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**THE EFFICIENCY OF PROSTHESIS  
WITH EXTENSIBLE (ADJUSTABLE)  
STEM IN OSSICULAR CHAIN  
RECONSTRUCTION: OUR EXPERIENCE**

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The 4<sup>th</sup> International Symposium  
on Otosclerosis  
and Stapes Surgery  
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# Aim

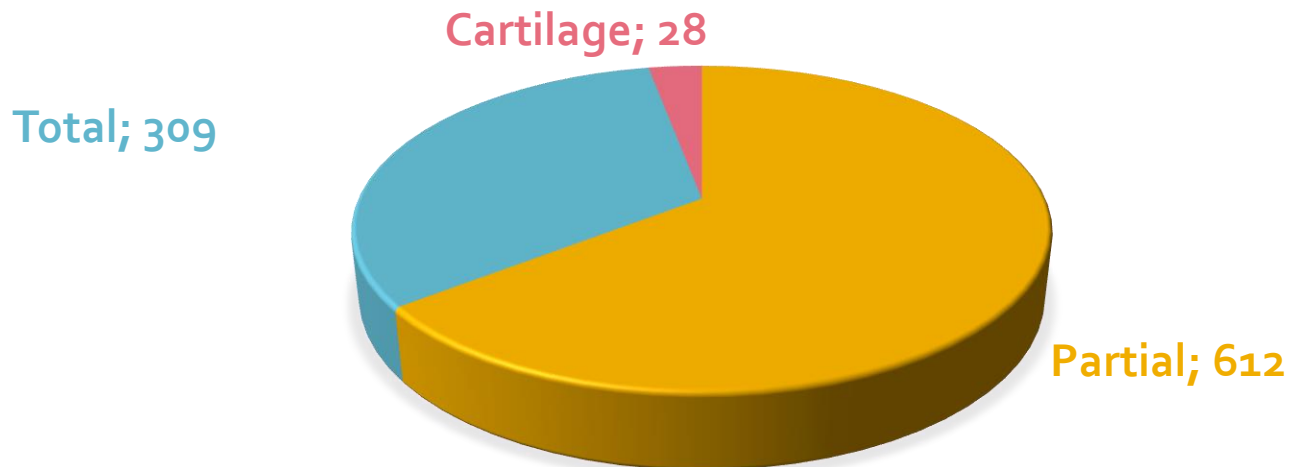


To analyze the effectiveness of surgical treatment with ossiculoplasty of patients with chronic suppurative otitis media and congenital ear malformations operated in a single clinical center from 2016 to date with the use of different types of ossicular prosthesis

# Materials and methods



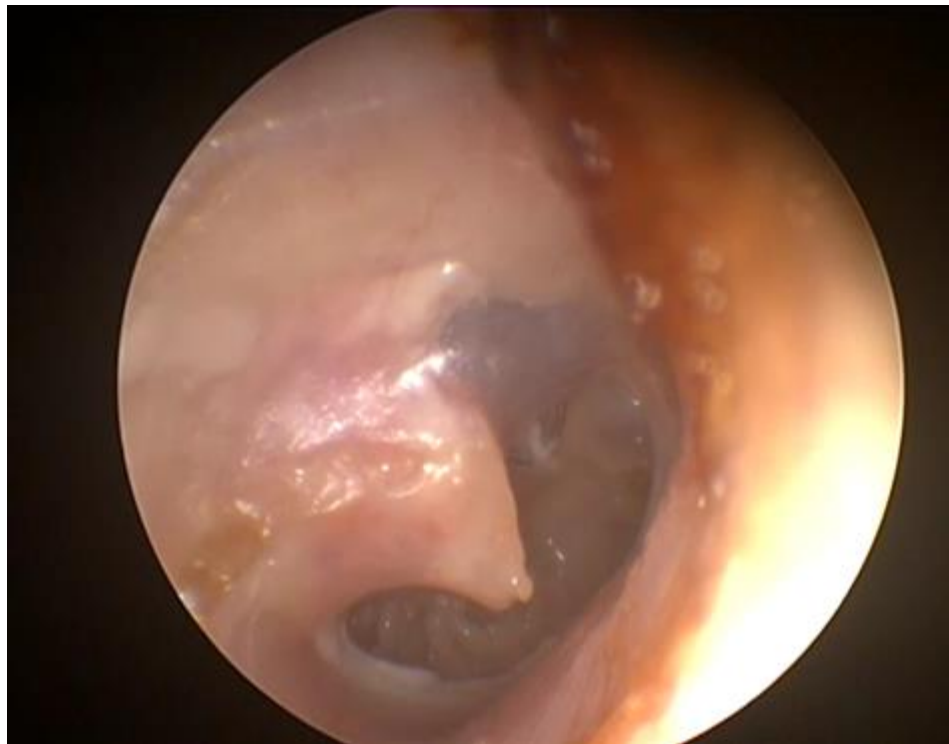
723 patients (921 operation) with chronic suppurative otitis media and congenital ear malformations underwent tympanoplasty with ossiculoplasty. We used partial titanium ossicular prosthesis in 612 cases and total titanium ossicular prosthesis in 309 cases



# Materials and methods



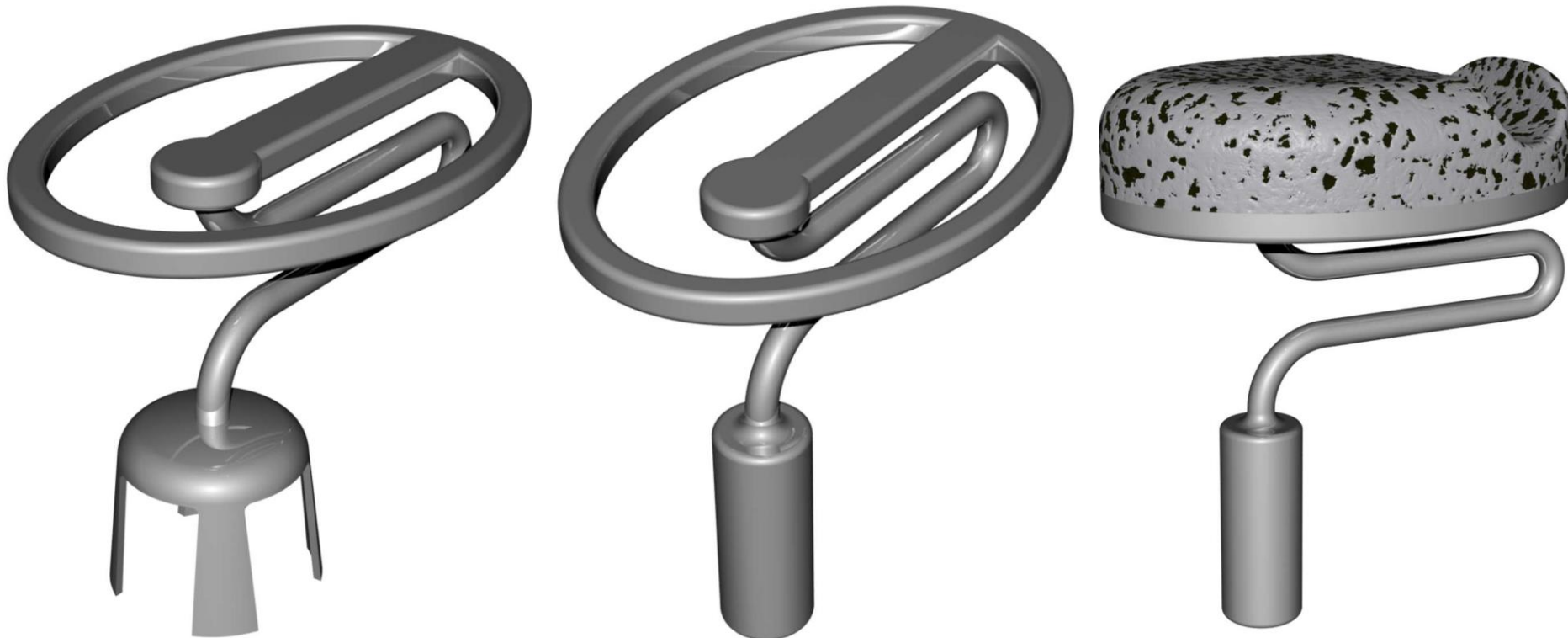
In 252 cases patients underwent 1 to 5 tympanoplasty in different hospital earlier



# Materials and methods



We used prosthesis with extensible (adjustable) stem (the stem is extensible and compressable to set the perfect length). The prosthesis showed good sound wave conductivity by oscillometric tests (unchanged conductivity of the sound wave in all stem configurations).



# TITANIUM / HAP (hydroxyapatite) Adjustable prosthesis



No cartilage interposition needed: The HAP flange can be placed directly in touch with the tympanum

Implant stability: The flange sticks to the tympanum thanks to its porosity

Saves stock! One model fixes all lengths

Adjustable stem that can be tried in place till the perfect length is reached

Can be extended and compressed several times

No additional and expensive instruments needed



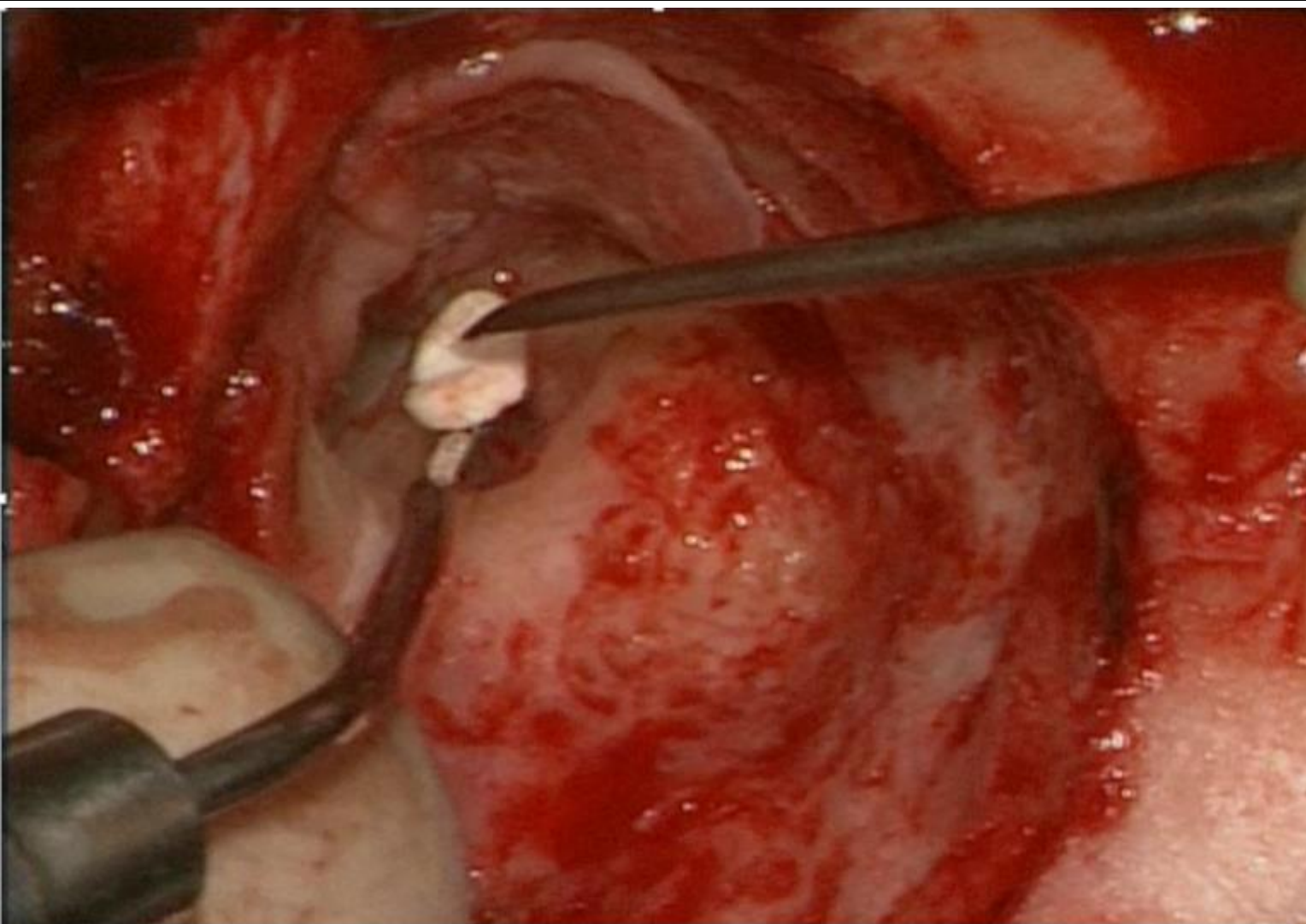
# Materials and methods



The effectiveness of the surgical interventions were assessed as short-term (up to 3 months post-operatively) and long-term (6 to 12 months) anatomical and functional outcomes. The anatomical results considered satisfactory if there was a well-formed mobile neotympanic membrane, air tympanic cavity and dry postoperative cavity. Pure tone audiograms were used to evaluate the functional results



# Materials and methods





# Materials and methods



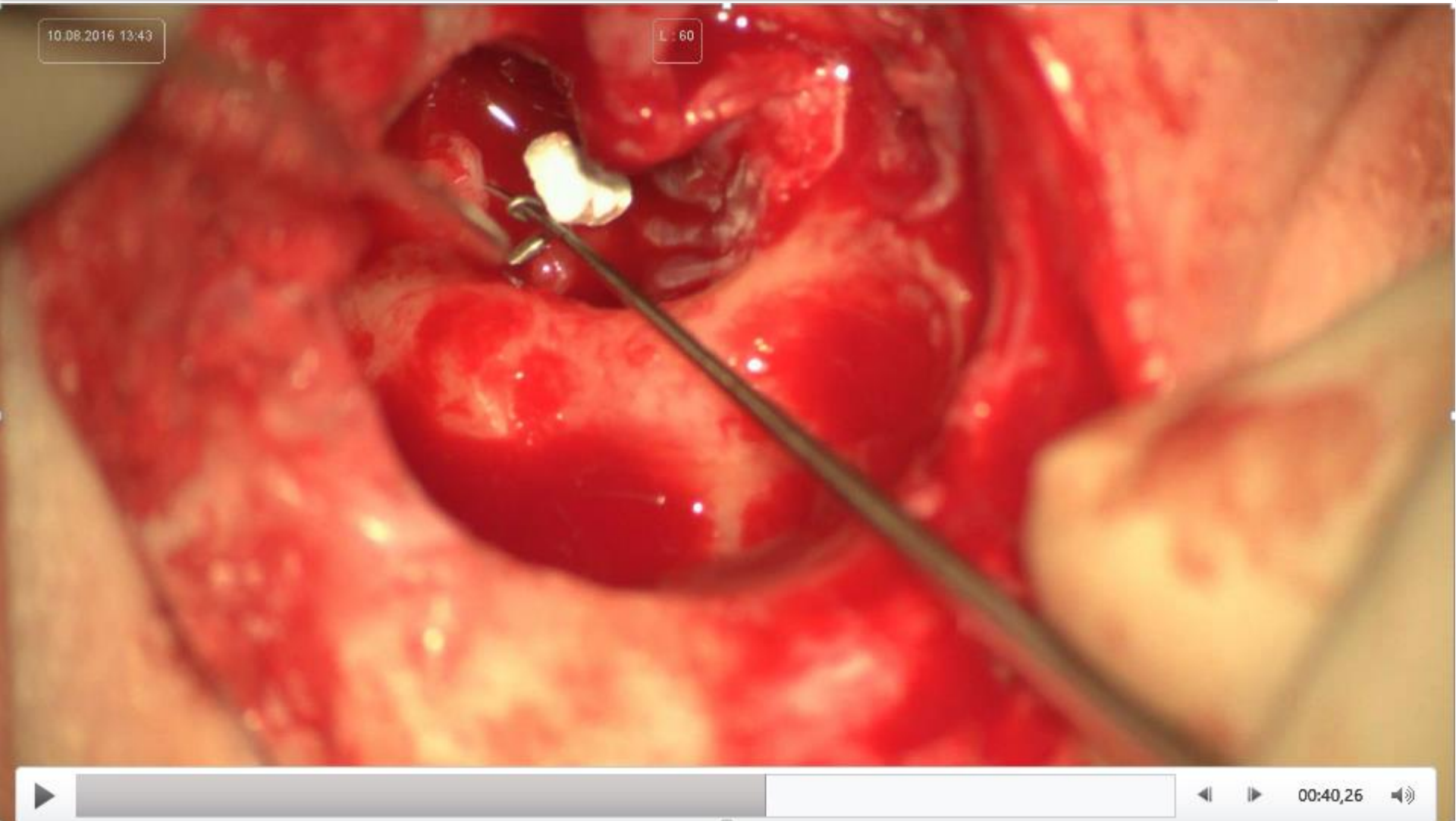
# Materials and methods



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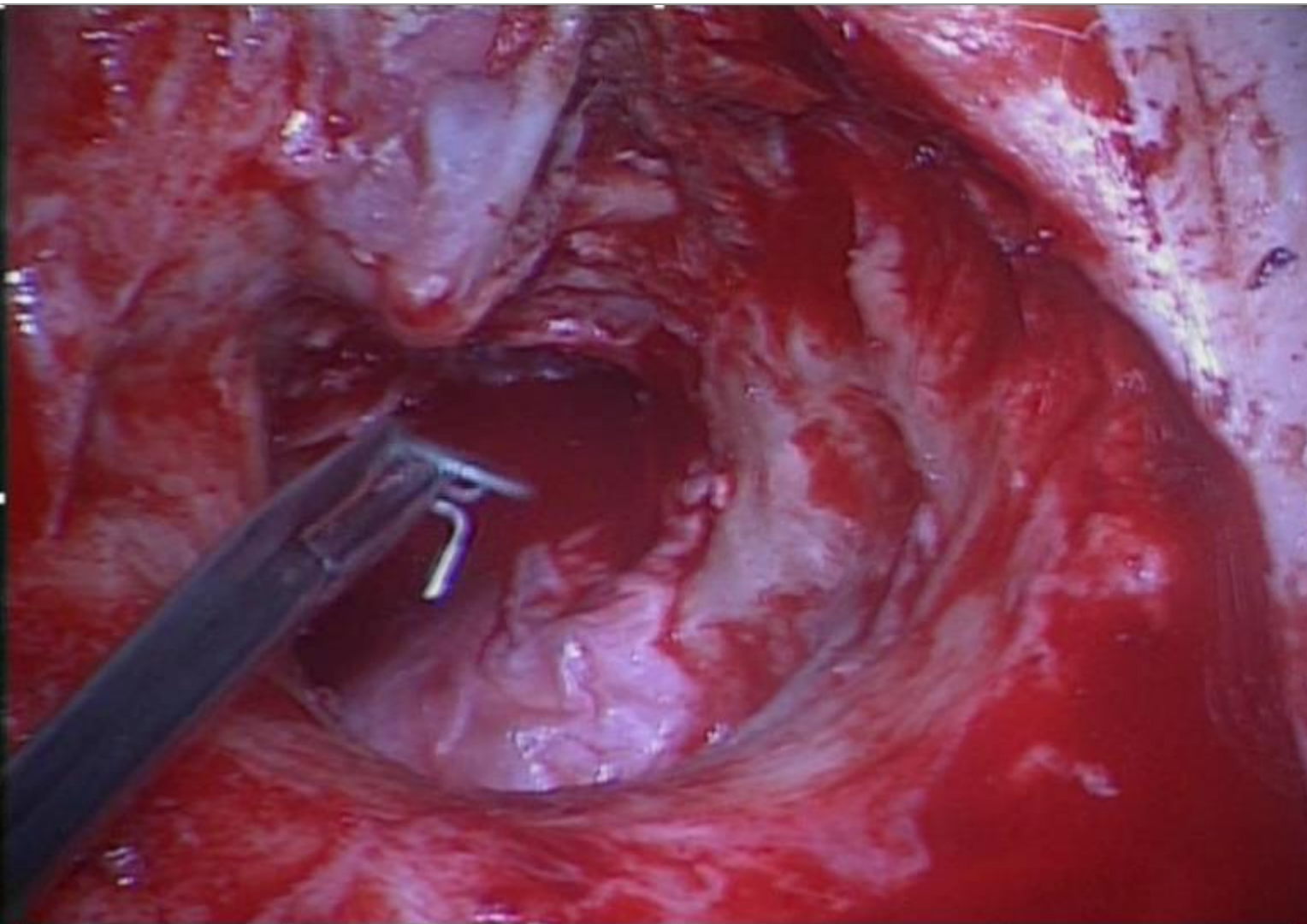
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# Materials and methods

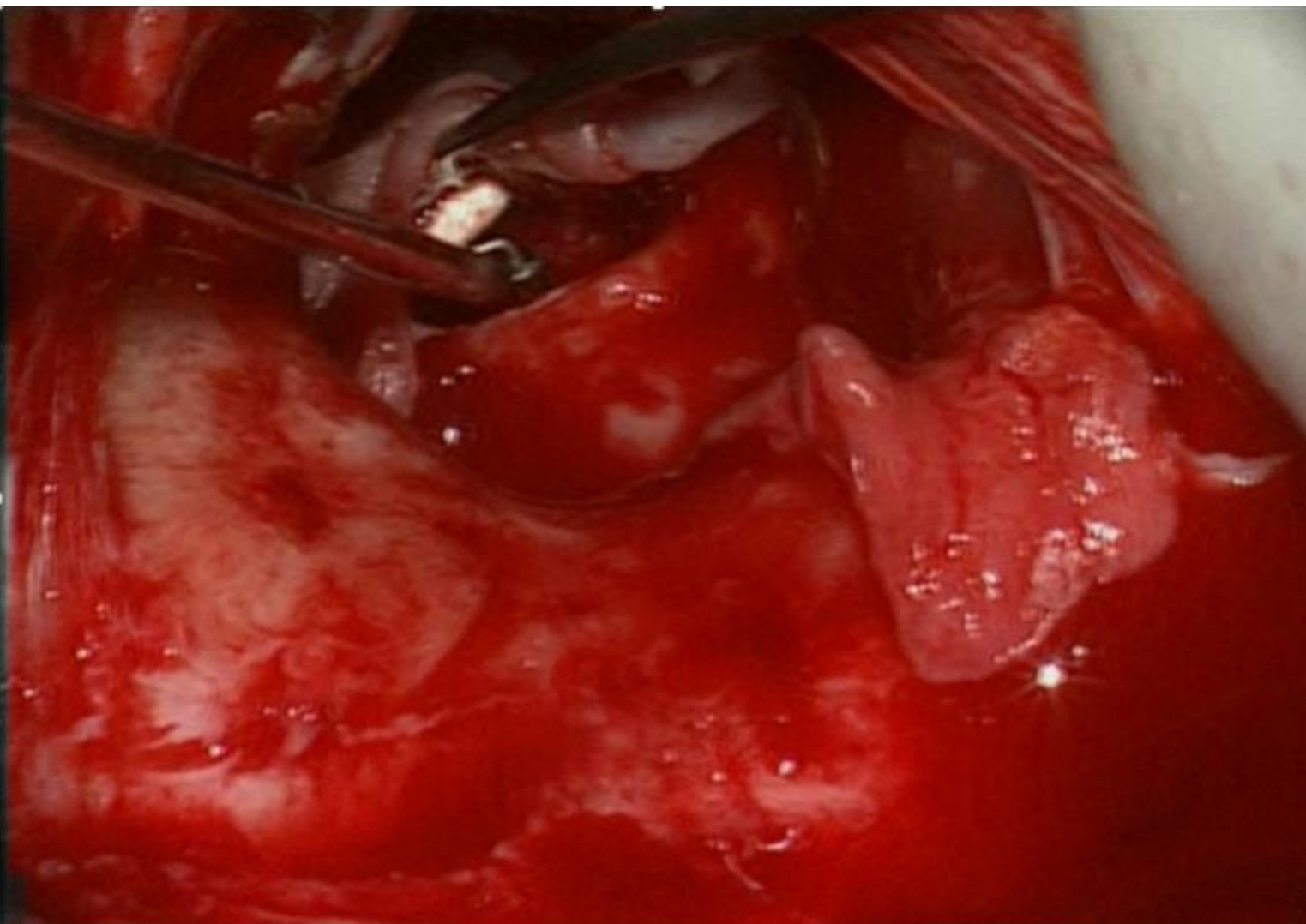




# Materials and methods

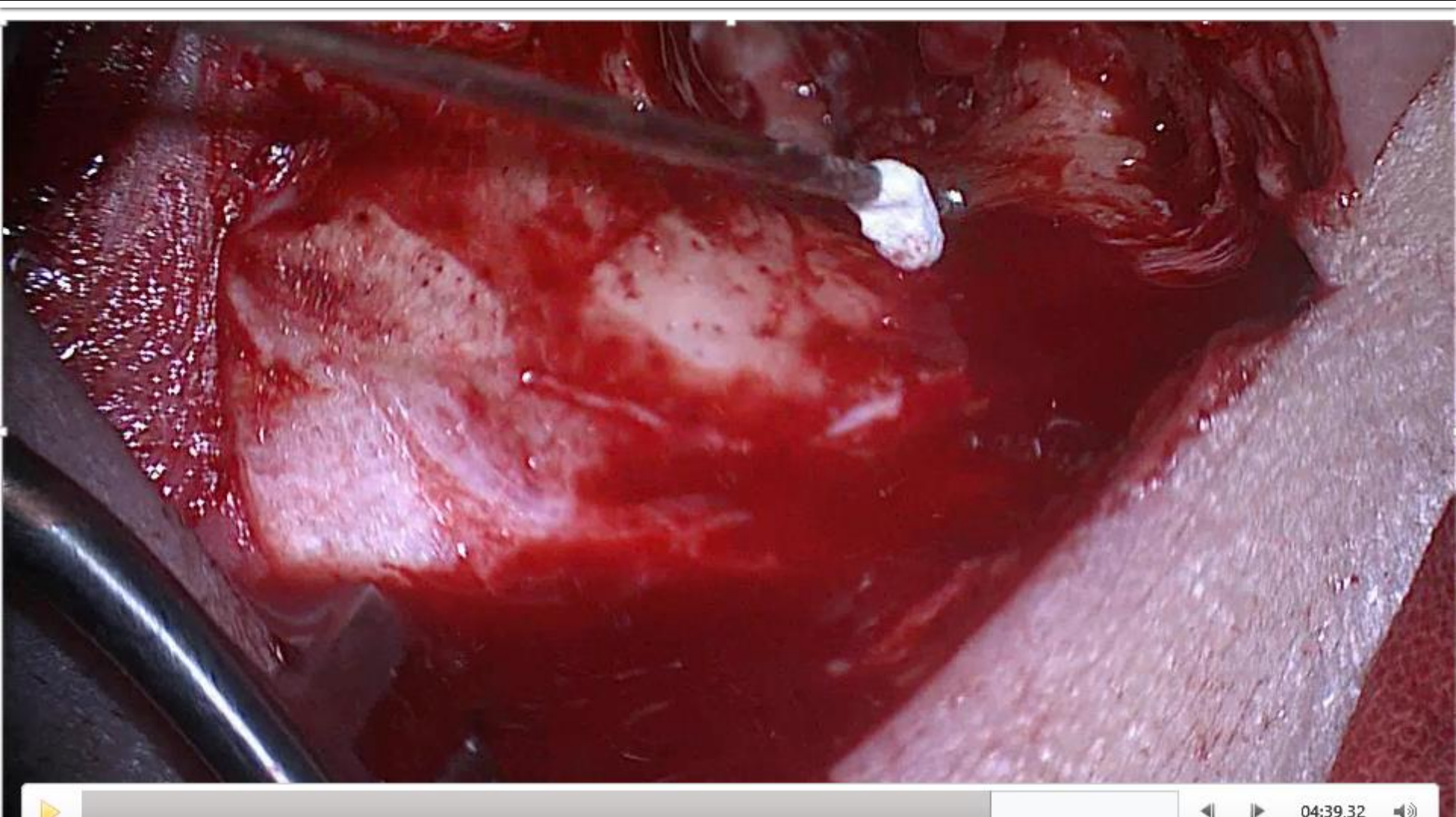


# Materials and methods



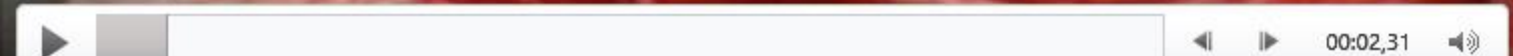
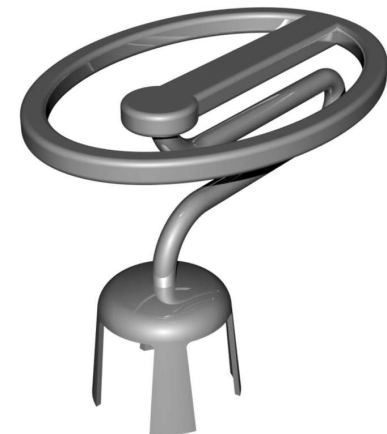
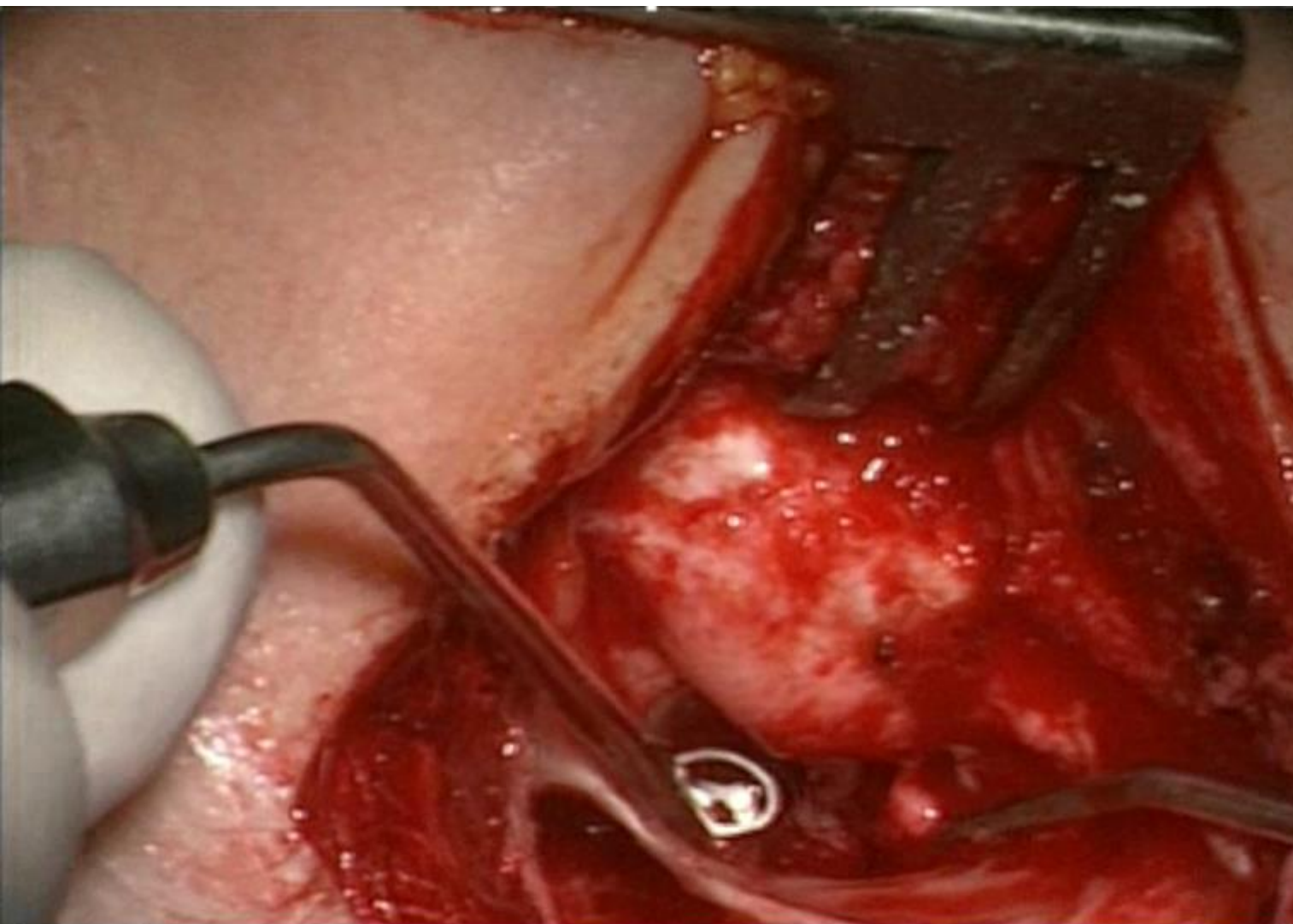


# Materials and methods



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# Materials and methods





# Results

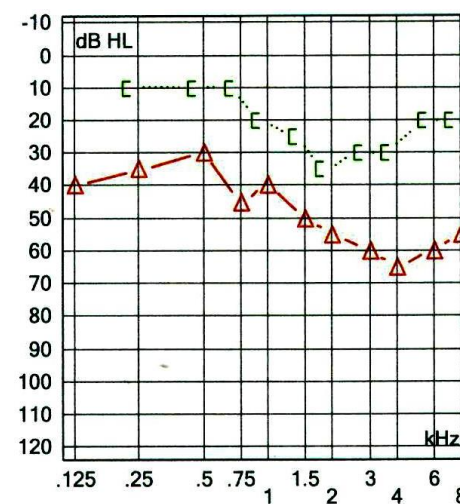
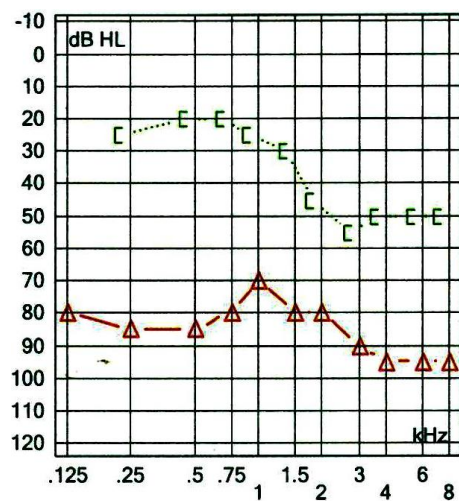


Satisfactory anatomical results were obtained in 93.5% of the patients with the safe type suppurative otitis, in 88.9% of patients with the unsafe type and in 91.2% of the patients after a revision surgery. The average air conduction was  $33,7 \pm 7,1$  dB before surgery and significantly decreased to  $17.5 \pm 5.8$  dB at 6 months postoperatively in patients who underwent ossiculoplasty using a partial ossicular prosthesis with satisfactory anatomic results. Analysis of the functional results showed a statistically significant ( $p < 0.05$ ) decrease average air conduction to  $35.5 \pm 5.7$  dB (before surgery  $57.1 \pm 5.3$  dB) and air-bone gap to  $18.5 \pm 2.3$  dB (before surgery  $36.5$  dB) in 91.4% of cases in patients who underwent ossiculoplasty with a total prosthesis with satisfactory anatomical results.

# Results



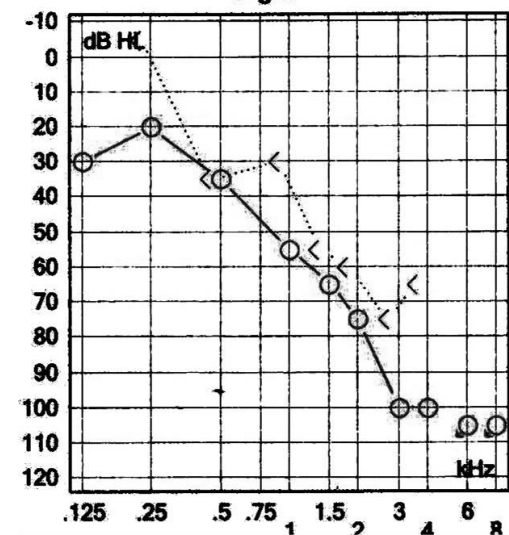
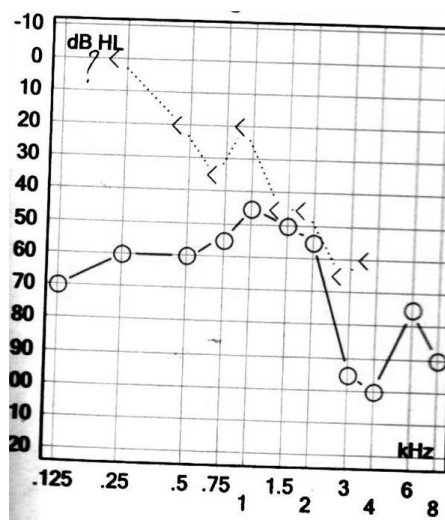
4 mon after  
retympanoplasty



# Results



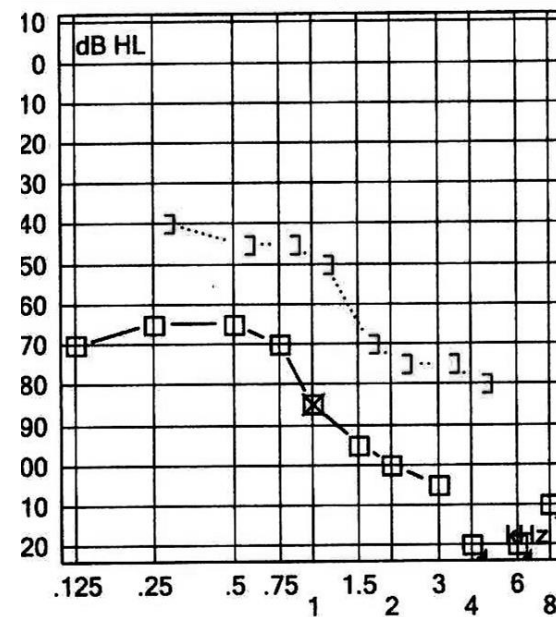
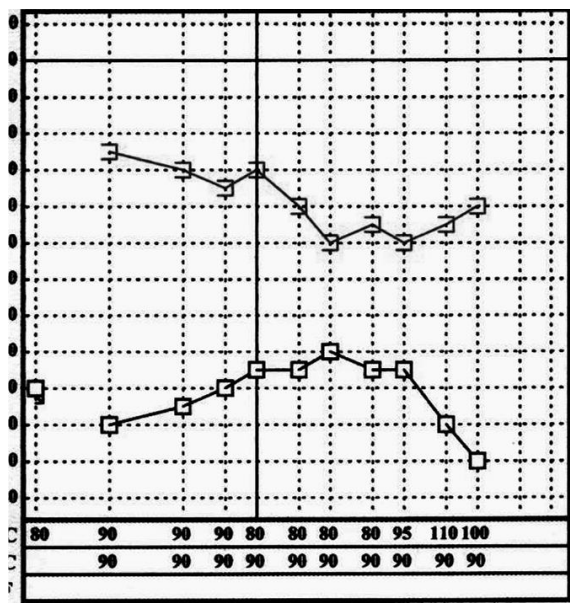
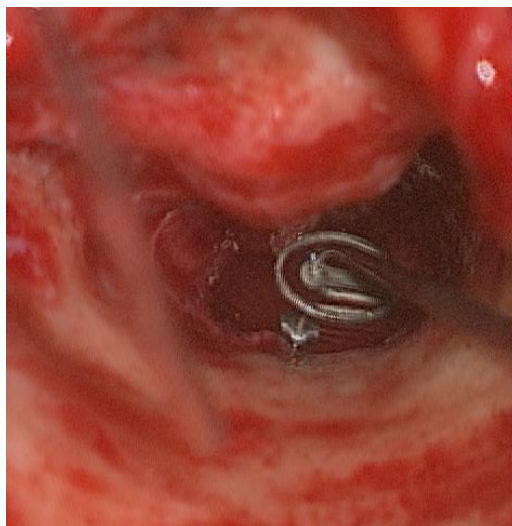
2 mon after  
tympanoplasty



# Results



4 mon after  
tympanoplasty

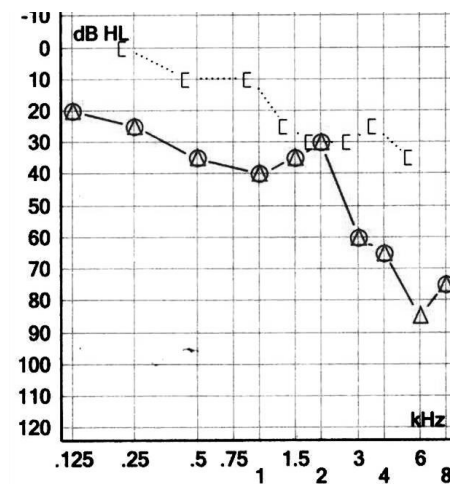
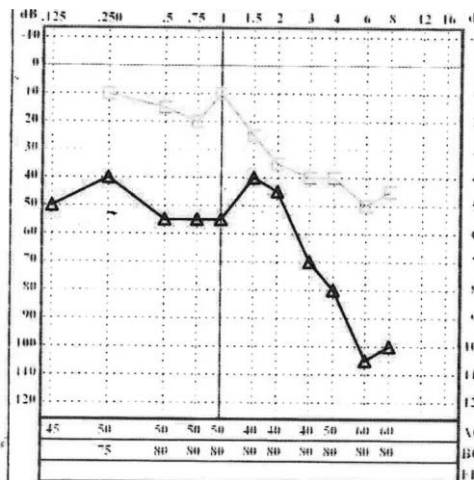




# Results



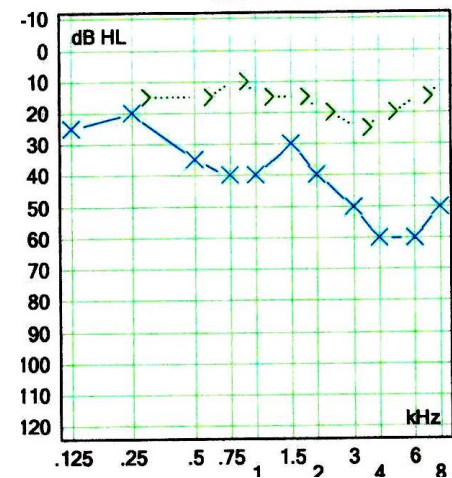
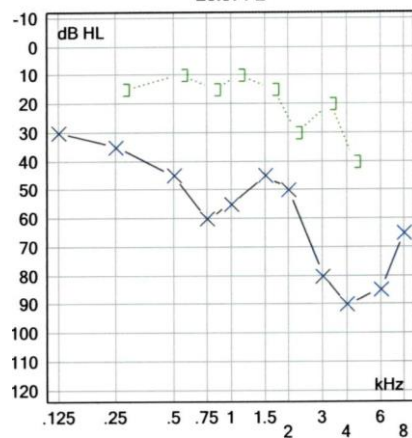
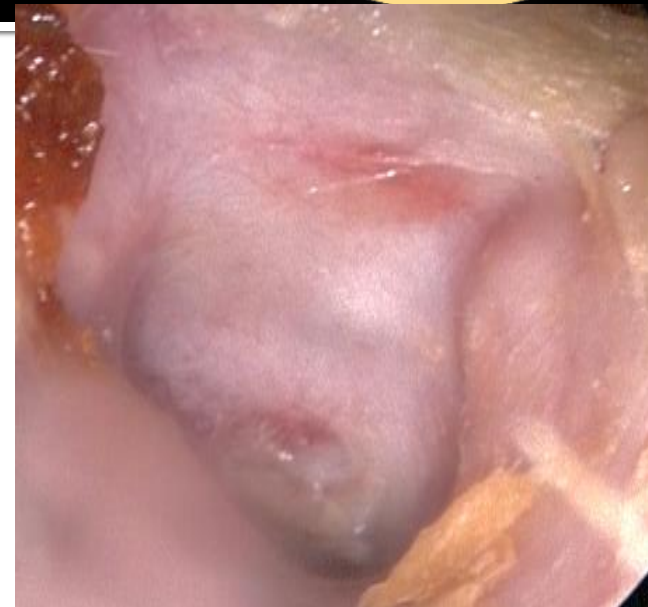
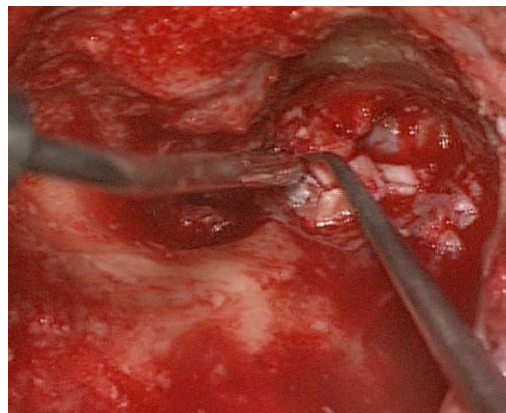
3 mon after second  
CWDM



# Results



12 mon after  
CWDM

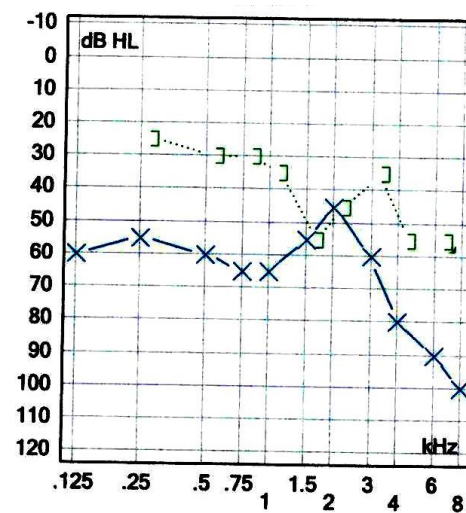
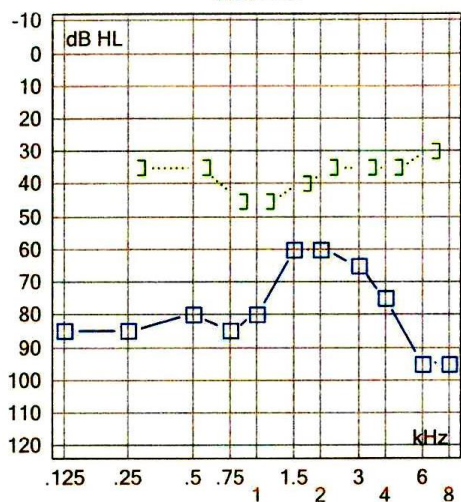
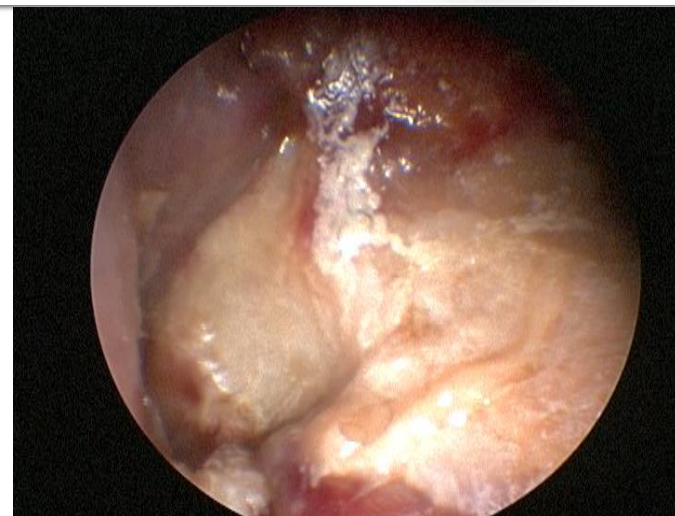




# Results



2 week after  
second CWDM

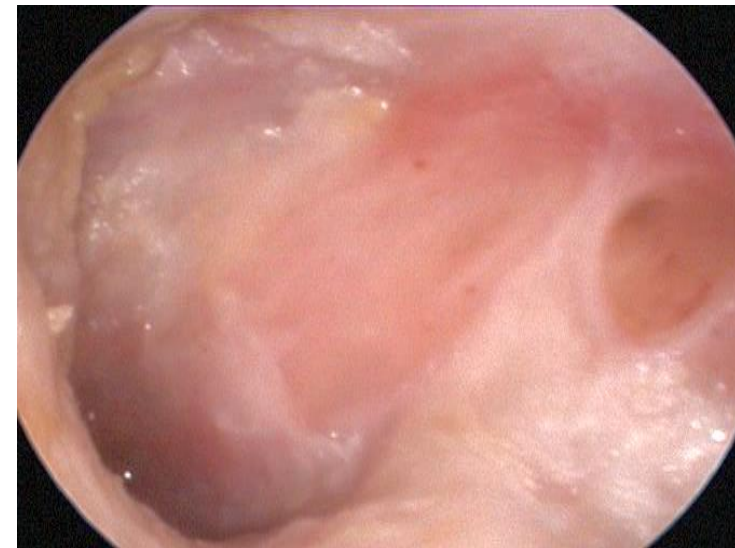




# Results



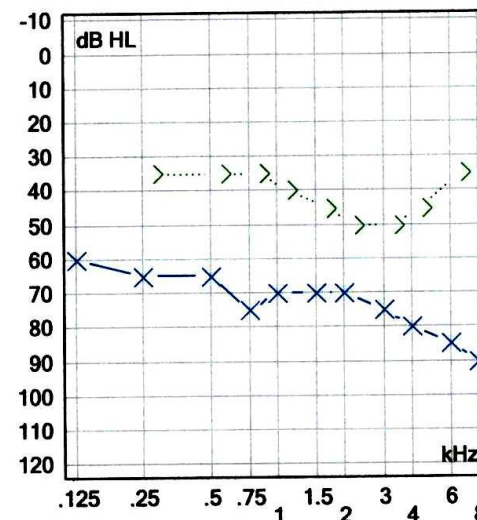
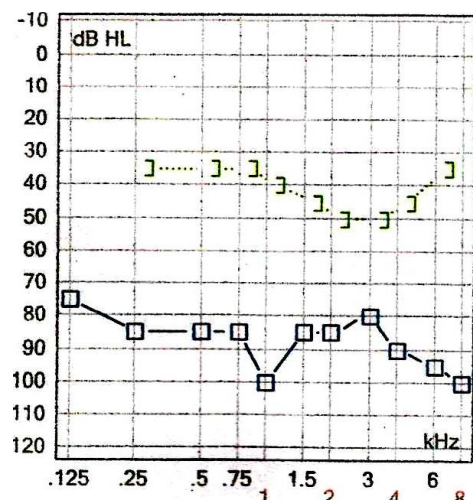
3 mon after second  
CWDM



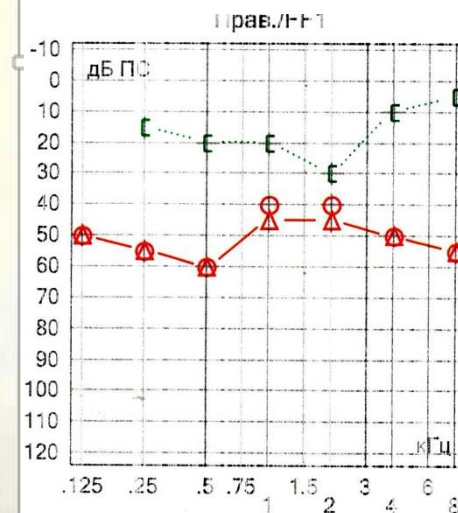
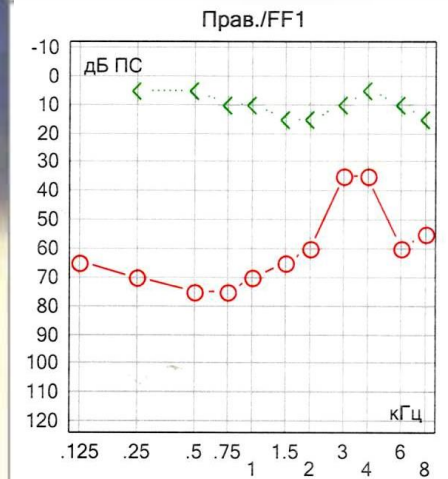
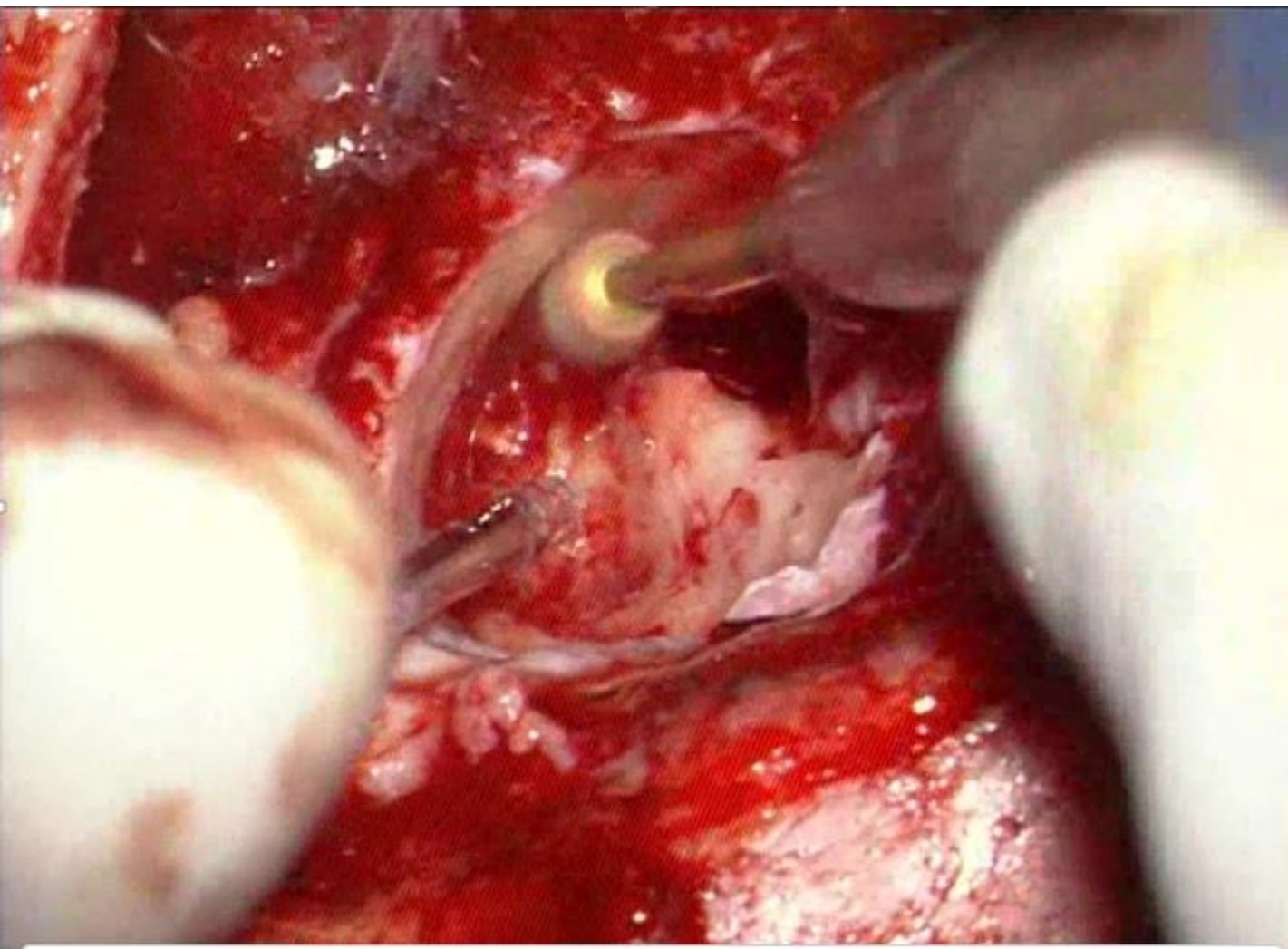
# Results



6 mon after CWDM

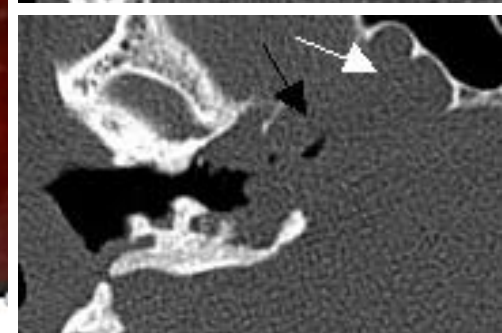
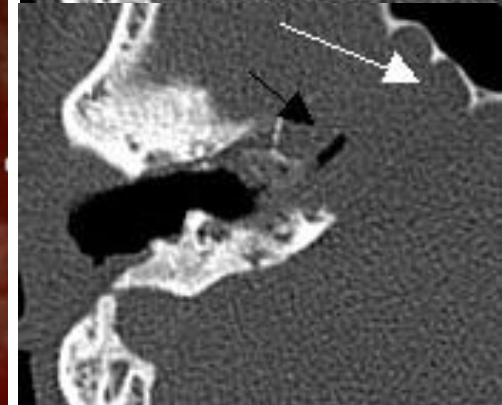
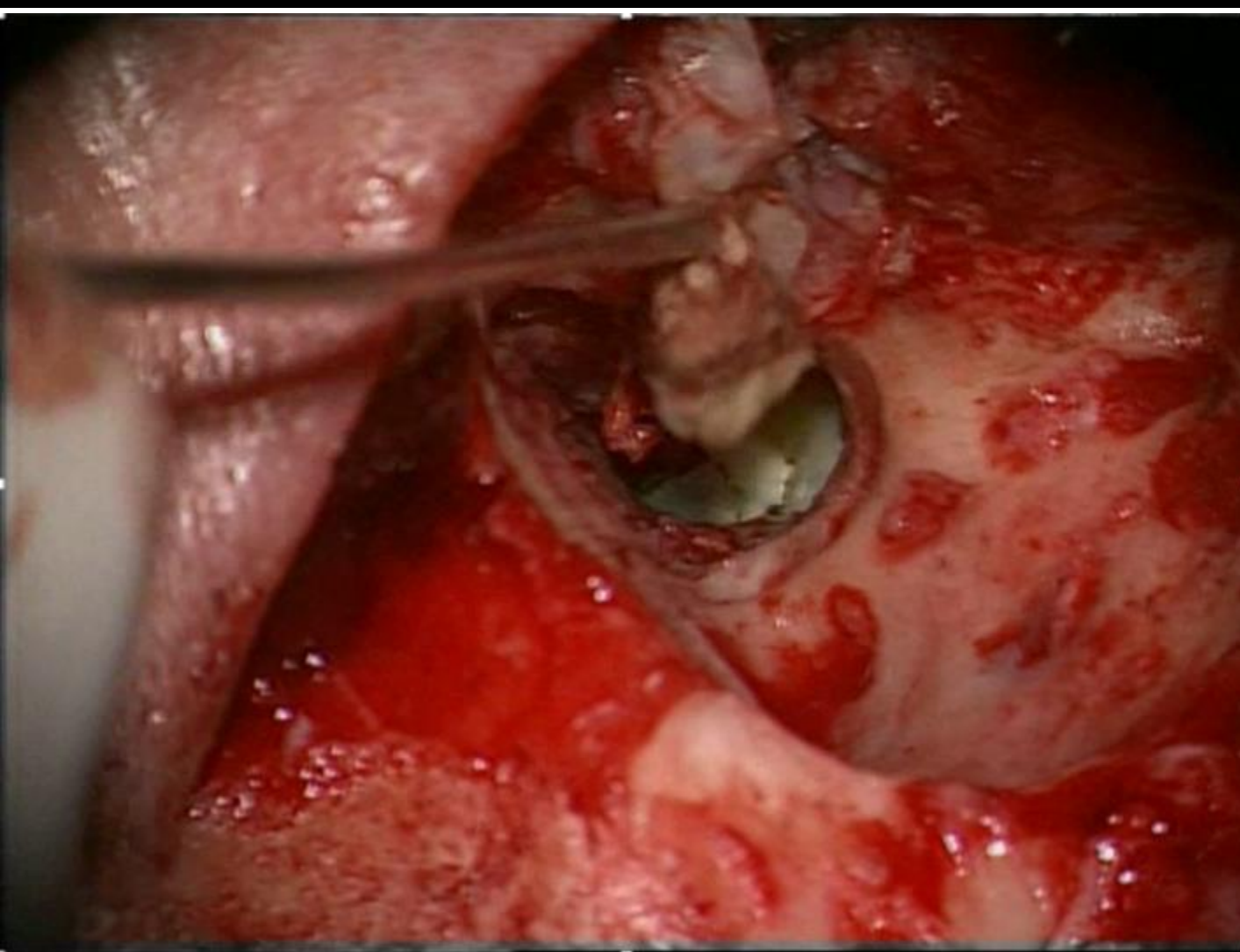


# Clinical case. Infralabyrinthine cholesteatoma





# Clinical case. Infralabyrinthine-apical cholesteatoma



# Results



Displacement of total ossicular prostheses was registered in 9 (2,9%) cases from 309 .

The most common causes of unsatisfactory anatomical results were perforation (15 cases), cholesteatoma reoccurrence (3 cases) and lateralization of the neotympanic membrane (3 cases).

# Discussion and conclusion



Formation of a reliable sound conducting system with ossicular prostheses allows for persistent improvement of hearing. Various surgical techniques, such as extended posterior tympanotomy, endoscopic assistance, provide a good effect with the removal of non-aggressive cholesteatoma while preserving the bone structures, which are not involved in the disease. A complete removal of an advanced aggressive cholesteatoma with the opening of the temporal bone cell system ensures good functional and anatomical outcomes, makes it possible to prevent the spread of the pathological process and development of intracranial complications.





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ФЕДЕРАЛЬНЫЙ  
НАУЧНО-КЛИНИЧЕСКИЙ ЦЕНТР  
ОТОРИНОЛАРИНГОЛОГИИ

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