



IAPO-Interamerican Association of  
Pediatric Otorhinolaryngology

## *Chronic Otitis Media Round Table*

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*Moderator: Nelson Caldas*

*Participants: Alberto Chinski (Argentina), Humberto Guimarães (Brazil), Sebastião Diógenes (Brazil) and Shiro Tomita (Brazil)*

### ***Nelson Caldas***

It is very important to have close cooperation between pediatricians and otolaryngologists. An interdisciplinary approach is needed in the treatment of otolaryngological diseases, as cooperation between the two specialties—pediatrics and otolaryngology—will result in interaction that will make the situation less difficult for parents and also for the small patients. And, once again, actions promoted by Dr. Tania Sih through IAPO, whether scientific events or publications, are a clear example that this cooperation can be done.

I will start by making a comment on the diagnosis of otitis media in relation to otoscopy. I've heard some pediatricians say that otoscopy is very difficult for them. I believe that this is true, especially under certain conditions that even for us, ENTs, can be difficult, such as otoscopy in a small child. I can confess that in spite of the armamentarium available to us, there are some circumstances in which it is impossible to reach diagnostic certainty. And as ENTs we have a huge responsibility.

On the other hand, we often see the more skilled pediatricians performing an otoscopy, and making the classical statement: "I think that the tympanic membrane (TM) is somewhat congested, somewhat retracted, somewhat hyperemic". This comment shows a typical uncertainty, and it has to be said that the pediatrician still lacks the instruments to remove epithelial debris, wax plugs, and such. I have a question for the members of this round table. What are the instruments that you use to perform a good otoscopy in a pediatric patient, a young child, for example? How do you perform the otoscopy? What are the instruments?

### ***Alberto Chinski***

As with any other exam, otoscopy requires three elements: good light, an immobile patient, and adequate instruments. We can do almost everything related to inspection of the ear, with these three elements. The ability to keep a baby or a child up to two years of age quiet, immobile, will depend very much on the way we are able to communicate and "win" the child's attention. If we "throw" ourselves upon the child, with the help of the parents, the secretary, the nurse, the nanny, in the attempt to immobilize her with the ear-aspirator or a speculum that is larger than the outer ear, causing pain, the exam will certainly not be successful. Thus, otoscopy has to be carefully performed, almost tenderly. Sometimes two

visits are necessary, instead of only one with a forceful exam and the child “kicking and screaming.” Cleaning the ear is very easy if we do not use an aspirator. With a fine forceps, a cotton-holder, or an alligator forceps, that we know so well, plus good lighting and a good otomicroscope, we will be able to make a diagnosis with certainty in one or two visits. I don’t think there are children that cannot be examined, where the exam is impossible.

***Nelson Caldas***

Thank you, Dr. Chinski. I would like to know what is the opinion of Prof. Humberto Guimarães. We have already been in other round tables discussing tympanometry, a chapter of impedanciometry that evaluates the contents of the middle ear, especially in the diagnosis of otitis media with effusion (OME). In Recife, where I live, pediatricians are very enthusiastic about tympanometry. I trust tympanometry as a diagnostic aid; it is very good in certain occasions. I would like to have Humberto’s opinion on pneumotoscopy, if it replaces or complements tympanometry in the diagnosis of middle ear effusions.

***Humberto Guimarães***

We have an audience with ENTs and pediatricians. First of all, as Dr. Alberto Chinski said, good otoscopy is fundamental in these patients. In general, a good otoscopic exam will prove the presence of effusion behind the tympanic membrane (TM) as well as other pathologic conditions. If you don’t examine the ear carefully, I think it is wrong to ask for tympanometry or impedanciometry. And it is wrong because impedanciometry has its limitations. If you have, for example, a tympanosclerotic plaque, results of impedanciometry will be impaired.

It is important to be careful. We should not think that this exam (impedanciometry) solves all diagnostic problems. Pneumotoscopy is an interesting exam giving us the opportunity to look at the TM, see whether there is dynamic movement, or if there is fluid or effusion behind it, interfering with its movement. I believe that it is a complement, a situation where we can combine the three items (otoscopy, pneumotoscopy, and impedanciometry) to provide the patient with a good otological diagnosis.

***Nelson Caldas***

Thank you, Humberto. I would like to ask Dr. Sebastião Diógenes to make a comment on what has been said up to now.

***Sebastião Diógenes***

I have lately had to perform otoscopy in babies, less than six weeks old. A pediatrician had a child with fever and anorexia and did not find a cause, a focus. The umbilical stump fell off with no problems; there was nothing in the intestinal system; but it can be otitis media, neonatal otitis. As we know, the earlier it occurs, the more severe it will be. In these cases, Nelson, I use optical fibers when I have difficulties, as that is sometimes helpful, because the TM in these children is still very inclined. It is thick. It does not have transparent characteristics as in an adult.

A difficulty I have had to manage more often in these otoscopies is related to the acoustic oto-emissions test being negative. No response. One of the causes could be epithelial debris in the ear canal, or secretion in the external auditory canal

(EAC). And it can be difficult for us. In these cases, Professor Nelson, I have used optical fibers specific for the ear, always with the recommendation that the acoustic oto-emissions exam should only be repeated after 30 days.

In reality, I think that this recommendation is pertinent, as in smaller children who undergo this test we have to remember two points. First, a large number of these children have natural embryonic and mesenchymal remnants in their ears. So the ear could really be occupied without disease being present, as this is part of post-partum evolution. And these circumstances could interfere with the acoustic oto-emissions test. It is a huge responsibility to perform otoscopy and interpret the results in small children. Our responsibility “triples,” as this child might be considered to have a positive result for deafness, an auditory prosthesis might be prescribed, but there was no definitive diagnosis.

***Nelson Caldas***

Prof. Shiro Tomita, is there anything you would like to add?

***Shiro Tomita***

I agree with what my colleagues have said. And I would only like to remind you that otoscopy is fundamental to a diagnosis. When a child is immobilized, the constant crying can lead to an increase in vascularization of the TM. We could think it is otitis, but it might only be the consequence of the effort spent in crying. Thus, diagnosis is important, and the exams mentioned before should be performed according to the experience of each one of us. Treatment is based on these findings.

***Nelson Caldas***

Very good. Talking now about chronic otitis media (COM), we should clarify or remember that the COMs are generally classified as suppurative and non-suppurative, which includes those with perforated TM and non-perforated TM and includes cholesteatomatosis or non-cholesteatomatosis. Cholesteatoma is an “invasion” of the EAC and the skin of the TM into the tympanic cavity and represents an important chapter. It is one of the larger problems for ENTs in the pediatric area. I would like to ask the panel, first Dr. Humberto Guimarães, what do you see when there is a cholesteatoma in a child that is different from what is seen in the adult? There are surgeons who don’t think that there is a large difference, but others state that cholesteatoma in children is much more dangerous, due to the texture of the younger bone, and so on. What do you think about this?

***Humberto Guimarães***

There are two types of cholesteatoma in children, congenital cholesteatoma (CC) and secondary or acquired cholesteatoma (AC). Congenital cholesteatoma is diagnosed by finding a whitish retro-tympanic mass, with pneumatized mastoid and with no previous history of otitis. Acquired cholesteatoma occurs after retraction of the TM. It is clear that cholesteatomas have to be seen in children in two ways: not only their pathophysiology but also their therapeutic aspects.

As to surgery, I favor the more conservative technique for mastoidectomy, the canal-up mastoidectomy. When you are dealing with AC in a child, you have to talk to the family to explain that only one surgery (a single surgical time) sometimes does not solve the problem, and you’ll need other surgeries to

eliminate the problem. In general, mothers do not like to deal with the cavity in radical mastoidectomy (canal-down), as it will always bring some problems to these patients even when the results are good.

When dealing with CC, I believe you need an early diagnosis. You have to think about the possibility of these pathologic conditions being present. Patients with otitis media with effusion (OME), for example, have to be carefully examined using otoscopy, especially in unilateral cases, as this OME can be a CC. Surgery is much easier if you are able to detect this CC early on. You don't have to perform a tympanomastoidectomy, a posterior tympanotomy. You make an incision from the 9 to the 3 o'clock position; you move the TM and take out the cholesteatoma from where it is located, in general in the upper part of the opening of the Eustachian tube (ET), where there is epithelium embryologically differentiated from that in the middle ear.

***Nelson Caldas***

Thank you, Dr. Humberto. You have given us a very good explanation about surgical techniques used to treat cholesteatoma. It was really very useful for all, but I believe that our pediatric colleagues are not very familiar with these open and closed techniques (canal-up/canal-down). This subject is really fascinating for the otolaryngologist, especially the otologist. I would like to have the opinion of Dr. Alberto on cholesteatoma in a child and in an adult. Do you think they could be treated in the same way?

***Alberto Chinski***

I'm going to talk about cholesteatoma in children. As we know, it is very aggressive in children. It is a primitive cholesteatoma, and the surgery is simple, a resection. It is quite simple when we have an early diagnosis.

We usually divide AC into two groups: in patients who are economically better off and those who are less so. Unfortunately this is the situation. I've worked for many years in the Ricardo Gutierrez Children's Hospital in Buenos Aires, with less favoured children. And we operated on all cholesteatomas because they were already very invasive or there was some complication. We consider that for these patients it is necessary to perform a radical mastoidectomy (canal-down) to ensure that there is no possibility of recurrence, as a residue is common (known as a "cholesteatoma pearl"). A tympanoplasty is performed in the same surgery as the radical mastoidectomy.

***Nelson Caldas***

Thank you, Dr. Alberto, you were very clear. It is important for pediatricians to know that cholesteatoma in children is more severe because it grows more easily. As Dr. Humberto said earlier and Dr. Alberto also agrees, true CC appears behind a non-ruptured TM as a pearl, sometimes less evident, and diagnosis can be very difficult. Even less informed otolaryngologists or those who do not have available instruments with otoscopic magnification or an otomicroscope may not identify cholesteatomas like these, the pearl having 1/3 of their size. An experienced otolaryngologist, with a more adequate tool for magnification that allows proper otoscopy, can make the diagnosis more easily. Sometimes these children have

some hearing difficulty as the only symptom. Therefore, adequate otoscopy becomes so important.

It is not easy to identify this hearing difficulty, as this CC is unilateral and the good ear compensates for the other. Whenever we examine a TM, especially in younger children, attention must be given to subtle otoscopic alterations. With this type of cholesteatoma, symptoms are present only when it becomes exteriorized and starts to suppurate, and then the problem is already present. Thus, good and accurate otoscopy is fundamental.

Dr. Sebastião, what do you think about all this?

***Sebastião Diógenes***

When a whitish mass can be seen through the TM during otoscopy, the possibility of this being a CC is quite clear. As it grows, the CC evolves and will perforate the TM. Very often the child comes to the outpatient clinic of our public service with otorrhea and, as you said, the problem is already present. In this situation it is very difficult to determine whether this is CC or AC that is exteriorized through the perforated TM. And we cannot be totally sure that it is CC. These are the cases where I have a chance of making the diagnosis while the TM is still intact.

***Nelson Caldas***

Thank you very much, Dr. Sebastião. Dr. Shiro, a comment.

***Shiro Tomita***

After such a condition is diagnosed in a child or an adult, the indication is to surgically remove the cholesteatoma as long as clinical conditions are favorable. I am not going to discuss the technique in this round table. We know that the cholesteatoma is more aggressive in children, becomes more diffuse and causes more destruction. Once diagnosed, treatment must be equal to surgery to avoid sequelae and complications that can occur. As to CC, Sebastião made a very good comment: in otoscopy, very often you don't know whether it is a ruptured TM and led to the formation of a cholesteatomatous cyst, or if the cyst was formed embryologically, and we call it CC. Thus, sometimes it is difficult to diagnose CC, especially in a child, as good otoscopy is more difficult to perform.

***Nelson Caldas***

Thank you. I see that the members of the panel are unanimous in the sense that in a child, cholesteatoma is more invasive, more destructive and aggressive than in adults. This message is very important for our interdisciplinary cooperation with pediatricians.

I would like to make some comments now about tympanostomy tubes (TT) that are, as we all know, indicated mainly in OME. Since Armstrong, in 1951, these are polyethylene and have evolved to other materials since then. Tympanostomy tubes have been used for more than 50 years in an almost innocuous manner. It has even been considered to be one of the surgeries performed most often in the US, second to circumcision. Until a short while ago, the major complication of TTs was occasional suppuration or otorrhea. Nowadays, however, it seems that most cases suppurate.

Thus, indications for placement of TTs are restricted, not because it has advantages or disadvantages, but for fear of the large number of complications. In the past, the

placement of a TT solved a child's problem, but today I create a problem for the child and for myself, with persistent otorrhea through many TTs. It suppurates, and nothing will make it stop. Even after medicating with oral, parenteral antibiotics, otorrhea persists, and the only solution is to remove the TT.

What is new is the presence of biofilm, the adherence of a “mansion-like architecture” made by a group of bacteria. This “mansion” has communicating tunnels, a true community of different organisms. Through their adherence, these biofilms create pathologic conditions such as the otorrhea seen with TTs. They contaminate the mucosa of the middle ear and move towards the prosthesis. I was talking to a colleague who performs cochlear implants, and he revealed his concern as they have started to find these “mansions” also in implants. Endoscopists are finding biofilms in their scopes. Some authors reason that the best way to treat biofilms is to place the TT and then use antibiotic eardrops in patients who have recurrent acute otitis media. What is the opinion of the members of our panel?

***Alberto Chinski***

Biofilm is really a new subject of discussions. When there is a biofilm in mucosa of the middle ear, it becomes necessary to place the TT and, if there is continuous suppuration, it is quite possible that a biofilm has adhered to the TT. If this is the case, we can use eardrops with antibiotics, and if this does not solve the problem, the recommendation is to remove the TT and place a new one.

***Nelson Caldas***

Dr. Sebastião, do you have any comment about biofilm?

***Sebastião Diógenes***

In fact I have dedicated myself to the study of biofilms. In the past, we used to place the TT, and the problem was solved. I think that it still solves the problem, but at a price. And very often the price is chronic otorrhea. What we did in the past for a patient with perforated TM—dressings, cleaning with hydrogen peroxide, all of it—is already acting on the biofilms, as one of the stages of their pathogenicity is adherence to the surface, whether on epithelium of the middle ear or on the TT itself. Dressings and washings help to “detach” or remove these biofilms. I think that the tube helps, solves the problem of atelectasis, retraction pockets, but attention must be given to the possibility of a biofilm being present. We should follow-up the patient. I think it is better to have intermittent otorrhea than a retraction pocket or a cholesteatoma in the future.

***Shiro Tomita***

This evolutionary process of acute otitis media (AOM) is a continuum, according to Michael Paparella. His school talks about the continuum. From its very beginning, the evolution of chronic otitis media (COM) involves a problem of tubal dysfunction, alteration of mucosa of the middle ear, either hypertrophy or metaplasia, disturbance in ventilation of the middle ear, imbalance in gas-exchange in the middle ear, in irrigation, in vascularization. This is a process that modifies the “environment” of the middle ear, thus favouring infectious inflammatory processes. When I diagnose otitis media with effusion (OME), either secretory or with exudate, transudate, I only perform the tympanocentesis and do not place

the TT. I believe that removing the adenoid will already improve ventilation, as in general children have adenoid hypertrophy.

By using only paracentesis, plus clinical treatment, you can bring a very good result for the child. However, we are often surprised by an OME that did not improve and goes on evolving. In these cases we have to place a VT. As to persistent otorrhea through the TT, if we suspect that a biofilm is the cause, we have to remove the TT and place a new set of TTs.

***Nelson Caldas***

It is also good to remove the adenoid.

***Alberto Chinski***

Statistically, only one out of ten TTs will drain or have otorrhea after surgery.

***Nelson Caldas***

In the past, it would drain for a few days, two or three. But now, in many cases, the otorrhea persists for much longer periods, caused by biofilms.

I would like to thank the members of this round table. It was a pleasure to coordinate it!