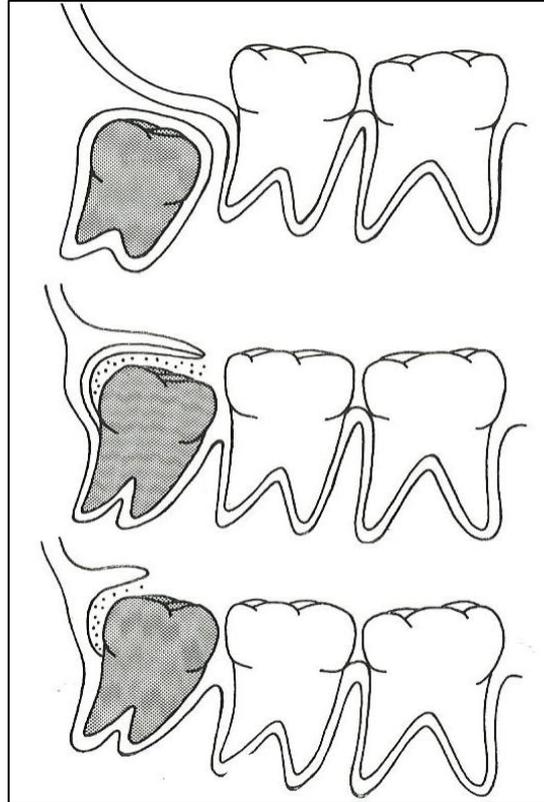


Impaction of lower third molar (Wisdom tooth)

م.د. لؤي حاتم

بور د جراحة الوجه والفكين



We need to know:

What is impaction?

What are the causes of impaction?

What is the classification of impaction?

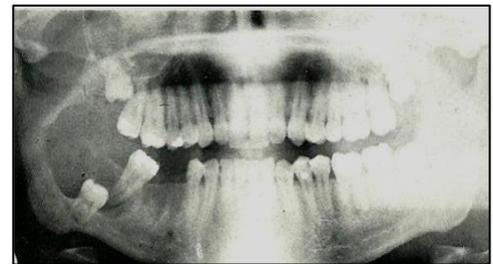
How you can manage the impaction?

Impaction:

— Tooth eruption is defined as the movement of a tooth from its site of development within the alveolar bone to its functional position in the oral cavity.

Causes of impaction:

- Lack of space in the dental arch (main cause).
- Obstruction by another tooth.
- Development in abnormal position.
- Dense overlying bone.
- Thick fibrous tissue.
- Odontogenic tumors.



Follicular cyst of the ascending ramus with impaction of lower right wisdom

— The mandibular third molar is the most commonly impacted tooth in the mouth followed by maxillary third molar, maxillary canine, mandibular canine, mandibular second premolar, maxillary second premolar and second molars.

— The mandibular third molar tooth germ is usually visible radiographically at age 9 years, and cusp mineralization is completed approximately two years later. Crown formation is usually complete by the age 14 years, by the age of 16 years the roots are approximately 50% formed and they are completely formed with open apex by age 18 years.

— The eruption of lower third molar is complete at the average age of 20 years but it can occur up to age 25 years.

Indications for removal of impacted lower third molars

1. Infection; including pericoronitis, cellulitis, abscess and osteomyelitis.
2. Unrestorable dental caries, non-treatable pulpal and/or periapical pathology.
- 3. Periodontal disease of the adjacent tooth.
- 4. Interference with orthodontic treatment.
- 5. Internal or external resorption of the impacted tooth or adjacent teeth.
6. Pain directly related to a third molar, pain associated with TMJ or masticatory musculature should be excluded.
7. Tooth in the line of bone fracture or impeding trauma management.
8. Fracture of tooth.
9. Teeth associated with cysts or tumors.
10. Teeth impeding orthognathic surgery or reconstructive jaw surgery.
11. Satisfactory tooth for use as donor for transplantation.
12. Prophylactic removal in the presence of specific medical and surgical conditions, including; before organ transplantation, chemotherapy or radiotherapy.

Classification of impacted lower third molars

1. Vertical
2. Mesio-angular
3. Horizontal
4. Disto-angular
5. Bucco-angular (transverse)
6. Linguo-angular (transverse)
7. Unusual position (aberrant)

Radiographic examination

The radiographic examination should demonstrate:

- 1-The whole impacted tooth.
- 2-Thickness of bone over the impacted tooth.
- 3-The adjacent tooth.(usually lower seven)
- 4-The inferior dental (alveolar) canal.
- 5-The anterior border of the ascending ramus.

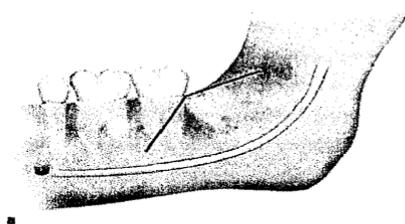
The incision and flap design

Basically, the following conditions need to be fulfilled when raising a mucoperiosteal flap:

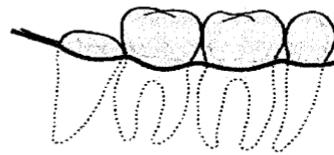
1. No damage to important anatomical structure,
2. A good view of operation field,
3. Sufficient blood supply to the mucoperiosteal flap (a wide base of the flap),
4. Possibility of enlarging the flap,
5. Wound suture on intact bony support,
6. Favourable scar formation.

Types of flaps used for surgical extraction of lower third molar:

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- 1. Envelope flap.
- 2. Triangular flap, which is an envelope flap with a vertical releasing incision.



Triangular flap



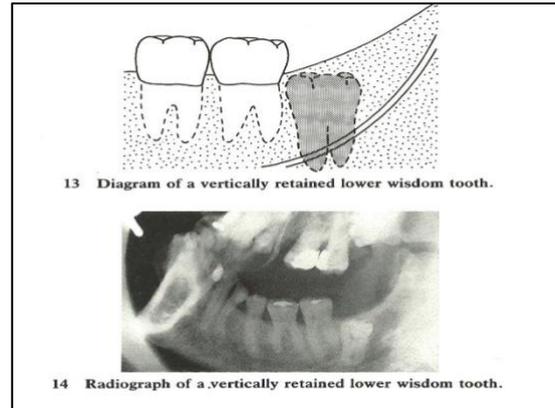
Envelope flap

1- Vertical impaction of lower wisdom teeth

—The aim is to remove bone distal to the tooth to create suitable room to move the tooth, and to make place for the elevator mesially (point of application) to luxate the tooth carefully avoiding pressure on the mandible and the adjacent second molar.

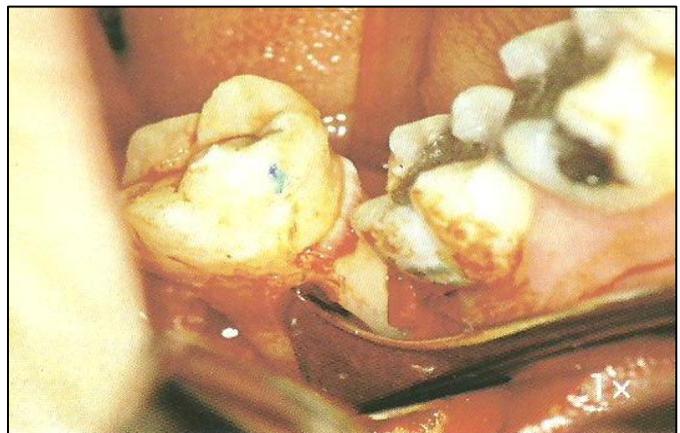
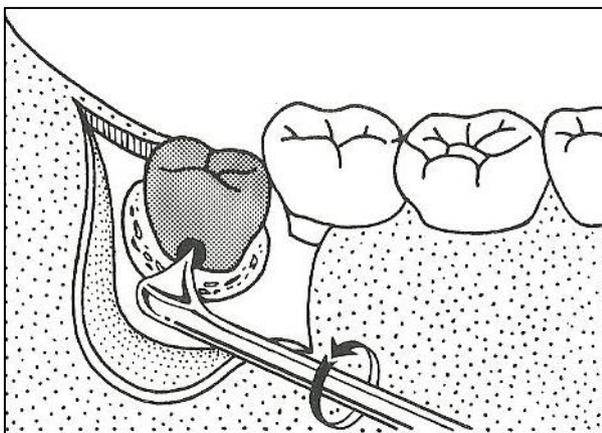


Lateral view x-ray show vertical impaction of lower third



Picture shows the vertical impaction of lower third molar and its relation to inferior alveolar nerve

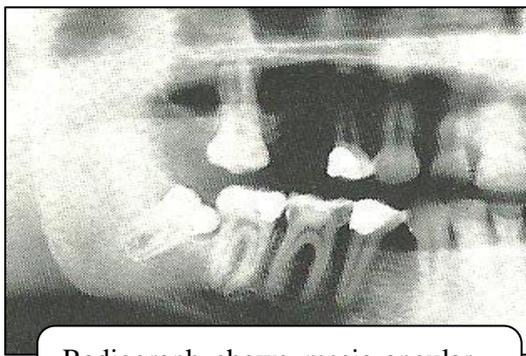
Other method is that to remove enough bone around the wisdom tooth and create a burr hole in the buccal aspect (Interradicular) to the impacted tooth and to use a claw elevator (Winter type) to elevate the tooth by rotation upward in the cranial direction



Bone removal around the impacted lower third molar and then elevate it from its socket by using Winter type elevator.

2. Mesio-angular impaction of lower wisdom teeth

After flap elevation and uncover the tooth by removing the bone on the tooth, a gutter is created with a suitable bur around the tooth, the distal bone should be removed to facilitate visualizing the tooth. It is important to make a good point of application mesially to use the elevator, first to judge the mobility of the tooth and then to elevate the tooth out of its socket.



Radiograph shows mesio-angular impaction of lower wisdom tooth

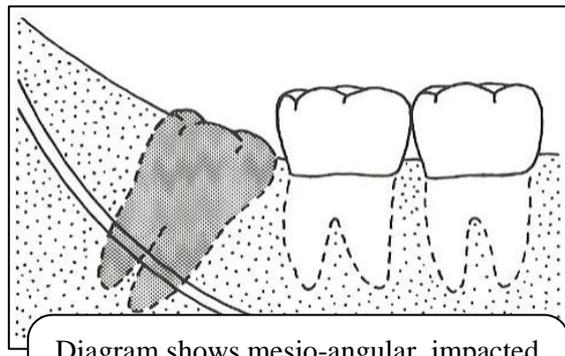


Diagram shows mesio-angular impacted lower third molar and its relation to the nerve.

3. Horizontal impaction

In the case of the horizontal impaction, the crown must be completely exposed down to its mesial surface so that an elevator blade can be inserted between this and the underlying bone. A bony channel is cleared alongside the buccal aspect of the tooth. Then bone is burred off the superficial surface of the crown and the coronal one-third of the distal root round to the bifurcation in the case of a double-rooted tooth.



Radiograph shows horizontal impaction of lower third molar

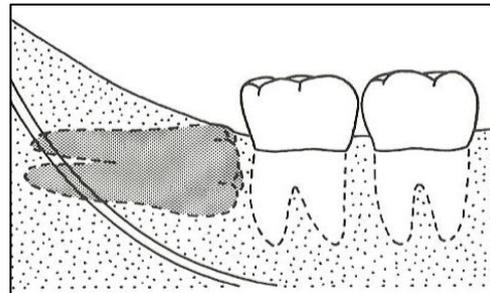
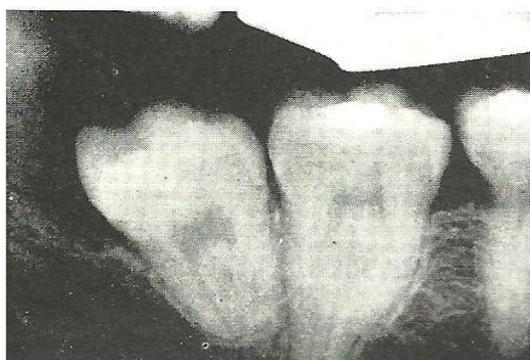


Diagram shows horizontal impaction of lower third molar

Disto-angular impaction

Disto-angular impaction removal is a **difficult** task due to the lack of place to apply elevator because of unavailable point of application. In case of a disto-angular impaction the bur must be taken round the back of the wisdom tooth and lingually until it just reaches the lingual plate. Particular care should be taken to protect the lingual nerve at this point. Incidental penetration of tooth substance must be avoided.



Radiograph shows disto-angular impaction of lower third molar

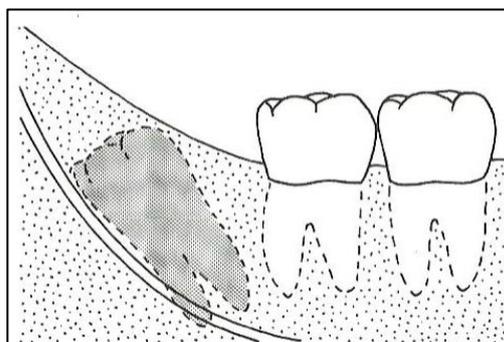
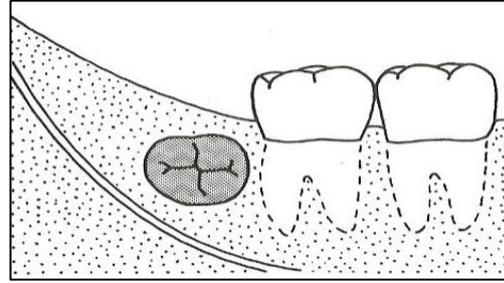
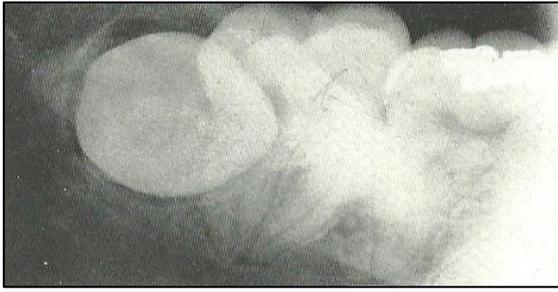


Diagram shows disto-angular impaction of lower third molar

5. Bucco-angular impaction of lower wisdom teeth, or

6. Linguo-angular impaction of lower wisdom teeth (Displacement in the transverse direction)

— For surgical removal of the bucco-angular or linguo-angular impacted wisdom teeth, a good radiographic views (one perpendicular to each other) to assess and evaluate the position of the impacted wisdom tooth. The approach is similar to standard approach with careful removal of bone **from the buccal aspect** (avoiding weakening the mandible) the delivering the tooth without pressure on the mandible until making the tooth moving by applying reasonable pressure.



Bucco-angular impaction of lower third molar

7. Unusual position (aberrant position)

—An extra-oral approach is recommended for the surgical removal of the tooth which is *near the lower border of the mandible*.

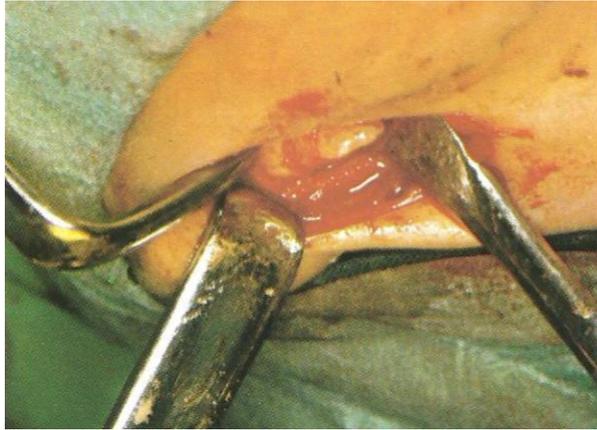


Unusual position (aberrant position) of lower third molar.
The tooth near the angle of the mandible

Extra-oral approach for tooth extraction:

— In rare cases the extraction of displaced wisdom teeth in the lower jaw may have to be carried out extra-orally. This method may be chosen if inflammatory processes have led to the formation of a fistula. The excision of the fistula can be combined with the surgical extraction of the wisdom tooth. The possibility of damage to the inferior alveolar nerve in the case of teeth located on the base of the mandible or on the buccal aspect is reduced by using the extra-oral route. Extra-oral wisdom tooth extraction is also possible during the surgical treatment of mandibular fractures; in every case it must be carried out under sterile conditions in a

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Aberrant position of wisdom tooth extracted surgically by extra-oral approach.

— specialized clinic, preferably under general anesthesia in the hospital for better sterilization, better lighting and vision and better patient's cooperation.

Complications of surgical removal impacted lower third molar

- 1- Pain, edema and trismus. These are considered as acute reversible inflammatory response to surgical trauma. They can be minimized by gentle surgical technique, the use of NSAIDs or steroids, these complications peak after 48 hours and resolve within a week.
- 2- Post-operative hemorrhage.
- 3- Infection and abscess formation.
- 4- Alveolar osteitis (dry socket), it occurs 2-3 days post-operatively due to blood clot disintegration, the predisposing factors include:
 - a) Smoking history.
 - b) Women taking oral contraceptives.
 - c) Pre-existing infection.
 - d) Excessive surgical trauma.
- 5- Nerve injury
- 6- Localized osteomyelitis
- 7- Fracture mandible, uncommon, it may occur due to apply excessive force during extraction.