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OTOLARYNGOLOGICAL QUIZ

LARYNGOLOGY

Moderators: Professor D. F. N. Harrison (GB)
Mr. R. Pracy (GB)

Panel: Dr. P. Van Den Broek (The Netherlands)
Professor D. P. Bryce (Canada)
Mr. A. G. Maran (GB)
Professor B. McCabe (USA)
Dr. H. Millar (Australia)

SUCCESSFUL panel quiz's are, in essence, designed to provide the audience with entertainment as well as information. Consequently, transcripts of the discussions, even when accompanied by selected illustrations can never reflect the real flavour of the occasion. Enthusiastic editing would undoubtedly lead to a concentrate of knowledge but this would bear only a superficial relationship to the actual event and has been rejected by the moderators of this most enjoyable occasion.

The panel was selected not only for their wide knowledge of Head and Neck problems—the term Laryngology being somewhat widely interpreted —but also for their ability to defend their position against the lighthearted probing of the moderators—and this they did with consummate ease. Selection was on a world wide basis and this decision enhanced the value of their comments since they reflected the international nature of head and neck problems rather than national didactism. To provide variety as well as knowledge, the patients whose problems were discussed included a number of paediatric cases. All had been treated by the moderators and this provided a touch of realism to the discussions.

The first patient, a 15-year-old boy with a nasal angiofibroma, provided an opportunity for Douglas Bryce to defend the use of radiotherapy in this condition, and there was also consideration given to the need for biopsy and the role of embolization. Bob Pracy then presented the problem of a three months' old baby with a bleeding granular mass on the hard palate. Eventually a diagnosis of invasive fibromatosis was made and the tumour was successfully removed by transantral ethmoidectomy, a procedure which the panel admitted could not have been easy in such a young child. There was a general discussion on the effect of such surgery on subsequent tooth development and it was agreed to report what eventually happened at the next Academic Conference!

The following case report concerned an elderly lady who had previously been operated upon by the neurosurgeons for an orbital

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haemangioma. Six months later she presented with a large facial swelling on the same side, a vascular mass in the nose and a blue swelling on the palate. Discussion of the various diagnostic aids gave Arnold Maran an opportunity of making the most enlightening remark of the morning. In answer to a query regarding identification of this patient's CT Scan his answer, "I would say that whatever it is, its typical of it", received acclamation from audience as well as fellow panelists! Despite its vascular nature, removal showed this tumour to be an adenoid cystic carcinoma and comments were made regarding the fallibility of radiological investigations.

The history of a child with a congenital aplasia of the right half of the larynx was discussed. Brian McCabe advised a policy of 'letting the child grow a little' with a tracheostomy and operation about the age of 5 years. This in fact matched the actual management policy although it was felt by Paul Van Den Broek that the laryngeal stent should have been left in for six months rather than six weeks. Eventually the child was decannulated, without aspiration, and is now well.

A 43-year-old Persian lady with a gradually increasing facial mass was presented. This had been present since the age of 10 years and had pushed the eye upwards, blocked the nose and produced considerable deformity of palate and alveolus. Hugh Millar was quizzed, in what he described as similar to the FRCS examination, about the various histological types of osteomata. All agreed that surgical removal, preserving the sight, would be difficult—as it was. This patient prompted Douglas Bryce to say that he had been warned that the moderators of this panel might be 'slippery'—but to call this a Laryngological Panel was carrying things a bit far. Nobody took much notice of this, since it was obvious to all that he was thoroughly enjoying himself!! The last patient was a 4-year-old with stridor and a subglottic narrowing. Treatment was a laryngo-tracheoplasty agreed by the panel but it was then noticed that he always sat down to urinate! By now the panelists were prepared for any question and rapidly agreed that a urological opinion, and a cystogram (which was then shown to them) would reveal another congenital anomaly—a second urethra. He also had an additional bronchus arising from the trachea.

There is no way that the written word can describe the good humour, erudition and obvious pleasure that highlighted the deliberations of this panel. Those who were unable to be present missed an opportunity of listening to five experienced head and neck surgeons' comments on a number of difficult, even bizarre problems. This they did with wisdom and clarity and for this the two moderators wish to thank them most sincerely.

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OTOLOGY QUIZ

Moderator: Mr. G. D. L. Smyth, D.Sc., M.D., F.R.C.S., Belfast

Panel: Dr. D. F. Austin, M.D., Chicago, USA.
Dr. M. E. Glasscock, M.D., Nashville, USA.
Dr. J. L. Sheehy, M.D., Los Angeles, USA.
Dr. W. K. Wright, M.D., Houston, USA.

MR. SMYTH: The first patient is a lady of 72 who had a combined approach tympanoplasty in 1966, and was well for almost six years, at which time she came back for a routine check and it was discovered that she had recently developed positional vertigo. The fistula test was positive, her hearing had gone down appreciably since the previous examination one year previously, and she was complaining of tinnitus. A postero-superior retraction pocket was noted on otoscopy. The first movie strip indicates the situation at operation. The right mastoid has been opened postaurally, and we can see a retraction pocket containing keratinous debris invading the attic and additus. I would like the panel to tell me what they would now do for such a patient, suffering from vertigo with a cholesteatomatous retraction pocket.

DR. WRIGHT: Well, obviously she's going to need a re-exploration of the mastoid, and probably pretty much a duplication of her first operation, because you have a cholesteatoma going back into the antrum and probably filling the entire cavity. This will have to be dissected off extremely carefully, because you probably have a fistula in the horizontal canal. If this proves to be the case, at that point you have to be very careful and perhaps leave some matrix there, which means she will need a further operation later on. Many surgeons would want to turn this into a radical mastoidectomy. I feel that the patient should be consulted on this. If it were my ear, I would want somebody to still try to save the ear canal, and do a repeat of the original intact canal wall technique. This time, cartilage should be put underneath the graft to close the attic retraction, and I would want to have somebody to take a third look in my ear, whether or not matrix had been left, just to look for epithelium residuum two years later.

MR. SMYTH: So, basically, you would keep up the canal wall and try and preserve the anatomy of the ear as far as possible.

DR. WRIGHT: I think the patient should be consulted on this. Patients have the right to have things explained to them, and, therefore, they share the responsibility for what you do.

MR. SMYTH: Well, let's have a look at what happened next. I certainly agree on the likelihood of a fistula in this ear. The sac is lying on the

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lateral semicircular canal, but it's separated from it by a sheet of silastic, which you see being lifted off the canal, so it now seems unlikely that there would be a fistula, and, in fact, one doesn't see one. This was the first of several surprises I had in this operation. Having displaced the pocket anteriorly and removed the silastic sheeting, we can see that the lateral canal area is perfectly normal and we don't have a cholesteatoma invading the labyrinth. So the next question is: would you change your policy, now you know that this is the case?

DR. AUSTIN: Well, you deluded me right from the very start, so I don't know what the rest of this hour-and-a-half or two hours will be like. The state of affairs wasn't such a bad one as it looked at first. The sac hardly deserves the term recurrent cholesteatoma. It's not really up into the antrum and it appears to be mostly invading the posterior middle ear. In this instance I would surely do what has already been recommended, just remove the sac, repair the tympanic membrane, and reinforce the posterior region.

MR. SMYTH: Are you all prepared to go ahead and try and put the patient back in the situation she was 10 years previously, or not?

DR. SHEEHY: Well, to answer that question, let me say that, in the first place I would not ask the patient to make a decision, because I don't think the patient is in a position to understand the difference, or the significance of the difference, so, other than that, if the patient weren't 72 years old, I would agree with what Bill Wright said. However, at age 72 based on the findings you gave initially, which suggested that there was more of a problem than there was previously, I would have turned this into a classical modified radical, and I probably would have started off doing that. I wouldn't have explored and then waited. Now, if I had seen what the situation was, I still would have done the same thing, because I've got a patient 72 years old. How's the other ear? Normal?

MR. SMYTH: Absolutely normal, yes.

DR. SHEEHY: At 72 years old, you're not going to change a patient's lifestyle by creating a cavity, and I'm not about to start thinking I ought to look back in the ear or have some other problem evolve at a later time if she lives to be 92.

MR. SMYTH: If we look at the next section of movie then, you will see that, in fact, I decided that this patient shouldn't have her canal wall preserved because I thought that to do so would probably lead to a recurrence of the retraction pocket, so I decided to take the canal wall down. You can see that this is now being done with a rongeur, and the bridge removed to expose an intact ossicular chain. Now the problem is, what should be done with the cavity? I would now like to know whether the panellists have any special methods of dealing with the cavity?

DR. GLASSCOCK: I would prefer at this point in my career to do a modified radical operation, and I would use a very large meatoplasty. I have found in the last few years that, by creating a meatoplasty large

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enough to put my thumb in six months after surgery, the cavity is really no problem; it is small, it epithelializes well, and I let the younger patients go swimming.

DR. WRIGHT: I have a dissention to make at this point. I think doctors have too Godly an attitude about this thing, as though this shall be done to that patient, and that will be done to this patient, and the patient has no choice. I don't think this is so. You're assuming that all people are the same, and that their values are the same. For a swimmer, you're obviously not going to make an open cavity, and you're not going to make one on me either. However, other people feel differently, and when a patient gets to be 72 I really feel you should explain the various possibilities. Then you can nudge them a little bit, and say: "If I were you I'd do this", but I don't think you should unilaterally decide that this patient will have a cavity.

MR. SMYTH: My solution was something of a compromise, as we will see from the movie. What I did was to use Palva's technique to make a postaurally based flap to obliterate the cavity, and then separate that plug of soft tissue from the meatal skin remnants with a piece of preserved dura. This layer of dura is necessary in order to prevent granulation tissue forming on the meatal aspect of the flap. The flap is then tailored to match the dimensions of the cavity. You will see that there is a problem at the back of the cavity. I haven't got enough tissue and there may eventually be a depression here. Given that kind of situation, where I didn't make a big enough flap, what would you do?

DR. AUSTIN: Well, I like to use a flap when I do remove the canal wall, and I use the Palva flap, just as you've shown here. In larger spaces, I've tried a variety of materials, sometimes bone. I think with bone the infection rate is a little high, and I now prefer a collagen material, called 'Avatine' which is used to control bleeding on raw surfaces, but is also very nice to fill in these spaces. It doesn't engender complications, it just results in fibrosis.

MR. SMYTH: Does anybody use the recently introduced bio-compatible materials, or even fat?

DR. WRIGHT: I've used Proplast, 'though I think it's too early to really say it's good. I think you have to wait at least four to five years, and it hasn't been done that long yet. If you use Proplast it's very important to use a big piece of fascia to separate the Proplast from the skin. If you put Proplast right under thin skin, it'll come right through it.

MR. SMYTH: I think we have all had that sad experience.

DR. GLASSCOCK: I have taken a lot of infected Proplast out of mastoid cavities.

DR. SHEEHY: I've had no experience with Proplast, but at one time have implanted a lot of silastic sponges. This was 15 years ago, and they do tend to come out and they do get infected at times, particularly in an ear where you'd be likely to use it, namely where there was a big cavity and you can't get all the mucosa out. I would comment that, although I

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said I'd do a modified radical operation, because I wanted to clarify the issue about the open versus the closed techniques, I undoubtedly would have used bone paté to obliterate about half the cavity. I would have got it from saucerizing the margins and then used the Palva flap.

MR. SMYTH: You can now see the concluding steps in this operation. In fact, I used the patient's own bone, pieces of the canal wall, which are packed into the back of the cavity and, in this way, avoid putting any foreign material into the patient's ear. I think the panel have made it clear that they consider biocompatible materials to be possibly rather dangerous and that we don't know enough about them to use them in this kind of situation.

DR. SHEEHY: You used the term dangerous, but surely you don't mean dangerous. You mean ineffective or leading to trouble, but you don't really mean dangerous, do you?

MR. SMYTH: Let's say we don't know. Unknown might be a better term.

MR. SMYTH: The next patient had a prior stapedectomy and developed an incus necrosis. I repaired this situation by inserting a prosthesis between the malleus and the oval window, and some time after this the patient came back and, unfortunately, the wire was seen to be coming out of the tympanic membrane. Supposing this patient comes into your office, what is your general plan of management going to be?

DR. AUSTIN: It's interesting you said that. I had one in last week with a wire in the eardrum. We used these wires some years ago, and now frequently find the wires extruding and the hearing down. I revise those cases using ossicular bone most of the time. In this instance, I would use a prosthesis probably made out of a homograft malleus which would extend from the malleus handle down to the oval window membrane.

MR. SMYTH: The importance of talking to patients and explaining facts to them has already been mentioned. What would you say to this patient in terms of what might occur with the hearing post-operatively?

DR. WRIGHT: Patients should always understand that there is the variable possibility of having their hearing decrease in that ear, and, if this is the only hearing ear, this influences you greatly in what you do. Explain to them your thinking and why you choose this avenue, then if you get trouble, at least the patient realises that this was a decision that had to be carefully made, that there were reasons this way and that way, not that the patient makes the decision, but you bring him into it.

MR. SMYTH: When we look at this ear, we find that there is an area inferiorly where the drum is quite unstable looking and its surface is slightly granular. Would this in any way influence your immediate management of the case?

DR. GLASSCOCK: The problem I would envisage is that the wire is going to be embedded in the membrane over the oval window, and there is a chance that you might open that in removing the wire. You

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don't actually have to remove the wire. You could bend it over or you could clip it off. I probably would want to remove it. In that situation, I would probably like to have that granulation tissue gone before opening the ear by using drops or cautery with a little silver nitrate.

MR. SMYTH: Let's see what happened next. I opened the tympanum and discovered that there was a thick mucous secretion in the middle ear space, and this was an entirely unexpected finding. What would you do now? You were planning to simply replace the prosthesis, but you've encountered a thick middle ear effusion.

DR. AUSTIN: My approach to this ear, when I was going to operate on it, would be to deal with what I suspect is a big retraction of the whole drum. I would do a two-stage procedure. At the first stage, I would have grafted the drum and put in silastic. I would have waited till I got a good healed ear without the fluid problem. Only then does the question of the wire come up. Do you want me to answer what I would do with the wire?

MR. SMYTH: No, we'll come to that in a minute. Let's look at the next movie strip. In fact, I used a ventilator tube, grafted that raw area of tympanic membrane and waited six months, and then came back again. Now, as you look at the oval window, you can see the wire embedded in its centre. This was a gelfoam wire prosthesis, in fact. I was uncertain as to how to get the wire out of the membrane in order to reconstruct the ossicular mechanism without damaging the inner ear. Having got thus far with the wire embedded in the membrane and coming out through the eardrum, but all the other problems dealt with, what would be the best way to proceed, panel?

DR. AUSTIN: I misunderstood this from the start. You say you grafted the drum although there didn't appear to be a hole in it? Was there a hole in the eardrum?

MR. SMYTH: No, but there was this thick granular area, which I cut out and replaced with a piece of fascia.

DR. AUSTIN: Well, I don't like grommets, so I would not have put in a grommet, so then I don't have this six-month period to pass. As far as that embedded wire is concerned, in a case like this, I go ahead and remove the wire, but at the medial end, where it's in the oval window, and cut it off.

MR. SMYTH: What instrument would you use?

DR. AUSTIN: Scissors.

MR. SMYTH: We now come to the start of the second stage operation, six months after the drum was grafted. We're looking at the oval window and we're facing the problem we've just discussed. The wire is there in the window and it has to be got out. I decided to use the only sufficiently robust instrument which I had available—the House-Deiter malleus clippers—and when I used these I had, as you can see, a disaster, because the wire didn't cut, but tore out of the oval window membrane. Faced now with a possible perilymph leak and maybe even a rupture of the

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membranous inner ear, what would your immediate reaction be to this somewhat threatening situation?

DR. WRIGHT: I'd probably plug the torn area with some fascia or fat, and then proceed with putting in a prosthesis, probably with some cartilage to cover it. Was the malleus intact and the wire had just come through the malleus?

MR. SMYTH: Most of the malleus was still left. Would anyone disagree with that solution?

DR. SHEEHY: From what I saw when we started looking at the whole thing, I would have planned that I was going to graft the drum to get a good drum, not a thin one. I would have used perichondrium over the window, a TORP with cartilage on top of it, and I would have done so, firstly, because I would not have wanted to use the malleus again, and, secondly, I would have ended up with a large piece of cartilage underlying the whole posterior two-thirds of the posterior quadrants of the drum to prevent a future retraction. It happened once, and my feeling would be that, if you didn't do something to prevent it, given a year or two, or five, you'd have the same problem again with whatever you put in.

MR. SMYTH: You're really getting two advantages from one step, aren't you? You're supporting the tympanic membrane and preventing extrusion of the prosthesis.

DR. SHEEHY: Well, three advantages. You're restoring the hearing, you're preventing extrusion, and you're avoiding posterior atelectasis in the future. You're giving a good deal of tensile strength to the eardrum to help suck air in when the tube opens.

MR. SMYTH: Would anyone differ in any way in your management of the patient at this stage?

DR. AUSTIN: I see two problems here. (1) You didn't reoperate this patient with a grommet in the ear, did you? I think that's terrible because a grommet is a foreign body; he's got a perforation, now you're doing the second stage before it is the second stage. You've got an open middle ear, possibly infected, where before you just had glue in it. So, there you're at risk right off because you're doing what you shouldn't do—operate on an oval window with an open middle ear. The second thing is that those TORPs will come out whether you put cartilage on them or not. I have six out now in a two-year span. If they want to come out, they'll come out, and I don't care how much cartilage is on it. I disagree that the cartilage will protect the drum from collapsing down, or from extrusion of the TORP. Six in two years is 20 per cent so far in my series, and next year it'll probably be 40 per cent.

MR. SMYTH: I'm glad you made this point, because, in fact, most of these movies illustrate avoidable errors, and I agree with you. I went into this ear expecting to be able to reconstitute the chain without damaging the oval window. I didn't think far enough ahead to predict the possibility of a fistula. Otherwise, I agree, I would not have operated on the oval

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window with a ventilator button in it, but I think this case illustrates the point that you have to take into consideration that these complications can arise. I don't agree with you about TORPs. I think they're an important advance. Let's continue the movie and see what follows. I covered the oval window with a piece of fascia and then placed a TORP on the fascia. As you can see, I found it extremely difficult to be certain whether I had it centered in the oval window or not, and I'm worried when I see so much manipulation going on as to what this might be doing hydraulically in the inner ear space. I believe that cartilage does prevent the rejection of the TORP, and since I started using cartilage routinely there has been very little problem with extrusion. Others obviously have a different experience.

DR. SHEEHY: The biggest variable here is how big a piece of cartilage is used and how it's used? I think that can be a factor because early on, with smaller pieces of cartilage that covered, but just covered the TORP, we did have some early on extrusions. I cut the platform down and make it smaller and then have a piece that's twice the size of the platform, and it's dome-shaped, so it's not likely to slip in this position.

DR. GLASSCOCK: I'd like to make a couple of comments. One is: I think it's important to suture the cartilage onto the TORP to keep it from slipping off, because some of the extrusions that I have had are because the cartilage has slipped and the TORP has come against the drum. The other thing is that, if you have an ear that wants to retract and has that natural tendency in the posterior-superior quadrant, I think it's going to retract regardless of what you do to it.

DR. SHEEHY: One problem here, and I realise you didn't want to get into TORPs and PORPs, but I think it is important for the audience. I understand there's some of my associates who sew it on too. The problem is that if you sew the cartilage onto the platform, this limits your vision, and this is one reason that I don't, because I can use twice as large a piece of cartilage, putting it in secondarily, and I can put it in sideways. I think one of the necessities, if you're using cartilage with TORPs, and I think you should use it, is to put a big enough piece so that it covers a big area.

MR. SMYTH: Accepting then that some don't want to use a TORP in this situation, what do you use?

DR. AUSTIN: I like to use bone, and I place it between the oval window and the malleus handle. I have also used the shaft of the TORP in exactly the same way. It works very well. You can put a little 'V' in it, put it under the malleus handle, and bring it down onto the oval window membrane, and this works in revisions. I wouldn't use it in primary cases, but in revisions like this, it works very well. You can cut off the head and just use the shaft.

MR. SMYTH: The difference here is that there is no direct contact between the deep surface of the tympanic membrane and the plastic.

MR. SMYTH: The next lady presented to me with a six-month history of

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progressive facial palsy. Her lacrimation function was normal, her x-rays including tomographs were absolutely satisfactory, she had no hearing problem and no loss of balance. By the time I saw her the paralysis had become total, but she had still some nerve excitability. I decided to explore the facial nerve. Looking into the left middle ear, we can see the facial nerve, which is now being decompressed from the genu forwards along its horizontal course with a diamond burr. A swollen area of nerve is becoming apparent anterior to the genu, without any bone covering and it's bulging inferiorly and very close to the stapes. What would you do now, having discovered this situation and in light of the history? Would you be surprised to find this at this stage, that there was a large part of the nerve herniating out into the mesotympanum?

DR. GLASSCOCK: Not with that history, I would not be surprised.

MR. SMYTH: What do you think the mechanism of the progressive facial loss was in such a case?

DR. GLASSCOCK: I think that's a facial nerve neuroma. I've seen about eight of these in the last year.

MR. SMYTH: I thought I'd look at it a bit more closely. This was the appearance once I'd got the mucosa off the nerve. You can now see there is something tumorous about it, to say the least. Panel, what would you do now, confronted with this somewhat unexpected pathology?

DR. GLASSCOCK: I would say that if you came across this incidentally or by surprise, it really shouldn't be a surprise from the history. I would suggest taking out the incus, taking off the head of the malleus, opening up the attic and following this up to the geniculate, because actually from below you can expose the ganglion quite well by doing that and you could at least tell that way whether the tumour is going up into the geniculate area. Usually there is very little difficulty being able to discern where the tumour starts and ends. Incidentally, the tear test is totally worthless in these tumours. I've had several that involve the geniculate itself, and they have perfectly normal tearing.

DR. SHEEHY: I think the message has clearly come across that in a progressive facial nerve paralysis, you're dealing probably with a tumour, but you're not dealing with an acoustic neurinoma. You could be dealing with a cholesteatoma in the angle, but that's not very likely, but you're probably dealing with a primary facial nerve tumour, and that's the first bet. The other thing is that, if you were going to operate on it, you should get good tomograms first and also probably posterior cisternography, to find if you've got something in the internal auditory canal, and then when you go on to operate on it, you've got to be prepared to go into the middle fossa. Progressive facial nerve paralysis is just like waving a red flag. You've got problems and they're big problems. You're probably going to have to graft the nerve, as far as the internal auditory canal, with spinal fluid splashing in your face.

DR. AUSTIN: I think it's wonderful if you are forewarned and the

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patient comes in with a facial paralysis that's progressive. All our experiences are somewhat different, and for me, facial neuromas have been an incidental discovery at the time of surgery for some other reason. I've seen them discovered at stapes surgery, and it's been a cause for a postoperative facial paralysis after stapes surgery when it wasn't recognised, because many times it's called, just as you did, a bulging facial. I, myself, excise the neuroma and graft the nerve.

MR. SMYTH: Would anyone biopsy this before they made a decision what to do?

DR. GLASSCOCK: I would like to make a couple of points. Facial nerve neuromas are extremely interesting cases to me. One is that when you see a progressive facial you've got to consider that there's a tumour somewhere along the course of that nerve until proved otherwise. You have to do a thorough work-up with polytomes, CAT scans, posterior fossa myelograms, i.e. everything at your disposal. In the majority of cases, all of those things are going to be normal. It's incredible that you can have a very large tumour and everything is normal. You've got to explore the whole nerve. I've had two cases within the last three months in which the nerve from the internal auditory canal all the way through the stylomastoid foramen was completely normal, and on going out into the neck found a malignancy of the parotid gland, involving the facial nerve. You can't quit at the stylomastoid foramen, you have to follow it out. The other thing is that if you do happen on a nerve with a tumour and the patient has no symptoms, they have a perfectly normal face, I would be very reluctant to cut that tumour out, without first closing the ear, talking with the patient about it, either waiting then till the tumour produces a facial paralysis, going back, or going back at that time and cutting it out.

MR. SMYTH: It's pretty clear, panellists, that your experience has taught you that you can't ever expect these to be small uncomplicated tumours and you've got to be prepared for the worst. Let's see what happened next. Because I didn't know what this mass was, I cut a tiny piece off it in order to have a histological specimen. I was somewhat surprised when the pathologist told me that this was a case of Refsum's disease, a rare neuropathy, in which granulomatous swellings develop in cranial nerves and produce this kind of problem. I excised it and grafted with a piece of great auricular nerve.

Now, the next patient, a 24-year-old boy, presented with progressive symmetric bilateral sensorineural hearing loss in both ears. The curve was flat and averaged 40 dB with 68 per cent speech discrimination. There was a family history of Refsum's disease. Tomograms revealed that there was an enlargement of the left internal auditory meatus medially and inferiorly. We decided it was probably an acoustic, but maybe a meningioma, but wondered why the hearing was also affected on the other side, more so when we did contrast studies and discovered that we couldn't get any contrast to go into either internal auditory meatus. My neurosurgical

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colleague and I operated using a posterior fossa approach. You can see that we immediately encountered this enormous artery, which is occupying much of the medial aspect of the meatus. This was a little bit of a surprise. If you were confronted with this large branch of the anterior inferior cerebellar artery would you accept this as a proper explanation for that kind of hearing loss?

DR. GLASSCOCK: Could you see into the internal auditory canal at all?

MR. SMYTH: This was before we even opened the internal auditory canal. The first thing we saw was this artery.

DR. GLASSCOCK: I think that you can get hearing loss from anything pressing on the cochlear nerve. I do not think that you would get a bilateral loss, and with the history of Refsum's disease, I think that there's probably going to be a tumour in that canal.

MR. SMYTH: In fact, when we started looking into the canal we discovered that the seventh and eighth nerves were bound together with thick fibrous tissue but there was no tumour. We divided and removed as much of this tissue as possible, and closed the skull. Would anyone have done anything else, and is there any particular management which would have been more useful for this patient?

DR. GLASSCOCK: I would have approached this patient from the middle fossa instead of posteriorly, but I wouldn't know anything else to do.

MR. SMYTH: What do you think would be responsible for this kind of finding?

DR. GLASSCOCK: We see this not too infrequently and I don't really know what it's from, but many times you can't get dye into the internal canal. If you look in there, there are arachnoid adhesions and there some type of arachnoiditis has occurred at some time in the individual's life.

MR. SMYTH: Well, in fact, when I later enquired from the mother, as I should have in the first place, I discovered that this patient had a history strongly suggesting meningitis when aged two.

MR. SMYTH: We're going to get away from tumours now and deal with some challenging problems I've encountered in stapedectomy. This movie concerns a patient who had a stapedectomy and developed clear clinical evidence of a fistula. You can see that there is fluid gathering in the inferior part of the oval window.

The implant was a gelfoam-wire prosthesis. Some two years after the operation the patient sneezed forcibly and developed a fluctuant hearing loss. Do the panel think there's any prosthesis which is more prone to fistula than any other?

DR. AUSTIN: Teflon piston.

DR. WRIGHT: In the light of our experience we quit using it without tissue, because if you use a piston of any kind you've got to put it on top of a seal.

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DR. GLASSCOCK: My experience in stapedectomy is possibly less than in other areas, but I would agree with that.

DR. SHEEHY: No experience with Teflon. In our experience the wire gelfoam pad we have used has had the highest incidence of fistula. However, the gelfoam wire prosthesis is usually the easiest type to revise. Any time you get tissue in the window you may have adhesions between the under-surface of the oval window contents and the membranous labyrinth. My experience is that the easiest type to revise are gelfoam and the next easiest are fat. I would just go ahead, gently make sure there was an opening into the oval window. He had a fistula? Really, in my experience, this presents no major problem. It's extremely uncommon to have adhesions to the vestibular contents when you use gelfoam and, as such, using a reasonable degree of judgment, you can proceed without being too concerned about doing damage.

DR. WRIGHT: I operate the patient under local anaesthesia when I do a revision, so that, if they're dizzy, they can tell you they are dizzy. With the gelfoam wire or gelfoam seal you usually don't get adhesions, but it's still important to do it under local. I would take the prosthesis out and freshen the seal without taking all the tissue out, and cover it with a vein, then put a piston on top of that, usually a Robinson prosthesis.

MR. SMYTH: As you see from the movie, once I had disarticulated the prosthesis from the incus, I started to dissect a flap based on the promontory, off the facial nerve, and after reflecting the contents of the oval window, you can see that the naked wire had been projecting into the vestibule. Now the conglomerate has been moved down onto the promontory and the oval window covered. It's important to have perichondrium or fascia available before actually starting to work on the oval window, so that the length of time that the oval window is open is restricted to the minimum. Has anybody anything particular they'd like to say about fistulas and their general management?

DR. SHEEHY: I think the presence of an oval window fistula following stapedectomy is probably much more common than we realise, and the vast majority of them probably don't have clearcut symptoms. The one thing you have to be careful of is that you are not dealing with a sick inner ear rather than a fistula. I think the most serious problem is with a patient who has had a stapes type of surgery and then gets some inner ear symptoms, and you say: "Aha! Fistula", and you go in and you over-interpret what you see. You do something and the ear goes out because of a sick inner ear. Fistula in itself frequently doesn't produce marked symptoms, and those who have done stapes surgery for years and say: "I've never seen a fistula", mean they haven't recognised one. Be very careful, if you think there may be a fistula following stapes surgery, if the patient has good hearing. If there's no conductive loss, then be very careful before doing something until you clearly identify the problem. You're better off

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to back out and do nothing than you are to disturb something that may cause the ear to go deaf.

MR. SMYTH: I think that's a very important message. Now, there are other problems in stapedectomy surgery, and one of them is a biscuit-type footplate, and here we see one of these thick footplates, which always used to give me a lot of trouble, and in this movie I'm trying to transect the footplate from superior to inferior. Everything seems fine until this point, when the footplate is divided, and I would ask the question: "Does the panel use this technique?"

DR. WRIGHT: I do use this technique. If you've got a narrow niche sometimes you have trouble because you can't get the parts of the footplate out through the bottleneck. In that case, you have to enlarge the niche.

MR. SMYTH: You have just referred to the problem that we're about to see. In fact, this is a bottleneck situation, and as you can see, I am trying to lever out the posterior half of the footplate, and you can imagine what this may be doing to the inner ear, but it won't come out. What would you do now in that situation?

DR. WRIGHT: I would try to enlarge the niche a little bit, with a pick, otherwise you're probably going to have the thing turn around and eventually drop into the labyrinth.

DR. AUSTIN: In answer to the first question, I don't like to start in the middle of the stapes. I always start inferiorly around the margin, to get a little bit of room and sometimes even try and get the whole footplate out in one piece rather than two, if it looks like it's going to be one of those that'll fall in. But it's hard to make any rules about it because you just decide right then on how well you can see the margins and how easy it is to work. So I would say that you want to test your instruments before you start pulling on those fragments because that's where you lose the distal stump of an instrument. Often it falls down into the vestibule.

MR. SMYTH: What I did, in fact, was to take out the anterior half in order to make some space, as the film shows, and then I shunted the posterior half forwards and was able to get it out and avoided losing it in the vestibule. Now there is a totally open vestibule but I had already prepared a piece of vein, which is now placed over the oval window. The vein is now impressed into the oval window niche with gelfoam prior to the insertion of a Teflon piston. Would anybody differ very much, having got themselves into this situation?

DR. GLASSCOCK: Yes, I use perichondrium.

DR. AUSTIN: There was a heady implication just then—once you've got yourself into the situation where you *had* to remove the whole footplate? I personally remove the whole footplate every time.

MR. SMYTH: My long-term statistical analysis indicates that the size of the fenestra is the chief factor contributing to delayed high-tone sensorineural hearing loss.

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DR. AUSTIN: I don't get high-tone sensorineural hearing loss, and I don't get fistulas with large pistons either.

MR. SMYTH: At least if you don't believe in it you know that some other people do, don't you?

Now we have another patient with the same kind of footplate, operated on many years ago before I realised the importance of making a hole in the footplate before starting to remove the superstructure. You can see that I'm now dividing the incudo-stapedial joint, having previously severed the stapedius tendon. In this ear I am trying to do something different from transecting the footplate. As you see, I am trying to restrict the aperture in the stapes footplate by gently picking a small hole in the centre and slipping the fragments laterally, rather than letting them fall into the vestibule. This avoids the problem I had in the previous case, and I can use 0·3 mm slim shaft pistons in order to reconstruct the ossicular chain, and I put some gelfoam around that. Again, this is probably somewhat controversial.

DR. GLASSCOCK: Would you use tissue now?

MR. SMYTH: No. I still use gelfoam and I haven't personally any knowledge that it's led to any problems.

DR. AUSTIN: I don't think the gelfoam leads to problems; I just don't think it's a very good seal.

DR. WRIGHT: I've tried a few small fenestra operations and see invariably with a thin footplate little fracture lines going around and loose pieces, and they worry me, and so I've ended up taking the footplate out in most cases and the ones I succeeded in doing, I didn't think the hearing was as good. I am sure that this is my ineptness in trying a new procedure. Whenever you try someone else's procedure, you probably are almost like a resident; you're doing it for the first time and you're awkward.

MR. SMYTH: In this final movie strip we see another problem which is not infrequent—a prosthesis which has eroded through the long process of incus. This was a Teflon-wire prosthesis.

DR. SHEEHY: The major judgment here is whether the incus is long enough to accept a prosthesis of whatever type you'd like to use. My impression here was that you could probably go from incus to oval window, but your problem is keeping the prosthesis from slipping off the end of the incus. Therefore, because of the fact that the lenticular process and the tip of the long crus has gone, I would judge here that I could use my usual procedure with a Sheehy prosthesis, wire with a little gelfoam on the end of it, and then I would wrap something around the articulation with the incus. Now in a primary case if you run into it you can take the chorda tympani and wrap it round the end of the incus, which will then make sure the prosthesis doesn't slip, or I would take a piece of fascia and wrap it around.

MR. SMYTH: Well, in fact, as you see, I decided I should get the piston out. To do so must be hazardous because the piston is embedded in the

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oval window in a mass of connective tissue. There must be some risk to the inner ear. Having extracted the piston, I'm confronted with the situation we were already discussing, the shortened long process. Obviously, the slim shaft piston which I prefer isn't really going to be very much use for this problem. What would the panel do to overcome this problem?

DR. GLASSCOCK: This incus is long enough to use a wire and you wrap soft tissue around the end of the incus and it'll work out well.

DR. AUSTIN: Well, I think you have two alternatives. One, if you are a piston fan and you're intending to put a piston back down into that hole, then you'd better try and lock it to the malleus some way or other. Here I would use the shaft of the TORP, and I would use tissue over that hole in the oval window. The other alternative, and I've used it a time or two, is to hold that prosthesis on that slippery tapered incus with a little drop of glue on the end, and that'll keep it up there too.

DR. WRIGHT: I think I probably would have used a Robinson prosthesis; either the type that is meant for this type of situation where it's deficient on one side, or else I would have drilled out and burred one side, so that I could go around the end of the incus, and the bucket handle would go over there and hold it in place. I think sometimes these things happen with pistons because the piston is down in the labyrinth a little too far and has endosteum underneath it, and as it contracts, it pushes it up. That's why they come uncrimped sometimes.

MR. SMYTH: Let me show you what I decided to do, which is similar to one method already suggested. As you can see, I used a TORP, placed between the aperture in the oval window membrane and the malleus.

DR. SHEEHY: Could I comment on what you just did? This is an excellent technique, except don't forget that, even though it's under the malleus, the edges of the drum can suck back in occasionally with a little cold or something and can come in contact, so you'd better put cartilage also, and I suspect you'd agree, even though it was under the malleus.

MR. SMYTH: Obviously we still have a number of unsolved problems in aural surgery. I am grateful to my panel for their frank discussion of some of mine, and I hope that what has been said will assist our audience to avoid or correct some of these not uncommon occurrences in the future.

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