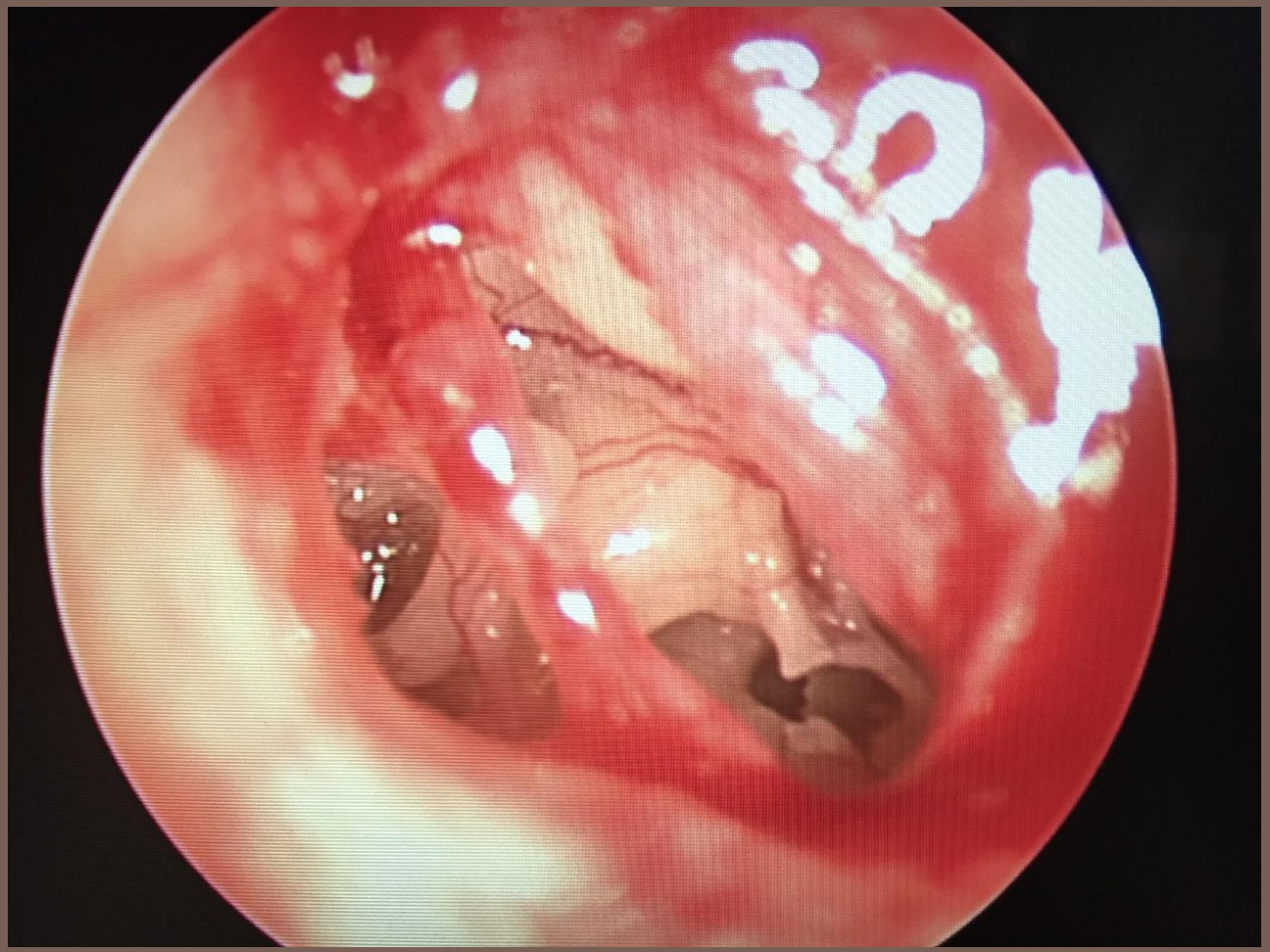
STAPES ENDOSCOPIC SURGERY

How I do it ?



PGS TS LÂM HUYỀN TRÂN

OTOSPONGIOSIS

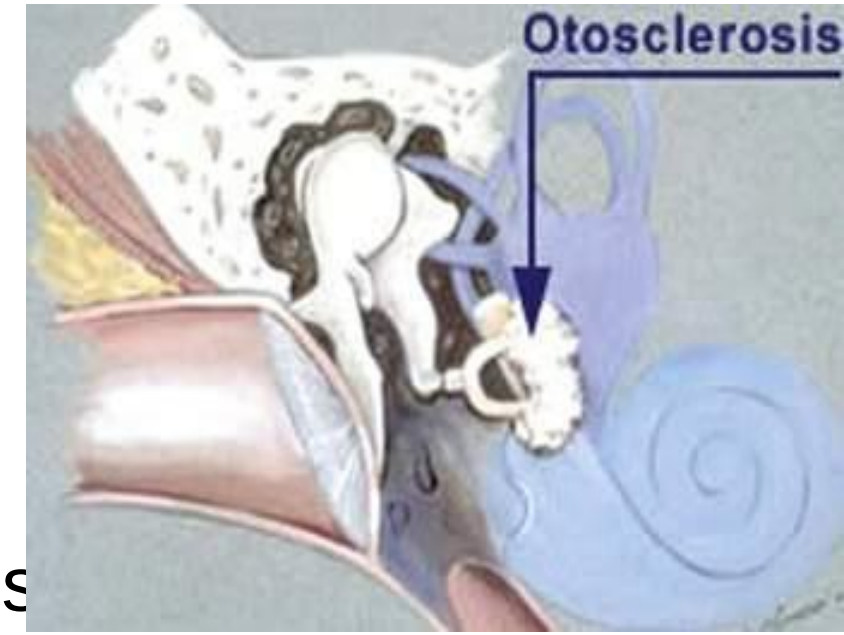
- Otosclerosis is a disease that causes abnormal bone remodeling to occur in the otic capsule of the temporal bone, leading to:

Stapedial fixation

=> conductive hearing loss

If cochlea is involved

=> sensorineural hearing loss



SURGERY :

STAPES REPLACEMENT:

- **Stapes replacement by autograft : fat tissue**

Phẫu thuật thay xương bàn đạp bằng vật liệu tự thân như trụ mỡ

- **Stapes replacement by prosthesis**

Phẫu thuật thay xương bàn đạp bằng prosthesis (plastic, platinum, stainless steel)

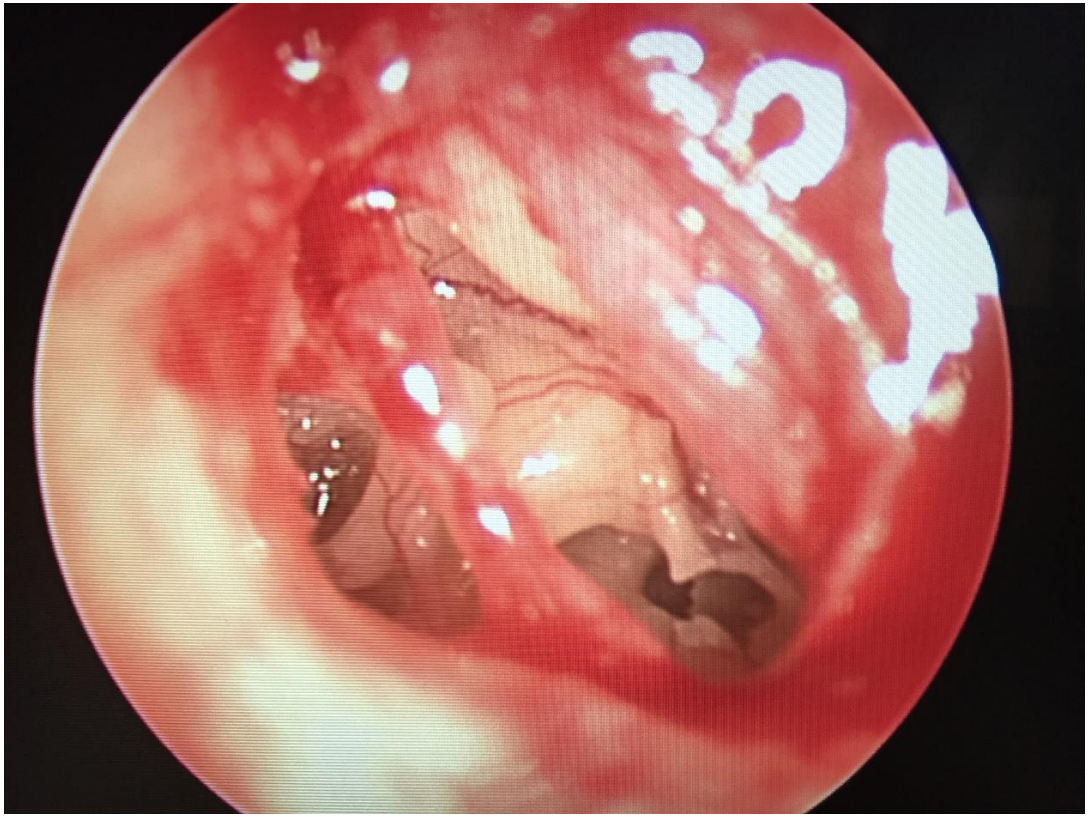
INSTRUMENT

- Endoscope
- Microsurgery instruments
- Prosthesis

Stapes replacement

via transcanal endoscopic surgery

The purpose was to evaluate the role of otoendoscopy in performing stapes replacement in clinically otosclerotic patients.



HOW I DO IT ?

Inclusion CRITERIA

Inclusion criteria were as follows:

clinically diagnosed otosclerosis with

- Normal otoscopy,

- Audiometry showing CONDUCTIVE HEARING LOSS with an air-bone gap (ABG) of at least 20 decibels (dB),

- Type A tympanometry,

- Absent stapedial reflex

Exclusion criteria

Exclusion criteria were as follows:

- Repeated history of middle ear infections,
- Tympanic membrane perforation,
- Stenotic or severely winding bony EAC
- ABG of less than 20 dB,
- Neurosensorial hearingloss

Exclusion criteria during surgery

Ossicle test : check for mobility of the ossicular chain

- Malleus
- Incus
- Stapes
- Oval window

INSTRUMENTS

- Optic : 0 degree 4mm or 2.7- 3 mm

with 0º lens directed to view the middle cavity from below upwards

* Optic 4mm in case of the normal ear canal

* Optic 2.7mm in case of the narrow ear canal

Anesthesia

(1) The procedure was carried out under hypotensive general anesthesia.

(2) Ideal tension was around 90 mmHg

(3) Local canal infiltration of Lidocaine epinephrine (1/100.000) was performed before the ear skin incision: 16 cases

(4) Non infiltration was performed in 16 cases

STEP BY STEP PROCEDURE

- Take the temporalis fascia as a graft
- Create the tympanomeatal flap
- Expose the incus- stapes joint
- Open the posterosuperior notch
- Expose the stapes footplate
- Ossicular chain mobility test (malleus- incus- stapes)

STEP BY STEP PROCEDURE

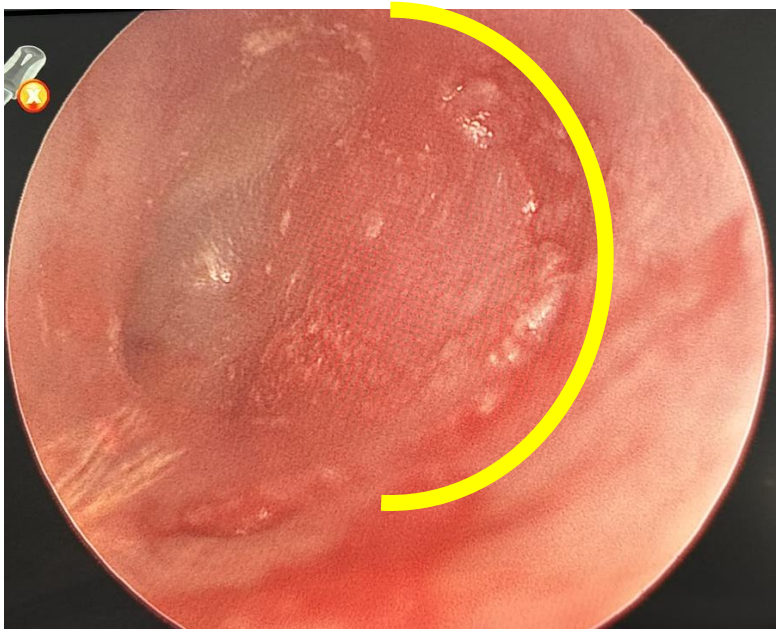
- Cut stapedial tendon
- Supra structures was cut
- Drill to make a hole on the footplate
- Temporal fascia was on the footplate
- Insert prosthesis
- Tympanomeatal flap was repositioned
- Gelfoam to ear canal

Dissection of the entire tympanic annulus

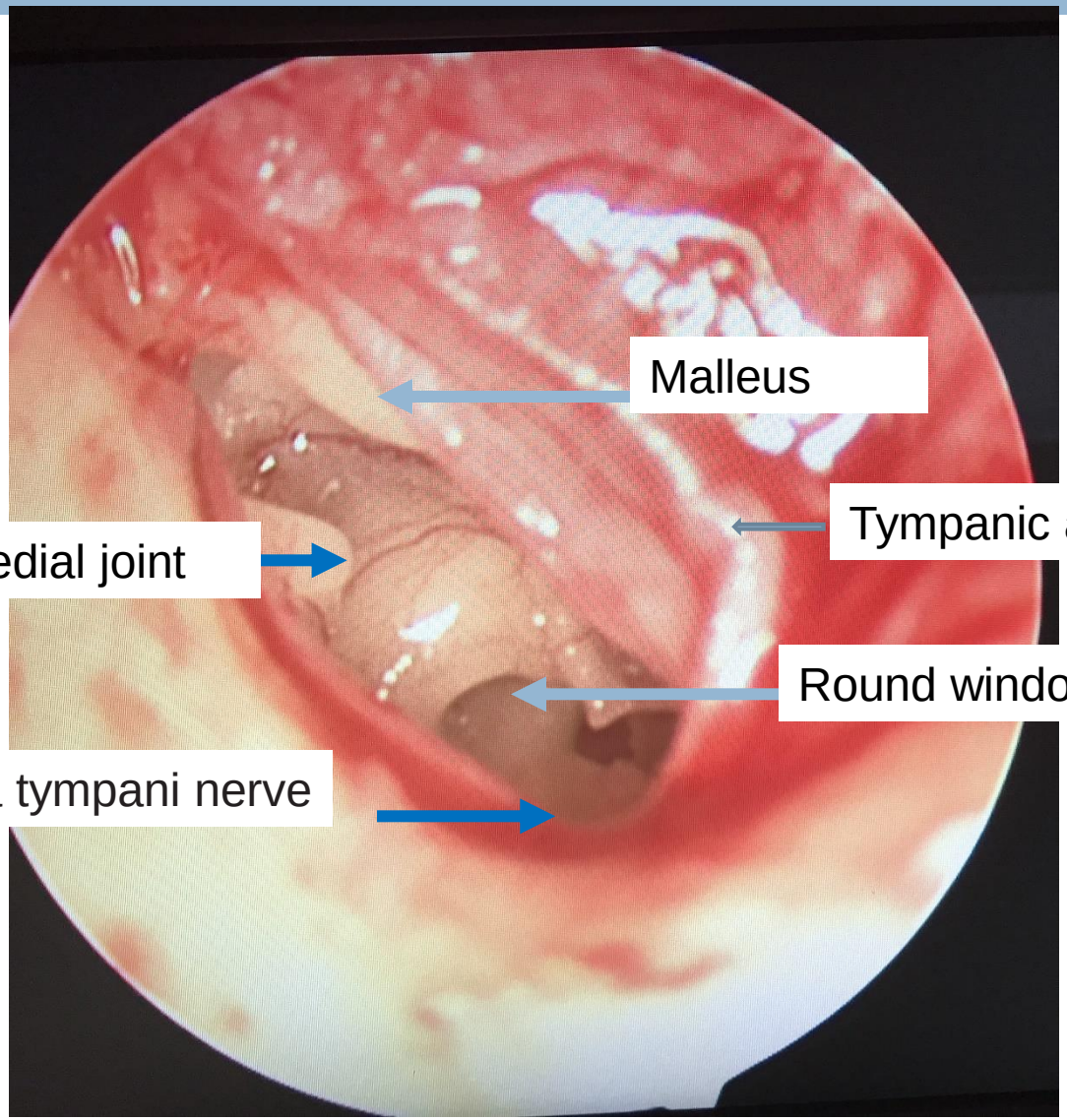
(1) The tympanomeatal flap was created under endoscopic 0° as an inverted C-shaped flap,

(2) the horizontal incision was performed at a distance of about 1–1.5 cm from the tympanic membrane.

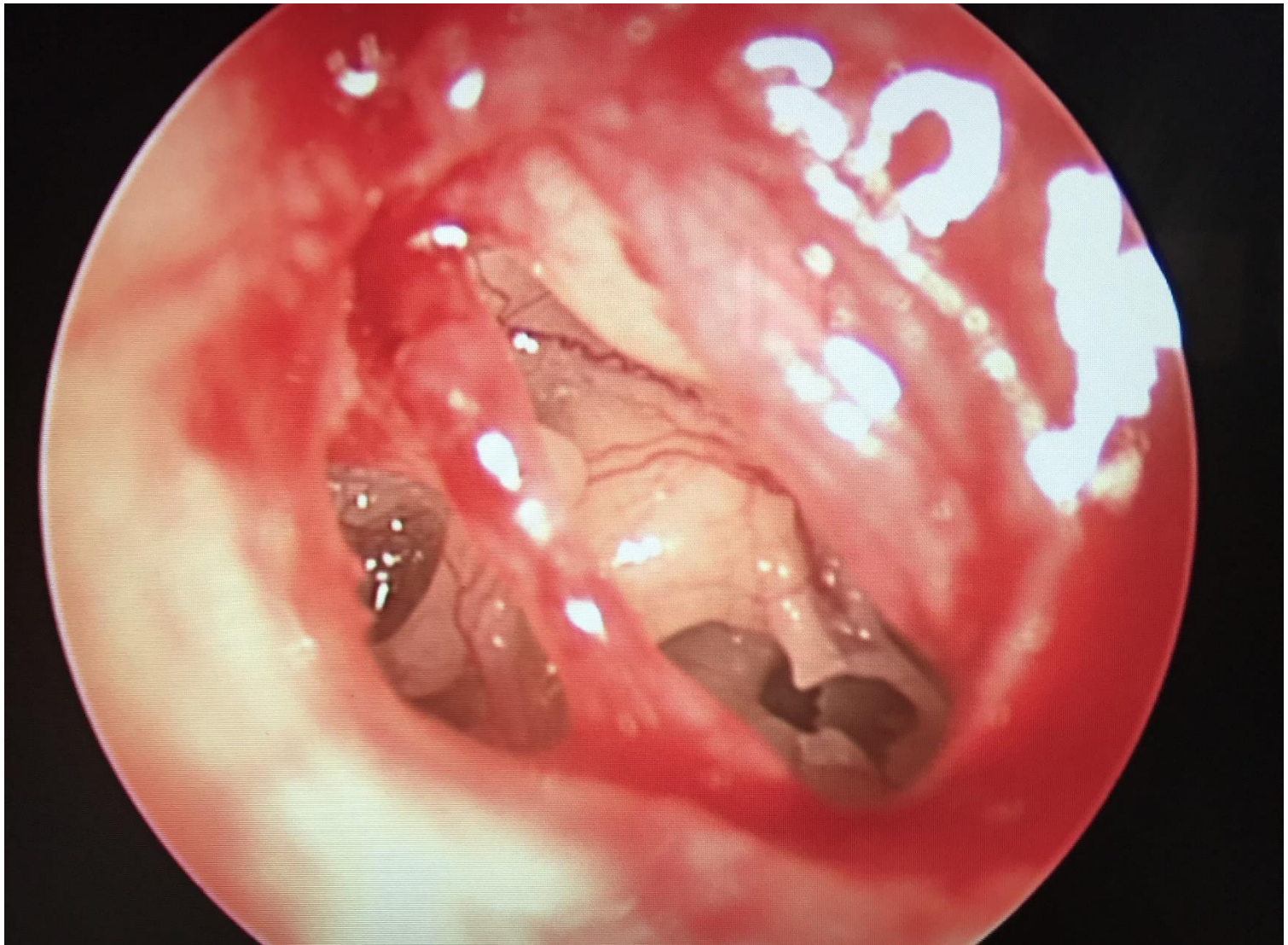
(3) The flap was elevated with a round knife and the tympanic annulus was entirely dissected before opening the middle ear cavity.



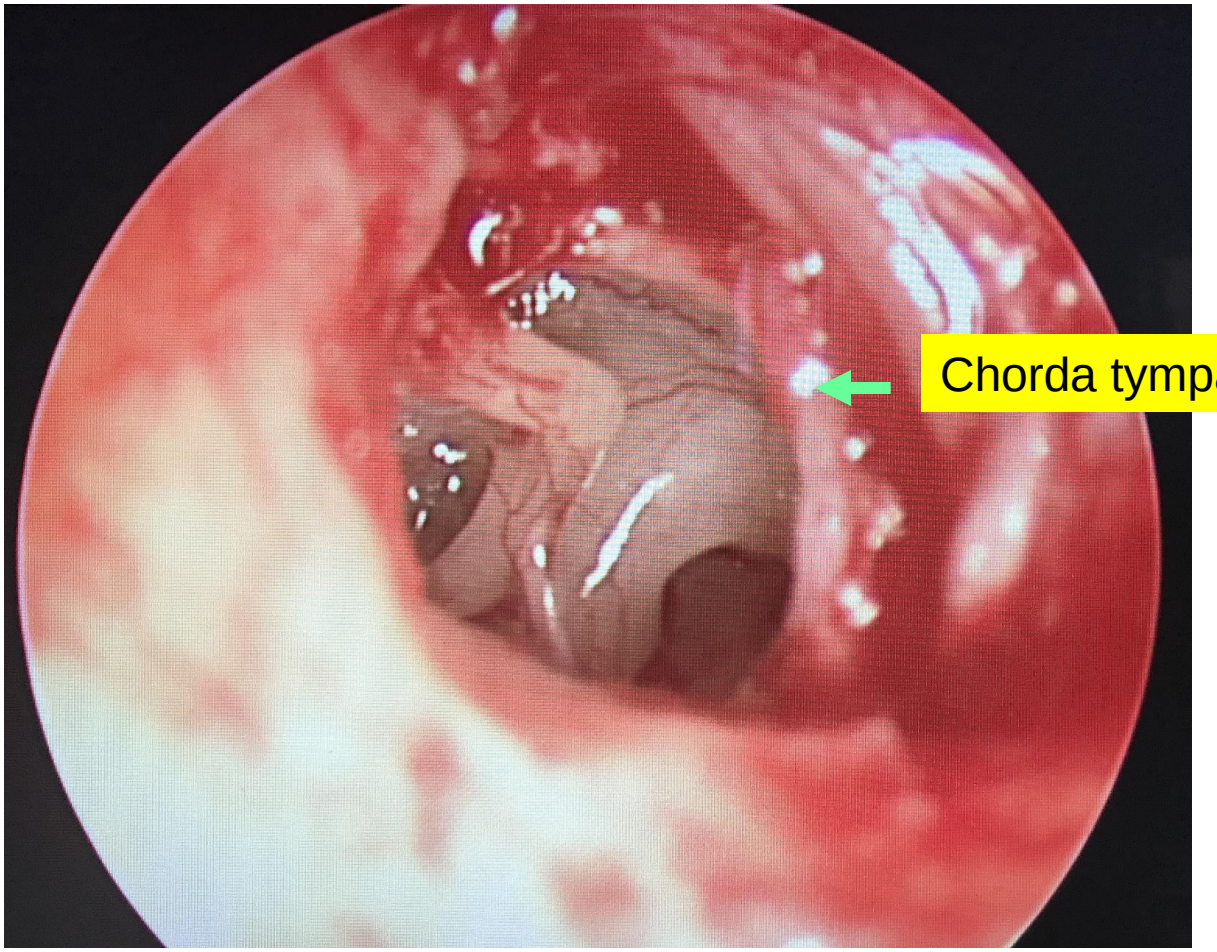
Tympanomeatal flap.



Minimal curettage of posterosuperior external auditory canal



Chorda tympani nerve is freed and displaced upward

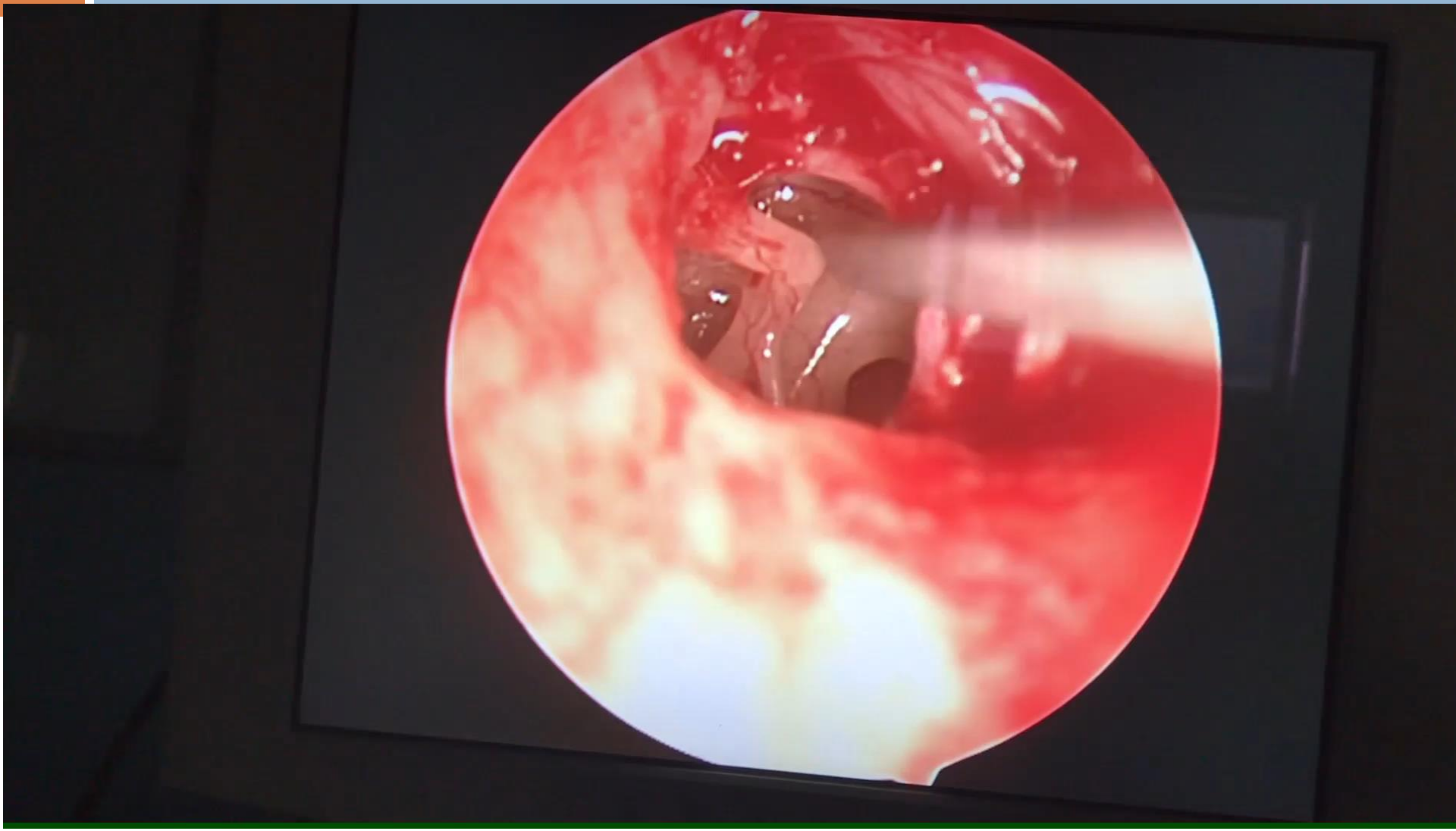


OSSICULAR CHAIN mobility TEST

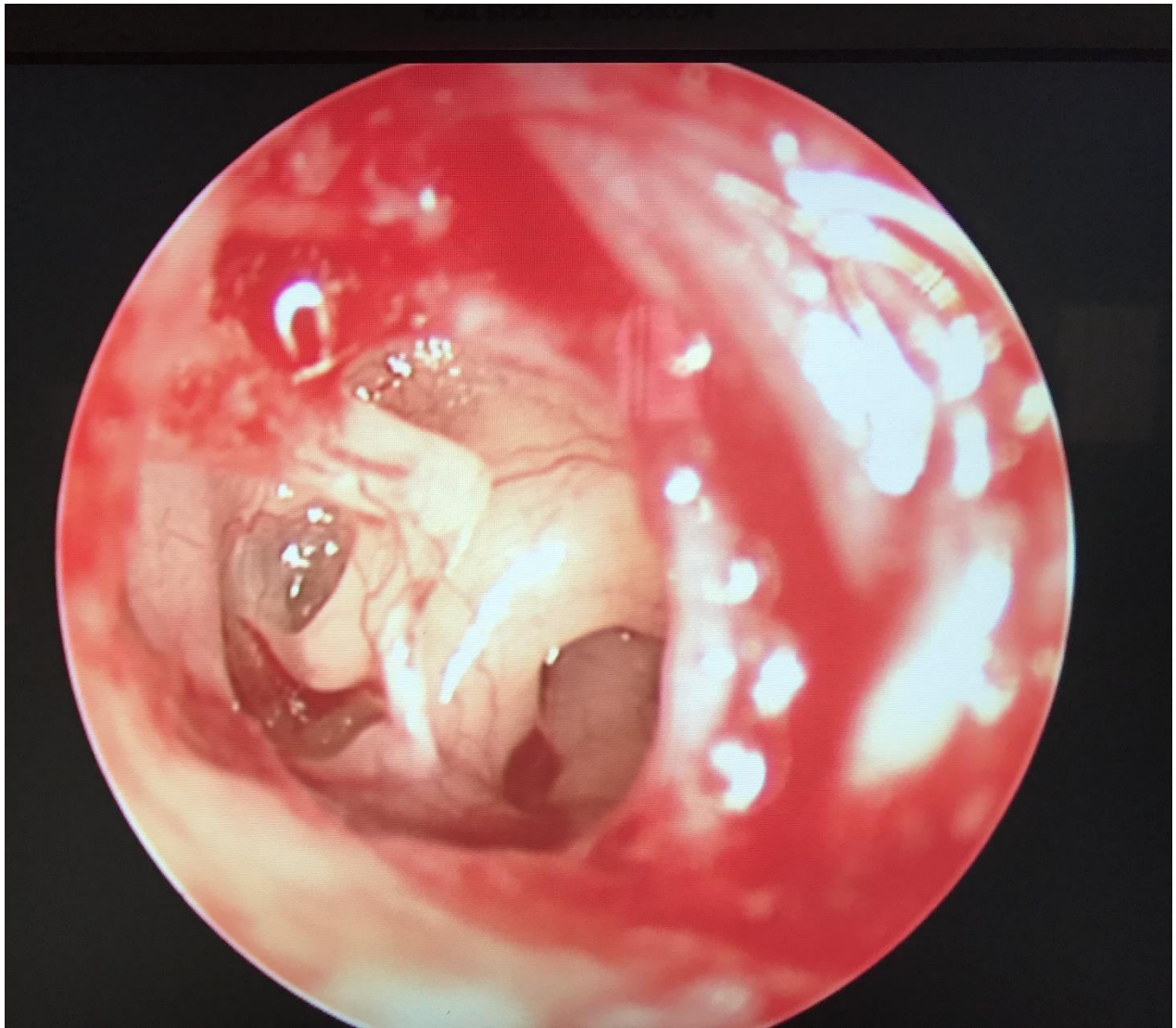
- After raising the flap, the middle ear structures were visualized with 0° rigid endoscope.

- Ossicular chain fixation was checked by palpating the malleus

Ossicular chain mobility test (video)

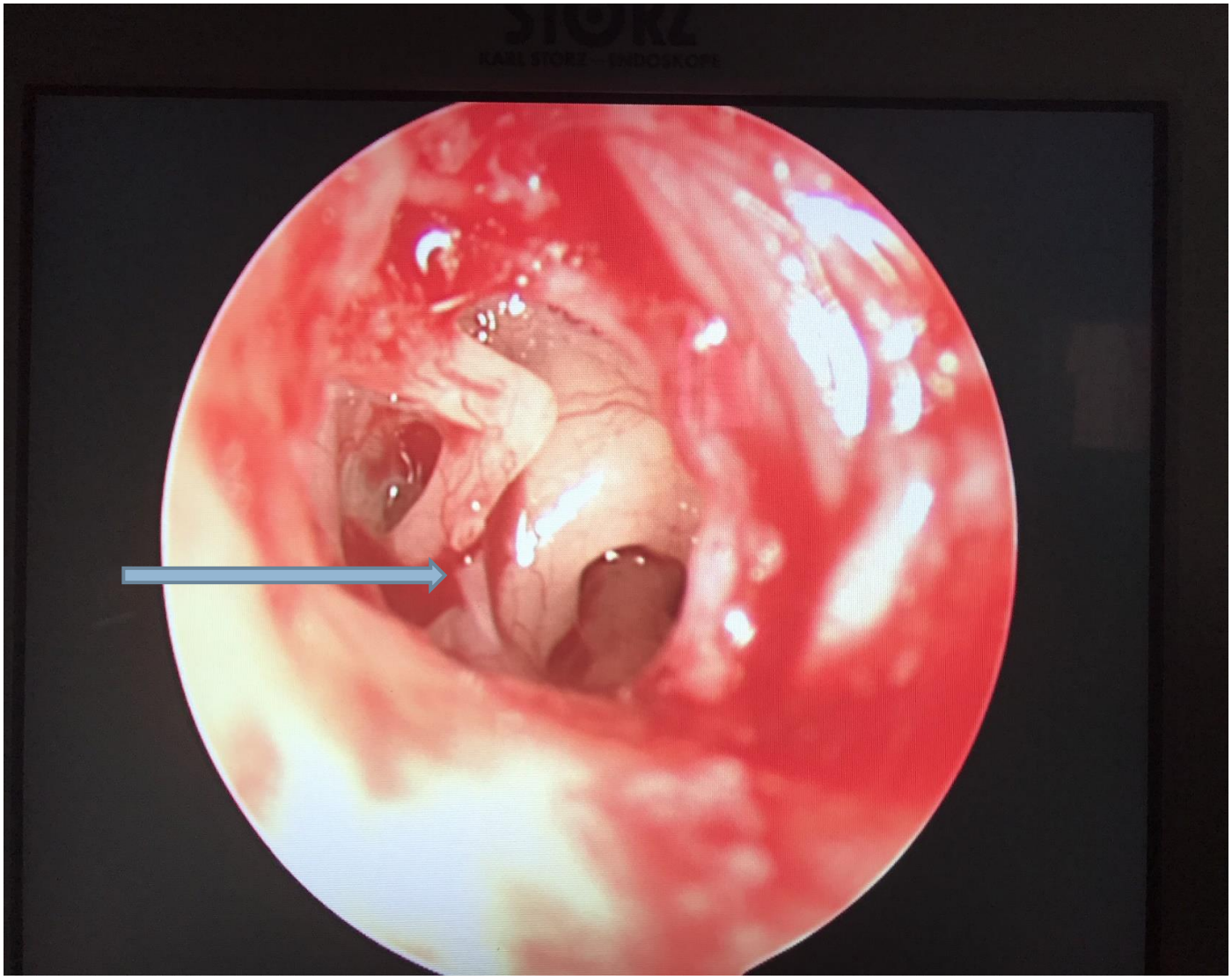


Stapes Foot plate

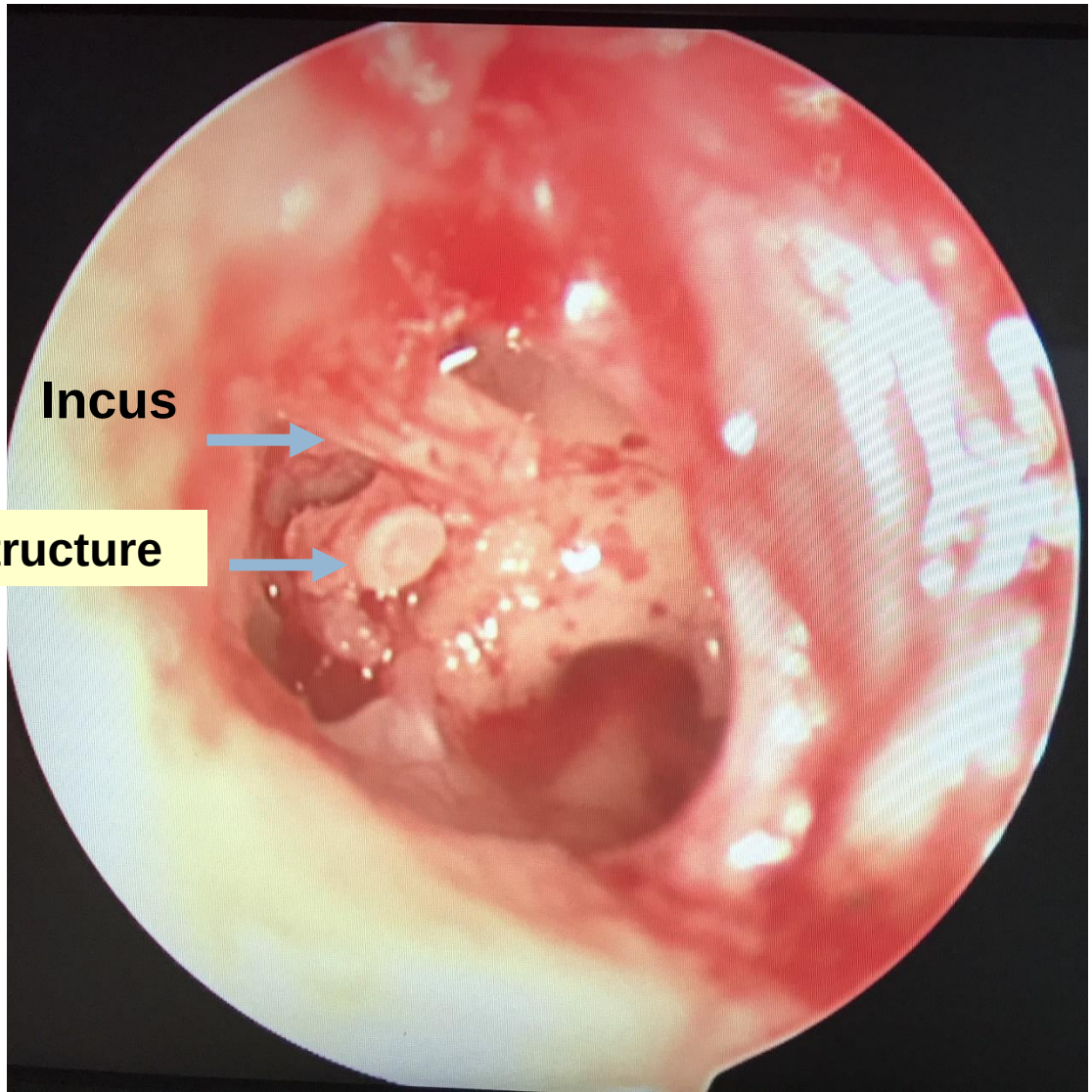


Stapedial tendon was cut

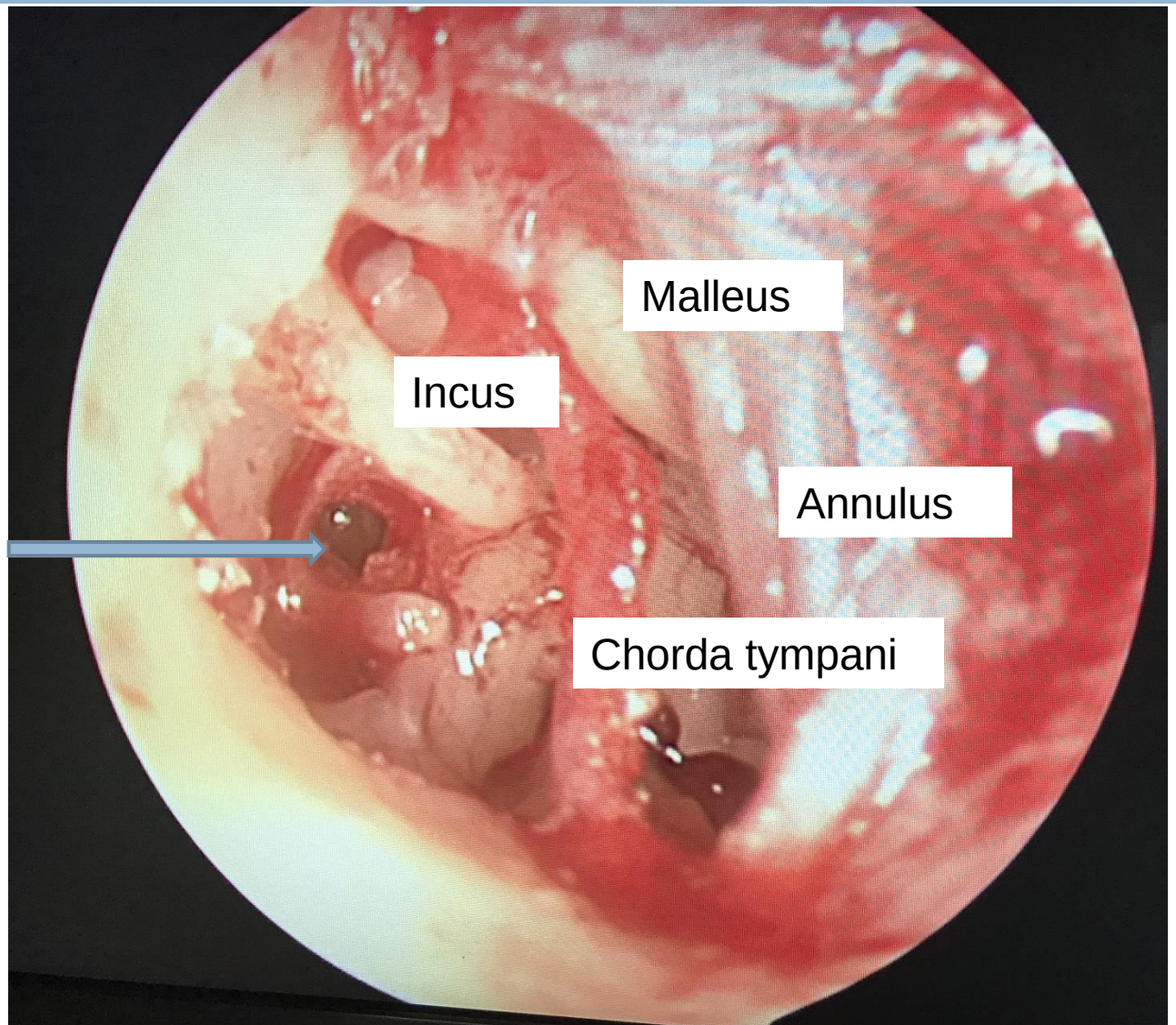
Stapedial tendon



The stapes Suprastructure was carefully out fractured

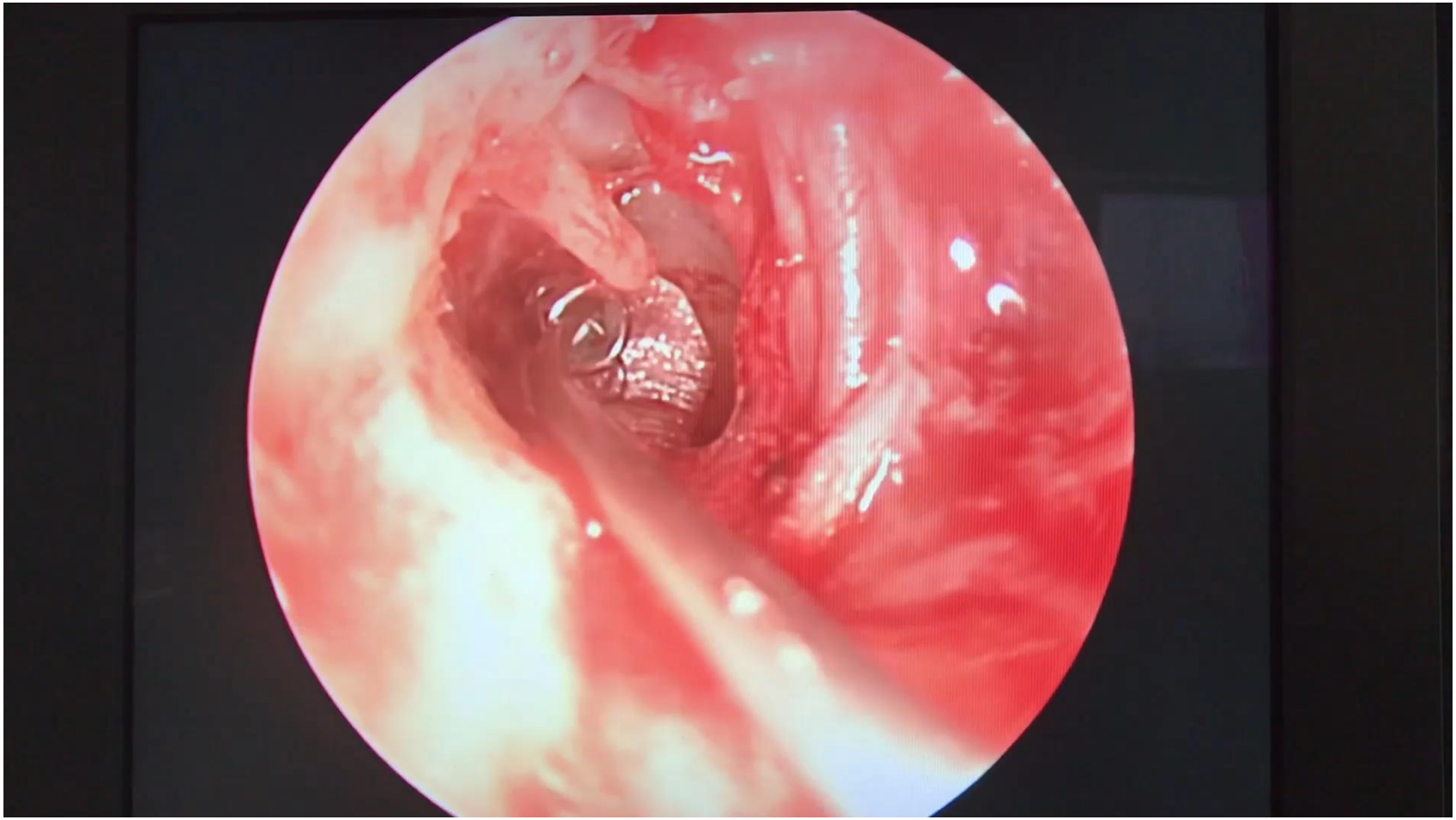


Stapedotomy: a powered low speed microdrill was used to create the stapedotomy to fit the prosthesis

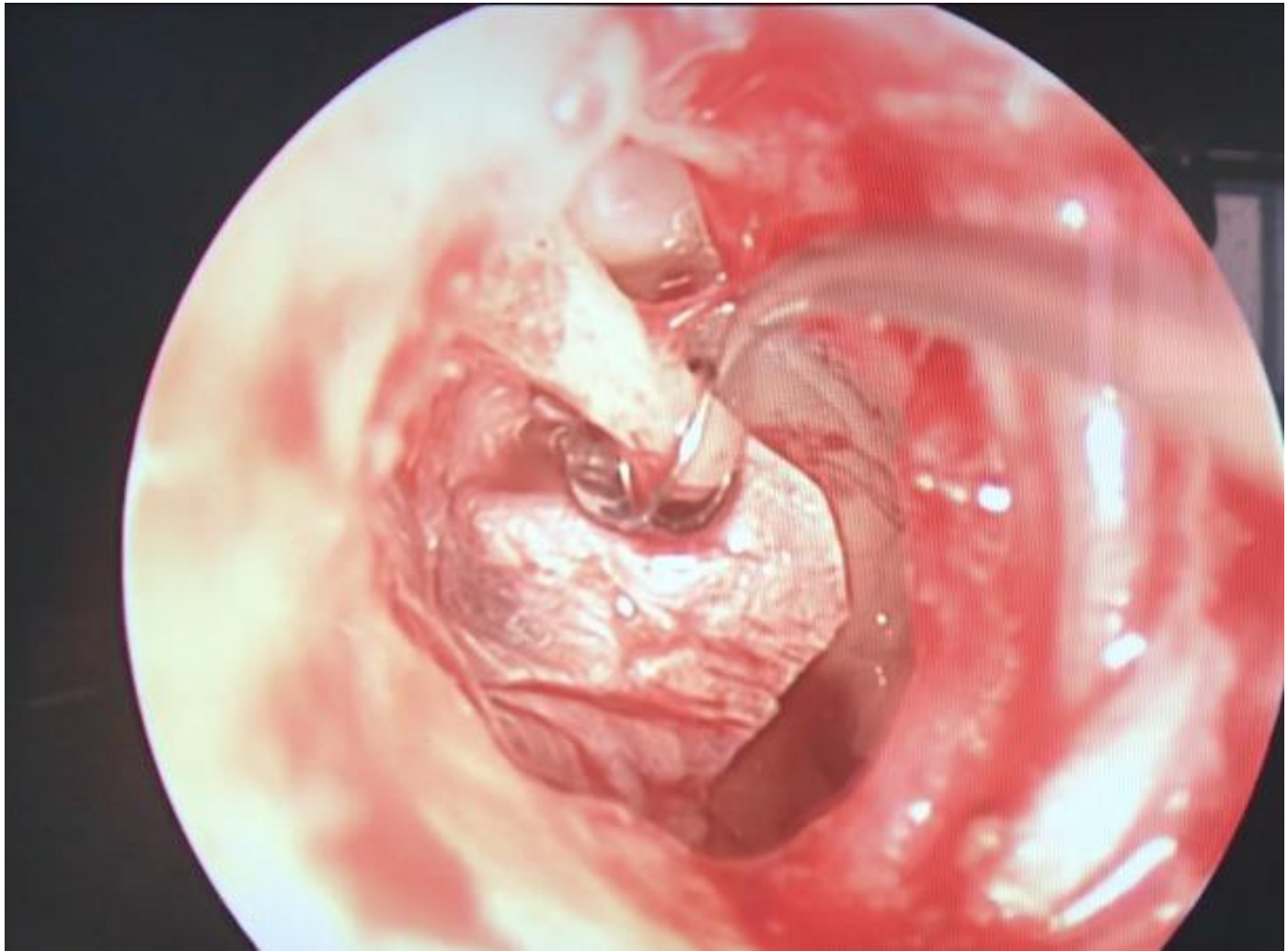


A hole of stapes Footplate

Prosthesis was introduced into the fenestrated footplate (video)



Prosthesis was on the temporal fascia



Remarks

- After opening the footplate, We avoided frequent suctions, to avoid postoperative complications such as vertigo and cochlear damage.

- The malleus was palpated to ensure that the entire ossicular chain moves all the way to the prosthesis.

- The tympanomeatal flap was repositioned and Gelfoam dressing was placed in the external ear canal

RESULTS

32 ears (30 patients)

Females : 29 . Males : 3

Age : 28-57

R ears : 17 , L ears : 15

ABG pre op: 30 ± 5.26 dB

ABG post- op : 10 ± 2.56 dB

The range of the operative time was 60-120 min with a mean of 90 ± 18.35 min

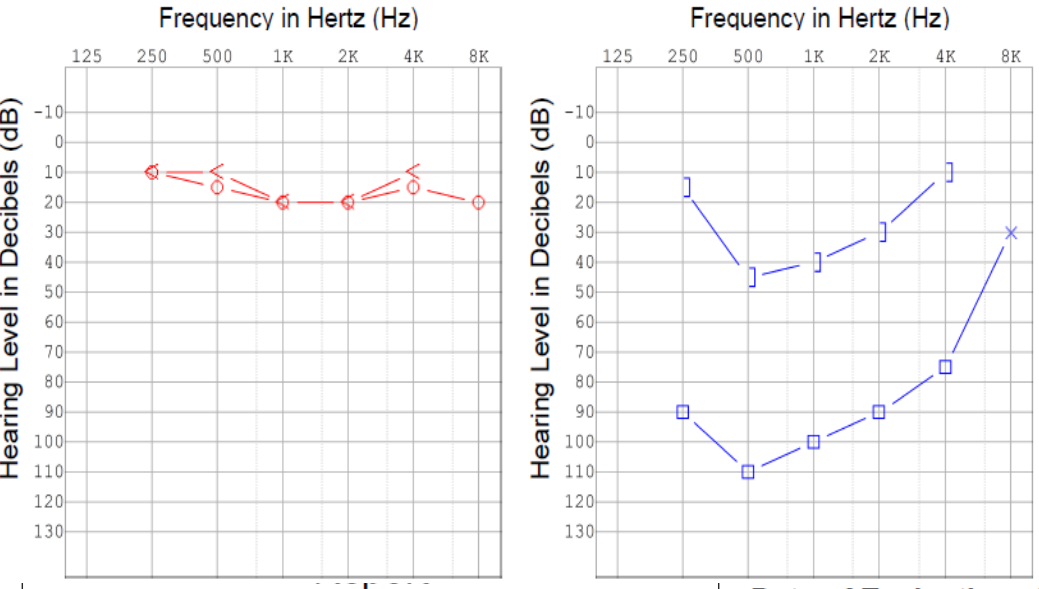
Sinus endoscope or oto endoscope ?

- We preferred the use of sinus rigid endoscope 4 mm width as it is available in most hospitals
- This scope provides wide field images and better instrument handling
- In case of narrow ear canal, we used rigid otoendoscope of 14 cm length and 3 mm width.
- It provided excellent manipulation within the EAC and perfectly focused images

Report

Birthdate: 2/16/1984

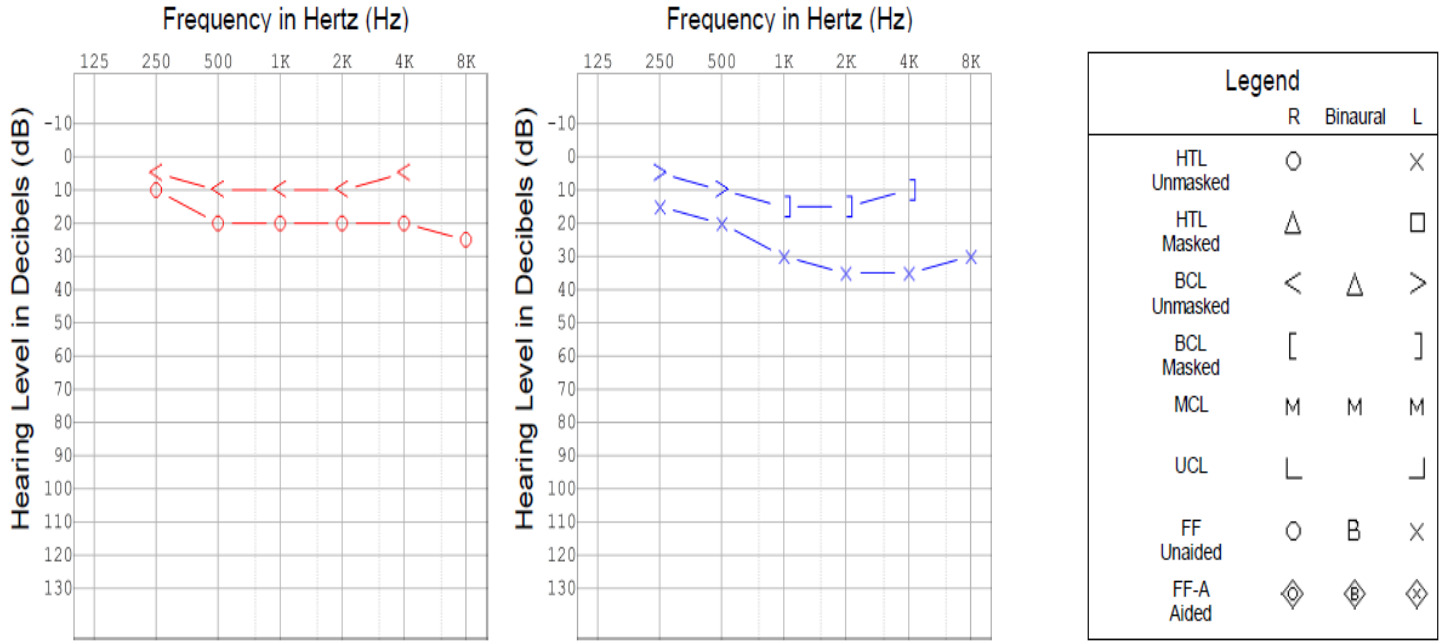
Date of Evaluation: 12/15/2016



Pre- op

Date of Evaluation: 11/23/2017

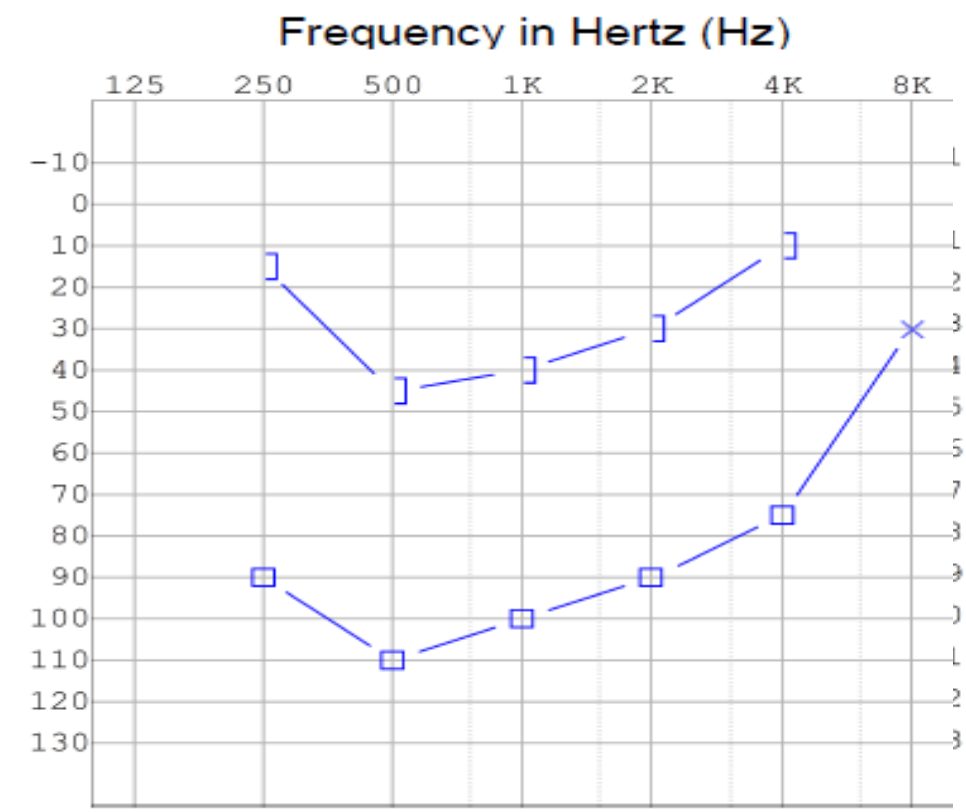
RESULTS



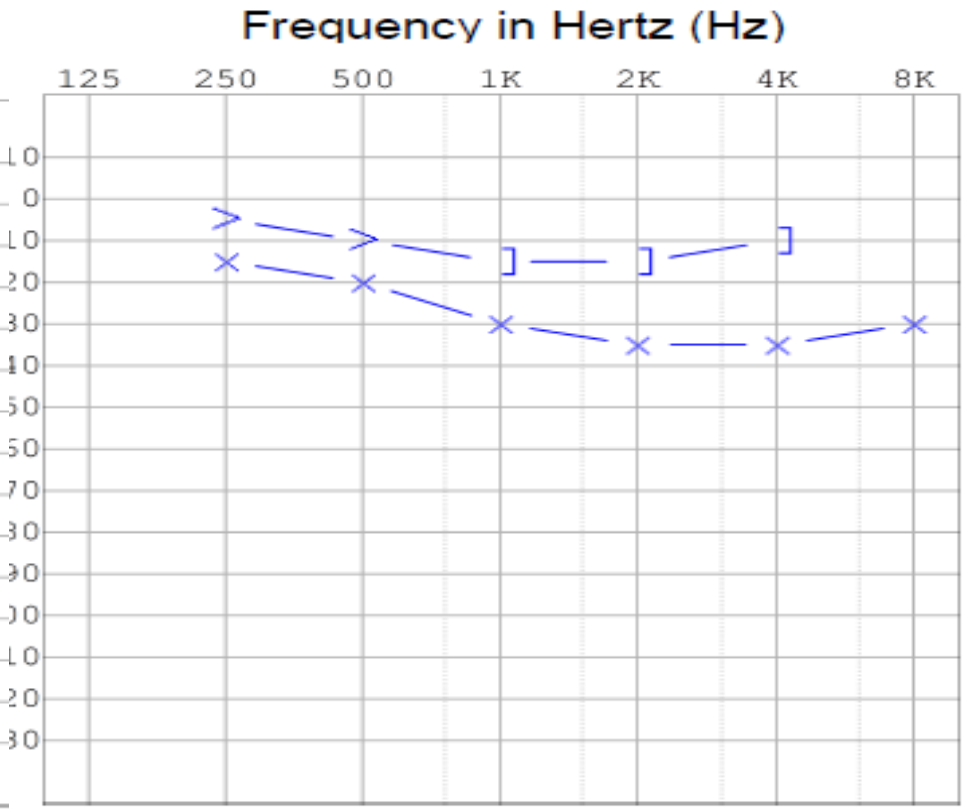
Post -op

RESULTS

Client Name: Mai
Client #: 0002011
Birthdate: 2/16/19
Date of Evaluation



Client Name: Mai T
Client #: 0002011
Birthdate: 2/16/198
Date of Evaluation

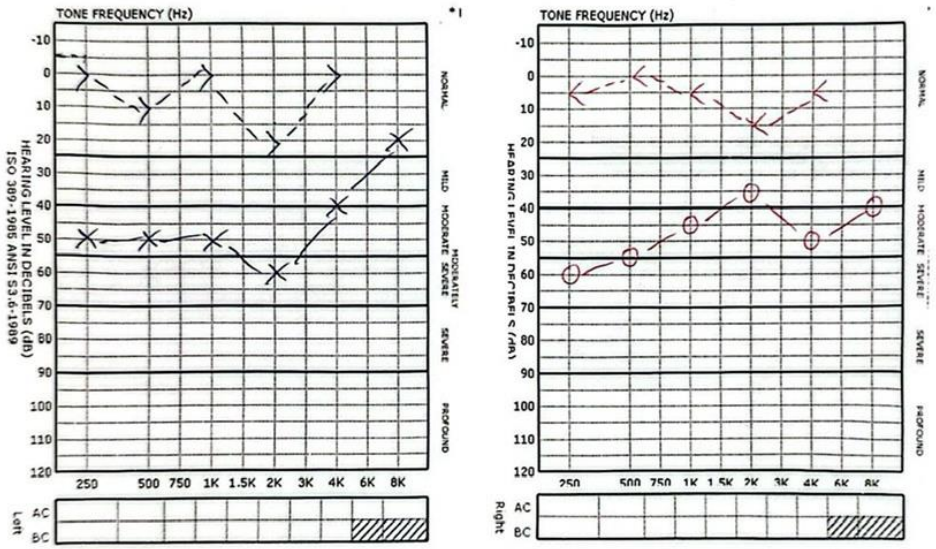


BỆNH VIỆN NGUYỄN TRI PHƯƠNG
TÂM TRUNG THÍNH HỌC – CẤY ÓC TAI (LẦU 1)
468 Nguyễn Trãi, P.8, Q.5, Tp.HCM

THÍNH LỰC ĐỒ

Pre -op

- Họ và tên/Name : ..lư.....Tuổi/Age:.140
- Ngày đo/date:.....
- Ghi chú/Notes: .....



Ký hiệu/Audiometric symbols:
Tai phải/Right ear:
Air-HTL: O Air-Mask: Δ
Bone-HTL: < Bone-Mask: [Other: Ok

Tai trái/Left ear:
Air-HTL: X Air-Mask: □
Bone-HTL: > Bone-Mask:] Other: Ok

Kết luận/*Comment*:.....

BỆNH VIỆN NGUYỄN TRI PHƯƠNG
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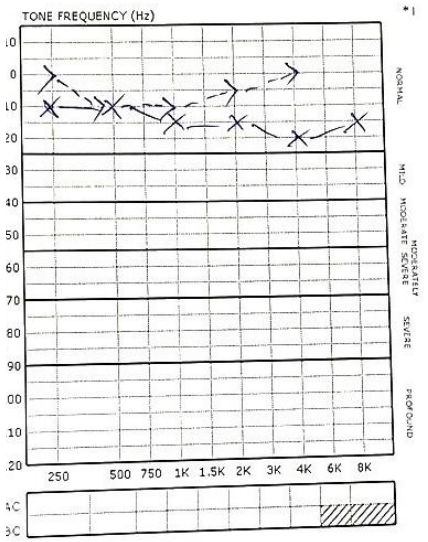
468 Nguyễn Trãi, P.8, Q.5, Tp.HCM

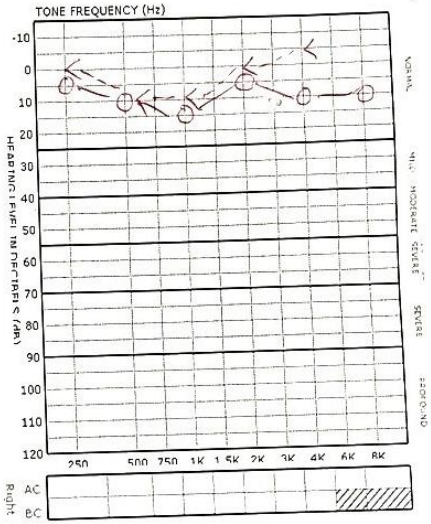
THÍNH LƯC ĐỒ

Post -op

- Họ và tên/Name
- Ngày đo/date:..
- Ghi chú/Notes: ....

....Tuổi/Age:1984





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Bone-HTL: > Bone-Mask:] Other: OL

ADVANTAGES & DISADVANTAGES

- Advantages of using endoscope include the following: excellent exposure, visualization of the entire middle ear cavity with ease, and excellent images.

- All steps of stapedectomy/ stapedotomy could be performed using endoscope.

- However, the main disadvantage is that it is a single-handed surgery with the nondominant hand holding the endoscope

COMPLICATIONS

No postoperative complications such as:

- facial paralysis,
- severe tinnitus,
- sensorineural hearing loss,
- persistent vertigo

CONCLUSIONS

- Transcanal totally endoscopic stapes surgery is a feasible and safe technique for the surgical management of CHL associated with otosclerosis. -
- Endoscope provides:

clear images.

Short time in the hospital .

Good restauration hearing

Otorhinolaryngologists should try to work and learn to handle both types of instruments, endoscopes and microscopes


THANK YOU