

# Odontogenic and Non odontogenic Cyst: Treatment

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# GENERAL PRINCIPLES.

- ▶ **History of the lesion.**
- ▶ **Clinical examination.**
  - ▶ Inspection.
  - ▶ Palpation.
  - ▶ Imaging.
  - ▶ Biopsy.

# HISTORY OF THE LESION.

## ▶ **Duration & Progress of lesion :**

- ▶ Prolonged duration.
- ▶ Long duration without pain.
- ▶ Growing after a stationary period
- ▶ Continuously increasing.
- ▶ Short duration, rapid growth.

## ▶ **Mode of onset:**

- ▶ Trauma.
- ▶ Spontaneous.
- ▶ Slowly growing lesion.

## ▶ **Exact site and shape:**

- ▶ Origin of the lesion.

## ▶ **Change in character of lesion:**

- ▶ Ulceration.
- ▶ Fluctuation.
- ▶ Softening.
- ▶ Painless-painful.

## ▶ **Associated symptoms:**

- ▶ Paresthesia.
- ▶ Dysphagia.
- ▶ Nasal obstruction.
- ▶ Tenderness.
- ▶ Lymphadenopathy.
- ▶ Restriction of mouth opening.

## ▶ **Swellings elsewhere in the body.**

- ▶ **Loss of weight.**
- ▶ **Recurrence.**
- ▶ **Any habit.**

# INSPECTION.

- ▶ Number.
- ▶ Site.
- ▶ Shape and size.
- ▶ Colour.
- ▶ Surface:
  - ▶ Smooth,
  - ▶ Lobulated,
  - ▶ Irregular,
  - ▶ Ulcerated,
  - ▶ Fungating growth.
- ▶ Pedunculated or sessile.
- ▶ Skin over the swelling.
- ▶ Teeth:
  - ▶ Absence of tooth.
  - ▶ Vital.
  - ▶ Nonvital.
  - ▶ Displaced.
  - ▶ Periodontal health.
  - ▶ Restorability.
  - ▶ Stage of eruption.
- ▶ Relationship with vital structures.
- ▶ Extent of bone loss and risk of pathological fracture.

# PALPATION.

- ▶ Consistency of lesion:
  - ▶ Soft.
  - ▶ Hard or indurate.
  - ▶ Bony hard.
  - ▶ Cystic.
  - ▶ Uniform consistency or variable.
- ▶ Presence of pulsations.
- ▶ Fixity.
- ▶ Lymph node examination.

Well-defined monocular radiolucency

? Normal structures (incisive canal, antrum, etc), superimposed shadows or other artefacts

YES

No treatment required

? Below ID canal and with a corticated periphery

YES

Probably a salivary inclusion (Stafne idiopathic bone cavity)

? Centred on the root of a non-vital tooth

YES

Radicular cyst or apical granuloma

Treat as radicular cyst and submit specimen for biopsy

? Centred on the crown of an unerupted or partially erupted tooth, usually a third molar or upper canine

YES

Usually a dentigerous cyst or enlarged follicle. Rarely an odontogenic tumour (eg adenomatoid odontogenic tumour, calcifying odontogenic cyst, odontogenic keratocyst or ameloblastoma)

Treat as dentigerous cyst and submit whole specimen for biopsy

In the alveolar bone, no particular relationship to any remaining teeth. Smooth rounded outline, possibly displacing any adjacent teeth

YES

Probably a residual cyst unless there are unusual clinical or radiographic features

Treat as a cyst and submit whole specimen for biopsy

Smooth outline which rises up between the roots of teeth to the alveolar crest

YES

Probably a solitary bone cyst

Incisional biopsy indicated

Does not fit any of the above descriptions

Centred away from the alveolar ridge

Unlikely to be odontogenic. Consider haemangiomas, giant cell lesions, Langerhans cell histiocytosis

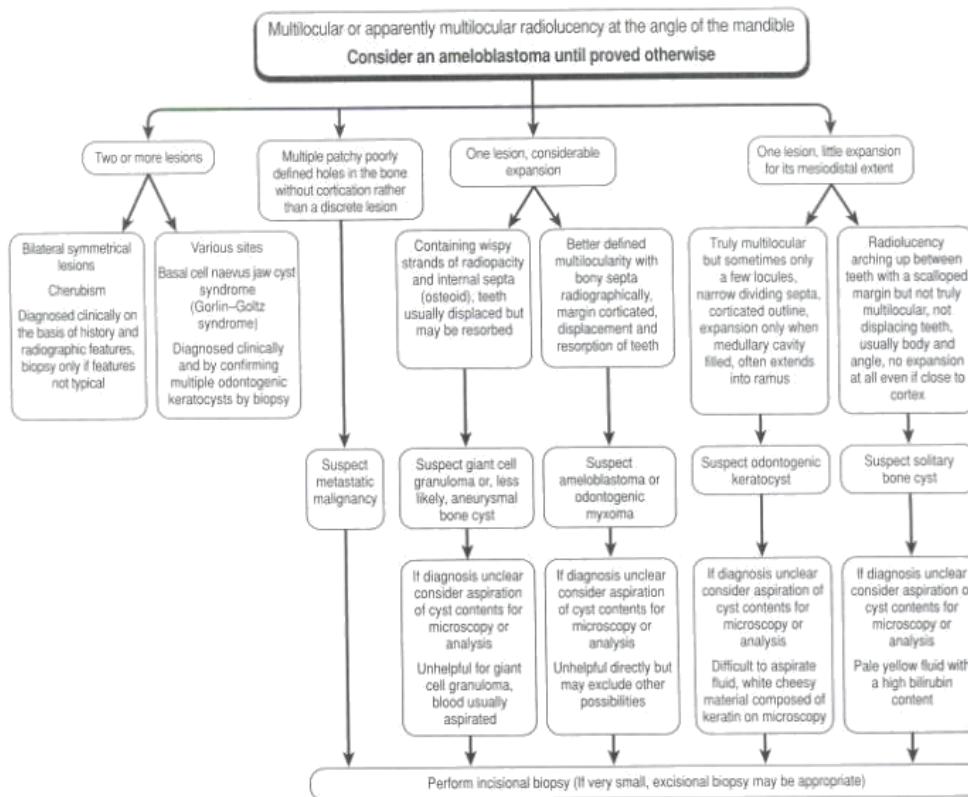
Centred in the tooth-bearing areas

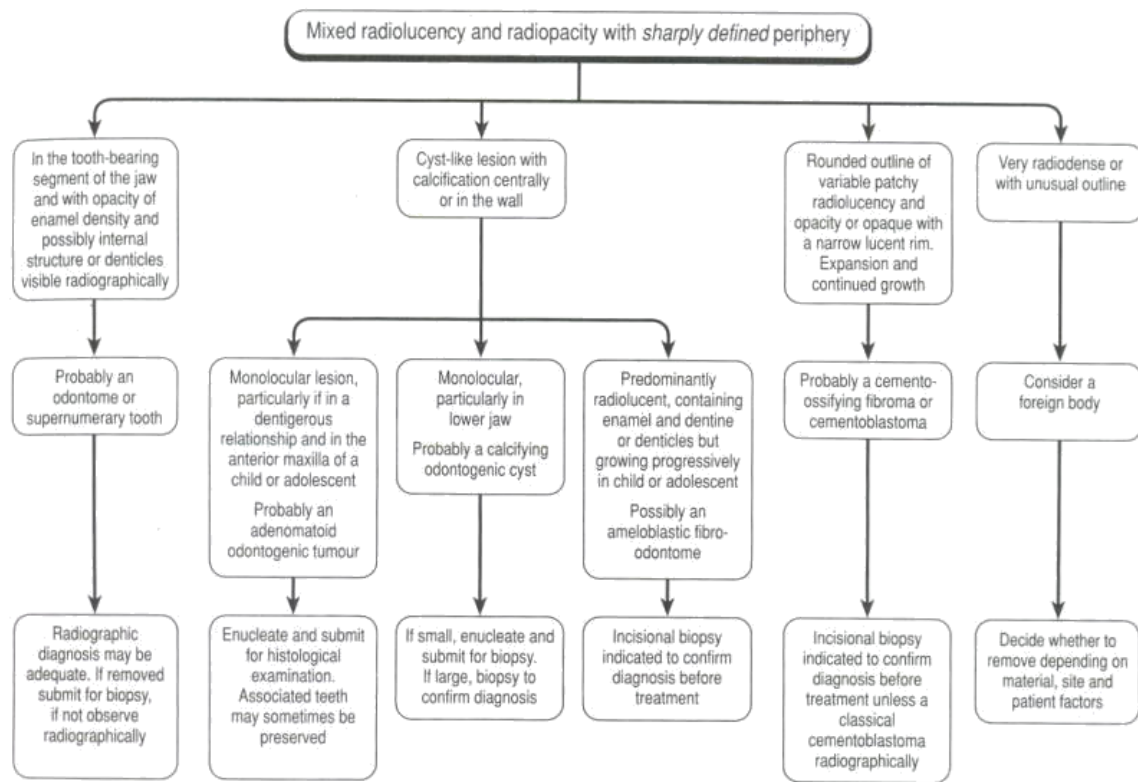
Probably an odontogenic tumour (several types), or giant cell lesion

Associated with nerve signs or enlarged lymph nodes

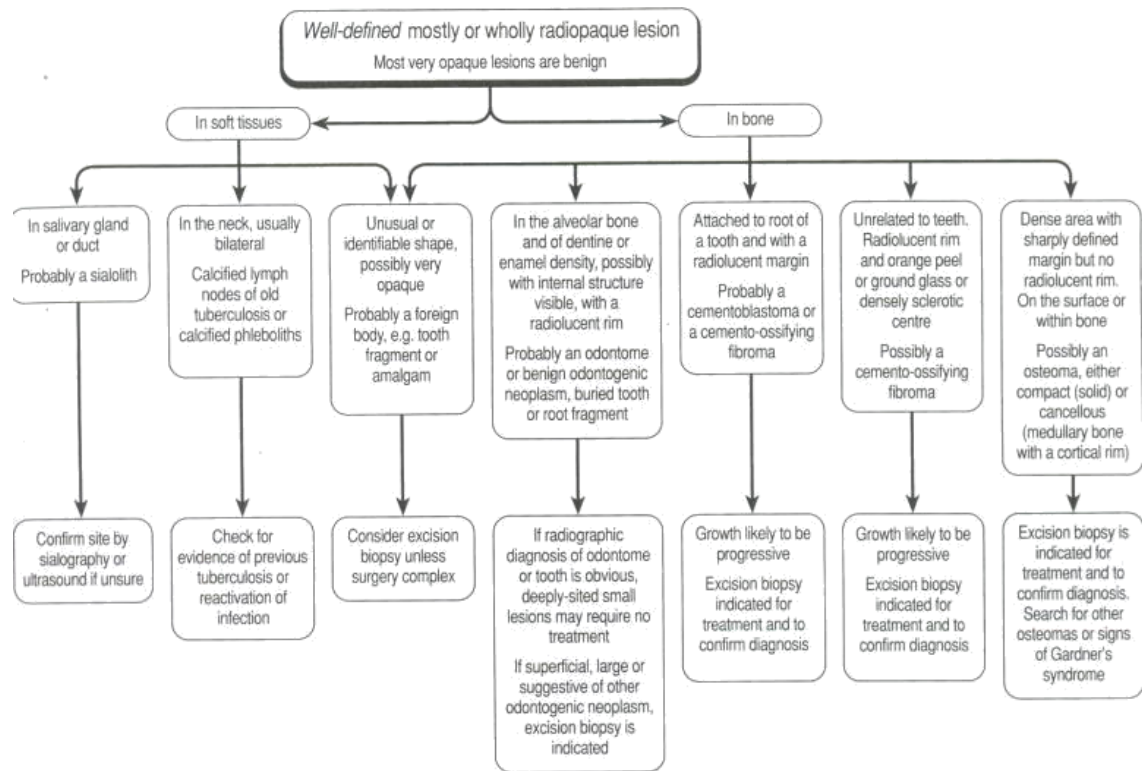
Consider a malignant neoplasm, particularly metastases, multiple myeloma and malignant odontogenic tumours

Incisional biopsy indicated





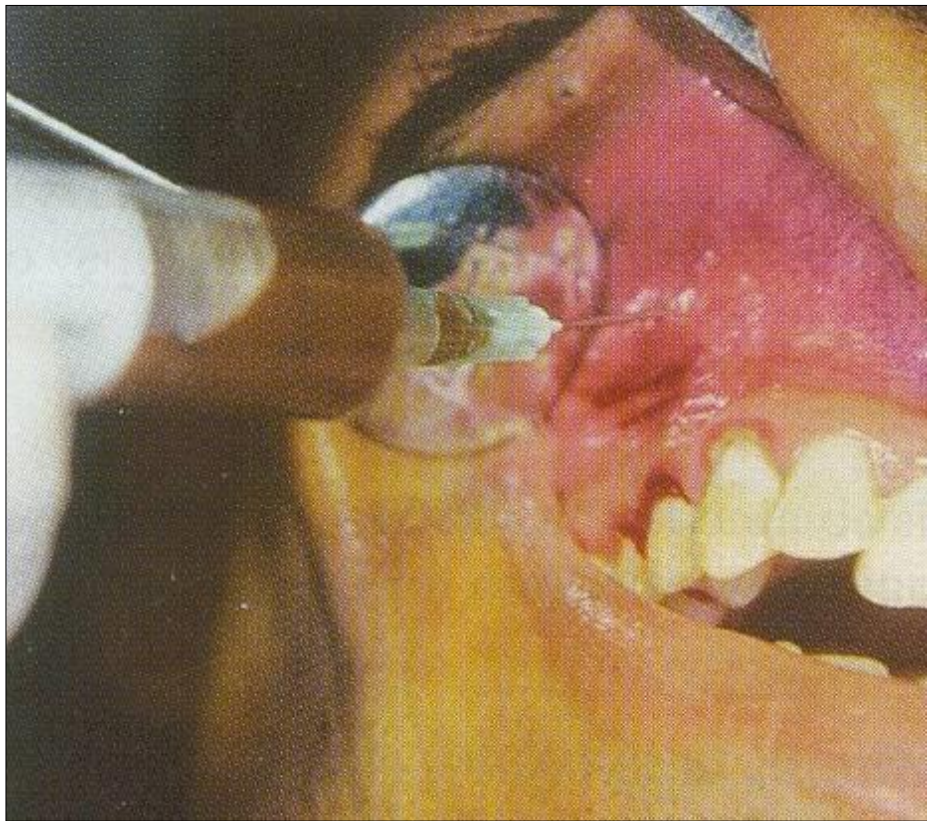




# BIOPSY.

- ▶ Exfoliative cytology.
- ▶ Fine needle aspiration cytology (FNAC).
- ▶ Excisional biopsy.
- ▶ Aspiration biopsy.
- ▶ Incisional biopsy.

# ASPIRATION BIOPSY.



# VARIOUS ASPIRATES.

<i>Pathology</i>	<i>Aspirate</i>	<i>Other Findings (of aspirate)</i>
1. Dentigerous cyst	<ul style="list-style-type: none"> <li>• Clear pale, straw coloured fluid</li> </ul>	<ul style="list-style-type: none"> <li>• Cholesterol crystals</li> <li>• Total protein in excess of 4.0 g per 100 ml (resembling serum)</li> </ul>
2. Odontogenic keratocyst	<ul style="list-style-type: none"> <li>• Dirty, creamy white viscid suspension</li> </ul>	<ul style="list-style-type: none"> <li>• Parakeratinized squames</li> <li>• Total protein less than 5.0 g per 100 ml most of which is albumin</li> </ul>
3. Periodontal cysts	<ul style="list-style-type: none"> <li>• Clear, pale yellow straw coloured fluid</li> </ul>	<ul style="list-style-type: none"> <li>• Varying amounts of cholesterol crystals</li> <li>• Total protein content is between 5-11g per 100 ml</li> </ul>
4. Infected cyst	<ul style="list-style-type: none"> <li>• Pus or brownish fluid, seropurulent/sanguinopurulent fluid, at times paste like or caseous consistency</li> </ul>	<ul style="list-style-type: none"> <li>• Polymorphonuclear leukocytes</li> <li>• Foam cells</li> <li>• Cholesterol clefts</li> </ul>
5. Mucocele, ranula	<ul style="list-style-type: none"> <li>• Mucus</li> </ul>	
6. Gingival cysts	<ul style="list-style-type: none"> <li>• Clear fluid</li> </ul>	
7. Solitary bone cyst	<ul style="list-style-type: none"> <li>• Serous or sanguineous fluid, blood or empty cavity</li> </ul>	<ul style="list-style-type: none"> <li>• Necrotic blood clot</li> </ul>
8. Stafne's bone cavity	<ul style="list-style-type: none"> <li>• Empty cavity will yield air</li> </ul>	
9. Dermoid cysts	<ul style="list-style-type: none"> <li>• Thick sebaceous material</li> </ul>	
10. Fissural cysts	<ul style="list-style-type: none"> <li>• Mucoïd fluid</li> </ul>	
11. Vascular cyst walls	<ul style="list-style-type: none"> <li>• Fresh blood</li> </ul>	
12. Intramedullary cavernous haemangioma	<ul style="list-style-type: none"> <li>• Syringe full of venous blood</li> </ul>	

# INCISIONAL BIOPSY.

- ▶ Aspiration should be tried before.
- ▶ Wedge fashion.
- ▶ Normal tissue should be excised.
- ▶ Ulcerated and necrotic tissue should be avoided.
- ▶ Avoid causing injury to nerves, teeth of blood vessels.
- ▶ Sufficient amount of tissue should be obtained.
- ▶ Specimen tissue should not be crushed.
- ▶ Deeper biopsies are preferred over superficial ones.
- ▶ Proper hemostasis is achieved prior to closure.
- ▶ Specimen should be properly oriented.
- ▶ Tissue should be immediately stored in 10% formalin solution completely immersed.

# OPERATIVE PROCEDURES.

## ▶ Cysts:

### ▶ Marsupialization (decompression).

- ▶ Partsch I.
- ▶ Partsch II.
- ▶ Marsupialization by opening into nose or antrum.

### ▶ Enucleation:

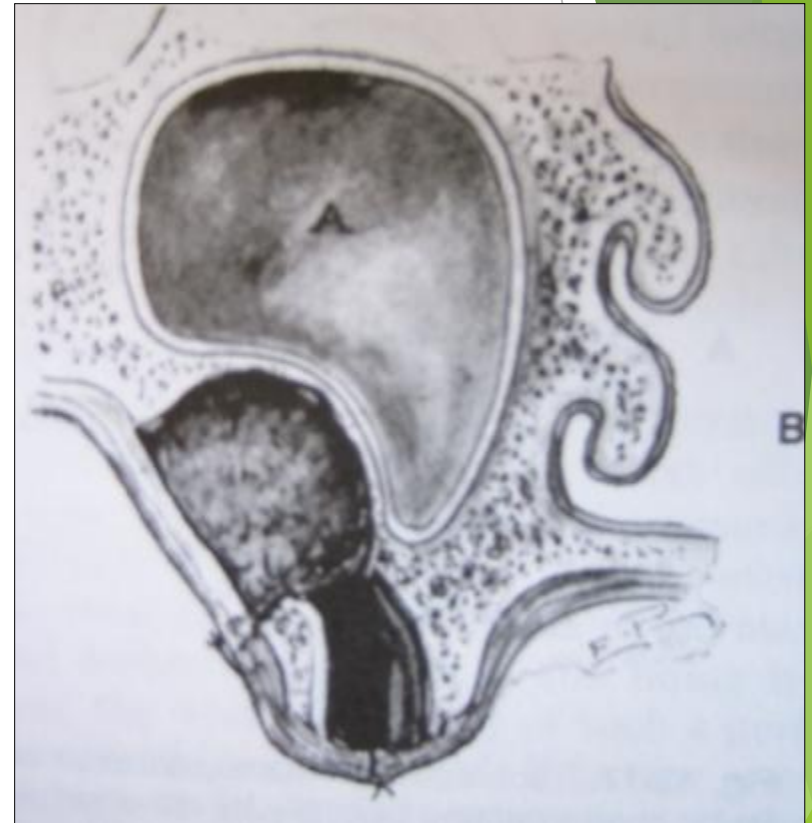
- ▶ Enucleation and packing.
- ▶ Enucleation and primary closure.
- ▶ Enucleation and primary closure with reconstruction/bone grafting.

- ▶ **Jaw tumors:** (Gold, Upton and Marx in 1991).
  - ▶ Enucleation.
  - ▶ Curettage.
  - ▶ Marsupialization.
  - ▶ Resection without continuity defect(RsCD).
  - ▶ Resection with continuity defect(RcCD).
  - ▶ Disarticulation.
  - ▶ Total resection.
  - ▶ Composite resection.

# MARSUPIALIZATION.

- ▶ Principle:
- ▶ Indications:
  - ▶ Age:
  - ▶ Proximity to vital structures.
  - ▶ Eruption of teeth.
  - ▶ Size of cyst.
  - ▶ Vitality of teeth.
- ▶ Advantages.
- ▶ Disadvantages.

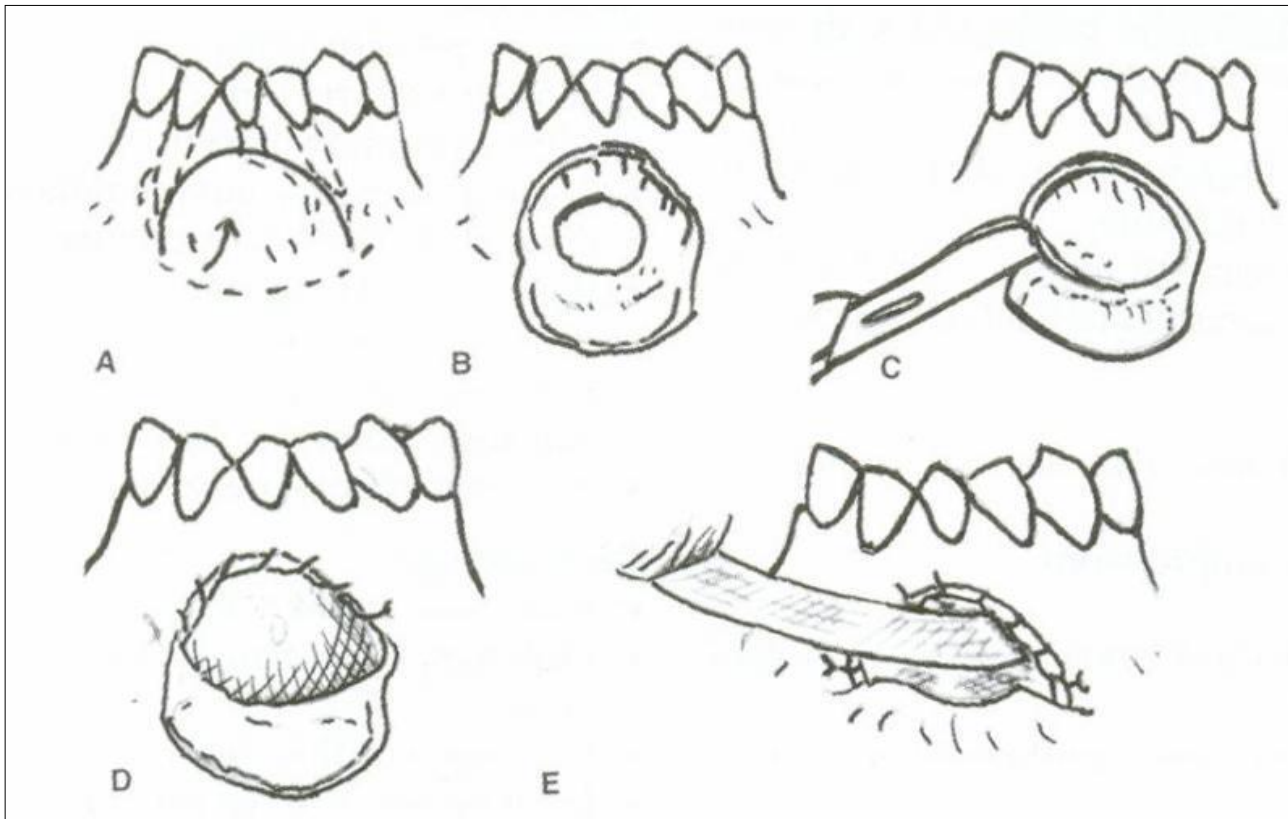


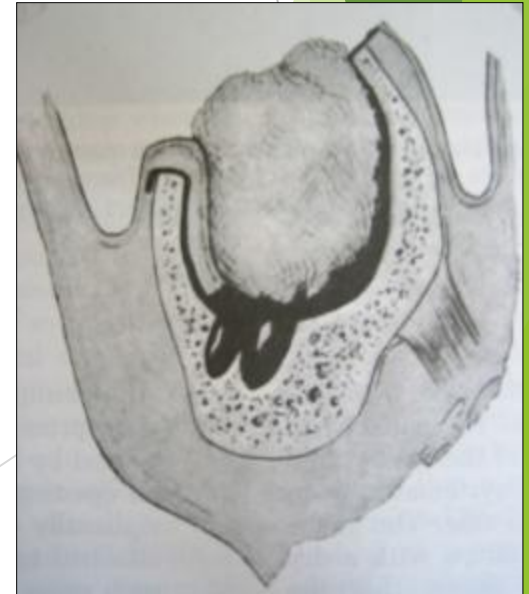
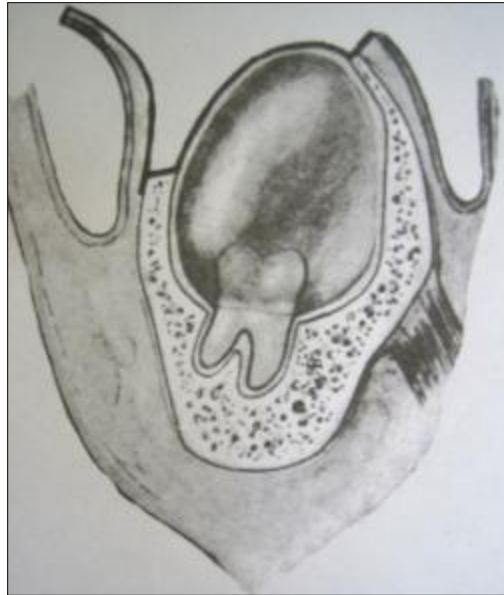


# Surgical procedure.

## ▶ **Partsch I.**

- ▶ Anesthesia.
- ▶ Incisions.
- ▶ Removal of bone.
  - ▶ Thin bone.
  - ▶ Thick bone.
- ▶ Removal of cystic lining.
- ▶ Visual examination of residual cystic lining.
- ▶ Irrigation of the cystic cavity.
- ▶ Suturing.
- ▶ Packing.
- ▶ Maintenance.
- ▶ Use of plugs.
- ▶ Healing.







# MARSUPIALIZATION.





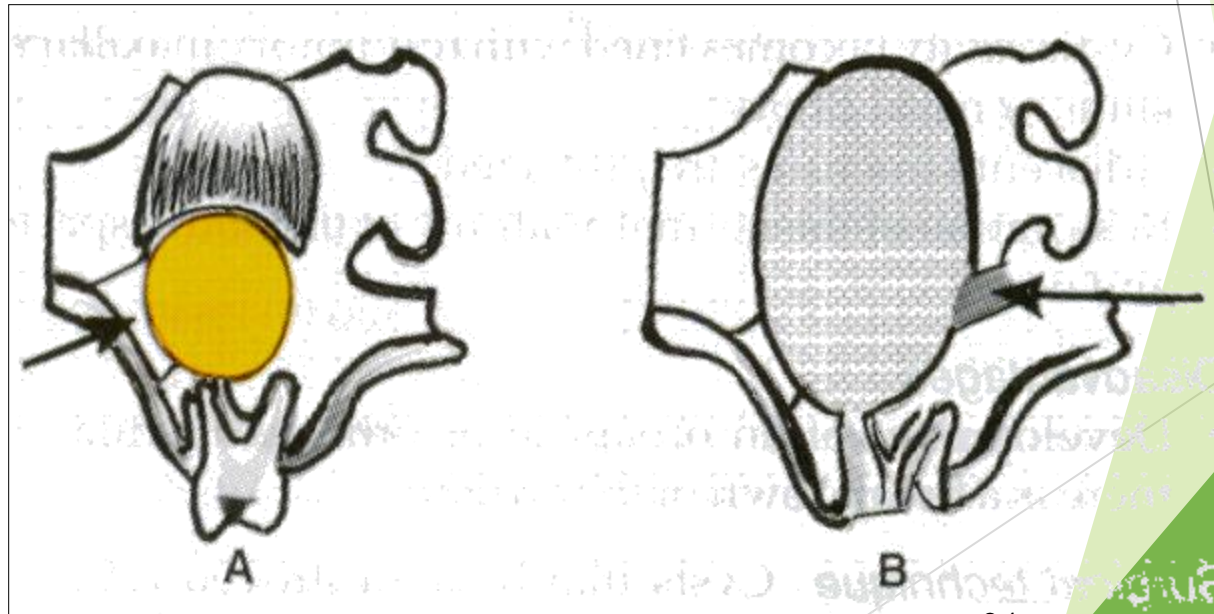
- ▶ Partsch II or Waldron's method:

2 stage procedure combining marsupialization and enucleation.

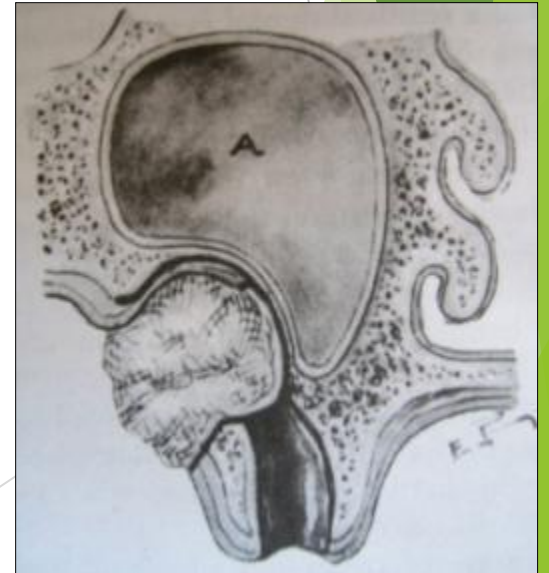
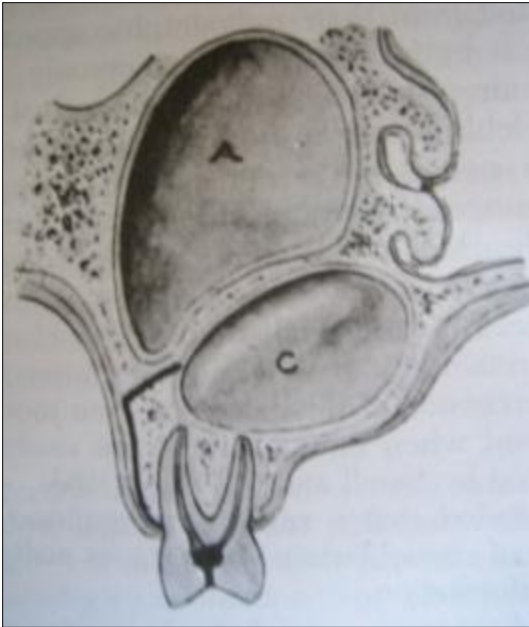
- ▶ Indications.
- ▶ Advantages.
- ▶ Disadvantages.

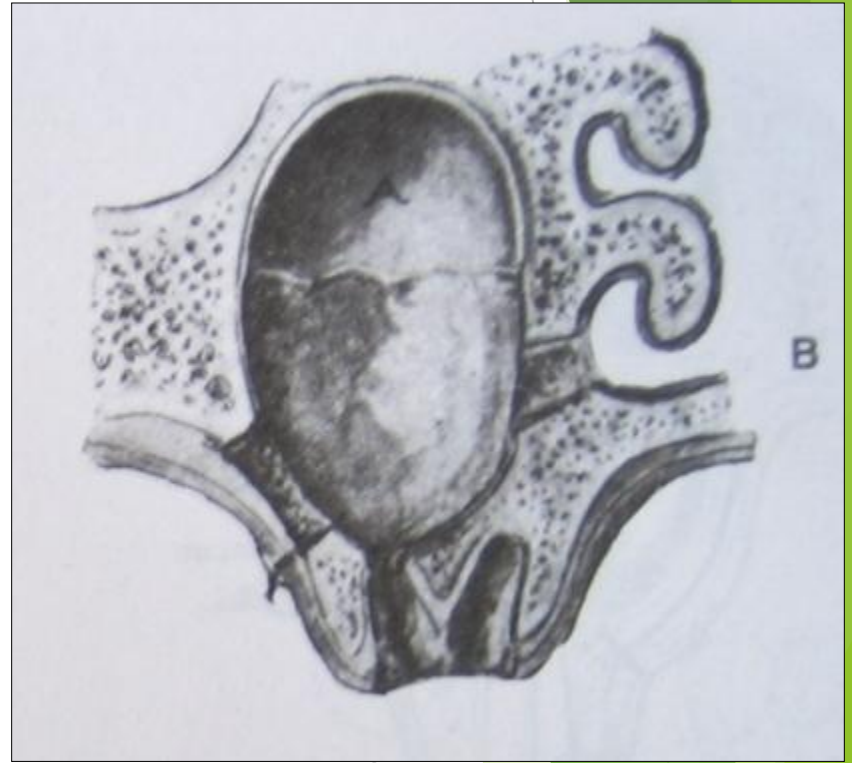
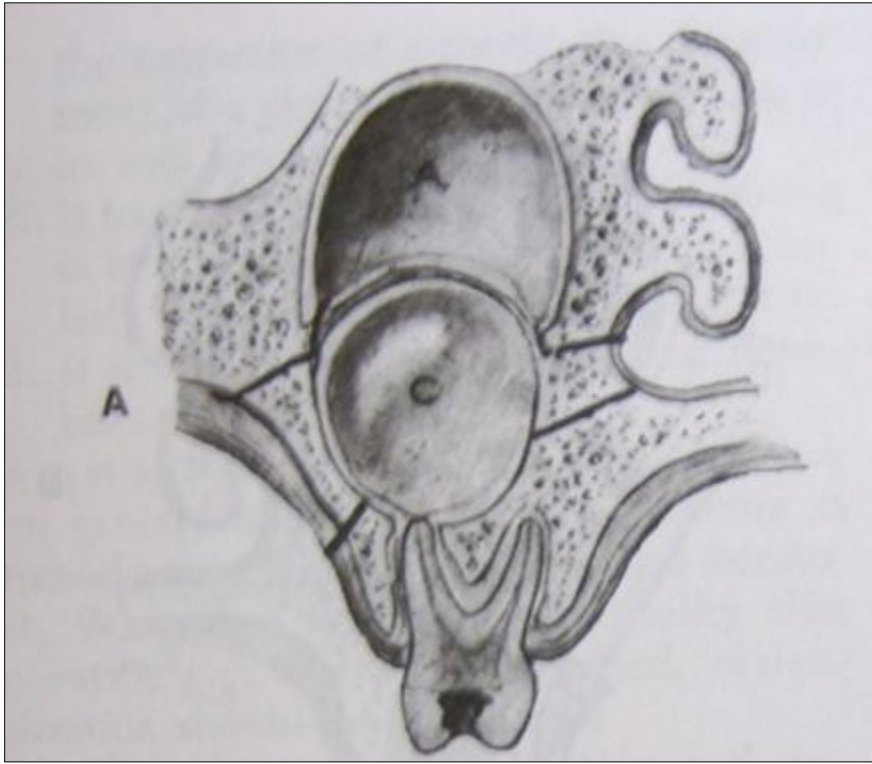
# Opening into nose or antrum.

- ▶ Advantages.
- ▶ Disadvantages.
- ▶ Surgical technique.









# Enucleation.

- ▶ Principle.
- ▶ Indications.
- ▶ Advantages.
- ▶ Disadvantages.
- ▶ Surgical technique.

# Enucleation and packing.

- ▶ This is indicated if primary closure is unsuccessful.
  - ▶ Infected cyst.
  - ▶ Difficulty in approximating wound edge.
- ▶ Dehiscence after primary closure.
- ▶ The cavity is packed as in marsupialization.

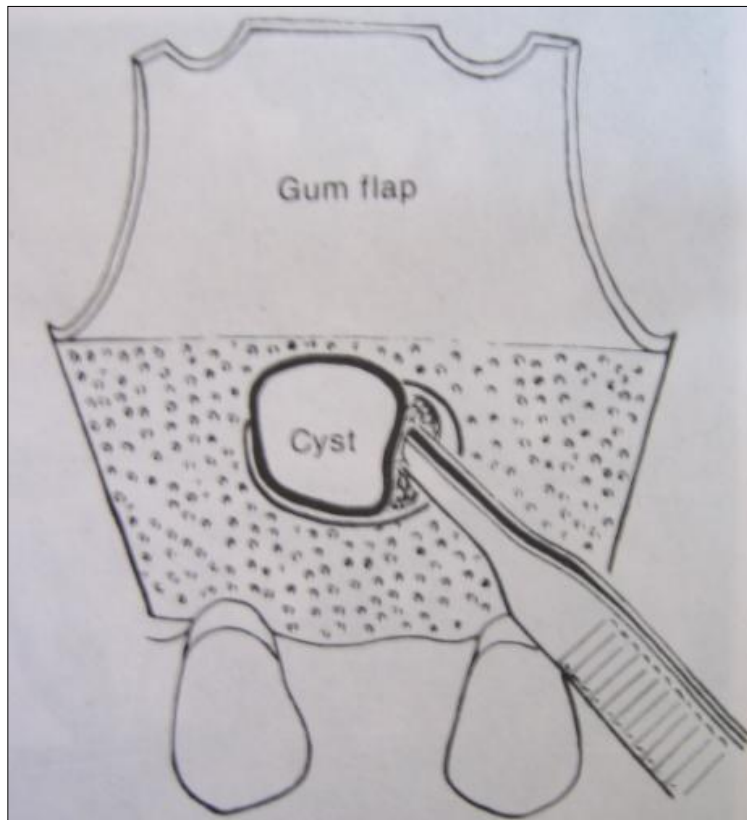
# Enucleation and primary closure.

- ▶ Enucleation of small cystic lesions from an intra oral approach.
- ▶ Enucleation of large, inaccessible mandibular lesions from an extraoral approach.
- ▶ Enucleation and primary closure with reconstruction/bone grafting.

# Enucleation of small cystic lesions from an intra oral approach.

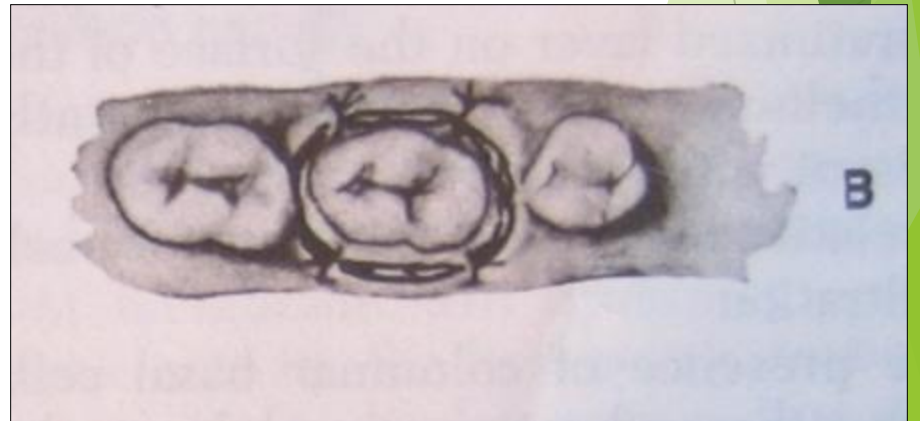
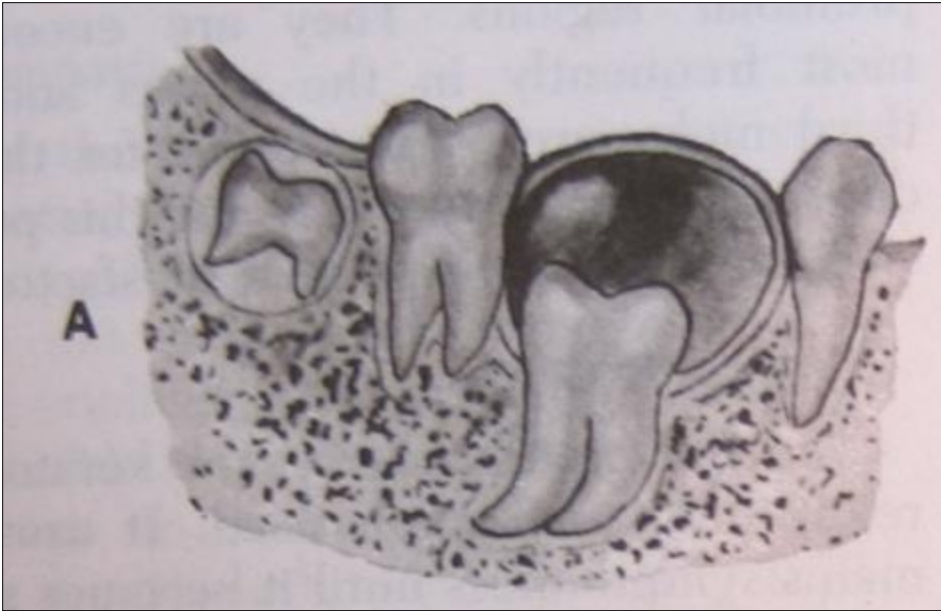
- ▶ Anaesthesia. (GA, LA, CS)
- ▶ Incision :
  - ▶ Around the necks of involved and teeth adjacent on either side.
  - ▶ Flap rests on sound teeth.
  - ▶ Releasing incisions are given on either ends which ends at the buccal sulcus.
- ▶ Reflection of the flap.
- ▶ Bone is removed to expose the cystic lesion.
  - ▶ If a window in the bone is already present it is enlarged using rongeur.
  - ▶ If the bone is thick holes are drilled with bone bur and they are connected to fragment the bone.
  - ▶ Thin layer of bone may be seen adhered to the flap which is peeled off.

- ▶ Cystic lining is separated.
  - ▶ Curved curett or periosteal elevator.
  - ▶ Concave surface of the instrument should face the cyst lining.
  - ▶ Care should be taken to prevent rupture of the cyst lining.
  - ▶ In areas where the cystic lining is adherent, a peanut gauze is held in the beaks of hemostat and it is inserted b/w the lining and the bony bed.
  - ▶ Cystic contents can also be aspirated so that lining shrinks and the visibility is improved.









- ▶ **Teeth**
  - ▶ that required to be removed are now extracted.
  - ▶ Apicoectomy is done in endodontically treated teeth.
- ▶ Cyst cavity is inspected.
- ▶ Bleeding points are arrested.
- ▶ Wound is flushed with normal saline and antiseptic solution such as 2% povidone-iodine.
- ▶ Cavity is left to heal or various packed with graft material.

# Enucleation of large, inaccessible mandibular lesions from an extra oral approach.

- ▶ Large cystic lesions involving the
  - ▶ Body
  - ▶ Angle &
  - ▶ Ascending ramusare accessible from extra oral approach.
- ▶ Submandibular incision is taken 1.5cm to 2cm below the inferior border of mandible.
- ▶ Enucleation or marginal excision is performed.
- ▶ Stoelinga has advocated use of Carnoy's solution.

## Enucleation and primary closure with reconstruction/bone grafting.

- ▶ Large cystic lesions involving both the cortical plates and inferior border of the mandible.
  - ▶ Titanium plates .
  - ▶ Illiac crest or costochondral grafts.





# FOLLOW UP.

- ▶ Post operative vitality of teeth.
- ▶ orthodontic assistance
  - ▶ Unerupted teeth may require for eruption.
  - ▶ Alignment of displaced teeth.
- ▶ 8yrs for keratocyst.
- ▶ Gorlin's syndrome.

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