



Figure 1 :Ability to look around corners .



Figure 2: The whole operating team can follow the surgery over the screen .¹²



Figure 3 : Less invasive surgery

References

- 1-Yung MM. The use of rigid endoscopes in cholesteatoma surgery. J Laryngol Otol. 1994; 108(4):307-9. Doi: 10.1017/S0022215100126611.
- 2-Presutti L, Marchioni D, Mattioli F, Villari D, Alicandri-Ciuffelli M. Endoscopic management of acquired cholesteatoma: our experience. J Otolaryngol Head Neck Surg 2008; 37: 481-487
- 3-Preyer S. Endoscopic ear surgery– a complementary microscopic ear surgery. HNO. 2017 Jan; 65(Suppl 1):29-34. Doi: 10.1007/s00106-016-0268-x.
- 4-Tarabichi M and Kapadia M. Principles of endoscopic ear surgery. Curr Opin Otolaryngol Head Neck Surg. 2016 Oct; 24(5):382-7. Doi: 10.1097/MOO.0000000000000296.
- 5-Mubarak M. Khan and Sapna R. Endoscopic Cartilage Tympanoplasty: A Two-Handed Technique Using an Endoscope Holder. The Laryngoscope V C 2015 the American Laryngological, Rhinological and Otolological Society, Inc.
- 6-Badr-El-Dine MI, James AL, Panetti G, Marchioni D, Presutti L and Nogueira JF. Instrumentation and technologies in endoscopic ear surgery. Otolaryngol Clin North Am. 2013 Apr; 46(2):211-25. Doi: 10.1016/j.ote.2012.10.005.
- 7-Pothier D. Endoscopic Ear Surgery, Principles, Indications, and Techniques. Thieme publications, 2015, pages1-4.
- 8-Mitcheli S and Coulson C. Endoscopic ear surgery: a hot topic? The Journal of Laryngology & Otolology, 1 of 6. 2017 doi: 10.1017/S0022215116009828.
- 9-Tarabichi M. Endoscopic Ear Surgery. Ann Otol Rhinol Laryngol 108:1999.
- 10-Tarabichi M. Endoscopic transcanal middle ear surgery. Indian J Otolaryngol Head Neck Surg. 2010 Jan; 62(1):6-24. Doi: 10.1007/s12070-010-0007-7. Epub 2010 Jun 19.
- 11-Raj A, Meher R (2001) Endoscopic transcanal myringoplasty—a study. Indian J Otolaryngol Head Neck Surg 53(1):47-49.
- 12http://www.scielo.br/scielo.php?pid=S180886942011000600008&script=sci_arttext&tlng=en
- 13-http://www.gracemedical.com/products/endoscopic-instruments/endoscopic-instruments/

Handicaps of Endoscopic Ear Surgery; do they require a special surgeon to deal with?

Osama Metwaly “M.D”

Department Of Otorhinolaryngology, Faculty Of Medicine, Cairo University, Egypt .

Background

The beginning of endoscopic ear surgeries is recorded to be about forty years ago; however, it is only recently that interest for this technique has risen.¹ It provides a wide panoramic view with easy observation of areas around the “corners” in the middle ear cavity; so decreasing residual disease and recurrence rates , Fig.1.² Endoscopic visualization has improved significantly due to high-definition (HD) video making the quality of images superior to microscopic visualization.³ Training of young surgeons is easier because trainer and trainee have the same view of the surgical field, Fig. 2, as everybody can follow all surgical steps on the screen “through the surgeon’s eyes” .³Endoscopic techniques are less invasive and avoids the necessity to make postauricular or endaural incisions ,Fig. 3 .⁴

Handicaps of Endoscopic Ear Surgery

- Single Handed Technique** : this can overcome by using **1-Endoscope holders** created by Prof. Mubarak Khan ,⁵ fig. 4 , however , these are not yet in common use. **2-The modification of ear surgery instruments** to include an aspirator holes providing ability to perform dissection and aspiration maneuvers at the same time.⁶
- Careful control of hemorrhage**: this can be overcome by: A-Cottonoid packs soaked in epinephrine B-Saline irrigation to wash away hemorrhage and provide a clean visual field C-Injection of a local vasoconstrictor as 1/200,000 epinephrine in the subcutaneous layer of the external auditory.⁷
- Excessive heat production**: Studies recommend continuous exposure of the endoscope to the middle ear, in the absence of any cooling mechanism, should be limited. Regular getting out the endoscopes, or regular application of suction or irrigation should be .⁸
- The cost of required specialized endoscopic equipment** : advanced endoscopic ear surgeries require certain curved dissectors and forceps need to be adapted so as to take advantage of the endoscope’s ability to “see around corners” fig. 5 .⁶
- Accidental patient movement during endoscopic surgery**: which may result in secondary direct trauma by the tip of the endoscope to the middle ear structure .⁹
- The size limitations of the ear canal** :stitch can be taken in the tragus and another one in the concha to straighten the opening of the external auditory meatus “**Tarabichi’s Stitch**”,Fg.6 .
- Choosing the size of operating endoscope**: the industry have introduced a 3 mm endoscope that carries a very similar field of view to the 4 mm endoscope and that can be introduced much more into the tympanic cavity.¹⁰
- Fogging of the Endoscope**: The use of a high quality antifog solution is important once the surgery is under way .⁷
- Loss of depth perception and binocular vision**. However with experience the surgeon usually interact with the tactile and visual information he received during surgery to reconstruct a 3-dimensional view of the operative site .¹¹
- Difficulties with specific ear surgeries**: As in positioning of a prosthesis and in drilling the footplate of stapes during stapedotomy; however those difficulties are negligible in experienced well trained hands .⁹

Conclusion

There is a noticeable continuous challenging learning curve for Endoscopic Ear Surgery ; as there is a loss of binocular vision, the endoscopic ear surgery is proceed at a very narrow space, a dry surgical field is required, but it is difficult to provide suction while continuing dissection. Practically speaking all of the above discussed issues are neglectable problems with experienced trained hands .

So make your choice!!



Figure 4 : Khan's endoscope holder (EndoHold®)



Figure 5 : Modified curved instruments.¹³



Figure 6 : Tarabichi's Stitich

For more information, please contact Osama Metwaly “M.D.” Kasr Alainy School of Medicine , Cairo University.

Osama.Metwaly@kasralainy.edu.eg

+201007991127

