

Endoscopes in Otology

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The use of binocular microscopes in ear surgery is prevalent since 1950's. This gives good magnification and illumination of the operative field. But, in minimally invasive transcanal approach, it becomes difficult to operate with the microscope.

The endoscopes use in middle ear surgery has given a new perspective to treatment of chronic otitis media. It increases surgeon's understanding of the disorder and its extension through the temporal bone and provides a wide field of view of the middle ear, compared to the microscope, as it brings the surgeons eye to the tip of the scope.

With endoscope the surgeon also gets a sharp and magnified vision that enables to change rapidly from a close-up to a wide angle view, just by going closer or by withdrawing the instrument. Further, it provides an all-round vision to the surgeon, who can rotate angled endoscopes to visualize the deep and hidden structures like anterior attic, anterior mesotympanum, facial recess, sinus tympani and hypotympanum, without moving patient's head or doing canalplasty, as was done with microscopes, due to single axis. Endoscopes are being used in transcanal Tympanoplasty, ventilation tube insertion and Stapedotomy, with good cosmetic outcome, shorter operative and recovery time. The avoidance of postoperative incision also decreases risk of wound infection, gaping, protruding pinna, retroauricular scar and keloid formation.

Using endoscopes in mastoid surgery for cholesteatoma is known to reduce risk of residual disease and recurrence. Endoscopes have a role in inspection of postoperative mastoid cavities through a small postauricular incision.

The limitations with endoscopes are, it may cause heat injury due to excessive heat dissipation and tip requires repeated clean-

ing with antifog solution. These can be avoided by using smaller 3mm endoscope with sub-maximal light intensity (< 60%), frequent removing-repositioning and irrigation of the surgical field. One safety concern is sudden movement of patient when being operated in local anesthesia. This may cause damage to ear structures by the tip of the endoscope. Also, being hand held, it leaves only one hand for surgical maneuvers, which becomes more challenging with blood ooze in surgical field. There is also, loss of depth perception, which can be easily overcome with practice. When working in narrow area, the instrument may strike tip of endoscope and cause irreparable damage.

Despite these limitations, the use of endoscope for middle ear surgery is advocated due to its minimally invasive functional reconstruction. Also, unlike the bulky microscope, the endoscope is easy to carry for camp surgeries in remote areas and same scope can be used for nasal surgeries with no added cost for equipment.

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