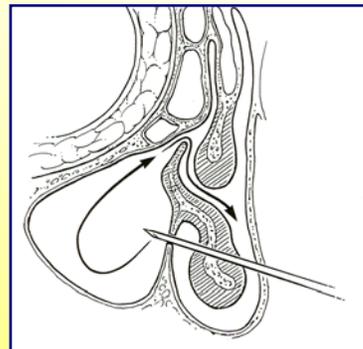


## Procedures and Operations on the Nose and Paranasal Sinuses

Prof. Samy Elwany

### Maxillary Sinus Puncture (Antral Washout)

- Concept: The maxillary sinus is irrigated with saline solution by a cannula introduced through the inferior meatus. The solution circulates inside the sinus cavity and comes out together with accumulated discharge through the natural ostium in the middle meatus.



## Maxillary Sinus Puncture (Antral Washout)

- Indications: (Uncommonly done now)
  - Diagnostic:
    - Proof puncture.
    - Culture and sensitivity study.
    - Cytological study.
  - Therapeutic:
    - Chronic infective maxillary sinusitis.
    - Dental maxillary sinusitis.

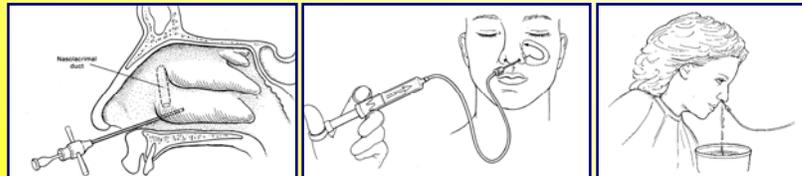
## Maxillary Sinus Puncture (Antral Washout)

- Technique: The wash out is done with a special trocar and cannula under local surface anesthesia using sterile saline solution.



## Maxillary Sinus Puncture (Antral Washout)

- The point of penetration , in the inferior meatus, is about 2 cm behind the anterior end of the inferior turbinate. The trocar is directed upwards and laterally toward the outer canthus. The sinus is then aspirated and irrigated.



## Maxillary Sinus Puncture (Antral Washout)

- Difficulties:
  - Difficult introduction:
    - Wrong site.
    - Thick sinus wall.
  - Difficult syringing:
    - Needle in close contact with posterior sinus wall.
    - Obstructed ostium.
    - Needle inserted into a polyp or cyst.

## Maxillary Sinus Puncture (Antral Washout)

### ■ Complications:

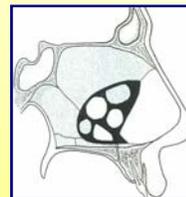
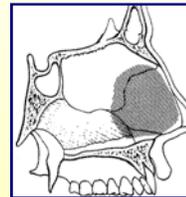
- False passage into cheek or orbit leading to emphysema or extravasation of fluid into the cheek, the lower eyelid, or orbit. Treatment is by hot fomentations and antibiotics.
- Vasovagal attack.
- Bleeding due to injury of the inferior turbinate.



## Surgery of the Nasal Septum. (Submucous Resection [SMR] and Septoplasty)

### ■ Definitions:

- **Submucous resection** means sub-perichondrial partial resection of the septal cartilage leaving a thin stripe of the cartilage along the nasal dorsum and the anterior border of the septal cartilage. Spurs (cartilaginous, bony, or mixed) are also resected.
- **Septoplasty** means straightening and realignment of the nasal septum in the midline by freeing its attachments and minimal resection of deviated or angled parts while leaving most of the septal cartilage attached to one side of the mucoperichondrium to preserve its blood supply. The resected pieces are usually re-inserted in place to preserve septal support.



## Surgery of the Nasal Septum. (Submucous Resection [SMR] and Septoplasty)

### ■ Indications:

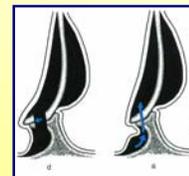
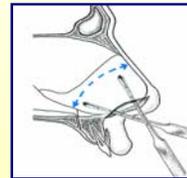
- The usual indication is to correct septal deviation or dislocation when it is causing symptoms or complications.
- Other indications:
  - Trans-septal (trans-sphenoid) hypophysectomy.
  - To improve access to the posterior part of the nasal cavity.



## Surgery of the Nasal Septum. (Submucous Resection [SMR] and Septoplasty)

### ■ Technique:

1. The mucoperichondrial flaps are elevated on one or both sides of the nasal septum.
2. Resection or septoplastic correction of the deviated parts is then performed in the sub-perichondrial plane.



## Surgery of the Nasal Septum. (Submucous Resection [SMR] and Septoplasty)

- Complications:
  1. Septal perforation.
  2. Septal hematoma.
  3. Septal abscess.
  4. Synechiae (adhesions) between the septum and lateral nasal walls.
  5. Depressed nasal bridge and/or nasal tip due to loss of septal support.



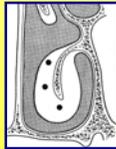
## Surgery of the Inferior Turbinates

- Indication: Persistent nasal obstruction ,due to hypertrophy of the inferior turbinates, that can not be relieved by medical treatment.  
N.B long term use of decongestant nasal drops is contraindicated.



## Surgery of the Inferior Turbinates

- Procedures:
  - Cautery and Submucous Diathermy (SMD) of the turbinates: Both of them aim at inducing submucosal fibrosis to shrink the inferior turbinate. SMD has the advantage of preserving the vitality of the surface epithelium



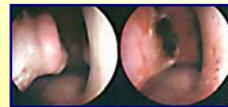
## Surgery of the Inferior Turbinates

- Partial Turbinectomy (PT): Resection of the hypertrophied parts of the turbinates. Excessive resection may cause atrophic changes (secondary atrophic rhinitis). Excessive bleeding may be a potential complication. If resection is limited to the bony concha the procedure is termed "Turbinoplasty"



## Surgery of the Inferior Turbinates

- Laser Turbinotomy:  
 The carbon dioxide laser is used to induce fibrosis in the body of the inferior turbinate while preserving the structure of the surface epithelium.



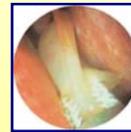
## Surgery for Nasal Polyps

- Nasal polyps were previously removed by an *avulsing* nasal snare or a Luc's forceps.



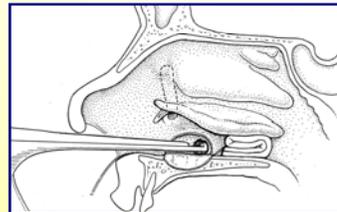
## Surgery for Nasal Polyps

Nowadays nasal polyps are usually removed endoscopically together with endoscopic ethmoidectomy.



## Surgery of the nasal Sinuses Intranasal Antrostomy (INA)

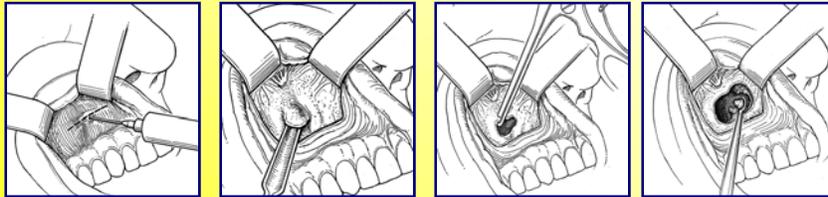
- An opening is created in the inferior meatus between the maxillary sinus and nasal cavity.
- It is largely replaced by endoscopic Middle Meatus Antrostomy (MMA)



## Surgery of the nasal Sinuses

### Caldwell-Luc Operation (Radical Antrostomy)

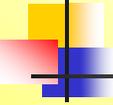
- Definition: Entering the maxillary sinus through its anterior wall (Sublabial antrostomy).



## Surgery of the nasal Sinuses

### Caldwell-Luc Operation (Radical Antrostomy)

- Indications: CW operation is only performed if endoscopic surgery is not available or can not resolve the problem, e.g.
  - Removal of tooth root or foreign bodies.
  - Removal of the root or recurrent antrochoanal polyp.
  - Access to the pterygopalatine fossa to clip the maxillary artery.



## Surgery of the nasal Sinuses

### Caldwell-Luc Operation (Radical Antrostomy)

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- **Complications:**
  - Injury of the roots of adjacent teeth.
  - Injury of the infra-orbital nerve.
  - Oro-antral fistula.



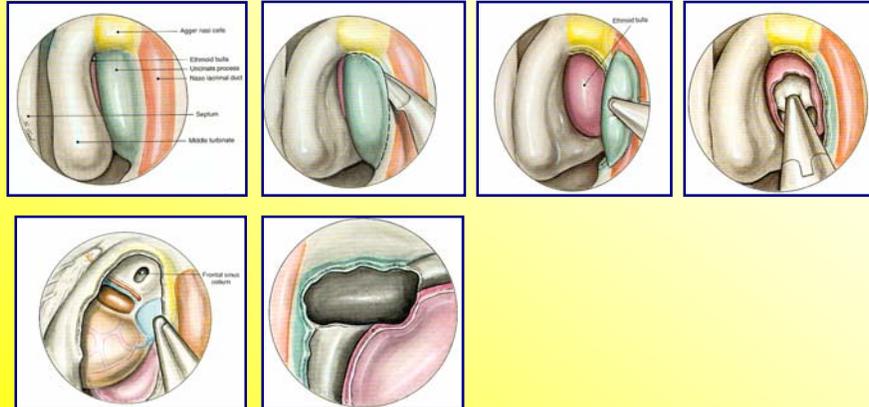
## Endoscopic Sinus Surgery (EES)

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- **Indications:**
  - Chronic and recurrent sinusitis: The concept of the operation is to clear infection and/or obstruction of the middle meatus (ostioameatal complex) to allow free drainage and aeration of the sinuses.
  - Nasal polypi.
  - Mucoceles.
  - Fungal sinusitis.
  - Extended indications, e.g. coagulation of sphenopalatine artery and closure of CSF leaks.

## Endoscopic Sinus Surgery (EES)

### ■ Technique:



## Endoscopic Sinus Surgery (EES)

### ■ Complications:

- CSF leak.
- Orbital complications: emphysema, hematoma, blindness.
- Epiphora due to damage of the nasolacrimal duct.
- Recurrence or persistence of symptoms due to adhesions, incomplete procedure, or allergy.