Simultaneous Management of Malleus Fixation during Stapedectomy for Otosclerosis

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INTRODUCTION

- The finding of a simultaneously fixed malleus and stapes is extremely rare, and is reported to be present in 0.4 to 4% of otosclerosis cases (1-3).
- Preoperatively, the presumed etiology of otosclerosis is isolated stapes fixation, but the definitive diagnosis is made during surgery.
- Preoperative temporal bone CT scan may be particularly beneficial in cases with an unclear clinical history.
- Simultaneous malleus and stapes fixation can be managed by a one-stage malleostapedotomy or a two-stage operation, but no systematic studies have been done to compare these two methods.

METHODS

- Case report and review of the literature.

RESULTS

- We report the case of a 37 year old man who presented with a 10 year history of bilateral progressive hearing loss.
- He also reported two episodes of vertigo accompanied by hearing loss, fullness, and tinnitus over the previous five years.
- There was no family history of hearing loss.
- Audiologic evaluation revealed bilateral conductive hearing loss with an air bone gap of 55 dB on the left and 30 dB on the right, with good cochlear reserve bilaterally (Figure 1).
- CT of the temporal bone was obtained given the unclear clinical history. It did not reveal foci of otospongiosis, ossicular fixation, or other abnormality, and the radiology report was read as normal (Figure 2).
- Upon further independent review intraoperatively, we found some suggestion of fixation in the area of the left malleus to the anterior epitympanum.
- Patient underwent left middle ear exploration with planned stapedectomy for presumed otosclerosis.
- Intraoperatively, fixation of both the malleus and stapes footplate was noted.
- The malleus was immobile due to fixation at the anterior malleolar ligament to the anterosuperior epitympanum.
- A single stage malleostapedotomy was performed with laser lysis of the bony fixation of the malleus and incus and a small fenestra stapedectomy using a 4.5mm Eclipse piston prosthesis.
- There was excellent mobility of the malleus, incus, and the prosthesis within the stapedotomy.
- The postoperative audiogram at six weeks demonstrates closure of the left air bone gap to within 10 dB, which has since closed completely on further follow up.

CONCLUSION

- Consideration for preoperative temporal bone CT should be given to cases with unclear clinical history to prepare for surgical exploration.
- Palpation of each bone of the ossicular chain individually is essential to ensure that no other bones are fixed.
- While only a single case, the audiometric follow up in this case supports the safety and efficacy of simultaneous malleostapedotomy as the primary management in cases of malleolar fixation in otosclerosis.

REFERENCES