery of the tooth. To remove this piece of bone, a 5 mm chisel was placed distal to the third molar with

the beveled side upward and cutting edge parallel to the external oblique ridge.

In this case, lingual plate was not removed, but the point of application of elevator and direction of force of elevation is same as lingual split technique.

Buccal approach technique using rotary instruments

Rose head round bur/straight fissure bur were mounted on a low speed micrometer straight hand piece is used to make a gutter around the distal and buccal aspect of the impacted tooth. when the bone is removed in the distolingual region, lingual flap should be properly protected with a howartz elevator. Failure to do so is likely to damage the lingual flap or the lingual nerve. more amount of bone is removed around the point of application to engage the elevator. Throughout the procedure, copious amount of normal saline is irrigated to avoid thermal necrosis of bone. to keep the operative field clear, an efficient suction is used constantly after the removal of tooth, a large vulcanite bur or a bone file is used to burnish the sharp bony edges. the wound is irrigated well before wound closure.

Retrospective analysis

Criteria	Chisel and Mallet	Bur
Technique	Difficult	Easy
Patient's acceptance	Not tolerated well when performed under LA	Tolerated well under LA
Chance of # of the bone	Relatively high	Less possibly
Healing of bone	Good	Delayed due to thermal necrosis and inefficient cooling
Postoperative edema	Less	More
Dry socket	Incidence is less	Very high
Postoperative infection	Less	More
Advantage & Disadvantage		

DISCUSSION

Many problems associated with the removal of mandibular third molar impaction have led us to compare the prevalent technique for their efficacy.

The present study was undertaken to assess clinically the level of effectiveness of three different bone cutting techniques and approaches to remove investing bone in the removal of impacted mandibular wisdom teeth.

Authors⁴ using lingual split and Thoma⁵ and Archer⁶ using buccal bone cutting mentioned that swelling was a known complication of third molar surgery. The presence of swelling or infection causes spasm of muscle leading to trismus. Bleeding can be attributed to two factors primarily due to dislodgment of clot and secondary due to infection⁵⁻⁷.

Post operative hemorrhage was similar in all three groups. Within 10 minutes, there was no significant change in groups. At 30 minutes, percentage was slightly higher in group C than in group A and was maximum in group B, but non significant¹.

Post operative swelling assessment by Breytenbach² method measurement from tragus to progonion (ear to chin) there is significant reduction in post operative swelling at day 3 and day 5 among the group A, B, and C¹.

Swelling was maximum in group C than in group B and was minimum in group A; reason for more swelling in group C may be that electric driven instruments generates a certain amount of on wards transmission force enough to drive the bone particles deeper to bony canaliculi¹; another reason may be inability to achieve complete sterilization of bur and hand piece assembly, which lead to cross infection and brushing of surrounding tissues⁷.

Trismus score was found significantly higher in group A and C than in group B¹. The finding is similar to Rud⁸ finding where trismus was higher in lingual split technique. The reason might be due to over stressing of lingual retractor to lingual oral mucosa bruising of surrounding muscles, mylohyoid muscles, medial pterygoid muscle, part of thick tendon of temporalis muscle by retractor, chisel, and lingual cortical bone piece are the added factors for the trismus.

Kruger⁴ and Thoma⁵ have mentioned pain to be post operative complication in third molar surgery while using buccal approach.

Post operative nerve injury impairment of

sensation was found maximum in group A followed by group B and was minimum in group C¹. Von Arc⁹ reported high incidence of lingual nerve injury (22%).

In group B, the finding corroborates with the finding of Rood¹⁻¹⁰ inferior alveolar nerve injury to be 12.07% temporary. Von Arc⁹ reported inferior alveolar nerve injury (5%), which is slightly in group C¹.

Post operative dry socket was maximum in group C¹

Birn,¹¹ MacGragor¹² reported 5 10% incidence of dry socket, which is similar to our findings, and overall incidence of dry socket was 12% in our study. Simpson stated that if bur or chisel were used correctly, post operative recovery was almost similar. Lilly¹³ and Horton¹⁴]showed that results were better while using bur.

Szmyd *et al.*⁷ evaluated the high speed bur technique verses chisel mallet clinically and found no significant difference in post operative swelling, trismus, and pain and other symptoms

CONCLUSION

The assessment of effectiveness of three surgical techniques in the removal of impacted mandibular teeth was made on the basis of ease of surgical technique and different post operative findings. Clinical impression made in each technique were as follows: There was no significant difference in post operative hemorrhage, there was difference in total surgical time taken, it was found that surgical time was significantly minimum in lingual technique using chisel and mallet.

Post operative swelling and pain were more in buccal approach using rotary instrument followed by buccal approach using chisel and mallet and minimum in lingual split technique. Lingual split technique using chisel and mallet is found to be better than other two groups

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