Diseases of Sinuses

**Acute Infections**
Most cases of acute maxillary sinusitis are secondary to:
1. Common cold
2. Influenza
3. Measles, whooping cough, etc.

In about 10% of cases the infection is dental in origin as in:
1. Apical abscess
2. Dental extraction
3. Oro-antral fistula

Occasionally, infection follow the entry of infected materials as in:
1. Diving-water is forced though the ostium
2. Fractures
3. Gunshot wound-contaminated

**Diseases of Sinuses**

1) **Inflammatory**
   A) Allergy:
      Allergic Naso-Sinusitis
   B) Infections:
      a) Acute
      b) Chronic

2) **Tumours**
Diseases of Sinuses

Acute Infections
Empyema of the antrum:
When the ostium is obstructed by oedema, the antrum become filled with pus under pressure.

Signs and symptoms:
1) Pyrexia is usually present
2) Tenderness over the antrum
3) Mucopus in the nose or naso-pharynx
4) there may be oro-antral fistula
5) X-ray show opacity or fluid level in the antrum

Treatment:
1) Bed rest
2) An appropriate antibiotic should be started
3) Nasal vasoconstrictor drop will aid to drain the sinus
4) Analgesics

In the most cases, resolution of acute maxillary sinusitis will occur, but occasionally antral wash out will be necessary to remove any residual debris. It should get performed in the acute phase.

Diseases of Sinuses

Chronic Infections
Predisposing factors:
1) Nasal Allergy.... Polyp
2) Oro-Antral Fistula
3) gross septal deformities

25% of patients with nasal polyps have chronic sinusitis

Signs and Symptoms:
Patients with chronic sinusitis usually have few symptoms
1) may be nasal obstructions
2) Usually Nasal and post nasal discharge
3) mucopus in the nose or naso-pharynx
4) Nasal mucosal congestion
5) X-ray shows fluid level, opacity, or mucosal thickening

Treatment:
Medication like antibiotic, nasal drop and analgesic may produce resolution... but recurrent is high
1) Predisposing factors should be will treated
2) Antral puncture and lavage
a) Intra-nasal antrostomy- b) Caldwell-luc operation c) antral endoscopy

Intra-nasal antrostomy
Oro-antral Fistula

Closure of fistula:
1) Refresh the fistula wall
2) use a local flap for closure

There are two type of local flap can be used:
- a) Palatal rotation flap
- b) Buccal extension flap

Complications of long standing Sinusitis

Otitis media:
the most common sources are the maxillary sinus, adenoid, tonsils,
Complications of long standing Sinusitis

Complications of long standing Sinusitis and Acute episodes

Cavernous sinus septic thrombosis

Carcinoma of the Maxillary Sinus

Sites of Origin of Maxillary Sinus Carcinoma

Primary tumours of Nasal Cavity & Paranasal sinuses

Primary tumours of Maxillary Alveolus/palate/upper sulcus

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Distribution of Sites for Primary Tumours of Nasal Cavity & Paranasal Sinuses

Histological Distribution of Tumours

Benign Sinonasal Tumours
- Papilloma
- Osteoma
- Chondroma
- Fibrous dysplasia
- Leiomyma
- Schwannoma
- Haemangioma

Intermediate Tumors
- Haemangiopericytoma
- Meningioma
- Oncocytoma

Malignant Sinonasal Tumours
- BCC
- SCC
- Minor salivary gland neoplasms
- Sarcomas
- Malignant melanoma
- Adenocarcinoma
- Lymphoma
- Neurogenic tumours

Histological Distribution of Malignant Tumours of Nasal Cavity & Paranasal Sinuses
SCC
60% - Maxillary sinus
30% - Nasal cavity
10% - Ethmoid sinuses
1% - Sphenoid/Frontal sinus

Risk Factors for Sinonasal Cancer

- Woodworking dust
- Nickel refining
- Textile workers
- Isopropyl oil
- Snuff
- HPV
- M:F 2:1
- Mean age 55 yrs

Mean age 55 yrs
Diagnosis of Maxillary Sinus Carcinoma

History
Examination
Imaging
Biopsy

Symptoms of Early Maxillary Sinus Carcinoma
Often no early symptoms
Sinusitis
Swelling of upper gum

Ohngren's Line
Suprastructure: Postero-superior
Infrastructure: Antero-inferior

Routes of Spread of Maxillary Sinus Carcinoma
Infrastructure
Suprastructure
Symptoms of Locally Advanced Maxillary Sinus Carcinoma

- Anaesthesia of Infraorbital nerve
- Diplopia
- Proptosis
- Nasal Obstruction
- Epistaxis
- Mass in hard palate/gum/upper sulcus

Symptoms of Advanced Maxillary Sinus Carcinoma

- Trismus
- Swelling of cheek

Histological Diagnosis

- Open biopsy
- Transnasal needle biopsy
- Endoscopic

Radiographic Evaluation

- Plain radiographs
- CT- axial
  - coronal
  - bone windows
  - 3-D
- MRI

Staging for Antral & Ethmoid SCC

- Limited to antral mucosa \( T_1 \)
- Erosion of palate/middle meatus \( T_2 \)
- Invasion of skin, post wall, orbital floor, anterior ethmoids \( T_3 \)
- Invasion orbital contents, cribriform plate, post ethmoids/sphenoid, nasopharynx, soft palate, pterygomaxillary space \( T_4 \)
Stage Distribution of SCC of the Maxilla

Selection of Treatment
Surgery alone: All benign tumours
   Early stage malignant tumours
Surgery & RT: Advanced malignant tumours
Advanced Unresectable Tumours: Chemo/RT
Malignant Lymphoma: Chemo/RT

Causes of Incurability
Widespread intracranial involvement
Poor surgical risk
Distant metastases
Pt refuses surgery

Pre operative Preparation
Multidisciplinary Clinic
Dental Assessment
Hygienist
Speech Therapist
Dental Impressions

Surgical Approaches
- Transnasal
- Transoral
- Transpalatal
- Lateral Rhinotomy
- Midface Degloving
- Weber-Ferguson
- Le Fort 1
- Combined Craniofacial approach

Facial Incisions
**Midface Degloving**

**Le Fort 1 Downfracture**

**Upper Cheek Flap**

**Resection Procedures**
- Partial maxillectomy
- Subtotal maxillectomy
- Medial maxillectomy
- Total maxillectomy
- Radical maxillectomy & orbital exenteration
- Anterior craniofacial resection

**Maxillectomy Classification**

**Medial Maxillectomy**
Total Maxillectomy
Radiotherapy

Adjuvant treatment with surgery
Palliative

Cataracts, blindness, trismus,
Scar retraction, xerostomia

Side effects
Reconstructive Options

Factors to consider:

Function – Speech, eating, swallowing

Psychological

Cosmetic

Maxillectomy - to reconstruct or obturate?
Results of a UK survey of oral & maxillofacial surgeons

123 surgeons
1-5 cases/year
62% - use obturator
36% - reconstruct surgically but in 10% of only cases
Obturators

**Advantages**

- Monitor recurrence
- Soft tissue support
- No donor site morbidity
- Oro-nasal regurgitation
- Bulk
- Frequent adjustments
- Hygiene problems

**Disadvantages**

- Oro-nasal regurgitation
- Bulk
- Frequent adjustments
- Hygiene problems

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**Pre-Prosthetic Planning**

Preserve as much hard palate as possible

Keep tooth adjacent to maxillary defect as an abutment

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**Immediate Surgical Reconstruction**

**Disadvantages**

- Prolonged op time
- Donor site morbidity
- Excessive bulk
- Unable to monitor recurrence?

**Advantages**

- Avoids problems assoc with obturators
- Superior cosmetic and functional outcome

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**Pre-Prosthetic Planning**

Split skin graft provides better tissue surface

Scar band assists retention of obturator

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**Pre-Prosthetic Planning**

Remove inferior turbinate to prevent interference

Reflect palatal mucosa over medial margin of resected palate for tissue coverage

If > 50% of soft palate is resected – consider removal of remainder of residual palate
Objectives of Surgical Reconstruction

- Consistently obtain a healing wound
- Restore palatal competence and function
- Support the orbit or fill the orbital cavity
- Obliterate the maxillary defect
- Restore facial contour

Pedicled Local Flap – Buccal Fat Pad

Cover Plate Inserted

Healed Buccal Fat Pad Reconstruction
Rectus Abdominis Flap

Latissimus Dorsi Flap

Implant Retained Prosthesis

Implant Retained Prostheses

Tranzygomatic Implants

Algorithm for Maxillectomy Defect Reconstruction
Results of Treatment
5 yr Survival

5-Year Survival by stage: SCC of maxilla

Patterns of Failure: SCC of Maxilla

The Royal College of Surgeons

The End