Societies' Proceedings

Combined Approach Tympanoplasty

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I would like first of all to thank our President for giving me the opportunity to open this discussion on combined approach tympanoplasty and secondly to say how much I have enjoyed the excellent paper and the films which Dr. Jansen has shown us today.

I intend to be as brief as possible in what I have to say and to try to stick to general principles, as it is easy in a specialty to become submerged in a mass of technical detail and to forget that progress will only be made if we respect general principles and remember the lessons of the past.

I started doing tympanoplasty work in 1955 having been stimulated by the pioneer work of Wullstein and Zoller in Germany, and I have been doing it ever since, although I do far less now than I used to do as I have found that the long-term functional results, say after 5 years or more, are poor, if the operation has been performed in the presence of active chronic suppuration.

What is the object of tympanoplasty? I believe there are three main objects and the first is the most important one. They are:

1. The production of a safe ear.
2. The production of lasting hearing improvement.
3. The production of a dry ear.

1. The Production of a Safe Ear

If cholesteatoma is present in the middle ear or mastoid it is necessary to carry out a procedure which removes it completely, and to leave behind conditions which minimize the recurrence of the cholesteatoma, or, to leave conditions when if recurrence does occur, the patient does not come to harm from the development of serious complications.

From the clinical point of view one meets firstly, the well encapsulated cholesteatoma often in a markedly sclerotic mastoid. I prefer to approach the cholesteatoma from its site or origin in the attic and work backwards in to the posterior attic and antrum. A small cavity often results and I prefer to leave it open as healing is seldom a problem. In combined approach tympanoplasty many cases of this sort will have healthy bone removed from the mastoid process and this is unnecessary.

The other type of cholesteatoma is the diffuse type seen in a partially cellular mastoid and seen in children. This is the dangerous type of cholesteatoma and some excellent pictures of it were shown by our President in his address last month.

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I once thought that I could, by careful surgery, aided by the operating microscope, remove all traces of disease in this type of case. I know now that I can never guarantee to do this. I think that we should appreciate that the term "microsurgery of the ear" is a misleading one. It is true that an operating microscope is used by the surgeon in operating at a relatively low magnification, and cellular structure is not seen. We should really use the term "macrosurgery of the ear" and not be too confident that all disease can be removed in this type of case. In combined approach tympanoplasty a good clearance of the mastoid segment can be obtained by the use of the postaural approach, but I do not believe that the surgeon can guard against recurrence of cholesteatoma as the mastoid cavity is obliterated at the end of the operation. It is my opinion that sooner or later cholesteatoma will recur in all these cases.

I, therefore, believe that combined approach tympanoplasty should not be done in this latter type of cholesteatoma as the patient has not been left with a safe ear.

I would like to quote some figures from an article by Sheehy and Patterson of the House Clinic who have been doing this type of surgery for longer than most people.

Report of Intact Canal Wall Cases: The Laryngoscope August 1967

Two hundred and ninety-eight tympanoplasties with mastoidectomy were performed using the intact wall technique. Cholesteatoma was present in 80 per cent.

Tympanoplasty with Mastoidectomy; Intact Canal Wall Technique. Extent of Cholesteatoma in 298 cases

None	20%	Middle Ear Only ..	5%
Epitympanum and Middle Ear only	20%	Mastoid Involved ..	55%

It is this group of 238 cholesteatoma cases with which we are concerned. There was no follow-up information on 11 cases. 95 per cent. were seen at 4 months and 86 per cent. at 1 year. The percentage of follow-up decreased after this time. After 5 years only 52 per cent. were followed up.

Intact Canal Wall Tympanoplasty Technique.
Cholesteatoma Cases: Length of Follow-up Related to the Year of Surgery.

Year of Surgery	No.	1 year	2 years	3 years	4 years	5 years or more
1965	86	86%				
1964	62	87%	74%			
1963	28	75%	71%	50%		
1962	24	92%	83%	83%	79%	
1961	21	100%	81%	71%	62%	52%
1958– 60	17	100%	77%	71%	65%	59%

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Revision surgery has been performed in 30 per cent. of the cases. Of the revisions for post-operative cholesteatoma half were performed for removal of disease inadvertently left behind at the original surgery and half for reformation of cholesteatoma due to the development of a retraction pocket.

Tympanoplasty with Mastoidectomy; Intact Canal Wall Technique. Reason for Revision in 30%, of 238 Cholesteatoma cases

Planned	Hearing	Post-Operative Cholesteatoma		Graft	
Two-Stage	Improvement	Residual	Recurrence	Failure	Other
19	20	9	11	9	2

I would also like to quote from an article by Shirley Baron, 1967. He refers in this article to the same technique by other surgeons and quotes a cholesteatoma recurrence rate of 10 per cent.

"In 1953, just before the surge of tympanoplasty, I wrote about the preservation of hearing in mastoid surgery. My plea then was for more conservative surgery in chronic middle ear and mastoid disease. Now, in 1967, my concern is, is some of the present surgery adequate? In the presence of cholesteatoma, is it really possible to preserve the posterior bony canal wall without a high incidence of recurrence of the cholesteatoma?

"Recently, I received a 63-page brochure from two young men with information about their course on conservative tympanoplasty given at the 1966 Meeting of the American Academy of Ophthalmology and Otolaryngology. They state, 'In all of our last 200 cases of chronic middle-ear disease, we have been able to preserve the posterior canal wall. In each of these cases, we were satisfied that we had removed, as well as it is every surgically possible to remove, all pathology, including cholesteatoma, from the middle ear . . .' 'We have seen a 10 per cent. recurrence of cholesteatoma in cases we operated upon two or more years ago. Some of these made themselves manifest by diminishing hearing, and others by drainage. None of these cases presented any serious difficulties.' "

You will see from these figures that recurrence of cholesteatoma even after so short a time is very high. Those of you who read the article by Sheehy and Patterson will see also that some surgeons have given up this operation when they meet diffuse cholesteatoma. The authors of this article also say that the surgeon must be prepared to take "a calculated risk" when he advises this method. I cannot agree with this statement as I do not think that the small extra gain in hearing that this technique may give is worth the risk of an intracranial complication. Some may say that if cholesteatoma reforms the mastoid may be reopened and the disease removed without harm to the patient. I do not know how often one has to do this, is it to be every few years or what and when does one stop? What does one advise when the patient has travelled

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to hospital from a village say in India and may not be able to attend for inspection at regular intervals? I believe the right treatment in this type of case is to exteriorize the cavity. It may be possible, if it does not heal, to obliterate it later on by a bone graft. I feel sure that this is the best treatment.

2. The Production of Lasting Hearing Improvement

In the early days of tympanoplasty one often got good immediate functional improvement which did not last. There were two reasons for this, skin grafts were used which became infected and the posterior meatal wall was removed and the graft collapsed. We now use fascia for the tympanic repair and never extrameatal skin. Combined approach tympanoplasty has solved the problem of the collapsed graft and also aeration is better. From the point of view of function it should give better results. I think that if this operation is performed when there is active suppuration there will be a late development of adhesions in the tympanum giving rise to a fall off in hearing after several years, but only time will show how common this is. It is my opinion that this technique is likely to give better hearing results at the expense of safety for the patient.

3. Production of a Dry Ear

Along with many other Otologists, I have spent a lot of time and energy trying to devise a method which would give rapid and permanent healing of the exteriorized mastoid segment produced after operation. The old method of packing and allowing ingrowth of epithelium is tedious but it will produce a dry ear in 75 or 80 per cent. However, these can and do break down from time to time and heal again after appropriate treatment. Free skin grafting gives quicker immediate healing, but the long-term results are worse as the skin often becomes chronically infected and the ear will not heal until the skin casts itself off, or is removed by the surgeon. I devised an operation to line the mastoid cavity with a flap of living skin. This produced slightly better results than allowing the cavity to heal spontaneously, but one could not always produce a flap large enough to completely line the cavity, and, if this was the case, the flap for some reason prevented spontaneous healing of the remaining raw surface. I have thus abandoned this operation. I then tried filling in the cavity with muscle after the methods of Rambo and Thorburn. This again did not prove satisfactory and my experiences with this method will shortly be published in the *Archives of Otolaryngology*.

Combined approach tympanoplasty avoids this problem but only at the sacrifice of safety for the patient. The following table summarizes the advantages and disadvantages of this technique.

Combined Approach Tympanoplasty

Advantages:

1. Good exposure mastoid and middle ear
2. Possibility of aeration after operation
3. Avoidance of mastoid cavity
4. Preservation posterior meatal wall.

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Disadvantages:

1. Approach of anterior attic disease through healthy bone
2. Difficulty of technique
3. Hidden recurrence of cholesteatoma in mastoid segment
4. Difficulty in removing recurrent cholesteatoma.

In conclusion, it is my opinion that combined approach tympanoplasty in the presence of cholesteatoma is not a safe operation in the long term, but it has certain real advantages over the older methods of tympanoplasty in improvement of function. My own practice now is to avoid tympanoplasty as a one-stage procedure in the presence of active suppuration. I try by means of the treatment of upper respiratory tract infection suction toilet with the microscope (surely a notable advance in the treatment of the chronic ear) and limited mastoid surgery to get a dry ear.

One often succeeds, and one can often avoid a large cavity. I then carry out the tympanoplasty using fascia and reconstruction of the ossicular chain with autogenous bone and the results are quite encouraging.

There remains a percentage of cases which I find are unsuitable for tympanoplasty at all, these are treated on conventional lines and sometimes a radical mastoidectomy is necessary.

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