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Management of Impacted teeth – Part II

Surgical procedure:

In general the surgical procedure can be summarized in five basic steps:

1. Gaining access by flap elevation.
2. Removal of overlying bone.
3. Sectioning of tooth.
4. Delivery of the tooth with elevators.
5. Preparation for Wound closure.

The first step allows the surgeon to gain access to the surgical area by means of full thickness mucoperiosteal flap. The flap should be of adequate size to allow it's retraction without damage. The second step involves the assessment for bone removal to allow the subsequent sectioning and delivery. The third step, if needed, includes tooth division by rotating burs to allow delivery without extensive bone removal. The forth step entails the removal of the impacted tooth with the aid of an elevators. In the final step, the bone margin is smoothed, area is washed with irrigation fluids and the flap is approximated with sutures.

The surgical management of an impacted tooth is generally different from the surgical removal of other teeth. This mainly attributed to the greater amount of bone removal during 3rd molar surgery, the bone quality is also denser and the cortical plate is thicker around the lower 3rd molar and the need of sectioning prior to delivery. This requires more advanced armamentarium and higher surgical skills when compared to surgical extraction of other teeth.

Step 1: Gaining Access by Flap Elevation.

Incision is placed by scalpel using sharp incision that is continuously touching the bone, allowing the mucosa and periosteum to be completely incised, the incision should be extended to rest on sound bone following the surgery, the incision should avoid vital anatomical structures (e.g. Lingual Nerve), Only one releasing incision is placed if needed and the base of the flap need to be broader than the apex.

In general during lower 3rd molar surgery an envelope or two-sided flap can be used. The selection of either of these flaps depends on the depth of the impaction, bone amount expected to be removed and accessibility needed to be achieved.

If the operator decided to manage the case with an envelope flap, the incision need to be extended from the mesial papilla of the 1st molar, runs within the sulcus along buccal side of the teeth up to the disto-buccal line angle and then posteriorly and slightly laterally to the anterior boarded of the mandibular ascending ramus. The envelope flap is then reflected laterally by periosteal elevators slightly beyond the external oblique ridge (Fig.1).

If the 3rd molar is impacted at a deeper area and the operator needs more bone to be removed to deliver the tooth, then a releasing incision is placed mostly at the mesial aspect 2nd molar and 2-sided flap is elevated (Fig.2).

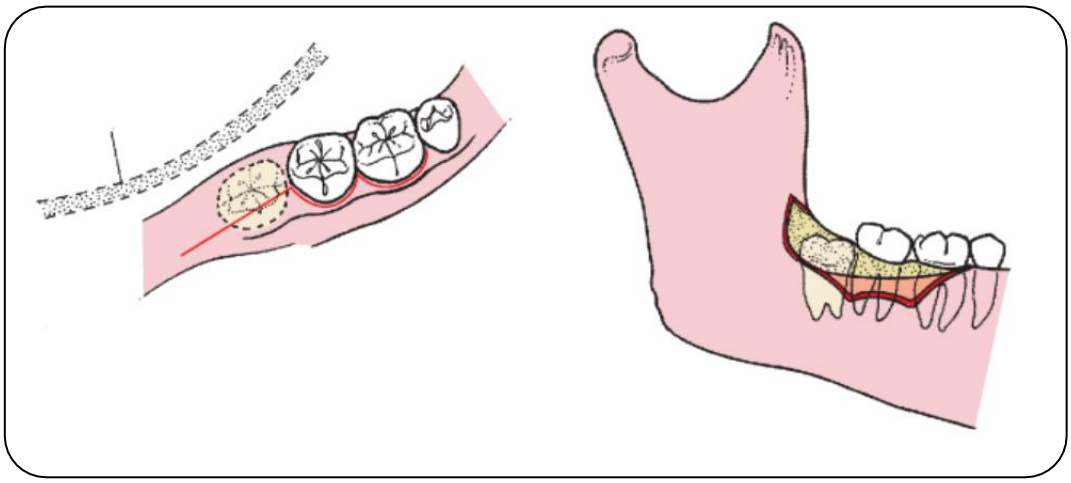

Figure 1 The envelope Flap. Left, The Posterior extension of incision should laterally diverge to avoid injury to the lingual nerve. Right, the envelope incision is laterally reflected to expose bone overlying the impacted tooth.

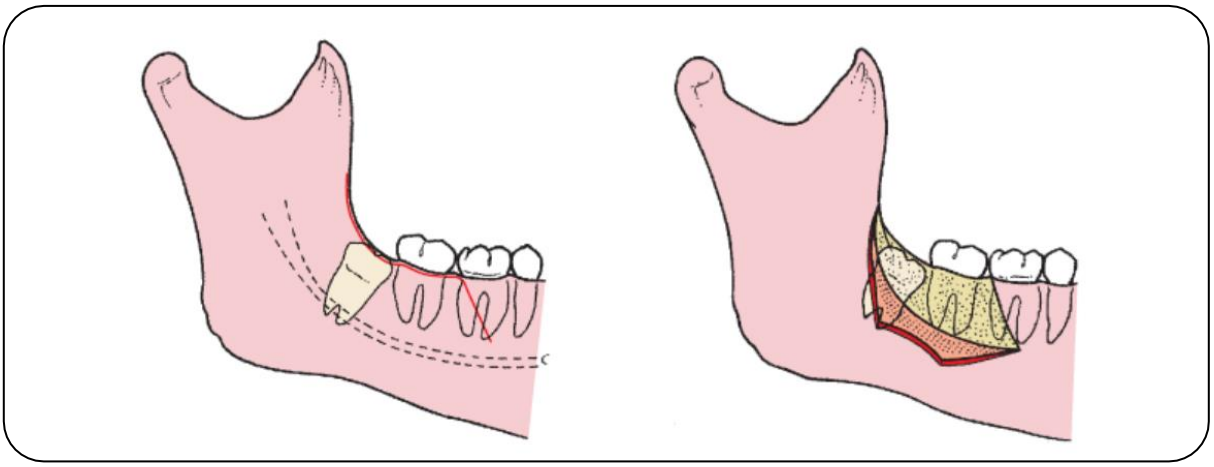

Figure 2 Two-sided flap. Left, a releasing incision is made at the mesial aspect of the second molar. Right, when the soft tissue flap is reflected by means of a releasing incision, greater visibility is possible, especially at the apical aspect of the surgical field.

Step 2: Removal of Overlying Bone.

Bone removal is needed in most cases of lower 3rd molar surgery; however the amount would be different according to the depth of impaction, angulation and relation with the mandibular ramus. The bone removal can be avoided in certain cases if the tooth is sectioned.

The bone on the occlusal surface is first removed to expose the crown of the lower 3rd molar, then bone from distal area and buccal cortical area down to the cervical margin of the tooth is removed. A round bur on straight handpiece can be utilized for bone removal; this is done under copious saline irrigation to avoid bone necrosis induced by heat generation. The bur can used to remove bone in between the tooth and cortical bone, within the cancellous bone by procedure called “tunnelling” or “ditching”. The latter will create pathway for delivery of the tooth and purchase point for elevator application.

No bone should be removed from the lingual aspect to minimize the risk for lingual nerve injury during the surgery.

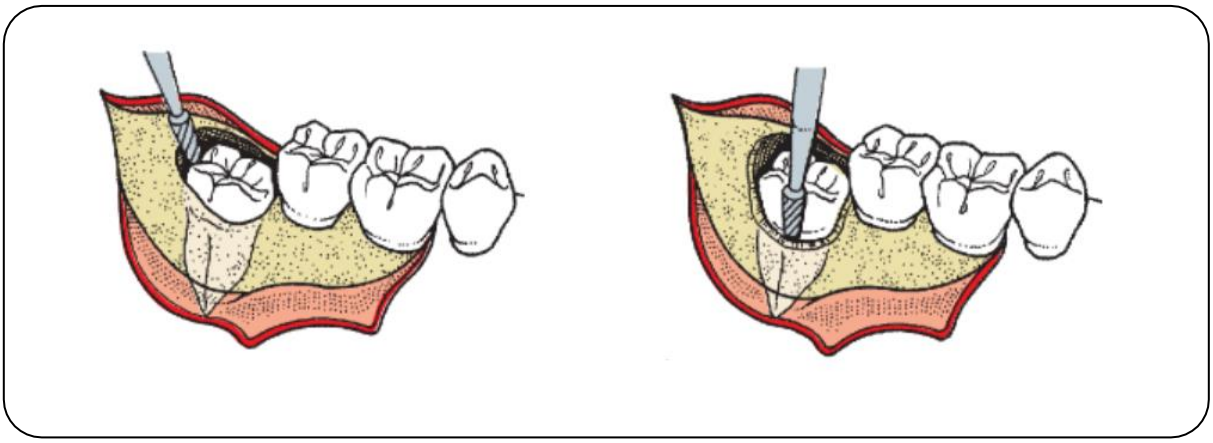

Figure 3 Bone Removal. Left, Occlusal bone removal to expose the crown. Right, Bone removal from the buccodistal aspect of the impacted tooth to allow the delivery.

Step 3: Sectioning of Tooth.

Following bone removal, judgment should be made regarding tooth sectioning. This depends on angulation of the tooth and morphology of the roots. Tooth sectioning is done by the aid of rotating bur mounted on straight handpiece. Sectioning is done on the buccal aspect towards the lingual aspect. Only ¾ of the crown should be sectioned, this will leave ¼ of lingual aspect of the crown which minimize the risk of lingual nerve damage. The remaining ¼ can fractured with the aid of dental elevators.

Regarding mesio-angular impaction, the distal part of the crown is sectioned by burs and removed by elevators then the impacted lower 3rd molar can be engaged from the mesial side to be delivered (Fig.4).

For horizontal impaction, the crown is sectioned completely from the root and removed. The roots are then displaced by elevators into the space previously occupied by the crown (Fig.5).

In disto-angular impaction, the crown is also sectioned completely from the root structure. This will increase the visibility and access to the roots. If the roots are fused, then it can be delivered in one piece. Otherwise in case of divergent roots, sectioning of the root structure into separate pieces may be needed to allow the delivery (Fig.6).

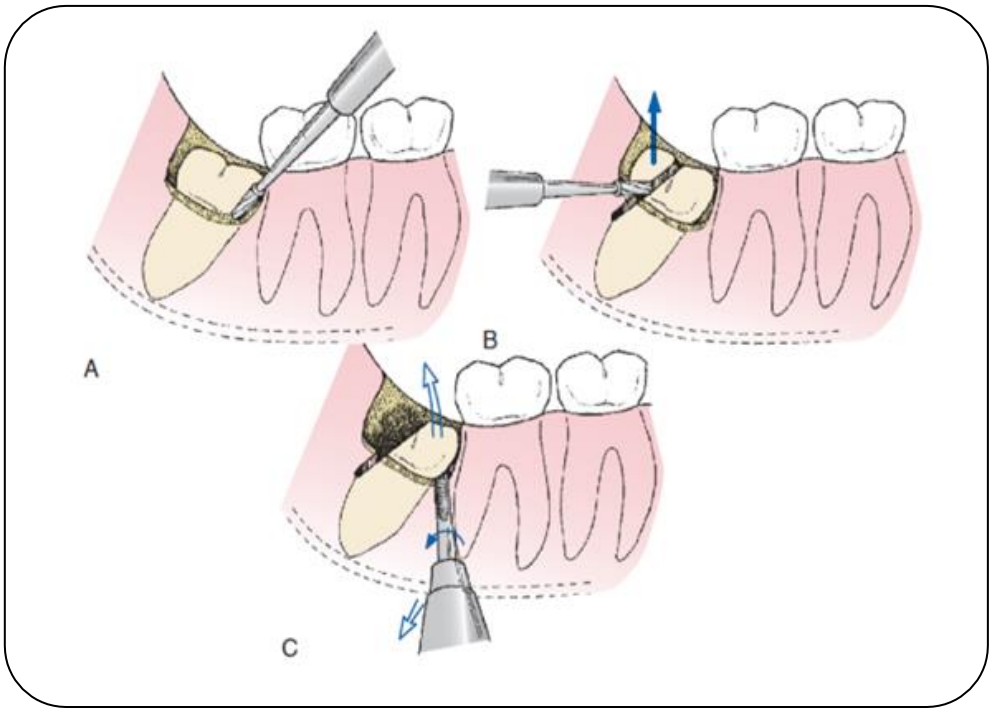

Figure 4 Surgical steps for removal of Mesio-angular lower 3rd molar impaction.

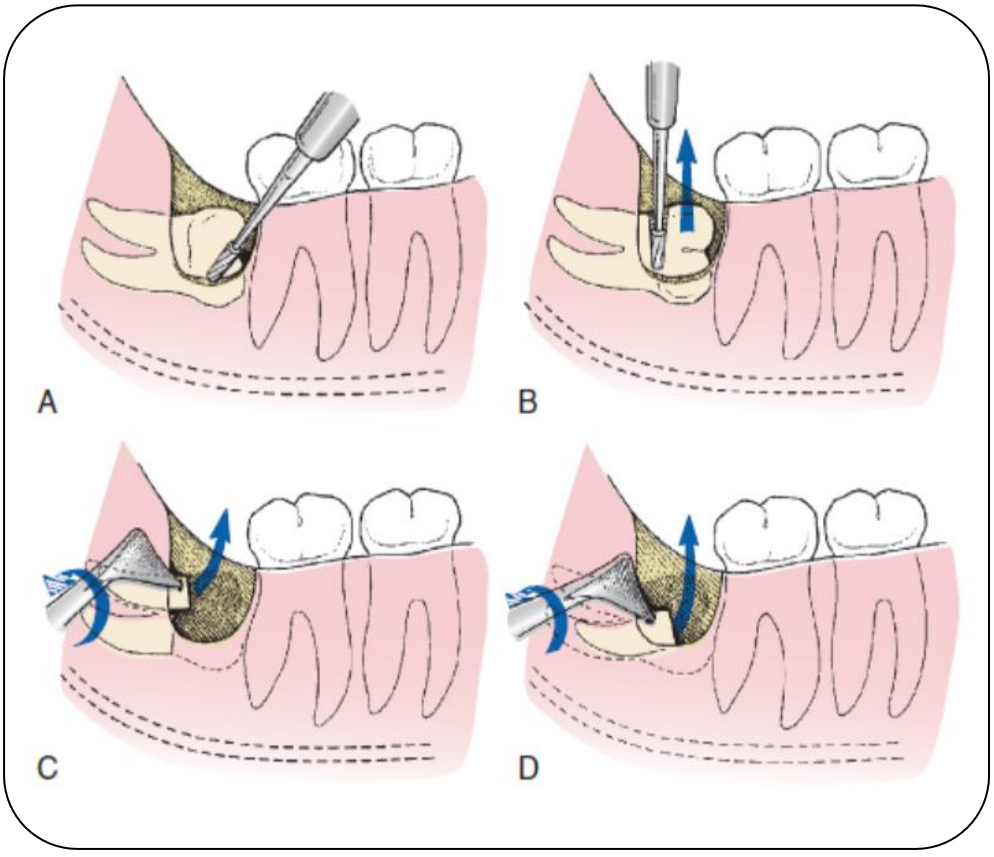

Figure 5 Surgical steps for removal of Horizontal lower 3rd molar impaction.

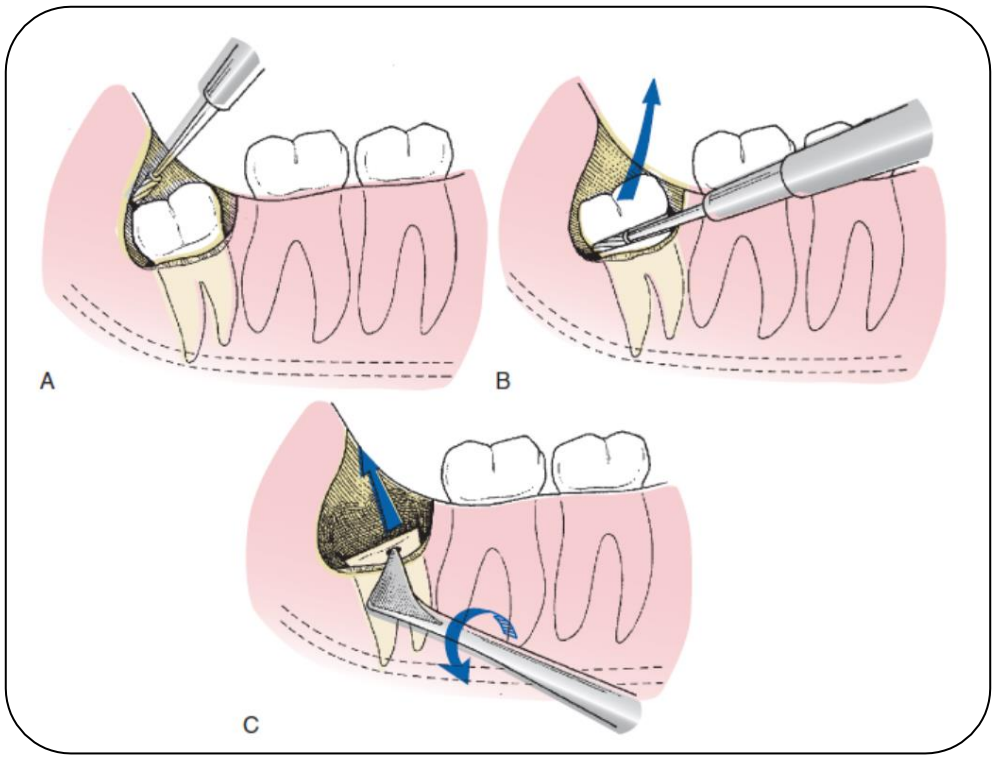

Figure 6 Surgical steps for removal of Disto-angular lower 3rd molar impaction.

Step 4: Delivery of the Tooth with Elevators.

Following proper bone removal and sectioning, the impacted lower 3rd molar can be delivered by the aids of elevators. The most commonly used elevators are straight and triangular Cryer elevators. No excessive force should be delivered to avoid excessive bone loss, damage to adjacent teeth or even fracture of the mandible.

Step 5: Preparation for Wound Closure.

In the stage the operator needs to smooth any sharp bone, thoroughly wash the area with saline solution to remove debris from the surgical area. Artery forceps can be used to allow removal of the dental follicle, if present. Sutures are then applied to approximate the flap, allowing primary healing.

Haemostasis should be checked following suture. If slight oozing is present, moistened sterile gauze can be placed to control it.

References:

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