MEDICAL EDUCATION RESOURCE

ACUTE RHINOSINUSITIS

MedMentor EDU

ACUTE RHINOSINUSITIS

ENT Study Notes | MBBS & NEET-PG Edition

SECTION 1 | INTRODUCTION

1.1 Definition

Acute rhinosinusitis (ARS) is acute symptomatic inflammation of the mucosa of the nasal cavity and paranasal sinuses lasting less than 12 weeks, usually following viral upper respiratory infection and presenting with nasal obstruction, nasal discharge, facial pain/pressure, and reduction of smell.

1.2 Acute Rhinosinusitis vs Sinusitis

• Rhinosinusitis is the preferred term because sinus inflammation almost always coexists with nasal mucosal inflammation.

• Sinusitis alone is anatomically incomplete because isolated sinus disease without nasal mucosal involvement is uncommon.

• ARS includes viral, post-viral, bacterial, recurrent acute, odontogenic, and invasive fungal forms.

• Clinically important because it may mimic common cold, allergy, migraine, dental pain, and neuralgia.

1.3 Clinical Importance

• One of the commonest ENT presentations after upper respiratory tract infection.

• Most cases are viral and self-limiting; inappropriate antibiotics increase resistance.

• Bacterial disease is suspected when symptoms are persistent beyond 10 days, severe at onset, or show double worsening.

• Complications may involve orbit, intracranial cavity, frontal bone, cavernous sinus, or dental structures.

• High-yield exam topic because diagnosis is mainly clinical and complications require urgent recognition.

1.4 Duration-Based Classification

Type	Duration	Key Point
Acute rhinosinusitis	< 12 weeks	Complete re
Subacute rhinosinusitis	4-12 weeks	Used in man prolonged ac
Chronic rhinosinusitis	> 12 weeks	Persistent in evidence
Recurrent acute rhinosinusitis	>= 4 episodes/year	Symptom-fr episodes

EXAM PEARL: ARS is diagnosed mainly by symptoms and duration. CT is not routine in uncomplicated cases; it is used for complications, recurrent disease, uncertain diagnosis, or preoperative planning.

SECTION 2 | CLASSIFICATION

2.1 Clinical Classification

Class	Typical Pattern	Exam Focus
Acute viral rhinosinusitis	Common cold; symptoms <10 days and improving	No antibiotic
Post-viral rhinosinusitis	Symptoms worsen after day 5 or persist beyond 10 days	Inflammator bacterial dis
Acute bacterial rhinosinusitis	Persistent >10 days, severe symptoms, or double worsening	Selective an
Recurrent acute rhinosinusitis	Multiple discrete episodes with full recovery between	Search for a cause
Acute invasive fungal rhinosinusitis	Rapid necrotizing infection in immunocompromised/diabetic patients	Emergency therapy

2.2 Acute Viral Rhinosinusitis

• Usually follows viral URTI and is the most common form of ARS.

• Symptoms peak in 2-3 days and improve within 7-10 days.

• Discharge may become thick or coloured in viral disease; colour alone does not prove bacterial infection.

• Management is supportive: saline irrigation, analgesics, antipyretics, hydration, and short course decongestants when needed.

2.3 Post-Viral Rhinosinusitis

• Persistence of symptoms beyond 10 days or worsening after initial improvement around day 5.

• Pathology is mainly mucosal inflammation and oedema with OMC obstruction.

• Antibiotics are not automatically indicated unless bacterial criteria are present.

• Intranasal corticosteroids are useful when inflammation, allergy, or marked obstruction is present.

2.4 Acute Bacterial Rhinosinusitis

• Bacterial infection complicates a minority of viral ARS cases.

• Common organisms: Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis.

• Staphylococcus aureus, anaerobes, and gram-negative organisms are more relevant in selected settings such as dental source, prior antibiotics, immunocompromise, or hospital exposure.

• Diagnosis is clinical; culture is reserved for severe, recurrent, non-responsive, immunocompromised, or complicated disease.

EXAM PEARL: Double worsening = symptoms improve initially and then suddenly worsen again. This is one of the most useful clinical clues for acute bacterial rhinosinusitis.

SECTION 3 | ETIOLOGY

3.1 Viral Causes

Virus	Clinical Association
Rhinovirus	Most common common-cold virus;
Influenza virus	More severe systemic symptoms: fe
Parainfluenza virus	URTI with cough and nasal sympto
Coronavirus	Common cold pattern; may cause p
Adenovirus	More intense mucosal inflammation coexist

3.2 Bacterial Causes

Organism	High-Yield Point
Streptococcus pneumoniae	Classical common cause of ABRS; fever may occur

Haemophilus influenzae	Common in children, smokers, and
Moraxella catarrhalis	Important in children; beta-lactamas common
Staphylococcus aureus	Recurrent, postoperative, chronic/re infection
Anaerobes	Odontogenic maxillary sinusitis; fou disease

3.3 Other Causes

• Allergy: mucosal oedema, turbinate hypertrophy, and OMC obstruction.

• Dental infection: periapical abscess, periodontal disease, oroantral communication, dental implants.

• Foreign body: especially unilateral foul discharge in children.

• Swimming/diving: contaminated water entry and pressure-related ostial dysfunction.

• Barotrauma: pressure change during flying/diving causes sinus mucosal oedema and pain.

SECTION 4 | PREDISPOSING FACTORS

Factor	Mechanism

URI	Viral mucosal oedema blocks sinus
Allergic rhinitis	Turbinate oedema and excessive sec meatus
DNS	Mechanical narrowing of nasal airw
Nasal polyps	Obstruction of middle meatus and s
Adenoiditis	Pediatric reservoir of infection and
Smoking	Ciliary paralysis, epithelial injury, t
Pollution	Mucosal irritation and reduced muc
Immunocompromised state	Severe bacterial/fungal disease risk
Dental infection	Direct spread to maxillary sinus
Ciliary dysfunction	Poor mucus transport; recurrent dise

EXAM PEARL: In recurrent acute rhinosinusitis, always search for an underlying trigger: allergy, DNS, concha bullosa, adenoiditis, dental source, immunodeficiency, or ciliary

dysfunction.

SECTION 5 | PATHOPHYSIOLOGY

5.1 Pathogenesis Flowchart

Viral URTI / allergy / dental infection / irritant exposure

?

Mucosal oedema of nasal cavity and sinus ostia

?

Osteomeatal complex obstruction

?

Impaired ventilation and negative sinus pressure

?

Transudation of fluid into sinus cavity

?

Mucostasis and impaired mucociliary clearance

?

Secondary bacterial proliferation

?

Acute bacterial rhinosinusitis or complications

5.2 Key Mechanisms

• Ostial obstruction is the central event in most anterior group sinus infections.

• Negative sinus pressure causes pain and draws fluid into the sinus cavity.

• Mucostasis creates a low-oxygen environment favourable for bacterial growth.

• Viral epithelial damage reduces ciliary beat and disrupts mucus clearance.

• Inflammation produces cytokines, oedema, hypersecretion, and thick purulent mucus.

• Odontogenic disease bypasses the usual URTI pathway and directly seeds the maxillary sinus with anaerobes.

EXAM PEARL: OMC obstruction is the final common pathway for maxillary, frontal, and anterior ethmoid sinusitis.

SECTION 6 | CLINICAL FEATURES

6.1 General Features

• Nasal obstruction: due to mucosal oedema and turbinate congestion.

• Purulent nasal discharge: anterior rhinorrhoea or postnasal drip.

• Postnasal drip: throat clearing, cough, bad taste, and halitosis.

• Facial pain/pressure: worsens on bending forward or straining.

• Headache: site depends on sinus involved.

• Fever and malaise: suggest severe viral illness or bacterial infection.

• Hyposmia/anosmia: due to mucosal oedema around olfactory cleft.

• Cough: common in children due to postnasal drip, often worse at night.

• Halitosis: common in purulent and odontogenic disease.

6.2 Sinus-Specific Features

Sinus	Pain / Symptoms	High-Yield

Maxillary sinusitis	Cheek pain, infraorbital pain, upper toothache	Dental sourc
Frontal sinusitis	Forehead/supraorbital pain, morning headache	Risk of Pott intracranial s
Ethmoid sinusitis	Pain between eyes, medial canthal pain, orbital symptoms	Common so
Sphenoid sinusitis	Vertex, occipital, deep retro-orbital pain	Deep headac nerve/caver

6.3 Severe/Complicated Warning Symptoms

• Periorbital swelling, proptosis, diplopia, painful eye movements, reduced vision.

• Severe frontal headache, vomiting, neck stiffness, photophobia, altered sensorium.

• Forehead swelling and tenderness suggesting frontal osteomyelitis.

• Cranial nerve palsy, cavernous sinus signs, or bilateral orbital signs.

• Black eschar, facial numbness, palatal ulcer, ophthalmoplegia in suspected invasive fungal disease.

SECTION 7 | EXAMINATION

7.1 Anterior Rhinoscopy

• Congested nasal mucosa and swollen turbinates.

• Purulent discharge in nasal cavity.

• DNS, spur, polyp, crusting, foreign body, or mass may be seen.

• Inferior meatal pus may suggest maxillary sinus disease but middle meatal pus is more specific for anterior group sinusitis.

7.2 Diagnostic Nasal Endoscopy

• Middle meatal pus is a key objective sign of maxillary/frontal/anterior ethmoid sinusitis.

• Turbinate oedema, contact points, polyps, adenoiditis, crusting, fungal debris, or necrotic tissue may be identified.

• Pus from sphenoethmoidal recess suggests sphenoid/posterior ethmoid disease.

• Endoscopy allows culture from middle meatus in severe, recurrent, or non-responsive cases.

7.3 Facial, Dental and Orbital Examination

• Facial tenderness: maxillary cheek, frontal sinus floor, medial canthus/ethmoid area.

• Dental examination: caries, periodontal disease, recent extraction, oroantral fistula, upper molar tenderness.

• Orbital examination: eyelid oedema, proptosis, ocular movements, visual acuity, colour vision, pupillary response.

• Neurological examination when severe headache, vomiting, neck stiffness, seizures, or altered sensorium are present.

SECTION 8 | DIAGNOSIS

8.1 Clinical Diagnosis

• ARS is diagnosed from symptoms plus duration; objective testing is not mandatory in uncomplicated disease.

• Major symptoms: nasal blockage/congestion, nasal discharge/postnasal drip, facial pain/pressure, reduction/loss of smell.

• Supportive symptoms: fever, cough, fatigue, halitosis, dental pain, ear pressure.

• Uncomplicated acute viral disease usually improves within 7-10 days.

8.2 Criteria Suggesting Acute Bacterial Rhinosinusitis

Criterion	Meaning
Persistent symptoms	Symptoms/signs continue for >=10 improvement
Severe symptoms	High fever with purulent nasal disch 4 days at onset
Double worsening	Initial improvement followed by wo pain, or obstruction
Complicated disease	Orbital, neurological, frontal bone,

8.3 EPOS-Style Symptom Criteria

• Acute rhinosinusitis is suspected when there are two or more symptoms, one of which should be nasal blockage/obstruction/congestion or nasal discharge.

• Additional symptoms include facial pain/pressure and reduction/loss of smell in adults.

• Post-viral ARS is considered when symptoms increase after 5 days or persist beyond 10 days.

• Bacterial ARS is suggested by at least three features: discoloured discharge, severe local pain, fever, raised inflammatory markers, or double sickening.

EXAM PEARL: Do not diagnose bacterial ARS based only on coloured nasal discharge. Duration, severity, and double worsening are more important.

SECTION 9 | INVESTIGATIONS

Investigation	Indication	Finding
Diagnostic nasal endoscopy	Severe/recurrent/non-responsive/uncertain cases	Middle meat obstruction,
CT PNS	Complications, recurrent disease, preoperative planning, failed therapy	Sinus opacif block, orbita
X-ray PNS	Historical/limited role	Air-fluid lev OMC detail
Culture & sensitivity	Severe, immunocompromised, recurrent, hospital-acquired, treatment failure	Guides antib middle meat
Dental imaging	Unilateral maxillary sinusitis, dental pain, foul smell	Periapical le implant com

CBC/CRP	Severe systemic illness or complication	Leukocytosi markers

EXAM PEARL: CT changes can persist after viral URTI and must be correlated clinically. Do not treat CT opacification alone without compatible symptoms.

SECTION 10 | DIFFERENTIAL DIAGNOSIS

Condition	Differentiating Clue
Acute viral rhinitis	Watery rhinorrhoea, sneezing, short course
Allergic rhinitis	Itching, sneezing, watery rhinorrhoe relation
Migraine	Photophobia, nausea, episodic throb discharge
Dental pain	Localized tooth tenderness, caries, p ray changes
Trigeminal neuralgia	Brief electric shock-like pain trigge

Cluster headache	Severe unilateral orbital pain with la circadian pattern
CSF rhinorrhoea	Clear watery unilateral discharge, in taste
Facial cellulitis	Skin erythema, warmth, tenderness; sinusitis

SECTION 11 | MEDICAL MANAGEMENT

11.1 Conservative Measures

• Reassurance and observation in uncomplicated viral/post-viral ARS.

• Steam inhalation may provide symptomatic relief but does not sterilize sinuses.

• Saline irrigation improves mucus clearance and reduces crusting/discharge.

• Adequate hydration keeps secretions less viscous.

• Rest and avoidance of smoking/pollution during acute illness.

11.2 Drug Therapy

Drug Group	Use	Exam Note

Analgesics	Facial pain, headache, fever-related discomfort	Paracetamol
Antipyretics	Fever and malaise	Supportive; suggests bac
Intranasal steroids	Inflammation, allergic component, post-viral symptoms	Useful in mo and allergic
Topical decongestants	Short-term relief of nasal obstruction	Use only 3-5 medicament
Antihistamines	Only when allergic rhinitis component present	Not routine i thicken secr
Mucolytics	Thick secretions; symptomatic use	Adjunct only

EXAM PEARL: Topical nasal decongestants should be short course only. Prolonged use causes rebound congestion/rhinitis medicamentosa.

SECTION 12 | ANTIBIOTIC THERAPY

12.1 Indications for Antibiotics

• Persistent symptoms without improvement for 10 days or more.

• Severe onset: high fever, purulent discharge, significant facial pain for 3-4 days.

• Double worsening after initial improvement.

• Immunocompromised patient, high-risk comorbidity, or suspected complication.

• Odontogenic sinusitis with bacterial source and anaerobic features.

12.2 Common Antibiotic Choices

Antibiotic	Role	Important I
Amoxicillin-clavulanate	First-line in most adults with ABRS	Covers beta- common EN
Doxycycline	Alternative in penicillin allergy in adults	Avoid in pre
Cephalosporins	Selected alternatives/combination depending on local policy	Use cautious beta-lactam
Macrolides	Not preferred empirically in many settings	Resistance li
Fluoroquinolones	Reserved for selected severe allergy/resistant cases	Avoid routin effects and s
Anaerobic cover	Odontogenic disease	Dental sourc

12.3 Duration of Therapy

• Adults with uncomplicated ABRS: usually 5-7 days in many modern guidelines.

• Children: commonly 10-14 days or as per pediatric protocol/local guideline.

• Complicated, immunocompromised, odontogenic, or invasive fungal disease requires individualized longer therapy and specialist management.

• Failure to improve after 48-72 hours of antibiotics needs reassessment: wrong diagnosis, resistance, dental source, abscess, complication, or fungal disease.

EXAM PEARL: Antibiotics are not routine for viral ARS. Use them selectively to reduce resistance and adverse effects.

SECTION 13 | SURGICAL MANAGEMENT

13.1 Indications

• Orbital abscess or subperiosteal abscess not responding to medical therapy or causing visual compromise.

• Intracranial complications: meningitis, extradural abscess, subdural empyema, brain abscess.

• Acute invasive fungal rhinosinusitis requiring urgent debridement.

• Frontal sinus complications including Pott puffy tumour.

• Recurrent acute rhinosinusitis due to anatomical obstruction after medical optimization.

• Odontogenic sinusitis with retained root, oroantral fistula, or persistent dental source.

13.2 Procedures

Procedure	Use

Antral lavage	Historical/selected maxillary sinus c less common
Endoscopic sinus drainage	Drain pus, restore ventilation, obtain complications
FESS in recurrent disease	Correct OMC obstruction and anato
Orbital abscess drainage	Urgent ophthalmology + ENT mana abscess/vision risk exists
Frontal sinus drainage	Frontal sinusitis with osteomyelitis complications

SECTION 14 | ORBITAL COMPLICATIONS

14.1 Mechanism

• Ethmoid sinus is the commonest source due to thin lamina papyracea.

• Infection may spread by direct bone erosion, congenital dehiscence, thrombophlebitis, or valveless venous channels.

• Children are especially prone to orbital complications from acute ethmoiditis.

14.2 Chandler Classification

Stage	Name	Clinical Fea
I	Preseptal cellulitis	Eyelid oeder and ocular m
II	Orbital cellulitis	Orbital fat in chemosis, m proptosis/op
III	Subperiosteal abscess	Pus between proptosis, di
IV	Orbital abscess	Pus within o proptosis, op
V	Cavernous sinus thrombosis	Bilateral orb palsies, seps

EXAM PEARL: Reduced vision, afferent pupillary defect, ophthalmoplegia, or severe proptosis in sinusitis is an emergency.

SECTION 15 | INTRACRANIAL COMPLICATIONS

Complication	Key Features

Meningitis	Fever, headache, neck stiffness, pho sensorium
Extradural abscess	Pus between skull and dura; may fo
Subdural empyema	Rapid neurological deterioration; se
Brain abscess	Headache, fever, focal neurological
Cavernous sinus thrombosis	Fever, toxic state, bilateral orbital si palsies

15.1 Routes of Spread

• Direct extension through osteomyelitis or bone erosion.

• Valveless venous channels and septic thrombophlebitis.

• Frontal sinusitis is especially associated with intracranial complications in adolescents and young adults.

• Sphenoid sinusitis may affect cavernous sinus, pituitary region, optic nerve, and cranial nerves.

SECTION 16 | OSTEOMYELITIS

16.1 Frontal Bone Osteomyelitis

• Usually complication of acute frontal sinusitis.

• Occurs due to spread through diploic veins or direct extension.

• Presents with fever, frontal headache, forehead tenderness, and soft swelling.

• May coexist with extradural abscess, subdural empyema, or brain abscess.

16.2 Pott Puffy Tumour

Pott puffy tumour is osteomyelitis of the frontal bone with subperiosteal abscess, classically presenting as tender swelling of the forehead following frontal sinusitis.

• Not a neoplasm despite the word tumour.

• Needs urgent CT/MRI evaluation for intracranial extension.

• Treatment: IV antibiotics + surgical drainage/debridement + frontal sinus drainage.

EXAM PEARL: Pott puffy tumour = frontal bone osteomyelitis + subperiosteal abscess after frontal sinusitis.

SECTION 17 | ACUTE INVASIVE FUNGAL RHINOSINUSITIS

17.1 Risk Groups

• Uncontrolled diabetes mellitus, especially ketoacidosis.

• Neutropenia, hematological malignancy, transplant, chemotherapy, prolonged steroids.

• Immunosuppression and severe systemic illness.

17.2 Mucormycosis and Clinical Clues

• Mucorales invade blood vessels causing thrombosis, tissue infarction, and necrosis.

• Black eschar over middle turbinate, nasal septum, palate, or skin is a danger sign.

• Facial pain, facial numbness, orbital pain, ophthalmoplegia, proptosis, vision loss, palatal ulcer may occur.

• Rapid progression from nose/sinus to orbit and brain is characteristic.

17.3 Management Principles

• Urgent ENT evaluation and diagnostic nasal endoscopy with biopsy.

• Reversal of underlying immunosuppression and strict diabetic control.

• Immediate systemic antifungal therapy, commonly liposomal amphotericin B as per protocol.

• Aggressive surgical debridement of necrotic tissue; repeated debridement may be required.

• MRI/CT to assess orbital and intracranial extension.

EXAM PEARL: Black eschar in a diabetic or immunocompromised patient with sinus symptoms is acute invasive fungal rhinosinusitis until proved otherwise.

SECTION 18 | PEDIATRIC ACUTE RHINOSINUSITIS

18.1 Key Points

• Ethmoid and maxillary sinuses are present early, so ethmoiditis and maxillary sinusitis are common in children.

• Adenoiditis is an important contributor and may mimic or perpetuate rhinosinusitis.

• Cough, nasal discharge, fever, irritability, and halitosis are common presentations.

• Orbital complications are more common in children, especially from ethmoiditis.

• Antibiotic choice and duration must follow pediatric dosing and local guidelines.

18.2 Pediatric Danger Signs

• Eyelid swelling or redness, especially if unilateral.

• Painful or restricted eye movement.

• Proptosis, diplopia, reduced vision.

• Persistent high fever, severe headache, vomiting, drowsiness, seizures.

SECTION 19 | ODONTOGENIC MAXILLARY SINUSITIS

19.1 Etiology

• Periapical abscess of upper molars/premolars.

• Periodontal disease, dental extraction, dental implants, oroantral fistula.

• Foreign body/root fragment in maxillary sinus.

• Mixed aerobic-anaerobic infection is common.

19.2 Clinical Clues

• Usually unilateral maxillary sinusitis.

• Foul-smelling purulent nasal discharge or bad taste.

• Upper toothache, dental tenderness, history of recent dental procedure.

• CT shows unilateral maxillary opacification with dental pathology or oroantral communication.

19.3 Management

• Dental source control is essential; antibiotics alone often fail if the dental source remains.

• Antibiotics should cover anaerobes when odontogenic infection is suspected.

• Closure of oroantral fistula may be required.

• Endoscopic maxillary sinus drainage may be needed for persistent disease.

EXAM PEARL: Unilateral foul-smelling maxillary sinusitis = think odontogenic source.

SECTION 20 | PREVENTION

• Treat allergic rhinitis with allergen avoidance, intranasal steroids, and appropriate antihistamines.

• Correct significant anatomical obstruction such as DNS, concha bullosa, or polyps when recurrent disease persists.

• Avoid smoking and reduce exposure to pollution/irritants.

• Maintain dental hygiene and treat dental infections early.

• Vaccination where relevant: influenza and pneumococcal vaccination in appropriate risk groups.

• Optimize diabetes and immune status in high-risk patients.

SECTION 21 | MASTER COMPARISON TABLES

Table 1: Viral vs Bacterial Rhinosinusitis

Feature	Viral ARS	Bacterial A
Duration	<10 days and improving	>=10 days w double wors
Onset	Gradual with common cold	Severe onset
Fever	Low-grade/short duration	High fever o
Discharge	Watery to mucoid; may become coloured	Purulent disc pain/pressur
Treatment	Symptomatic	Selective an

Table 2: Acute vs Chronic Rhinosinusitis

Feature	Acute	Chronic
Duration	<12 weeks	>12 weeks
Pathology	Acute mucosal oedema, infection/inflammation	Persistent in polyps may
Symptoms	Pain, purulent discharge, fever more prominent	Blockage, di
Imaging	Only if complicated/recurrent/uncertain	Objective ev
Treatment	Symptomatic +/- antibiotics	Long-term m

Table 3: Maxillary vs Frontal vs Ethmoid vs Sphenoid Sinusitis

Sinus	Pain Site	Special Feature
Maxillary	Cheek, infraorbital, upper teeth	Odontogenic source common

Frontal	Forehead, supraorbital	Morning headache; tender frontal floor
Ethmoid	Between eyes, medial canthus	Common in children
Sphenoid	Vertex, occipital, deep retro-orbital	Deep nonspecific headache

Table 4: Acute Rhinosinusitis vs Migraine vs Dental Pain

Feature	ARS	Migraine
Nasal symptoms	Obstruction/discharge common	May have autonomic symptoms but no pus
Pain trigger	Bending forward, sinus pressure	Light, sound, stress, certain foods
Discharge	Purulent/postnasal drip possible	Absent
Associated signs	Fever, malaise, endoscopic pus	Nausea, photophobia

Investigation	DNE/CT if indicated	Clinical neurology

Table 5: Common Organisms

Setting	Likely Organisms
Community ABRS	S. pneumoniae, H. influenzae, M. ca
Odontogenic sinusitis	Anaerobes + oral streptococci + mix
Recurrent/postoperative disease	S. aureus, gram-negative organisms
Immunocompromised/diabetes	Mucorales, Aspergillus, resistant ba
Children	H. influenzae, S. pneumoniae, M. ca

Table 6: Antibiotics in Acute Bacterial Rhinosinusitis

Situation	Preferred Direction

Uncomplicated adult ABRS	Amoxicillin-clavulanate first-line in
Penicillin allergy adult	Doxycycline or other guideline/loca
Macrolide use	Avoid routine empirical use where r
Odontogenic disease	Add anaerobic coverage + dental so
Treatment failure	Reassess diagnosis; culture if possib antibiotic
Complicated disease	Hospital admission, IV antibiotics, i

Table 7: Orbital vs Intracranial Complications

Feature	Orbital	Intracrania
Common source	Ethmoid sinusitis	Frontal/sphe
Presentation	Eyelid oedema, proptosis, ophthalmoplegia, vision changes	Severe head focal deficit

Imaging	Contrast CT/MRI orbit and PNS	MRI brain +
Emergency sign	Reduced vision/ophthalmoplegia	Altered sens deficit
Treatment	IV antibiotics +/- drainage	IV antibiotic management

SECTION 22 | HIGH-YIELD EXAM PEARLS

22.1 Must-Know Facts

• Rhinosinusitis is the correct term because nasal mucosa and sinus mucosa are inflamed together.

• Acute rhinosinusitis duration is less than 12 weeks.

• Most ARS is viral; antibiotics are not routine.

• ABRS clues: persistent symptoms >=10 days, severe onset, or double worsening.

• OMC obstruction is the final common pathway for anterior group sinusitis.

• Middle meatal pus is a key endoscopic sign of anterior group sinus infection.

• Maxillary sinusitis causes cheek pain and upper toothache.

• Frontal sinusitis can cause Pott puffy tumour and intracranial complications.

• Ethmoid sinusitis is the commonest source of orbital cellulitis, especially in children.

• Sphenoid sinusitis causes vertex/occipital/deep retro-orbital headache.

• Unilateral foul-smelling maxillary sinusitis suggests odontogenic source.

• Black eschar in diabetic/immunocompromised patient suggests invasive fungal rhinosinusitis.

• Chandler classification stages orbital complications from preseptal cellulitis to cavernous sinus thrombosis.

22.2 Common MCQ Traps

• Coloured discharge alone does not mean bacterial sinusitis.

• CT is not routinely required for uncomplicated ARS.

• Post-viral ARS does not automatically require antibiotics.

• Preseptal cellulitis has normal vision and ocular movements; orbital cellulitis has orbital signs.

• Pott puffy tumour is osteomyelitis with subperiosteal abscess, not a cancer.

• Topical decongestants should not be used beyond a few days.

• Odontogenic sinusitis needs dental treatment; antibiotics alone may fail.

• Invasive fungal rhinosinusitis is a surgical and medical emergency.

IMPORTANT DIAGRAMS / FIGURES

A. Pathogenesis Diagrams

• Fig. 1 - Pathogenesis of acute rhinosinusitis: URTI/allergy -> mucosal oedema -> OMC obstruction -> mucostasis -> bacterial infection.

• Fig. 2 - Osteomeatal obstruction: middle turbinate, uncinate, infundibulum, ethmoid bulla, maxillary ostium.

• Fig. 3 - Sinus drainage blockage: anterior group drainage into middle meatus and posterior group into sphenoethmoidal recess.

B. Sinus-Specific Diagrams

• Fig. 4 - Maxillary sinusitis: maxillary sinus opacification, high medial ostium, dental root relation.

• Fig. 5 - Frontal sinusitis: frontal recess block and relation to anterior cranial fossa.

• Fig. 6 - Ethmoid sinusitis: lamina papyracea and orbital spread pathway.

• Fig. 7 - Sphenoid sinusitis: sphenoid sinus relation to optic nerve, ICA, cavernous sinus.

C. Complication Diagrams

• Fig. 8 - Orbital spread of infection through lamina papyracea.

• Fig. 9 - Intracranial spread from frontal/sphenoid sinus.

• Fig. 10 - Chandler classification stages I-V.

• Fig. 11 - Pott puffy tumour: frontal osteomyelitis with subperiosteal abscess.

D. Surgical and Radiology Figures

• Fig. 12 - Endoscopic sinus drainage: uncinectomy, maxillary ostium identification, middle meatus drainage.

• Fig. 13 - CT acute sinusitis: air-fluid level and mucosal thickening.

• Fig. 14 - CT orbital complication: subperiosteal abscess and orbital cellulitis.

• Fig. 15 - CT odontogenic maxillary sinusitis with periapical dental pathology.

IMPORTANT MICROBIOLOGY / HISTOPATHOLOGY SLIDES

• Slide 1 - Acute suppurative inflammation: neutrophil-rich exudate in sinus mucosa.

• Slide 2 - Acute inflamed sinus mucosa: oedema, congestion, neutrophils, epithelial damage.

• Slide 3 - Streptococcus pneumoniae: gram-positive lancet-shaped diplococci.

• Slide 4 - Haemophilus influenzae: small gram-negative coccobacilli.

• Slide 5 - Moraxella catarrhalis: gram-negative diplococci.

• Slide 6 - Anaerobic odontogenic infection: mixed oral flora with necrotic debris.

• Slide 7 - Mucormycosis: broad aseptate ribbon-like hyphae with right-angle branching and angioinvasion.

• Slide 8 - Aspergillus: septate hyphae with acute-angle branching.

IMPORTANT CLINICAL PHOTOGRAPHS

• Photo 1 - Purulent anterior nasal discharge in acute rhinosinusitis.

• Photo 2 - Endoscopic middle meatal pus.

• Photo 3 - Acute maxillary sinusitis with cheek tenderness/swelling.

• Photo 4 - Facial swelling in complicated sinusitis.

• Photo 5 - Orbital cellulitis: eyelid oedema, chemosis, proptosis.

• Photo 6 - Subperiosteal abscess with medial orbital displacement.

• Photo 7 - Pott puffy tumour with forehead swelling.

• Photo 8 - Dental source sinusitis: carious upper molar/periapical abscess.

• Photo 9 - CT sinus opacification and air-fluid level.

• Photo 10 - CT orbital complication from ethmoid sinusitis.

• Photo 11 - Black eschar in acute invasive fungal rhinosinusitis.