ADHESIVE OTITIS MEDIA
(Atelectasis)

Collapse of the Pars Tensa and its Classification
Sade classification of drum collapse: I, mild retraction II, retraction onto the incus, III, collapse onto the promontory IV adhesion onto the promontory. Note that this is descriptive, but does not infer management.
CLASSIFICATIONS OF DISEASE

Objectives

- Description of pathology
- Guide to choice of management
- Study of outcomes of management employed
SADE CLASSIFICATION

Deficiencies

- Lacks definition of the critical stages of collapse-related pathology and their clinical importance
- Fails to infer the appropriate choice of the management options available
- Provides little basis for clinical outcomes research management

i.e. Lacks clinical application
The Black surgically-related classification of drum collapse:
If OME is present, add an asterisk*: possible poor hearing prognosis.
Black adhesive otitis classification, Stage 1. Collapse, perhaps severe, with minimal deafness. Observe only, or vent tube if an effusion causes hearing loss (Stage 1* cases).
Black Stage 2. Collapse with significant deafness. Consider drum elevation and reinforcement with a cartilage graft. OME (Stage II*) may cause persisting problems.
Black Stage 4. Cholesteatoma (with granulations on the scutum). Trans-canal and/or mastoidectomy clearance, drum and chain repair. Ensure prevention of re-collapse.
BLACK CLASSIFICATION
Clinical Application

- Identification of disease severity
  - Collapse, Ossicular involvement,
  - Cholesteatoma, Persistent tubal failure

- Indicates optimal treatment

- Provides a basis for practical research

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Right side Stage 1 adhesive otitis. Mild collapse is present, but negligible hearing loss and the ear is aerated.
Stage 1 adhesive otitis with generalised slight drum collapse, aerated middle ear, minor attic pocket.
Stage 1 adhesive otitis. Mild extensive posterior pars tensa collapse probably succeeds prior OME, but without deafness and with an aerated middle ear.
Stage 1 adhesive otitis. Prominent collapse on to the promontory has occurred but with minimal hearing loss.
Stage 1 mild adhesive otitis. Retraction of the postero-superior pars tensor has caused subtle erosion of the long process of the incus, but the chain is intact and the ear aerated. Minimal conductive loss.
Stage 1* adhesive otitis. Moderate drum retraction is present, with the fluid levels of a serous OME. A vent tube should correct the mild conductive loss.
Uncertain classification. Moderate loss and a serous effusion. 20 db conductive loss. Stage I* if a vent tube restores hearing, Stage II* if not. Possible future problems.

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Stage 1* adhesive otitis. Mild drum retraction has caused localised collapse on to the promontory. A serous effusion is present.
Stage 1* adhesive otitis. There is mild collapse on to the long process of the incus, with a serous OME present. Tubal insertion will alleviate blockage/deafness.
Unusual Stage 1* collapse. Previous vent tube insertion has resulted in a circumscribed deep central invagination. Serous OME present. ? Future problems.
Stage 1 / impending Stage 3 collapse. Generalised mild drum collapse is present, but the long process has eroded and loss of contact with the stapes head is occurring.
Stage 2 severe drum collapse, but without ossicular involvement or effusion. A total drum reinforcement with a well-fitted cartilage graft should largely restore hearing.
Stage 2* collapse. An unusual case of anterior pars tensa collapse into the Eustachian orifice, without chain involvement. A serous OME is seen behind the posterior drum.
Probable Stage 3* collapse. Severe posterior drum collapse, partial necrosis of the incus long process and a chronic OME are present. Chain fixation is likely.
Stage 3 adhesive otitis. Drum collapse has eroded the long process of the incus, leaving only a fibrous connection to the stapes head. Chain repair indicated, plus composite grafting to protect the repair and prevent re-collapse.
Stage 3 adhesive otitis. The ear is well aerated and the collapse mild, but the long process has necrosed and the deafness is substantial. Ossiculoplasty required.
Stage 3 drum collapse showing extensive relatively mild retraction after a long history of tubal failure. The ear is now aerated but the long process has vanished. Ossiculoplasty required.
Stage 3 adhesive otitis. Gross retraction of the posterior half of an otherwise tympanosclerotic drum, with loss of the long process and the stapes superstructure. Possible attic fixation. Drum and chain repair needed.
Stage 3*drum collapse. Diffuse moderate retraction, a large attic pocket, incus necrosis and a serous OME are present. The latter may hinder attempts to recover hearing via ossiculoplasty.
Grade 3* adhesive otitis. Marked pars tensa collapse, chain fixation, serous OME. Possible early keratin formation over the handle of the malleus. Poor hearing outlook.
Substantial stage 3* collapse with diffuse retraction and a chronic, probably mucoid OME present. Absent long process; poorer ossiculoplasty prognosis.
Marked Stage 3* collapse. Severe invagination of the posterior pars tensa has caused total loss of the incus and stapes superstructure. Concurrent serous OME. VII evident, deep to the retraction.
Stage 3* adhesive otitis. Gross drum collapse, probable chain fixation, necrosis of the long process and OME. Debris present but not pre-cholesteatomatous keratin.
Obliterative Stage 3 adhesive otitis. The middle ear cleft is filled with fibrosis; no aeration seen on CT scan. Chain fixed, poor surgical prognosis.
Advanced obliterative Stage 3 collapse. The middle ear has been obliterated by fibrosis, probably due to fulminating infection. Chain details obscure, severely deaf.

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Stage 3 collapse, verging on Stage 4. Severe posterior collapse has eroded the long process of the incus with only fibrous attachment remaining. Early keratin accumulation posteriorly, but the ear is aerated.
Early Stage 4 cholesteatomatous drum collapse. Gross invagination into the Eustachian orifice anteriorly. Developing keratin formation posteriorly.
Stage 3, possibly 4 adhesive otitis. Flecks of moist keratin adjacent to the protruding stapes superstructure may indicate the onset of true cholesteatomatous disease.
Early Stage 4 collapse. There is severe posterior collapse. The chain appears intact but may be partially fixed. Overt keratin accumulation heralds the onset of cholesteatoma.
Early pars tensa pattern cholestatoma. A plug of keratin is forming in the posterior mesotympanum around the site of the stapes superstructure, possibly extending into the lower attic. A serous effusion is present. Stage 4*.
Stage 3* adhesive otitis degenerating into attic cholestatoma. Substantial pars tensa collapse, OME and attic invagination and granulation formation.
Early Stage 4* disease. Previous drum collapse now displays developing keratin accumulation in the lower attic and over the long process of the incus. Serous OME.
Stage 4 drum collapse. A granulation is present on the postero-superior scutum, obscuring cholesteatomatous invagination into the facial recess and sinus tympani.
Stage 4* cholesteatomatous collapse, invading the attic. The incus and stapes have eroded. The facial nerve is evident within the collapse. Purulent OME present.
Gross Stage 4 collapse. The chain has been reduced to the head of the malleus; cholesteatoma is evident posterosuperiorly, but the middle ear remains aerated.
Stage 4 cholesteatomatous adhesive otitis. Gross drum collapse has invaginated into the rear attic with a plug of dry keratin evident superiorly. VII seen centrally, no chain. The remaining middle ear space is aerated.