

Third Molar Extraction Made Simple

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Abstract: Simple extraction is the most regular surgical procedure in oral surgery for the removal of tooth which is no longer salvageable due to extensive caries and associated periodontal pathology. In recent years, there has been an increased emphasis on the atraumatic removal of teeth. During the extraction procedure, basic atraumatic surgical techniques must be followed and the clinician must be prepared to manage complications should they arise. The surgical instruments used are of paramount importance. The separator forceps are the latest innovation in dental extraction technology and they provide an efficient means for atraumatic dental extractions of the maxillary and mandibular third molars. The instrument allows to cut the Sharpey fibers of the tooth between cementum and alveolar bone by luxating the periodontal ligament. The procedure involves proper patient assessment and radiographic evaluation of the tooth/ teeth to be removed, patient and surgeon preparation and appropriate mechanical principles, in order to avoid iatrogenic injury.

Keywords: Atraumatic extraction, Conventional forceps, Iatrogenic injury, Third molar extraction

I. Introduction

The extraction of a tooth is a procedure that combines the principles of surgery, physics and mechanics. ^[1] The removal of a tooth using these principles minimizes the need for physical strength and rather, it relies on the surgical skill of the clinician. In order to properly plan for such a procedure and in order to determine the relative difficulty of the extraction procedure of third molar, the clinician must first thoroughly assess the patient, both clinically and radiographically (relationship of third molar to second molar, approximation of roots to sinus floor and inferior alveolar canal, configurations of roots, condition of surrounding bone). ^[2, 3, 4] The anticipation of potential difficulty will allow the clinician to be prepared pre-operatively for any untoward outcomes. During routine extraction procedure, engaging the conventional forcep in third molar region is challenged by the bulge of maxillary tuberosity in maxilla and reinforcing external oblique ridge in mandible. The mandibular lingual cortex and maxillary tuberosity is often fractured during the extraction of a difficult third molar. ^[5] It is a well known fact that elevators are used to loosen the third molar before forcep application. Factors complicating use of conventional elevators are restriction by lips and cheeks, movement of the tongue, movement of the mandible, restriction of the mouth opening, flooding of the oral cavity with saliva, influence of the related structures (floor of the mouth, tongue, hard palate, soft palate), location, position, access, mobility, of the tooth to be extracted and condition of the crown of the second and third molar. Usage of conventional elevators carry their own set of problems during elevation of tooth such as loosening or extracting second molar, fracture of the alveolar process /mandible/ crown of third or second molar, slippage leading to lacerations of cheeks and lip, angular chelitis, penetration of the maxillary antrum or forcing the root into the antrum, forcing a root of a mandibular molar through lingual plate of the mandible or into the canal, dislocation of mandible and dislodgement of final restorations of second molar. There have been numerous innovative interesting technological advances with an augmented importance and need for atraumatic tooth extractions such as usage of powered periostomes, ^[6, 7, 8] piezosurgery, ^[9, 10] lasers ^[11] and Physics Forceps. ^[6] These advances have revolutionized the field of dentistry and oral and maxillofacial surgery. This article is intended to provide some technique advice for extracting third molars using separator forceps (SF), based on clinical observations and experience.

II. Surgical Technique

2.1. Brief Description Of SF

In more recent times, SF comes in set of two. In order to aid in accessibility, visibility and to drive the SF's blade parallel to the long axis of the tooth, the blades are offset substantially. These have two blades with sharp edges to cut the periodontal fibers. The serrated blades are 3mm wide at the tip and wedge shaped to dilate the socket and is concave from outer as well as inner surface. There is a wide aperture between the beaks to accommodate the height of contour of distal surface of second molar. The blades are hinged which allows them to close and open. The serrated handle acts as a lever which gives the operator a mechanical advantage. The

farther from the blades the surgeon grasps the handles, the less effort he will have to make to apply force to the tooth.

2.2. Chair Position

The operators and patients position is in accordance to sitting dentistry.^[12] The correct chair position allows the surgeon to keep the arms close to the body and provides stability and support. It also allows the surgeon to keep the wrists straight enough to deliver the force with the wrist and not with the hand. The patients head should be turned substantially toward the surgeon, so that adequate access and visualization can be achieved. Gripping of the SF is done by palm up direction for upper SF and palm down direction for lower SF. The fingers of left hand are maneuvered to palm up pinch grasp for upper and sling grasp for lower third molar.

The elevation of tooth is a surgical operation based primarily on an anatomical appreciation of their attachment in the jaw. After suitable local anaesthesia is achieved, the soft tissue of the gingival attachment and periodontal membrane are cut to separate the tooth from the bone. It is a good practice to apply the SF blades in the interdental area of the mesial surface on the lingual or palatal side of third molar (less accessible side of the tooth) first under direct vision and then apply the other blade on the buccal side. Then the handles of SF are squeezed to adapt the concave surface of the beaks against the convex circumference of mesial and distal portion of third and second molar crown respectively. This crown-enveloping feature allows the operator to have a control of initial superior movement of second molar throughout the completion of luxation of third molar that may be required to expand the socket to give the roots a path of egress. The maneuver does not involve of levering against second molar. As squeezing of the handles of the SF's proceeds, sufficient space is created in mesial periodontal (pdl) space, which facilitates the insertion of the beaks as apically as possible into the mesial pdl space leading to breakdown of the pdl fibers in the least traumatic way for the tooth. It also aids in expansion of the socket at the crest of the ridge, through a wedging action, followed by superior (occlusal) movement of the third molar. It is followed by constant apical pressure combined with a pumping motion of the handles to make even deeper penetration into the socket of the tooth being removed. We are aware of the fact that in an extraction one has to split, dislocate, cut, tear, amputate, section, divorce, or whatever word we choose, the periodontal membrane from the tooth. Therefore, the further toward the apex that the SF's blades can go, the more periodontal membrane is detached. Twisting the beaks in quarter - turn movement in clockwise-anticlockwise direction within the socket produces internal expansion of tooth socket. The third molar just rolls out of the socket on the distal direction due to the wedging and lever and fulcrum action of the SF. This movement should be slow and deliberate, as rapid movement will lead to root fracture. Finally the tooth is loose and may be drawn out of the alveolus using conventional molar extraction forcep. Of course, sometimes there might be a fracture of the cervical bone—that's why one squeezes a socket after the extraction.



Fig 1 Maxillary and Mandibular Separator Forceps

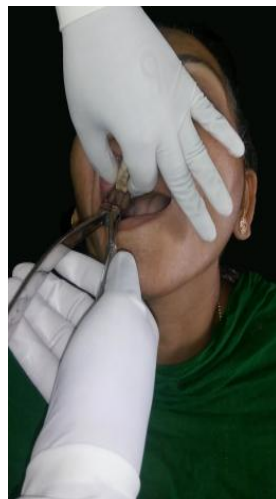


Fig 2 Technique for Maxilla

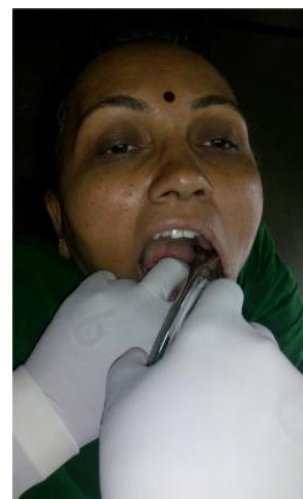


Fig 3 Technique for Mandible

Table: Checklist for third molar extraction technique

Advantage of technique	Disadvantage of technique	Factors influencing success of technique	Factors influencing failure of technique
<ul style="list-style-type: none"> • Tooth delivered occlusally in an area where socket – expansion through bucco-lingual luxation can be greatly hindered by dense cortical plate 	<ul style="list-style-type: none"> • Crown of third molar is under lot of stress which sometime might initiate the breakdown of the tooth by the very design 	<ul style="list-style-type: none"> • Remaining tooth structure. • Adequate access and visualization of the field of surgery. 	<p>Operator factors:</p> <ul style="list-style-type: none"> • Faulty application of SF, wrong pattern SF, improper grip of the handle, inadequate

<p>and limited access.</p> <ul style="list-style-type: none"> • Dispense the need for making a flap to remove the tooth. • Improves the possibility of the body to regenerate bone and “fill-in” the socket. • Minimizes the risk of infection. • Decreases the discomfort after the extraction. • Conserves the natural form of the gums. • Used in limited mouth opening, temporomandibular disorders. • Significantly reduces or eliminates the damage to the tissues, preserving the remaining tissue and bone around the tooth. 	<p>of the SFs beaks.</p> <ul style="list-style-type: none"> • Design of the SF is such that the upper portion of the beaks actually contributes to damaging the second molar if proper precaution and care is not taken. 	<ul style="list-style-type: none"> • Unimpeded pathway for the removal of the tooth. • Use of controlled force to luxate and remove the tooth. • Supporting the jaw during mandibular third molar elevation. • Retraction of cheek, tongue and lips. 	<p>movements, sudden or jerky movement.</p> <p>Patient factors:</p> <ul style="list-style-type: none"> • Pulpless tooth, badly decayed, tooth with abnormal root pattern, hypercementosis, excessive density of surrounding bone, geriatric patient, interference from the patient.
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III. Conclusion

The best and easiest way of managing tooth extraction complications is to prevent them. The drawbacks of SF application are that it is most commonly useful in conical roots, can't be used for other teeth, risks of damaging second molar crown, can't be used if second molar is missing/mobile/grossly damaged and in cases where third molar itself is grossly damaged. The use of SF can provide a great mechanical advantage in the extraction of some of the most difficult teeth to remove. They yield expected results, are anticipatory in time assurance, quick procedures and cause reduced physical and psychological distress to the patient. SF does not need to be sharpened frequently, as the beaks are sturdy and doesn't get worn-off in short span, easily sterilizable by autoclave, user friendly, easily available and when used in conjunction with proximators and periostomes, the other retentive factor(fibrous attachment) which hinders the occlusal path of egress is eliminated with minimal trauma to the surrounding bone. In future, slender beaks with pointed tips might help in luxating premolars as well, miniature version of these forcep might help in extraction of deciduous teeth as less rotational movement is required and subsequently prevent permanent tooth damage. Therefore we recommend SF rather than elevators for third molar elevation.

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