🎧 Chronic Suppurative Otitis Media

Atticoantral Type (CSOM-AA)

🧾 Case Scenarios

Case 1

A 20-year-old female with right-sided foul-smelling scanty ear discharge. Otoscopy shows white pearl-like material with granulations in the attic. History of vertigo while riding a motorbike.

Case 2

A 40-year-old male with left ear discharge for 20 years — purulent, scanty, blood-stained, foul-smelling. Examination: perforation in posterosuperior quadrant of tympanic membrane.

Case 3

A 15-year-old boy with right ear discharge since

childhood, scanty and foul-smelling. Otoscopy: white pearl-like shiny material in attic. Audiometry: mixed hearing loss.

> Classic presentation of unsafe CSOM with cholesteatoma.

🧠 Diagnosis

Chronic Suppurative Otitis Media — Atticoantral Type (Unsafe CSOM)

⚠️ Characterized by:

- Attic / posterosuperior marginal perforation
- Cholesteatoma formation
- Higher risk of bone destruction & complications

📖 History

- Ear discharge

    - Scanty
    - Foul-smelling
    - May be blood-stained
- Hearing loss → often *mixed type*
- Bleeding on ear cleaning
- Vertigo → suggests labyrinthine involvement

🔎 Examination

🎧 Otoscopic Findings

- Perforation
    - Attic perforation
    - Posterosuperior marginal perforation
    - May be hidden by granuloma
- Attic retraction pocket
- Cholesteatoma (pearly white mass)
- Granulation tissue
- Aural polyp
- Sagging of posterosuperior meatal wall

🧪 Functional & Neuro-otological Tests

- Tuning fork tests → hearing loss type
- Fistula test → labyrinth involvement
- Nystagmus
- Vestibular function tests
- Cranial nerve examination (especially VII)

🧪 Investigations

Investigation	Purpose
Microscopic ear exam	Site & extent of cholesteatoma, bone destruction, ossicle status, granuloma, discharge pockets
HRCT Temporal Bone (preferred)	Extent of bone erosion, mastoid pneumatization
X-ray Mastoids	Alternative if CT unavailable

Ear discharge C/S	Identify causative organism
Pure Tone Audiometry	Type & severity of hearing loss
Examination Under Anesthesia	Detailed assessment before surgery

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🦠 Causative Organisms

- Pseudomonas aeruginosa
- Proteus species
- Escherichia coli
- Staphylococcus aureus

💊 Management

🔪 Surgical — Mainstay of Treatment

Canal Wall Up Procedures

- Cortical mastoidectomy
- Combined approach tympanomastoidectomy
- Posterior tympanotomy
- Atticotomy

Canal Wall Down Procedures

- Modified radical mastoidectomy
- Radical mastoidectomy
- Atticoantrostomy

Mastoid exploration

🛠️ Reconstructive Surgery

- Myringoplasty → TM repair
- Tympanoplasty → middle ear reconstruction
- Ossiculoplasty → ossicular chain repair

🩺 Conservative Management

(Only if medically unfit for surgery)

- Regular mastoid cavity cleaning
- Periodic follow-ups

🗂️ Management Flowchart

Foul-smelling scanty discharge + attic/posterosuperior perforation → Otoscopy shows cholesteatoma / retraction pocket

- Audiometry + HRCT temporal bone
- Assess extent of bone & ossicle damage
- Fit for surgery?
  - → Yes → Mastoid surgery
    - Canal Wall Up OR Canal Wall Down
    - ± Tympanoplasty / Ossiculoplasty
  - → No → Conservative care + regular cleaning

⚠️ Complications

Intratemporal

- Ossicular destruction → conductive hearing loss
- Labyrinthitis
- Facial nerve palsy

Intracranial

- Meningitis
- Sigmoid sinus thrombosis
- Extradural abscess
- Subdural abscess
- Brain abscess
- Hydrocephalus

🎯 Exam Pearls

⭐ Scanty, foul-smelling discharge → think *unsafe CSOM*

⭐ Attic perforation + pearly white mass = cholesteatoma

⭐ Posterosuperior marginal perforation is dangerous

⭐ Vertigo → possible labyrinthine fistula

⭐ HRCT temporal bone is investigation of choice

⭐ Surgery is definitive treatment

🧠 Chronic Suppurative Otitis Media

Atticoantral Type with Intracranial Complication

🧾 Case Scenario

A 15-year-old boy presents with:

- Anorexia
- Malaise
- Right-sided headache
- Low-grade fever
- Episodes of abnormal behavior

Family history: Father has scanty, foul-smelling ear discharge for 4 years.
Otoscopy: Granulations in right attic region.

> Suggests unsafe CSOM with spread to intracranial structures.

🧠 Diagnosis

CSOM — Atticoantral Type with Intracranial Complication

📖 History

- Ear discharge
  - Scanty
  - Foul-smelling
  - Pulsatile purulent discharge
- Hearing loss
- Bleeding from ear
- Severe ear pain

- Persistent headache (same side as ear disease)
- Malaise
- Low-grade fever

🔎 Examination

🎧 Otoscopy

- Tympanic membrane perforation
  - Attic perforation
  - Posterosuperior marginal perforation
- Attic retraction pocket
- Cholesteatoma
- Granulation tissue
- Aural polyp
- Sagging of posterosuperior meatal wall

🧪 Functional & Neuro-otological Tests

- Tuning fork tests → Rinne & Weber → Mixed hearing loss

- Fistula test → labyrinth involvement
- Nystagmus (involuntary oscillatory eye movements)
- Vestibular function tests
- Cranial nerve examination (especially VII, IX–XII)

🧪 Investigations

🔬 Microscopic Ear Examination

- Cholesteatoma → site & extent
- Bone destruction
- Granuloma
- Ossicular status
- Pockets of discharge

🎧 Audiology

- Audiogram → type & degree of hearing loss

🖥️ Imaging

- X-ray mastoid → air cell destruction

- HRCT temporal bone → extent of bone erosion & mastoid pneumatization

🦠 Microbiology

- Culture & sensitivity of ear discharge → organism identification

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💊 Management

🔪 Surgical — Mainstay

Mastoid Exploration

Canal Wall Up Procedures

- Atticotomy
- Atticoantrostomy
- Posterior tympanotomy

Canal Wall Down Procedures

- Radical mastoidectomy
- Modified radical mastoidectomy

🛠️ Reconstructive Surgery

- Myringoplasty
- Tympanoplasty
- Ossiculoplasty

🩺 Conservative Treatment

(Adjunct or for unfit patients)

- Periodic follow-ups
- Repeated suction & clearance
- Forceps removal of granulations
- Chemical cauterization
  - → Silver nitrate
  - → Trichloroacetic acid
- Aural toilet
- Antibiotic cover

🗂️ Management Flowchart

Unsafe CSOM symptoms → Foul-smelling scanty discharge + attic/posterosuperior perforation → Otoscopy shows cholesteatoma / granulations → Headache + fever + behavioral changes → Suspect intracranial complication → Audiogram + Microscopy + HRCT temporal bone → Assess bone destruction & disease extent

→ Fit for surgery?

→ Yes → Mastoid exploration

- Canal Wall Up OR Canal Wall Down
- ± Tympanoplasty / Ossiculoplasty

→ No → Conservative management + antibiotics

⚠️ Possible Intracranial Complications

- Meningitis
- Extradural abscess
- Subdural abscess

- Brain abscess
- Lateral sinus thrombosis
- Otitic hydrocephalus

🎯 Exam Pearls

⭐ Unsafe CSOM + headache + fever → think intracranial spread

⭐ Behavioral changes → temporal lobe involvement

⭐ Attic disease = cholesteatoma until proven otherwise

⭐ HRCT temporal bone is essential before surgery

⭐ Surgery is definitive management

🧠 CSOM — Atticoantral Type with Intracranial Complication (Cerebellar Abscess Pattern)

🧾 Case Scenario

A 20-year-old female presents with:

- Scanty, foul-smelling right ear discharge × 4 years
- Severe right-sided hearing loss
- Headache
- Anorexia
- Vertigo

Otoscopy: White, glistening, pearl-like material in attic (pars flaccida)

> Long-standing unsafe CSOM with cholesteatoma → intracranial spread.

🧠 Diagnosis

CSOM — Atticoantral Type with Intracranial Complication (ICC)

(Most consistent with cerebellar abscess features)

📖 History (Intracranial Involvement Clues)

- Headache
- Spontaneous nystagmus
  - Irregular
  - Towards side of lesion
- Ipsilateral hypotonia
- Ipsilateral limb weakness
- Ipsilateral ataxia → Patient staggers toward side of lesion

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🔎 Examination

🧠 Cerebellar Signs

- Finger-Nose Test
  - Past-pointing
  - Intention tremor

- Dysdiadochokinesia
  - Rapid pronation–supination movements
  - Slow & irregular on affected side

🧪 Investigations

🩻 Skull X-Ray

- Midline shift
- Pineal gland calcification displacement
- Gas in abscess cavity

🖥️ CT Scan Brain

- Site & size of abscess
- Detects associated complications
  → Extradural abscess
  → Sigmoid sinus thrombosis

🦴 Temporal Bone Imaging

- X-ray mastoid OR CT temporal bone
  → Evaluates associated ear disease

💉 Lumbar Puncture (Cautious Use)

CSF findings:

- ↑ Opening pressure
- ↑ Protein
- Normal glucose
- ↑ WBC count
  → Polymorphs (acute)
  → Lymphocytes (chronic)

🦠 Microbiology

- Culture & sensitivity

💊 Management

🩺 Medical Treatment

- IV Antibiotics (broad coverage)

    - Chloramphenicol + 3rd gen cephalosporins
    - Metronidazole → *Bacteroides fragilis*
    - Gentamicin → *Pseudomonas, Proteus*
- Dexamethasone → For raised intracranial pressure
- Aural care → Suction & clearance of ear discharge

🧠 Neurosurgical Management

- Burr hole aspiration (repeated if needed)
- Excision of abscess
- Open incision & evacuation of pus

👂 Otologic Management

- Definitive treatment of primary ear disease
- Mastoid surgery once stabilized

🗂️ Pathway Flowchart

Unsafe CSOM (atticoantral) → Cholesteatoma formation → Bone erosion → Intracranial spread → Cerebellar involvement

Cerebellar signs → Ataxia + hypotonia + nystagmus → Past-pointing + intention tremor → Dysdiadochokinesia

Investigate → CT Brain (abscess site & size) → Temporal bone CT (ear focus) → CSF study (↑ pressure, ↑ protein, ↑ cells)

Management → Stabilize patient → IV broad-spectrum antibiotics + steroids → Neurosurgical drainage of abscess → Definitive mastoid surgery

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⚠️ Exam Clues

🚩 Long-standing foul ear discharge + neuro signs = intracranial complication
🚩 Ataxia toward lesion side = cerebellar involvement
🚩 Nystagmus toward lesion side

🚩 Cholesteatoma = bone-destroying disease

🚩 CT brain before LP if raised ICP suspected

🎯 Exam Pearls

⭐ Attic disease = unsafe ear

⭐ Cerebellar abscess → ipsilateral signs

⭐ LP shows ↑ protein, normal glucose (not meningitis pattern)

⭐ Always treat brain first, ear second

🦠 CSOM — Atticoantral Type with Intracranial Complication (Temporal Lobe Abscess)

🧾 Case Scenario

A 24-year-old male presented with:

- Anorexia
- Low-grade fever
- Nominal aphasia for 15 days
- Slight disorientation

On otoscopic examination → Attic perforation seen.

🧠 Most Probable Diagnosis

CSOM — Atticoantral Type with Intracranial Complication

➡️ Temporal Lobe Abscess (Otogenic brain abscess)

🎯 Why Temporal Lobe Abscess?

CSOM (atticoantral) → Cholesteatoma erodes bone → Infection spreads superiorly → Temporal lobe involvement

🧠 Dominant temporal lobe controls speech & language → aphasia

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📖 Key History Features

Symptom	Significance
Nominal aphasia	Difficulty naming objects → Temporal lobe lesion
Low-grade fever	Chronic intracranial infection
Anorexia & malaise	Systemic infection
Disorientation	Raised intracranial pressure
Homonymous hemianopia	Optic radiation compression → visual field loss opposite to lesion
Contralateral motor paralysis	Upward spread to motor cortex

Epileptic fits	Temporal lobe irritation
Olfactory hallucinations	Uncinate fits
Gustatory hallucinations	Temporal cortex involvement
Lip smacking movements	Psychomotor seizures
Pupillary changes	Raised ICP / herniation risk
Oculomotor palsy	CN III compression

🔎 Examination

👂 Otoscopy

- Attic perforation
- Cholesteatoma
- Foul discharge

🧠 Neurological Signs

- Altered higher mental functions
- Speech disturbance
- Visual field defects
- Focal neurological deficits
- Seizure activity

🧪 Investigations

Same protocol as cerebellar abscess:

🖥️ Imaging

- CT Scan Brain
  - Site & size of abscess
  - Ring-enhancing lesion
  - Midline shift
  - Edema
- MRI Brain
  - Better soft tissue resolution

- Early cerebritis detection

🦴 Ear Evaluation

- HRCT Temporal Bone
  - Extent of cholesteatoma
  - Bone erosion

💉 CSF (Lumbar puncture — cautious)

- ↑ Opening pressure
- ↑ Protein
- Normal glucose
- ↑ WBC count

🧫 Microbiology

- Culture & sensitivity of ear discharge

🗂️ Spread Pathway Flowchart

CSOM (Atticoantral type) → Cholesteatoma formation → Bone erosion (tegmen tympani) → Intracranial spread

- Temporal lobe cerebritis
- Localized abscess formation
- Raised ICP & focal deficits

💊 Management

🏥 Medical Management

- IV Broad-spectrum antibiotics
  - 3rd gen cephalosporins
  - Metronidazole (anaerobes)
  - Aminoglycosides (Pseudomonas)
- Steroids (Dexamethasone)
  - Reduce cerebral edema
- Antiepileptics
- Control ICP
- Aural toilet & suction clearance

🧠 Neurosurgical Management

- Burr hole aspiration
- Abscess excision
- Open drainage if large

👂 Otologic Surgery

- Definitive ear surgery after stabilization
- Remove cholesteatoma focus
- Mastoid exploration

⚠️ Exam Pearls

⭐ Temporal lobe abscess → Aphasia + seizures + visual field defect

⭐ Nominal aphasia = Dominant temporal lobe lesion

⭐ Lip smacking + smell/taste hallucinations = Uncinate fits

⭐ CSOM-AA commonly causes intracranial complications

⭐ Treat brain first, ear second

🦠 CSOM — Atticoantral Type with Intralabyrinthine Complication

📃 Case Scenarios

Case 1

A 25-year-old presented with foul-smelling right ear discharge, sometimes blood-stained.
He has vertigo off and on, especially when pressing the tragus inward.
There is conductive hearing loss on the right side.

Case 2

A 25-year-old female presented with right-sided scanty foul-smelling ear discharge for 10 years.
Now she has vertigo when looking to the right, associated with nausea and vomiting.

On examination, white glistening material is seen in the attic region.

🧠 Diagnosis

CSOM — Atticoantral Type with Intralabyrinthine Complication

➡️ Labyrinthitis

🎯 Why Labyrinthitis?

CSOM (Atticoantral) → Cholesteatoma formation → Bony erosion of labyrinth → Inner ear inflammation

➡️ Vestibular + cochlear involvement

📖 Key History Features

Symptom	Significance
Foul-smelling discharge	Cholesteatoma infection
Blood-stained discharge	Granulations / bone erosion
Vertigo (positional)	Labyrinth irritation
Nausea & vomiting	Vestibular disturbance
Vertigo on tragal pressure	Positive fistula phenomenon
Hearing loss	Usually conductive; may become SNHL
Fever	Active infection

🔎 Examination

👂 Otoscopy

- Attic perforation
- Cholesteatoma (white, pearly, glistening mass)
- Granulations

🧠 Vestibular Signs

- Nystagmus → usually towards affected ear (irritative stage)
- Imbalance
- Positive Fistula Test

🧪 Investigations

Investigation	Purpose
Fistula Test	Positive → Labyrinthine fistula
EUM (Examination Under Microscope)	Cholesteatoma extent
Pus C/S	Identify organism

CT Temporal Bone	Bony erosion, fistula
MRI	Soft tissue & intracranial spread

🗂️ Pathogenesis Flowchart

CSOM — Atticoantral type → Cholesteatoma formation → Bone erosion → Lateral semicircular canal fistula → Labyrinth irritation

- Vertigo
- Nystagmus
- Nausea & vomiting

💊 Management

🏥 Medical Management

- Vestibular sedatives
  - Ist gen antihistamines

    - Prochlorperazine
    - Cinnarizine
- Antibiotics
- Bed rest
- Head immobilization

👂 Surgical Management

- Early Myringotomy (acute stage)
- Cortical Mastoidectomy
- Mastoid exploration
- Drainage of labyrinth if required

⚠️ Prognosis

- Early treatment → Reversible
- Hearing can be preserved if managed promptly

🎯 Exam Pearls

⭐ Vertigo + CSOM-AA = suspect labyrinthine involvement
⭐ Tragal pressure vertigo = Fistula sign
⭐ Cholesteatoma commonly erodes lateral semicircular canal
⭐ Nystagmus direction helps stage disease
⭐ Treat infection + remove cholesteatoma surgically

🦠 Chronic Suppurative Otitis Media — Tubotympanic Type (Safe Type)

🧾 Case Scenarios

Case 1

A 30-year-old male presents with right-sided ear discharge for 10 years.
Discharge is profuse and purulent.
On examination → Central perforation in pars tensa.

Case 2

A 20-year-old male with unilateral profuse, odorless discharge from right ear for 8 years.

Associated hearing loss and right-sided nasal obstruction.

Otoscopy → Large anteroinferior / central perforation in pars tensa.

Nasal exam → Deviated nasal septum (DNS).

Case 3

A 2-year-old boy with right ear discharge for 6 months.

Discharge is odorless and profuse.

History of persistent nasal obstruction.

Ear full of purulent discharge.

Nasal septum deviated to right side.

🧠 Diagnosis

CSOM — Tubotympanic Type (TT type / Safe type)

🎯 Why "Safe" Type?

Infection confined to:

- Mucosa of middle ear
- Pars tensa perforation
- No bone erosion
- No cholesteatoma

📖 Key History Features

Feature	Description
Ear discharge	Mucopurulent, profuse, odorless
Hearing loss	Conductive
Chronic course	Years
Nasal obstruction	DNS, adenoids, sinusitis common

No severe pain	Usually painless

🔎 Examination

👂 Otoscopy

- Central / anteroinferior perforation (pars tensa)
- Middle ear mucosa:
  - Red
  - Edematous
  - Swollen
- Polyp (rare)

🎵 Tuning Fork Tests

- Weber → lateralized to affected ear
- Rinne → Negative
- Conductive Hearing Loss

🧪 Investigations

Investigation	Findings
Examination under microscope	Granulations, tympanosclerosis, adhesions
Audiogram	Conductive hearing loss
C/S ear discharge	Causative organism
Mastoid X-ray / HRCT temporal bone	Sclerotic mastoid or clouded air cells ❌ No bone destruction (key point)
X-ray sinuses & adenoids	Look for cause
Nasal exam	DNS, adenoids, sinusitis

🗂️ Pathogenesis Flowchart

ET dysfunction → Recurrent middle ear infection → TM perforation (pars tensa) → Persistent mucosal disease → Profuse mucopurulent discharge → Conductive hearing loss

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💊 Management

🏥 Medical Management

- Ear toilet
- Topical ear drops
    - Antibiotics + Steroids
- Systemic antibiotics

⚠️ Precautions

- Keep ear dry (no water entry)
- Avoid forceful nose blowing

🎯 Treat the Cause

- Adenoids

- Allergy
- DNS
- Sinusitis

🔧 Surgical Management

🧼 Disease Control

- Polyp removal
- Cauterization of granulations

🦴 Ear Surgery

- Canal wall up
    - Cortical mastoidectomy
- Myringoplasty / Tympanoplasty
    - When ear dry > 3 months

👃 Associated Procedures

- Adenoidectomy
- Septoplasty
- Tonsillectomy

- FESS

⚠️ Complications

Complication	Mechanism
Edematous mucosal polyp	Chronic inflammation
Tympanosclerosis	Hyalinization & calcification
Fibrosis & adhesions	Healing sequelae
Ossicular necrosis	Long process of incus commonly
Conductive hearing loss	Ossicular & TM damage

CSOM Difference: CSOM Atticoantral 🆚 Tubotympanic

Feature	Atticoantral Type (Unsafe)	Tubotympanic Type (Safe)
Area involved	Attic / posterosuperior part	Pars tensa
Perforation	Marginal / attic	Central
Discharge	Scanty, foul-smelling, blood-stained	Profuse, odorless, mucopurulent
Pathology	Cholesteatoma present	Mucosal disease only
Bone erosion	Common	Absent
Hearing loss	Mixed	Conductive
Complications	Common & dangerous	Rare & mild
Mastoid	Bone destruction	Sclerotic / clouded air cells
Safety	❌ Unsafe	✅ Safe

🎯 Exam Pearls

⭐ Profuse odorless discharge + central perforation = Tubotympanic type

⭐ Safe type → mucosal disease, no bone erosion

⭐ Always treat nasal pathology

⭐ Surgery only when ear is dry

⭐ Bone destruction → think Atticoantral

-> The End <-