MASTOIDECTOMY ELIMINATION

Overview

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Mastoidectomy elimination options: 1 Cavity obliteration, using muscle flaps or “filler” material; 2 EAC wall reconstruction; 3 Reconstruction with a “slab” graft; 4 Ablation (canal closure).
Each option carries a risk of complications – resorption of materials, residual cholesteatoma, infection, recurrent cholesteatoma.
MASTOIDECTOMY OBLITERATION
Mastoidectomy obliteration. The cavity is filled with soft tissue flap/s, or with a “filler”: organic, e.g. bone/cartilage/bone pate, or biomaterials such as ceramic granules.
Flap obliteration: Arterial supply to the peri-auricular tissues. Reliable flap design should be based on these vessels to prevent ischaemia and consequent atrophy or necrosis.

Essential patterns of past flap design: 1 Antero-superior based, 2 Inferiorly based, 3 Postero-superiorly based, 4 Pinna-based.
The Popper/Palva pinna-based flap has been widely used but is notorious for subsequent resorption, as the vascular supply is often sectioned during preparation.
Delivering vital tissue bulk with the necessary vasculature requires a flap pattern based on demonstrable supply, such as that of the wing flap. MTA: middle temporal artery; PAA: post-auricular artery.
Complications of mastoidectomy obliteration. 1: flap or filler resorption, 2: chronic ischaemic changes in EAC if vascularity is poor, 3: residual infection or cholesteatoma.
Patterns of residual cholesteatoma. It is inadvisable to obliterate high risk areas. Particularly, the use of ossifying fillers may lock in disease against the dura/VII/labyrinth.
Pattern of obliteration avoiding high risk residual disease areas.
MASTOIDECTOMY RECONSTRUCTION
Mastoidectomy reconstruction. This technique requires three components: 1: a durable and biocompatible support wall; 2: healthy EAC skin; 3: a vascular stroma that maintains vitality of the site.
Mastoidectomy reconstruction variant used when ossiculoplasty is impossible. A thick cartilage graft is used over obliterative fibrosis to minimise further drum collapse or invagination.
Mastoidectomy reconstruction. The defect in the canal wall has the shape of a $45^0$ curved section of a cone, rather than a simple wedge. This must be addressed when shaping a wall implant.
Wall reconstruction (HA ceramic) using a curved ceramic implant to fill the spiral wall defect: zr: zygomatic root, frg: facial ridge groove Sc: scutum.
Complications of mastoidectomy reconstruction: 1 exposure of wall material. 2 wall resorption/necrosis, 3 residual cholesteatoma, 4 recurrent cholesteatoma.
Complications of mastoidectomy reconstruction. 1: epithelial ischaemia/myringitis (poor vascular supply), 2: exposure of wall material, 3: wall necrosis, 4: recurrent cholesteatoma, 5: residual cholesteatoma.
MASTOIDECTOMY ABLATION
Mastoidectomy ablation using a flap to underlay the closure site and obliterate the cavity. A flap may not have sufficient bulk for the latter; use blood clot rather than fat: the latter is traumatic, lacks vascularity and impedes re-inspection.
Complications of ablation. I: infection, P: cholesteatoma pearl. Also, if the closure site is not reinforced, chronic tissue resorption may produce gradual cavity reformation.