Author’s response to reviews

Title: Correlating the site of tympanic membrane perforation with Hearing loss.

Authors:

Titus S Ibekwe (ibekwets@yahoo.com)
Onyekwere G Nwaorgu (onyinik@yahoo.com)
Taiwo G Ijaduola (taiwoijaduola@yahoo.com)

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Author’s response to reviews: see over
Dear Editor,

BMC Ear, Nose and throat Disorder.

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Correlating the site of tympanic membrane perforation with Hearing loss.
Titus S Ibekwe, Onyekwere G Nwaorgu and Taiwo G Ijaduola

REVIEWER 1:

I wish to thank reviewer 1 for the constructive criticisms. The issues raised are addressed as follows:

1. The possible confounding effects in chronic tympanic membrane perforations as noted by the reviewer is real and the fact that these may not be completely eliminated in live patients is true. Despite the exclusion of all active perforations we know that some of these confounders might still be there. This point was alluded to in the discussion session of the manuscript, last sentence before conclusion “Furthermore, the non conformity of “uncomplicated” TM perforations to this hypothesis strongly suggests other factors beyond effect on sound transmission”. The modeling design in the previous work by Sussan Voss is equally noted and spurred us towards carrying out this research on live patients, bearing in mind the limitations; to observe the response. However, in order to clearly reflect this important observation made by reviewer 1 we have decided to state this as one of the limitation of the study in page 6 paragraph 1, “Limitation of the study: This includes the inability to perfectly control all confounding factors especially in chronic tympanic membrane perforations that could have affected the audiometric assessment of the patient since the study was based on live patients and not models.”
2. The term “complicated” and “un-complicated” perforations have been dropped as suggested by the Reviewer1 and categorization now based on types of hearing loss (Pure conductive and mixed) and on duration of perforation (Acute and chronic). Acute perforations for the purpose of this study are those arising from traumatic central perforations and Acute otitis media (i.e. duration of perforation 2 weeks and below); whereas chronic are those perforations lasting longer than 2 weeks or associated with chronic otitis media. Under abstract, paragraph 3(Result), lines 7 and 8 the words “complicated” and “uncomplicated” have been erased, whereas in lines 10,13 and 14 they were replaced appropriately with Acute and Chronic Tm perforations. Similar corrections were made although the text.

3. A data analysis for mixed hearing loss now based on the air-bone gap to eliminate completely the sensorineural component is now incorporated as table 2c. The importance of this observation is noted with thanks. However, the result recorded did not vary significantly but no doubt has given more credulence to the findings. We wish to retain both results in the paper because they support the fact that the other factors associated with chronic tympanic membrane perforation must have been the modifiers prompting a positive correlation between perforation sites and hearing losses as opposed to acute perforations where such factors are either entirely absent or minimal.
Table 2(c) Statistical correlation of sites of perforations with hearing loss in complicated (mixed hearing loss) with elimination of the sensorineural component (A-B gap).

<table>
<thead>
<tr>
<th>Site of perforation(right TM)</th>
<th>N</th>
<th>Mean hearing loss</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Air-bone gap)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td>16</td>
<td>41.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Anterioinferior</td>
<td>4</td>
<td>22.0</td>
<td>4.7</td>
</tr>
<tr>
<td>Posteroinferior</td>
<td>3</td>
<td>35.0</td>
<td>2.1</td>
</tr>
<tr>
<td>Anterosuperior</td>
<td>3</td>
<td>13.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Posterosuperior</td>
<td>4</td>
<td>55.0</td>
<td>6.2</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>36.93</td>
<td>3.67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>K-W test</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.214</td>
<td>0.049</td>
</tr>
</tbody>
</table>

Those perforations with minimal confounding factors tend not to correlate with site of perforations whereas, the long standing (chronic perforations) with associated confounding factors sensorineural hearing losses, possible ossicular erosions, cholesteatoma correlated with
the site of perforations. Worthy of note is that on elimination of the sensorineural component of the hearing loss (through the utilization of air-bone gap), a similar result was obtained.

4. Figure 1 has been excluded as suggested by reviewer1 and therefore the last sentence in page 5 which read “: This is schematically represented by figure1. They are represented as:” has been erased.

5. The total number of ears (both normal and perforated) has been erased from the results in both the abstracts and the body of the article; while emphasis is on the number of patients and the ears with tympanic membrane perforations only. Under abstract, paragraph 3 (Result) line 2 “....with 124 ears were studied...” has been re-written as “....with 77 perforated ear drums were studied...”

6. While the reviewer’s observation about marginal posterosuperior perforation is correct; however it is our wish to consider all locations of perforations. In view of this opinion all actively discharging ears were excluded. Be it as it may, the possible effects of confounders have already been noted as part of the limitations of the study.

7. Truly the central perforations out numbers the rest. However, this is the true reflection of the frequencies of these perforations encountered within the study period. Furthermore, to avoid bias all consecutive patients seen within the period were recruited in the study.

8. Observation on the questionnaire is noted. However this study is an extensive one in which other parameters are separately being looked at. The extracted portion of the
questionnaire is the one that is most relevant for this particular aspect of the study and since we could not isolate this portion of the questionnaire from the entire design we decided to show all.

9. Our script has been co-read by a native speaker of English language and the grammatical errors detected corrected. Page 4 last sentence which formerly read “Sample size: Sixty two patients with 77 tympanic membrane perforations” has now been upgraded from a phrase to a full sentence. It now reads “Sample size: Sixty two patients with 77 tympanic membrane perforations participated in the study.” We are ready to accept rectification of any other error(s) as may be detected by the Editorial reviewers.

10. ALL corrections made in the manuscript were highlighted in red for easy access.

REVIEWER 2:

We wish to thank Reviewer no 2 for finding this work worthy of publication.

Kind regards,

Dr. Titus S Ibekwe

(Corresponding Author for ALL the Authors)