

# Overview of Rhinosinusitis

and

# Modern Management

Where Precision Changes Outcomes

**Dr. Maryam Binte Shahid**

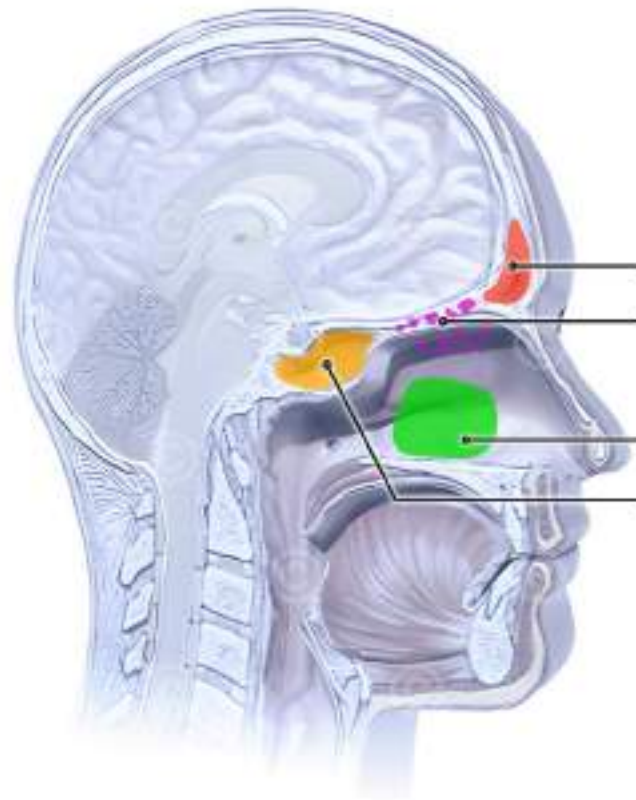
**Dr. Tanisha Ahmed**

# PARANASAL SINUSES

- The paranasal sinuses are a group of air containing spaces that surround the nasal cavity
- Lined by respiratory epithelium
- Main groups:
  - Frontal
  - Ethmoid (anterior, middle, posterior cells)
  - Maxillary
  - Sphenoid

# FUNCTION OF NOSE & PARANASAL SINUSES

- Respiration
- Humidifying And Warming Inspired Air
- Filtration
- Protection Of Lower Airway
- Olfaction
- Regulation Of Intranasal Pressure
- Increasing Surface Area For Olfaction
- Lightening The Skull
- Resonance
- Absorbing Shock
- Contribute To Facial Growth

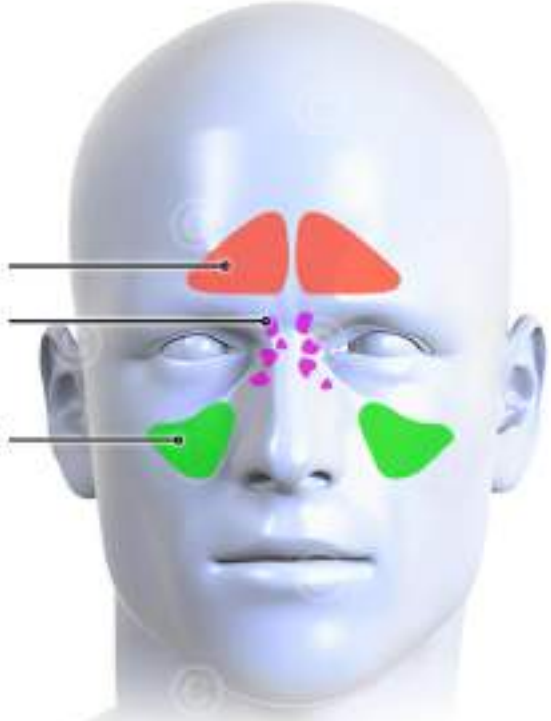


Frontal sinus

Ethmoid sinus

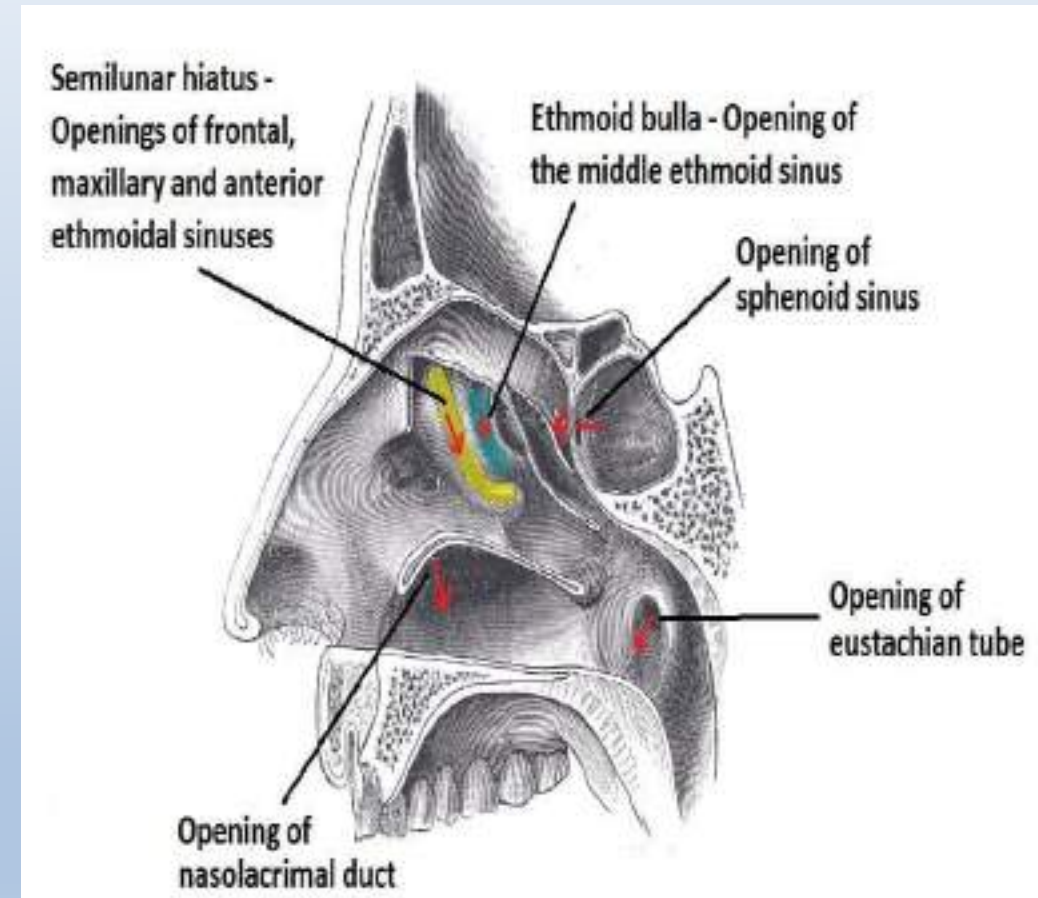
Maxillary sinuses

Sphenoid sinus



# Drainage Pathways

- ❑ Maxillary → Middle Meatus
- ❑ Frontal → Middle Meatus
- ❑ Ant. Ethmoid → Middle Meatus
- ❑ Post. Ethmoid → Superior Meatus
- ❑ Sphenoid → Sphenoethmoidal Recess



# Definition

Rhinosinusitis is inflammation of the mucosa of the nose and paranasal sinuses.

- Key features:
  - Mucosal edema
  - Nasal obstruction
  - Mucus retention
  - Impaired sinus ventilation
  - Variable microbial involvement

# CLASSIFICATION BY DURATION

- • Acute Rhinosinusitis : < 4 weeks
- • Subacute Rhinosinusitis : 4–12 weeks
- • Chronic Rhinosinusitis : > 12 weeks
- • Recurrent Acute Rhinosinusitis :  $\geq 4$  episodes/year with full recovery in between

# CHRONIC RHINOSINUSITIS(CRS) PHENOTYPES

- • CRS without Nasal Polyps (CRSsNP)
- • CRS with Nasal Polyps (CRSwNP)

# ETIOLOGY-BASED CLASSIFICATION

## ☐ Infectious:

- Viral
- Bacterial
- Fungal (AFRS, fungal ball, invasive)

## ☐ Non-Infectious:

- Allergic
- Non-allergic inflammation
- Structural causes
- Immunodeficiency
- Mucociliary dysfunction

# ETIOLOGY

## ☐ Viral (10-15%) :

- *Rhinovirus* (most common)
- *Influenza*
- *Parainfluenza*
- *Adenovirus*

## ☐ Fungal:(Immunocompromised/DM)

- *Aspergillus*
- *Mucormycosis*

## ☐ Bacterial :

- *S.Pneumoniae*
- *H.Influenzae*
- *Moraxella*
- *Streptococcus Pyogenes*

## • Anaerobes :

- *Bacteroides*
- *Fusobacterium species*

# Predisposing Factors

- Upper Respiratory Tract Infection
- Cold weather
- Anatomic Abnormalities :Nasal Polyps, Ciliary Disorder, Septal Deviation, Concha Bullosa, Turbinate Hypertrophy
- Immunosuppression
- **Inflammatory disorder:**
  - Wegener's Granulomatosis
  - Sarcoidosis
- Mucosal disorder
  - Cystic Fibrosis
  - Allergic Rhinitis and other hyperreactivity

# **PATHOPHYSIOLOGY**

Inflammation

Mucosal Swelling With Obstruction Of Sinus Ostea

Reduction Oxygen Tension

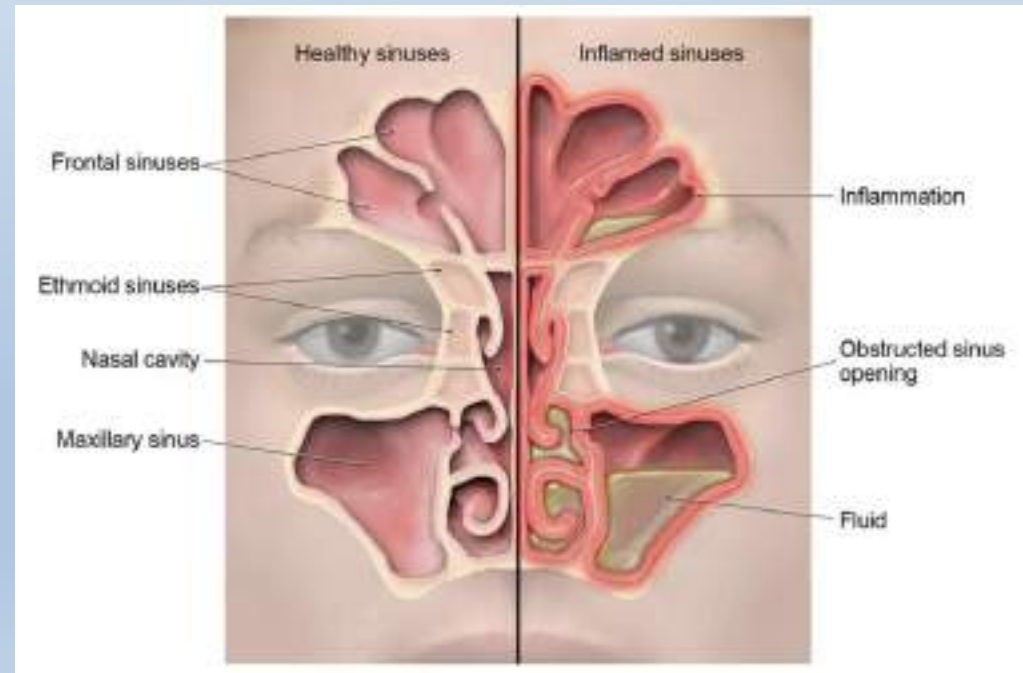
Reduce Mucociliary Transport

Collection Of Fluid In Sinus

Bacterial/Viral/Fungal Proliferation

# Acute Rhinosinusitis

The symptoms and signs of rhinosinusitis which persists less than 4 weeks with complete resolution is called acute rhinosinusitis.



# Chronic Rhinosinusitis (CRS)

12 or more weeks of persistent symptoms and signs of rhinosinusitis with no complete resolution is called chronic rhinosinusitis.

# CLINICAL FEATURES

SYMPTOMS	
Nasal Blockage/Congestion	Headache
Nasal Discharge	Halitosis
Facial Pain/Pressure	Dental Pain
Reduction Or Loss Of Smell	Earache
Fever	Fatigue
	Cough

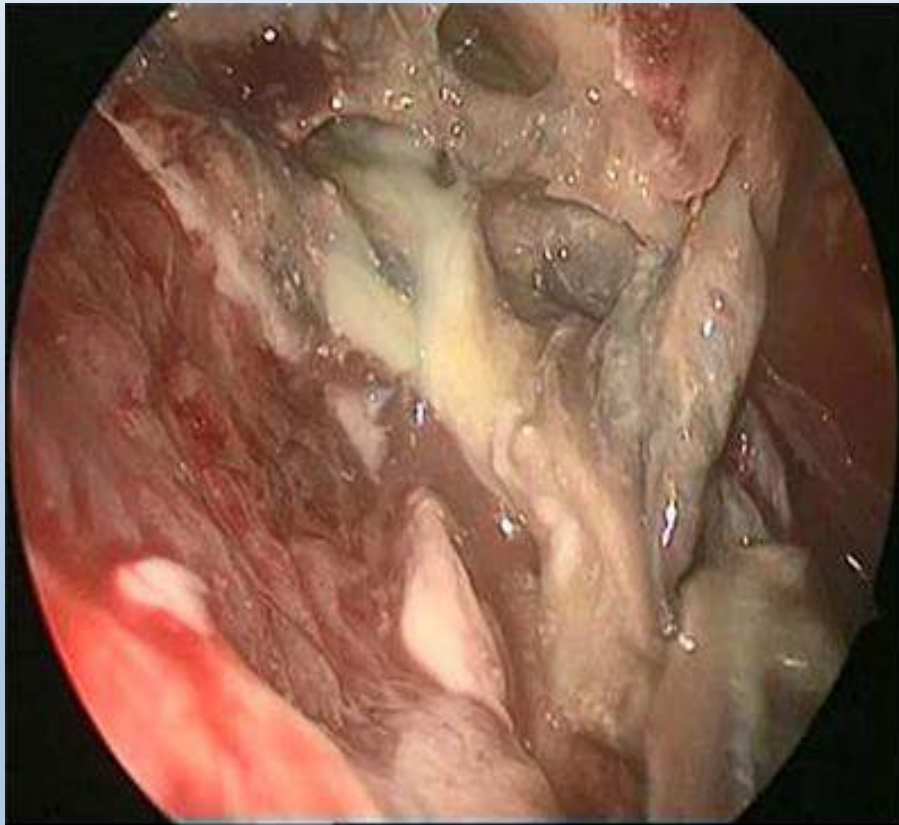
# SIGNS

- Inspection : Facial Congestion
- Palpation : Sinus Tenderness
- Anterior Rhinoscopy : Purulent/Mucopurulent Discharge
- Posterior Rhinoscopy : Purulent/Mucopurulent Discharge
- Nasal Patency Test : Obstruction
- Smell Test : Reduce / Absent

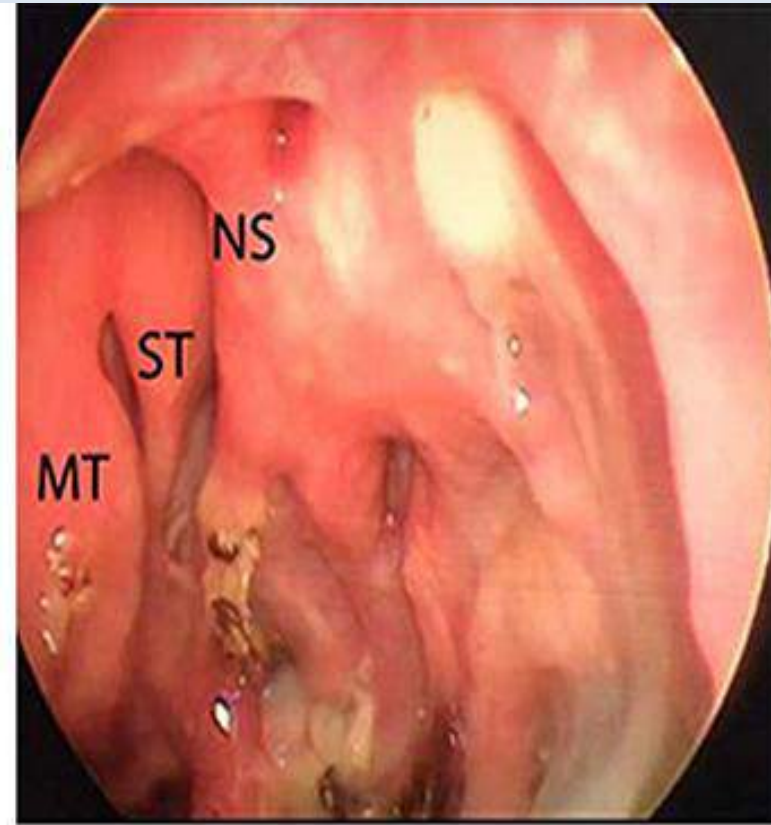
# FUNGAL RHINOSINUSITIS

- Aspergillus is the most common fungal agent
- Two categories –
  - Non-invasive disease
    - Fungal ball
    - Allergic fungal rhinosinusitis (AFRS)
  - Invasive disease
    - Acute fulminant fungal rhinosinusitis
    - Chronic or indolent invasive fungal rhinosinusitis

# Nasoendoscopic view of Fungal Rhinosinusitis



**A**



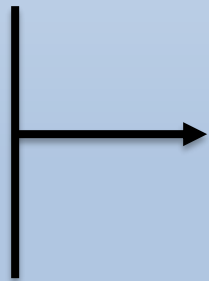
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# INVESTIGATION

- **Nasal Endoscopy**
- **Radiology :**
  - Plain X-ray
  - Computed Tomography
- Nasal Swab For C/S

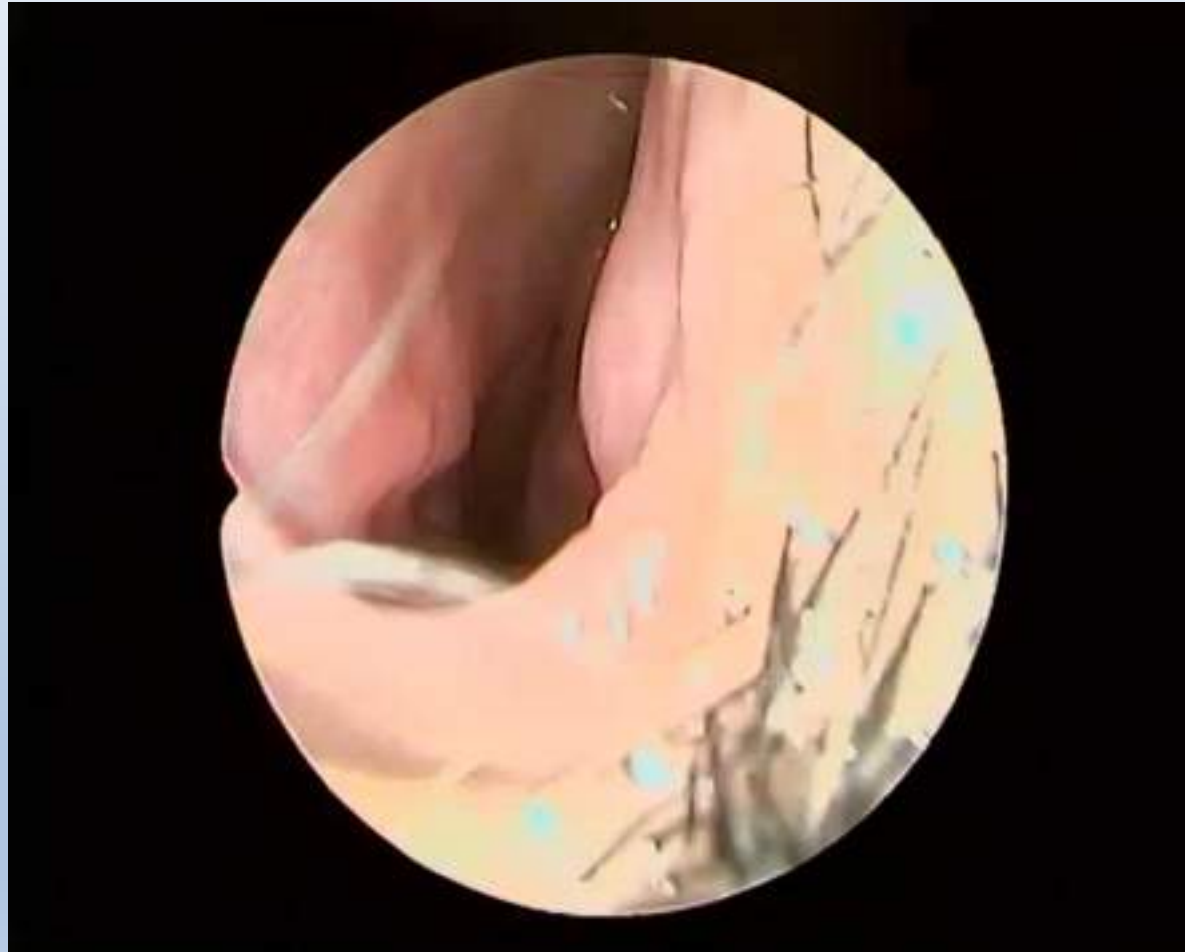
## Blood Test :

- CBC
- ESR
- S.Urea
- LFT

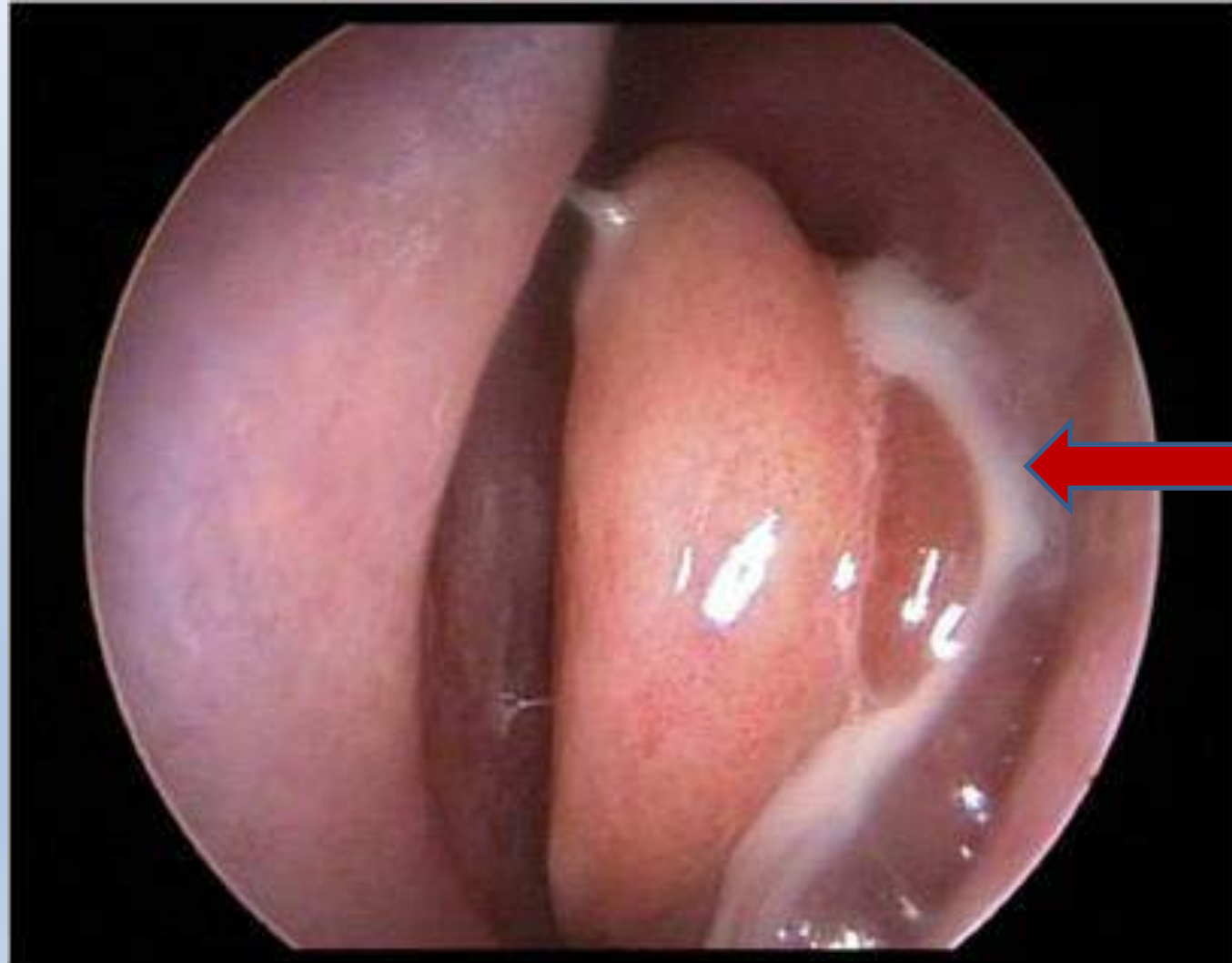


To Detect Underlying Disease  
Predisposing To Infection

# DIAGNOSTIC NASO-ENDOSCOPY (DNE)



# RHINOSINUSITIS



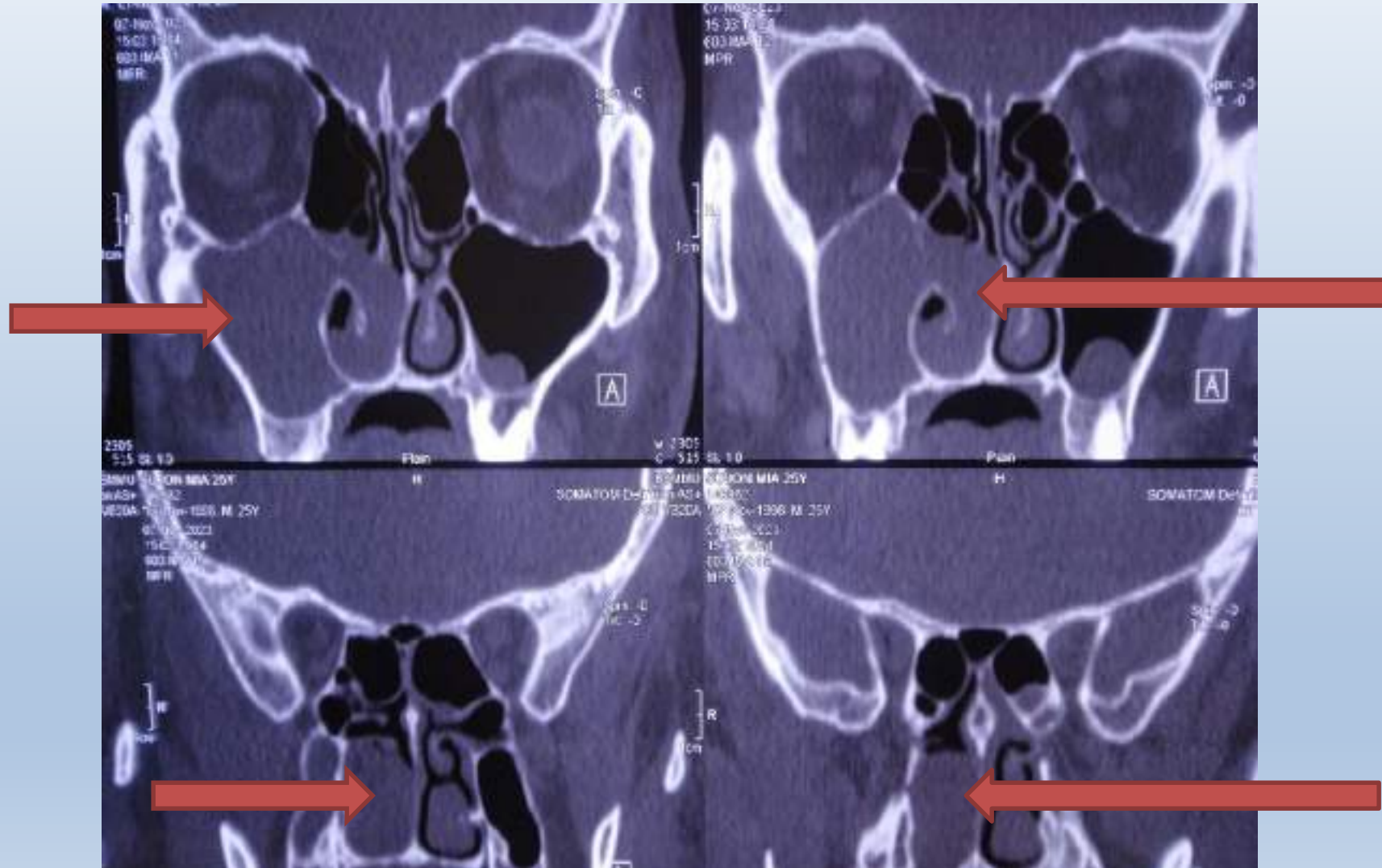
# BILATERAL NASAL POLYPOSIS



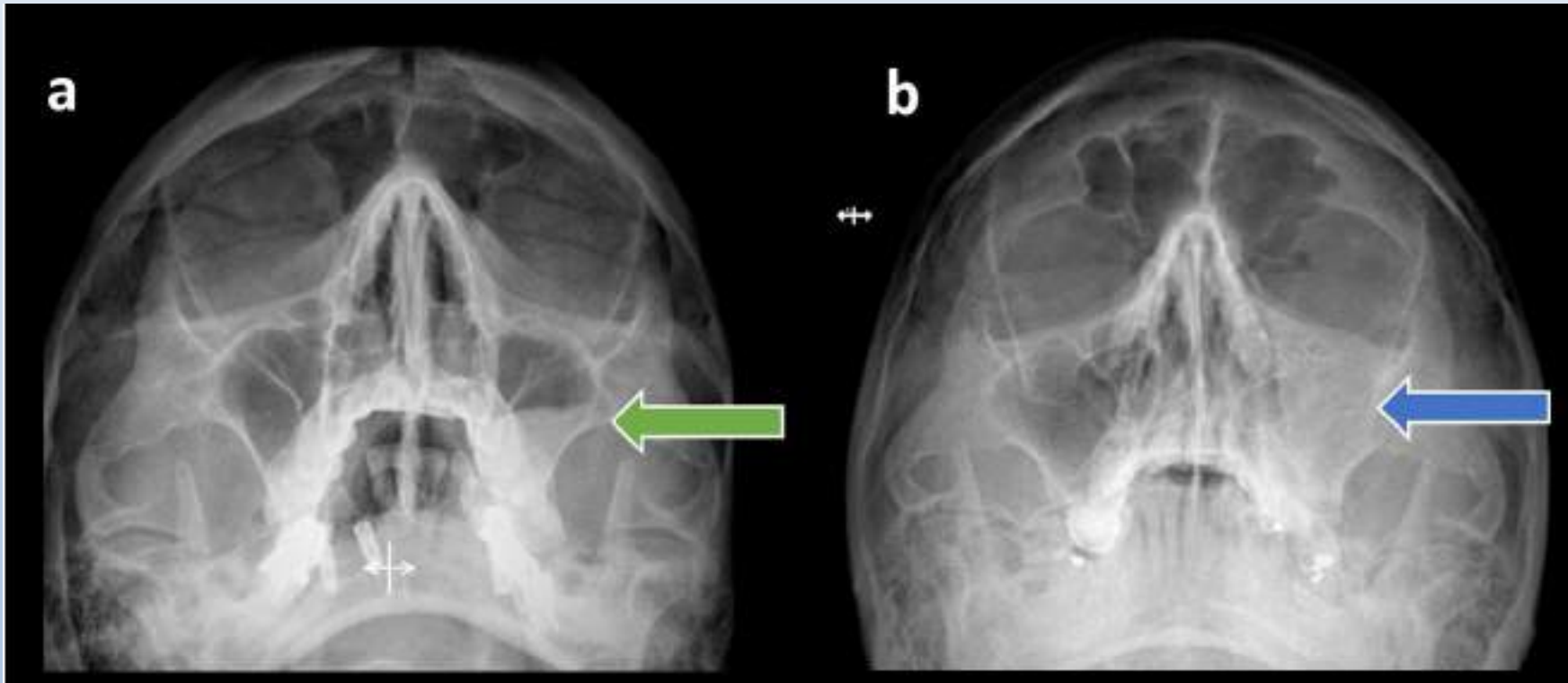
# ANTRO-CHOANAL POLYP



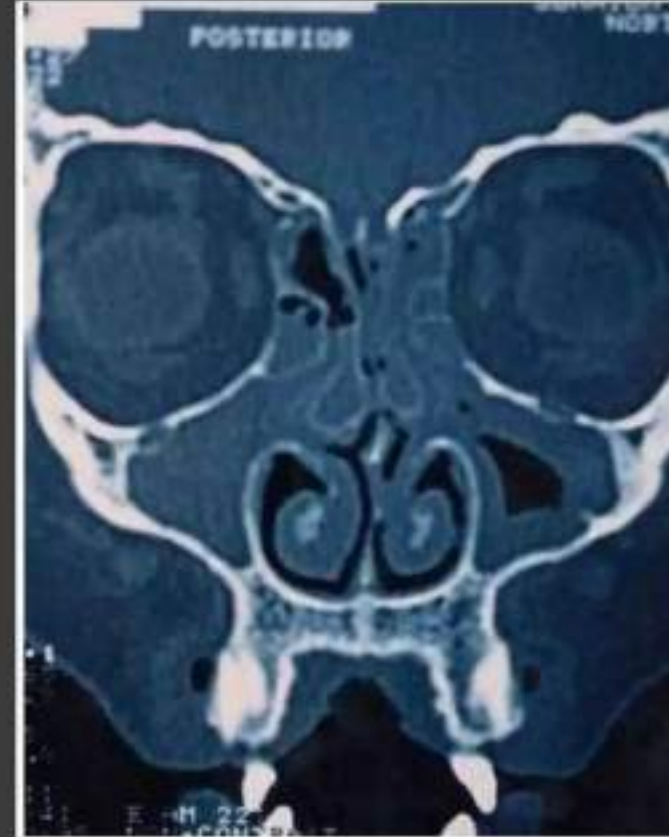
# ANTRO-CHOANAL POLYP



# Acute Maxillary Sinusitis: X-ray



# CT Scan of Nose and PNS :



CT scan PNS coronal view

# Complications of Rhinosinusitis

- Orbital
  - : Preseptal Cellulitis
  - Postseptal Cellulitis Without Abscess
  - Subperiosteal Abscess
  - Orbital Cellulitis
- Intracranial
  - : Meningitis
  - Extradural Abscess
  - Subdural Abscess
  - Brain Abscess
  - Cavernous Sinus Thrombosis
- Bone
  - : Osteomyelitis (Pott's Puffy Tumor)
- Local
  - : Mucocele /Pyocele

# COMPLICATION OF RHINOSINUSITIS



Orbital Cellulitis

# TREATMENT

## MEDICAL MANAGEMENT

- Antibiotic
  - Amoxicillin
  - Co-amoxiclave
  - Clindamycin
- Antihistamines
- Nasal decongestant
- Analgesics
- Corticosteroid
  - Local
  - Oral
- Mucolytics
- Nasal irrigation

# SURGICAL TREATMENT

- When medical treatment fails, surgical treatment must be considered
- **Conventional**-depends on the site
  - Antral puncture
  - Intranasal antrostomy
  - Caldwell-Luc Operation
  - Intranasal/external ethmoidectomy.
- **Endoscopic- FESS ( Functional Endoscopic Sinus Surgery)**

# Treatment of Fungal Rhinosinusitis

- Surgery – FESS
- Anti fungal medication ( Invasive fungal rhinosinusitis )

# RX OF CRSWNP :

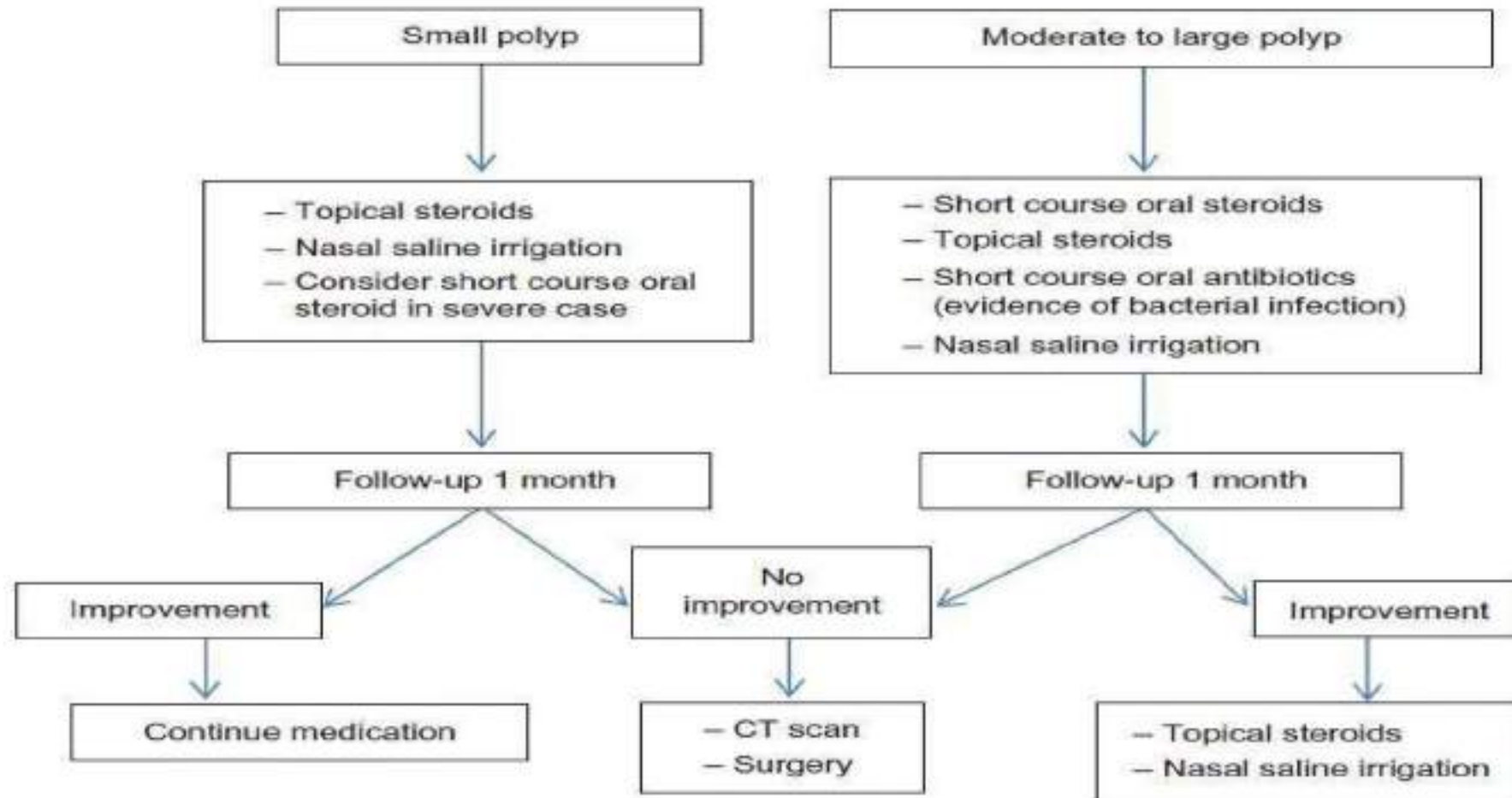


Figure 2 Management scheme for chronic rhinosinusitis with nasal polyps.

# RX OF CRSSNP

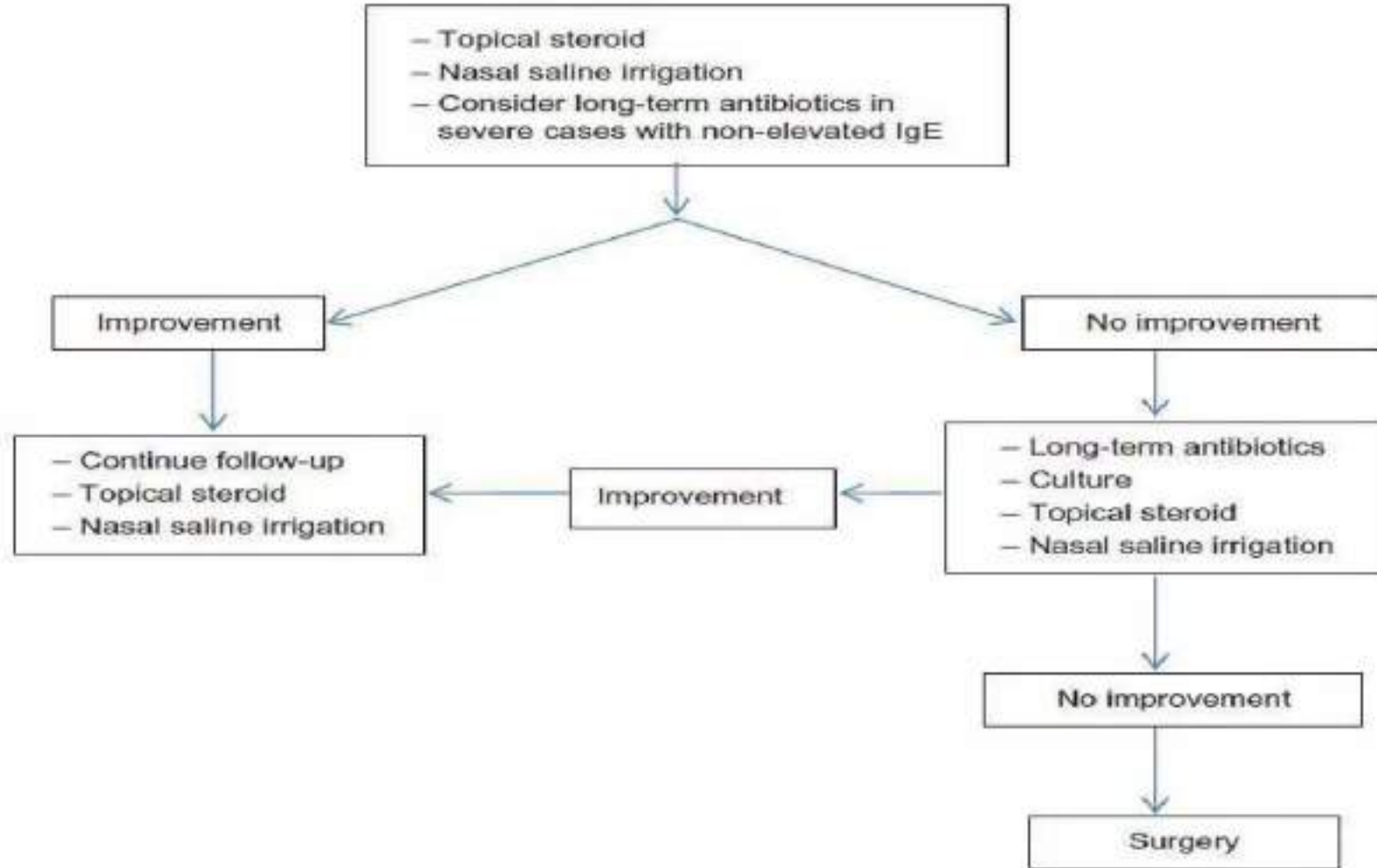


Figure 1 Management scheme for chronic rhinosinusitis without nasal polyps.

# INDICATIONS FOR SINUS SURGERY

- Nasal polyposis
- Deviated septum, enlarged turbinate, concha bullosa
- Mucocele
- Orbital abscess
- Fungal sinusitis-allergic vs. invasive (mucor)
- Tumor of nasal cavity or sinus
- Chronic, recurrent sinusitis
- Failure to respond to medical therapy

# Functional Endoscopic Sinus Surgery (FESS)



# Post Operative Video –after 1 month



# Complications of Endoscopic Sinus Surgery

## MAJOR (1%)

- CSF Leak / Meningitis
- Orbital Hematoma
- Internal Carotid Injury
- Blindness Or Diminished Vision
- Major Epistaxis
- Diplopia
- Anosmia
- Nasolacrimal Duct Trauma
- Intracranial Hemorrhage

## MINOR (7%)

- Minor Epistaxis
- Adhesions (Synechiae)
- Hyposmia
- Periorbital Ecchymosis
- Periorbital Hematoma
- Headache
- Dental / Facial Pain

# Rhinosinusitis with Orbital Cellulitis

**Before Operation**



**3 Weeks After Surgery  
(FESS with Orbital Decompression)**



A large, irregular splash of teal and light blue watercolor paint serves as the background for the text. The colors are soft and blended, with darker teal in the center and lighter, almost white, tones at the edges.

*Thank You*