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INVITED ARTICLE

A Consensus-based Practical Guide on the Management of retraction pockets of pars tensa and pars flaccida

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This is a consensus-based practical guide produced by the European Academy of Otology and Neurotology (EAONO) on the 'Management of retraction pockets of pars tensa and pars flaccida'. A previous systematic review did not show any evidence to support one particular treatment over the others, or even over watchful waiting. In the absence of evidence, the present practical guide is based on consensus using the Delphi Technique. It is a cyclical process that gathers information, summarises it and re-submits the summaries to participating EAONO members until a consensus is reached.

A set of statements were prepared by the authors and sent to all EAONO members. After 2 rounds of consensus cycle, all but one of the statements reached the target 80% consensus. The key statements on the 'Management of retraction pockets of the pars tensa and pars flaccida' cover the difference between retraction pockets and Cholesteatoma, the importance of describing a retraction pocket accurately, the indications for surgery, the types of surgical treatment in the paediatric and adult populations, the minimal follow-up periods and the value of pre-operative Eustachian function test.

Out of a total of 364 EAONO, only 46 responded to the first consensus cycle and 26 responded to the second cycle. The problem of low response rate needs to be addressed for future EAONO consensus documents to increase their credibility. Because of the low response rate, a high bar of 80% agreement is used for every single statement in the practical guide.

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Introduction

The European Academy of Otology and Neurotology (EAONO) wishes to produce guidelines on a number of otological conditions and their management. Guideline documents are supposed to be based on the highest level of evidence available. Unfortunately, this is not often possible, especially for surgical conditions or procedures. There are very few high quality randomised control studies or even comparative studies on surgical procedures. The problems include controlling the surgical skill of surgeons, recruiting sufficient numbers, observer bias, adequate follow up periods, and getting internal and external validity for the studied populations. In the absence of high quality evidence, guidelines should be based on consensus[Brouwers et al., 2010]. This paper describes the effort by the authors to formulate consensus statements on the 'Management of retraction pockets of pars tensa and pars flaccida'. A previous systematic review by authors has shown that there is no high level of evidence to support any surgical intervention over watchful waiting in the management of mild to moderate degrees of retraction pockets and there is also no good evidence to favour one particular treatment over the others [Neumann C and Yung MW, 2012]. Similar conclusions have been made by a Cochrane review [Nankivell and Pothier, 2010].

Retraction pocket is one of the topics in the proposed EAONO (European Academy of Otology and Neuro-Otology) guidelines on 'The Management of Chronic Otitis Media'. The present paper describes the consensus

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methodology and the statements achieved by consensus on the management of retraction pockets.

Methods and Results

Delphi Technique was used to obtain consensus from the EAONO members. It is a cyclical process that gathers information, summarises it and re-submits the summaries to members until a consensus is reached [Jones and Hunter, 1995]. The technique was originally developed by the Rand Corporation as a way of forecasting future events of national and international importance. The technique is time consuming and it requires a central coordinating mechanism to manage the alteration, transmission and summarising of questionnaire data. The senior author (MY) acted as the coordinator in the present consensus process. The Delphi technique comprises the following steps:

1. Consensus statements are sent electronically to each EAONO member. The internet tool Survey Monkey was used for this purpose (http://try.surveymonkey.com/).

2. Each EAONO member independently and anonymously indicates whether he/she agrees with each individual statement, and records any comments.

3. All the data generated in step 2 are sent to the coordinator who is responsible for data compilation and reproduction.

4. Data compilation by the co-ordinator, who uses them to revise the consensus statements.

5. Each participating EAONO member receives a copy of all comments and the revised statements

6. EAONO members generate further feedback and sent it to the co-ordinator.

7. Steps 4 to 6 are repeated as many times as necessary to reach consensus.

In order to minimize the number of consensus cycles, the senior author (MY) sought advice and comments from the council members of the British Society of Otology. Their input helped the senior author to draft the statements in the first cycle of the EAONO consensus survey. The statements were sent by an electronic survey tool to all members of EAONO (16 April 2012). There were 24 statements in the first cycle survey. Eighty per cent (80%) agreement was used as the cut-off line for consensus. Any statements that did not reach at least 80% agreement were revised based on the comments received from the responders. The responses for the first cycle consensus survey were summarized in Tables 1 and 2.

Based on the comments from the 46 responders, the statements were revised; some statements were amalgamated. The second cycle contained 18 statements. They were sent by the electronic survey tool again to the 46 responders from the first cycle (8 May 2012). The responses of the second cycle were summarized in Tables 3 and 4. Again based on the '80%' criterion, consensus was reached in all but one statements. The statement that lacked consensus was eventually dropped from the final document as it was felt that its exclusion will not adversely affect the quality of the consensus document. The individual statement and its respective degree of consensus at the second consensus cycle are summarized in Table 5.

Discussion

Delphi technique is a disciplined problem-solving procedure. It eliminates the effects of dominant personalities on group decision-making and it also eliminates status effects: powerful, charismatic individuals who can co-opt the process. Computer-based e-mail systems and the Internet create great efficiencies in the Delphi method.

It was disappointing that only 26 EAONO members participated in both cycles of the consensus process. This is obviously the limitation of the Delphi technique as it relies on the co-operation of the members. The low response rate could be due to a number of reasons. The database of the EAONO membership may not be up-to-date. Some members did not receive the statements, some

Table 1. Response from 364 EAONO members on the first cycle consensus survey

Response/lack of response	Number
Responded	46
Un-responded	318
Opted Out	2
Bounced	11

Table 2. Levels of agreement for the 24 statements used in the first consensus cycle.

Percentage agreed with the statement:	Number of statements
>90%	9
80% – 90%	8
60% - 80%	5
50% - 60%	2

Table 3. Response rate of the second cycle from 46 EAONO members.

Response/lack of response	Number
Responded	26
Un-responded	20
Opted Out	0
Bounced	0

Table 4. Levels of agreement for the 18 statements used in the second consensus cycle.

Percentage agreed with the statement:	Number of statements
>90%	12
80% – 90%	5
60% - 80%	1
50% - 60%	0

Table 5. Actual consensus statements used for the second cycle. All statements with over 80% agreement were adopted as the final version.

Statements	Agreement percentage
1. EAONO aims to use this questionnaire to assess current practice of EAONO members and produce guidelines on the management of retraction pockets. However as with all guidelines these will need to be used and adjusted for specific cases.	100%
2. It is important to describe the severity of the retraction pocket. This allows the otologist to monitor the progress of the retraction pocket. It can be done by using one of the published staging methods or by describing the retraction pocket using text, line drawings or by taking a photograph of the eardrum.	92.3%
3. Description of a retraction pocket should include its position, depth and whether it is fixed or mobile. The presence of discharge, accumulation of keratin, and evidence of bony erosion should also be noted.	100%
4. In general, a clean, asymptomatic retraction pocket with normal hearing does not require surgery, even if it is in contact with the intact ossicular chain. However, its progression should be monitored, especially in children.	84.6%
5. The indications for surgery for retraction pockets are generally the same for children and adult. However, in children, assessment of the upper respiratory tract is an important part of the management, and any retraction pockets should be more closely monitored than in adults.	92.3%
6. A non-self-cleaning retraction pocket with keratin accumulation inside the pocket is a cholesteatoma even if the ear is free of discharge	84.6%
7. Mobility of a retraction pocket can be tested by the Valsalva manoeuvre, applying suction to the retraction pocket, or the use of a pneumatic otoscope.	92.3%
8. Investigation of the retraction pocket should include assessment of the upper respiratory tract. This is particularly important for patients with nasal or sinus symptoms.	92.3%
9. Formal Eustachian function tests are not standard investigations for retraction pockets. They are mainly performed for research purpose or considered on an individual basis.	96.2%
10. Indications for surgery on a retraction pocket include a. Otorrhoea b. Hearing impairment as a result of the retraction pocket c. Keratin accumulation within the retraction pocket d. Inability to see the bottom of the retraction pocket on otoscopy. However, the decision on surgery will also depend on factors such as degree of hearing loss, hearing in the opposite ear, patient compliance to follow up, how effective is the local treatment. CT or MRI imaging could also be invaluable in assessing deep retraction pockets where the bottom cannot be seen on otoscopy.	80.8%
11. For an adult with a pars tensa retraction pocket requiring surgery a. cartilage reinforcement of the retraction pocket or cartilage tympanoplasty is the most popular technique. b. the added benefit of the ventilation tube is uncertain, except in cases with concomitant middle ear effusion.	96.2%
12. For a child with a pars tensa retraction pocket requiring surgery a. Insertion of a ventilation tube is the first line of treatment b. Cartilage tympanoplasty should be reserved for those retractions which persist following failure of ventilation tube insertion a. Combined ventilation tube insertion and simple excision of the retraction pocket is a simple technique used by some surgeons, but may cause a residual perforation or iatrogenic cholesteatoma.	92.3%
13. For an adult or a child with pars flaccida retraction pocket requiring surgery, atticotomy and cartilage reconstruction of the outer attic wall is generally the surgery of choice. In less severe cases it may be possible to clear debris and observe.	80.8%
14. Surgery is usually not indicated in adults with normal hearing and asymptomatic posterior retraction pockets or attic retraction pockets if the bottom of the retractions can be seen, even if they are fixed (cannot be reinflated by auto-inflation). However, it is prudent to monitor these pockets for at least 12 months to check that they remain stable. On discharge from outpatient follow-up, the patients should be counselled about the symptoms of otorrhoea and hearing loss and the need to return for review.	80.8%
15. In children, asymptomatic but fixed retraction pockets may need to be monitored more frequently and for a longer period. In cases where compliance to the follow up monitoring is in doubt, it may be necessary to consider surgical intervention early especially if the bottom of the retraction pocket cannot be seen on otoscopy.	92.3%
16. Patients with complete atelectasis (fixed retraction of the whole tympanic membrane) who present with hearing loss a. should be monitored for at least 12 months with hearing rehabilitation using hearing aid if necessary. Children may need to be monitored more frequently and for a longer period. b. On the whole have disappointing long-term results from hearing restoration surgery.	84.6%
17. Patients with a successful cartilage tympanoplasty for either pars tensa or pars flaccida retraction pockets should be followed up for at least 3 to 5 years. The patients should be counselled about the symptoms of otorrhoea and hearing loss and the need to return for review.	88.5%
Statement excluded: Mobile retraction pockets may become re-inflated spontaneously. Autoinflation exercises or the use of Otovent may encourage re-inflation of a mobile retraction pocket.	68.0%

opted out from the consensus process, and some confessed that they did not clear the backlog of email on their system. The authors were also aware of the problem of survey fatigue amongst many EAONO members. In order to minimize the number of consensus cycles needed for the final document, the initial statements had gone through several discussions and refinements with the help from the British Society of Otology Council to eliminate areas of controversy. The problem of low response rate from EAONO members need to be addressed in future consensus documents to give them more credibility amongst members.

The authors recognized that there are many individual variables that could influence decision making in a particular patient. The present practical guide allows for individualized consideration in the management of retraction pockets. Hence the consensus guide contains the statement '…as with all guidelines these will need to be used and adjusted for specific cases'.

There is no absolute answer to the question of what percentage of agreement would qualify for a consensus. Because of the low response rate, the authors used a relatively high bar of 80% to make the consensus document less controversial. Nevertheless, the reader should be informed on the actual degree of agreement for each statement as given in Table 5. The reason for the amalgamation of some statements for the second cycle was to make the survey less cumbersome.

One important question that often attracts discussion in otological conferences is 'When will a retraction pocket become a Cholesteatoma?'. It was interesting that the proposed definition (statement 7) by the authors received 91.3% agreement in the first consensus cycle and 84.6% agreement in the second cycle. Most responders agreed that Cholesteatoma is a non-self-cleaning retraction pocket with keratin accumulation inside the pocket even if the ear is free of discharge.

The authors feel that the present document is more a practical guide or a position document rather than a guideline for the management of retraction pocket. It was felt that the methodology used for the document has not yet fulfilled the guideline methodology [Brouwers et al., 2010]. For the present document, special considerations were given to children as it was felt that recurrent upper respiratory infections play an important role in changing the status of the middle ear and tympanic membrane.

Out of 18 statements in the second cycle, 17 achieved at least 80% agreement. The statement 'Mobile retraction pockets may resolve spontaneously. Auto-inflation exercises or the use of Otovent® balloon can encourage re-inflation of a mobile retraction pocket' only achieved 60.9% agreement in the first cycle. Many responders commented that the atrophic areas would not truly recover, and many also doubted the efficacy of auto-inflation. Even when the word 'resolve' in the statement was revised to 'become re-inflated', it only managed 68% agreement. Therefore the statement has been excluded from the final consensus document as it was felt that it does not add value to the consensus document.

Conflicts of interest: none

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