Reviewer's report

Title: Incidence of a round window membrane rupture in patients with sudden sensorineural hearing loss

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Reviewer: Stefan K Plontke

Reviewer's report:

The authors cover an important topic in clinical otology.

1. Is the question posed by the authors well defined?
   YES

2. Are the methods appropriate and well described?
   No. See comments on evaluation criteria below.

3. Are the data sound?
   Yes. But see comments on evaluation criteria below.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   Yes.

5. Are the discussion and conclusions well balanced and adequately supported by the data?
   Yes. See major comments below.

6. Are limitations of the work clearly stated?
   No. Should be discussed more clearly.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
   Yes.

8. Do the title and abstract accurately convey what has been found?
   Yes.

9. Is the writing acceptable?
   Yes.

Major comments and compulsory revisions:

A retrospective chart review has limitations for evaluating an „incidence“. Only a percentage of those patients who received a tympanoscopy for suspected round
window membrane rupture can be established that way. The term “incidence” should be changed to “occurrence” or a similar term.

Methods, from 2nd paragraph: The definition of sudden hearing loss is somewhat arbitrary. Give references, where the chosen definition for sudden hearing loss comes from.

How did the authors quantify non-measurable thresholds in audiograms („out-of-limits“)? How did they calculate improvement in these cases?

How did you calculate threshold? If a PTA was used does the frequencies used for the PTA correlate with the frequency range of the definition for sudden hearing loss?

What were the criteria for a “suspected round window membrane rupture” or what were the criteria for surgery?

Results, 1st paragraph: How many patients with sudden hearing loss were suggested surgery and refused to have surgery? If this cannot be established retrospectively, this will impose bias on the „incidence‟ and should be mentioned, e.g. in the results section.

In general: The concept of an intraoperative assignment of “no fistula”, “doubtful fistula” and “definite fistula” should be specified in more detail. In the methods section, criteria for these categories should be outlined. (Fluid in the RW niche alone does not appear a definite sign of a RW lesion without full inspection of the RW membrane.)

How many different surgeons were performing the procedure and it should be stated that they adhered to the same criteria for evaluations.

Results, 4th paragraph: The RW membrane in most case is hidden in the depth of the RW niche and in some cases covered by false membranes and mucosal folds (see Alzamil and Linthicum 2000 and other authors). Therefore it is often not visible by tympanoscopy before these false membranes are removed and more importantly the promontorial ridge over the RW niche has been removed. Please state whether and how this was done and of so in how many cases it was performed.

How differed the patients with fat seal from those with a fibrin glue combination sealing with respect to outcome?

Please give a reference for your criterion of hearing improvement (<20dB).

The hearing recovery in a major recent sudden hearing loss study (Rauch et al. 2011, JAMA) showed an average improvement of approx. 30dB in the PTA. Please discuss this (or results from other sudden hearing loss studies) with respect to your findings.

Minor comments and essential revisions:

Is citation (1) correct, if so, use only „Simmons“, not „Blair Simmons“.
p.5., 2nd paragraph: Include the Ethics Committee approval number.
p.7., last paragraph: Change to: “were not observed”

**Level of interest:** An article of outstanding merit and interest in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

The reviewer has been a consultant to Otonomy Inc., San Diego, USA.