

**Results:** Twenty one papers were identified which were relevant to our search. In total, 686 implants were inserted and 121 (17.6%) showed evidence of trauma. The cochleas with trauma had basilar membrane elevation in 10.5%, ruptured in 12.9%, the electrode passed from the ST to the scala vestibuli (SV) in 71.8% and there was grade 4 trauma consisting of spiral lamina or modiolus fracture and tear of the SV, in 4.8%.

The studies used a variety of histological and radiological methods to assess for evidence of trauma. A majority (57%) used histology either alone or with radiology (CT or x-ray). A majority of studies used cadaveric temporal bones (67%).

**Conclusions:** Minimising cochlear trauma during implant insertion is important to preserve residual hearing and optimise audiological performance. An overall 17.6% trauma rate suggests that CI could be improved with more accurate and consistent electrode insertion such as robotic guidance. The correlation of cochlear trauma with post-operative hearing has yet to be determined.

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### ID: IP070

#### Is a retraction pocket an epithelial migration, intended to contact and cure an underlying inflammation, as a self-healing mechanism?

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**Learning objectives:** Complete drill out of all granulations and prevention of adhesions with silicone sheathing of mucosa can reduce the risk of cholesteatoma recurrence.

**Introduction:** Theories on retraction pocket pathogenesis lack convincing proof. A new concept interprets the mysterious ingrowth of skin as a basic principle of healing as seen in other regions of the body.

**Methods:** Retrospective analysis of the interrelation of retraction pockets and underlying granulation tissue in 253 cholesteatoma revision surgeries in the last decade. Literature research on pathogenesis of cholesteatoma.

**Results:** Self-cleaning retraction pockets over non-inflamed mucosa remained stable. A retraction did not develop over well-aerated areas with unimpeded mucosal drainage. A new retraction was always contacted active granulation, which had either persisted or emanated from a former cholesteatoma surgery. Findings from experimental and clinical data in literature are in agreement with this new concept.

**Conclusions:** The pathogenesis of a retraction is interpreted as a natural attempt of the body to cure an underlying inflammation in a cavity. Analogue phenomena exist e.g. in the migration of the omentum towards a local inflammation in the abdomen. Based on this pathomechanism, the prophylaxis against a recurrent cholesteatoma therefore should combine a meticulous cleaning of all pneumatic cells from infectious granulation and establish a free drainage of all cavities of the middle ear into the tubal orifice, avoiding a

blockage on the path of mucosal clearance. Rhinosurgery also insists on an unblocked drainage of the operated sinus. In cholesteatoma surgery, thin silicone foils should cover all non-mucosa-coated surfaces behind the tympanic membrane and also in the epitympanon and, if necessary, reaching back to the antrum, ending on the mucosa of the tubal entrance. Gas production of the healthy middle ear mucosa can recover, and the risk of a recurrent retraction is reduced.

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#### A New Simple Radiological Scoring System for Classifying the Tegmen of the Mastoid

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**Learning Objectives:**

- Variations in normal tegmen and inner ear anatomy.
- Surgical considerations when operating near the tegmen.

**Introduction:** The tegmen is a thin plate of bone that separates the mastoid and middle ear cavity from the intracranial compartment. The tegmen has a very variable shape, and complications may arise when operating near the tegmen. Notably, the dura may be exposed, and if this is gone unnoticed, serious intracranial complications may result, including cerebrospinal fluid leakage and neural tissue damage. One important risk factors for dural complications is low placement of the tegmen. The purpose of this study was to determine the radiographic location of the tegmen tympani in relation to the lateral semicircular canal in adult patients with normal temporal bones.

**Methods:** Patients who underwent high resolution temporal bone CT scanning as part of their workup for hearing loss were examined retrospectively. We included adult patients that had normal temporal bone anatomy and no previous ear surgery. The distance between the lateral semicircular canal and the lowest point of the tegmen tympani was measured in both the sagittal and coronal planes.

**Results:** A total of 100 temporal bones were assessed. The mean tegmen height was 4.1 mm in the coronal plane and 2.5 mm in the sagittal plane. The measured tegmen heights demonstrated a unimodal distribution with some variance.

**Conclusions:** Our results demonstrate that there is generally one average tegmen height, with a range of variation around this point. Based on this finding, we propose a limited tegmen height classification scheme. Tegmens below 4.5 mm on coronal measurement and 2.5 mm on sagittal measurement are considered "low" (type A) whereas tegmens above these parameters are considered "high" (type B). This classification system might have implications in prognosticating patients undergoing middle ear surgery using preoperative temporal bone CT.