

understand complicated anatomy about ear surgery, especially for novice surgeons.

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Intraoperative Assessment of Ossicular Fixation

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Learning Objectives: The middle ear ossicles can be driven with a coil and magnet and the tiny vibration amplitudes can be measured with a laser vibrometer. Some information on the degree of ossicular mobility can be extracted by measuring the velocity ratios between different measurement points.

Introduction: Pathologies such as otosclerosis and sequels of chronic otitis media may cause fixation of the middle ear ossicles, leading to hearing impairment. Knowledge of the degree of ossicular mobility is useful in order to determine the best course of surgical treatment. Routine assessment of mobility is often performed by manual palpation during surgical exploration, but this is subjective and imprecise, and a more objective method would be welcome.

Methods: A method was developed that makes use of a small magnet and coil to vibrate the ossicles in surgery after the tympanic membrane has been elevated. The method allows the ossicles to be driven at acoustic frequencies while simultaneously allowing free visual access for a laser vibrometer.

The method was evaluated with measurements on human temporal bones. Ossicular fixation was simulated by applying glass ionomer cement to the anterior malleolar ligament, and to the stapes footplate. Measurements were made of the vibration response of the umbo, the incus long process, and at points on the stapes, before and after artificial fixation.

Results: The velocity ratios between different measurement points varies with the severity of the fixation. In the unfixed state the velocity ratios remain fairly consistent between temporal bones, but with increased fixation of the footplate the ratios diverge further from the unfixed.

The ratio of stapes to umbo velocity decreases when the degree of fixation increases, and may reduce by as much 40 dB in case of complete footplate fixation.

Conclusions: It is possible to drive the ossicles with a magnet and coil and measure ossicular motion with a laser vibrometer. Information on the degree of ossicular fixation could be gathered by examining the velocity ratios between different points on the ossicular chain. Since the results can be

displayed immediately after the measurements, the method may even be used to assess the results of an intervention intraoperatively.

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Tympanoplasty: does dry or wet temporalis fascia graft matter?

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Learning Objectives: To evaluate whether dry or wet temporalis fascia graft influences the outcome of tympanoplasty. Recent review of literature cites shrinkage of temporalis fascia graft as an important cause for failed tympanoplasty i.e. a dry graft rehydrates in the physiological environment of middle ear and shrinks. This might lead to alteration in the anatomical position of the placed graft, thereby surgical failure.

Objective: To evaluate the success rate of tympanoplasty type I by underlay technique using dry and wet temporalis fascia graft and to determine the role of fibroblasts.

Study design: A prospective, randomized study with control. Hundred adult cases of either sex of Chronic Suppurative Otitis Media-mucosal disease were divided into two groups of 50 each - Group A [underwent dry graft tympanoplasty] & Group B [underwent wet graft tympanoplasty]. Fibroblast count was also calculated in dry and wet grafts.

Results: An overall surgical success rate of 82% and 90% was observed in Group A and Group B respectively which was not found to be statistically significant. Further, a statistically significant high fibroblast count was observed in wet grafts, but it did not correlate with surgical success.

Conclusions: The nature of the graft, whether dry or wet does not influence the outcome of tympanoplasty type I.

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MRI evaluation of endolymphatic hydrops for middle ear surgery

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