Telescopic Examination of the mastoid Cavity

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Abstract

Otoendoscopy enables viewing of different angles of the tympanomastoid area and approach to them for better prognosis. A comparative study of post-operative mastoid cavities has been done using the Hopkin's rod telescope , Otoscope and microscope. Various procedures have also been done successfully on the mastoid cavity using the telescope on an outdoor basis.

Although mastoidectomy operations have been done for over 200 years now, post-operative mastiod cavities still present much problem to both the patient and the surgeon. Smith M. F. N. (1981) stated that 'deafness, discharge, dizziness, and dependancy partially define the discomforts of patients with an open draining mastiod cavity' basing his report on an out-patient and surgical managemnt of more than 300 than open draining mastiod cavities.

After radical and modified radical mastoidectomy , the cavity must be followed to detect any recurrent or residual disease, infections etc. Modern optical technology has made available fibreoptic rigid telescopes. Exploration of the middle ear can now be accomplished by the use of endoscopic techniques. Endoscopes with small diamaters and wide fields of view provide extraordinary visualization of the middle ear which was previously accessible only by surgical means.

The use of endoscopes for the middle ear was first described by Mer et al. (1967) who used a fibreoptic system delivered through existing tympanic membrane perforations in two patients. Eichner (1978) popularized rigid endoscopes for improved resolution.

Endoscopy of the middle ear has been previously used as an adjunct to microscopic examination in the office (Baltany, 1990). RF. Ahmad (1994) has described the successful use of 30 fibreoptic Hopkins rod telescope for the post-operative follow-up of the mastiod cavity with gratifying results.

Material and Methods

The present study was undertaken in the Dept. of E. N. T. S. M. S. Hospital, Jaipur on 25 cases of operated mastoidectomy. A detailed history and clinical examination of the patients were carried out.

The mastoid cavity was inspected for the presence of cholesteatoma, desquamated debris, granulations, recurrent and residual disease. These were removed from the cavity under endoscopic control. Exuberant granulations were cauterized with silver nitrate. In cases of delayed epithelialization, the growth of epithelium was stimulated by the application of gentian violet. Foreign bodies were removed from the cavity under telescopic control. High buttresses and facial ridge were curetted under guidance of the telescope.

Results

25 post-mastoidectomy patients constituted the case material of this study. Age of the patients ranged from 5-45 years. (Table 1), 14 (56%)

were males while 11 (44%) were females. 21 patients (84%) showed unilaterial disease. All patients complained of ear discharge. Hearing loss was the second commonest symptom seen in 92% cases followed by headache (36%) and dizziness (28%). It was seen that patients sought medical attention late. 8 cases each (32%) came for treatment after 1-5 years and 5-10 years of the onest of symptoms. 28% cases had a history of more than 10 years. Only 8% cases came within 1 year of the onest.

Table - I
Showing Age Group

S. No.	Age group (Years)	No. of patients	Percentage
1.	0-10	2	8%
2.	11-20	13	52%
3.	21-30	7	28%
4.	31-40	2	8%
5.	41-50	1	4%

Table - II
Comparative study of Structures Seen on Otoscopic, Microscopic and Telescopic Examination

S.N.	Structure	Otoscopic	%	Microscopic	%	Telescopic	%
1.	Meatus	25	100%	25	100%	25	100%
2.	Sinus plate	25	100%	25	100%	25	100%
3.	Dural plate	24	96%	25	100%	25	100%
4.	Sinodural angle	20	80%	22	88%	25	100%
5.	Semicircular canal	20	80%	25	100%	25	100%
6.	Facial canal	18	72%	24	96%	24	96%
7.	Tip cells	12	48%	15	60%	25	100%
8.	Sinus tympani	-	-	10	40%	25	100%
9.	Facial recess	-	-	11	44%	25	100%
10.	Ossicles (in 15 cases without graft	3	20%	12	80%	15	100%
11.	Epithelialization	12	48%	20	80%	25	100%
12.	Eustachian tube opening	8	32%	12	48%	16	64%
13.	Graft margins (out of 10 cases)	6	60% (out of 10 cases)	8	80%	10	100%

Table - III
Procedures Performed Under Telescopic Control

S. No.	Procedure	No. of patients	Percentage
1.	Removal of epithelial debris	7	28%
2.	Removal of otomycotic flackes	2	8%
3.	Removal of residual cholesteatoma	4	16%
4.	Polypectomy	1	4%
5.	Removal of granulations	8	32%
6.	Removal of foreign bodies	2	8%
7.	Promotion of epithelialization by application oif gentian violet	5	20%
8.	Lowering of high facial ridge	1	4%
9.	Removal of necrosed metal flap	1	4%

Table - IV
Follow up of Patients Under Study

Weeks	No. of dry ears	Percentage	No. of wet ears	Percentage
1st	10	40%	15	60%
2nd	14	56%	11	44%
4th	20	80%	5	20%
8th	24	96%	1	4%

The most common presentation was a posterosuperior marginal perforation seen in 9 cases (36%). In 7 cases (28%), the perforation could not be visualized due to the presence of a polyp. 20% cases showed an attic perforation.Modified radical mastoidec-tomy was done in 23 cases. In 2 cases, it was associated with facial nerve decompression.

A comparative study of the examination of the mastoid cavity by otoscope, microscope and telescope is presented in Table II. Procedures performed under telescopic control are listed in Table III. table IV shows the follow-up results of the patients under study. Among the 25 patients, only one patient had a wet ar at the end of 2 months.

Dicussion

In dealing with post-operative mastiod cavity problems, we have used Hopkin's rigid telescopes with viewing angles of 0^{o}, 30^{0} and 70^{0}. Although these telescopes were intially meant for the examination of the paranasal sinuses, larynx and nasopharynx, we have tried to use this in the examination of the mastiod cavity.

We compared the examination of the middle ear structures under Otoscopic, microscopic and telescopic control. We saw that the meatus, sinus plate and dural plate could be evaluated well by all three methods. Evaluation of the facial canal and semicircular canal was similar

by microscope and telesscope although otoscopic evaluation is inferior to them. Visualization of the sinodural angle, tip cells, sinus tympani, facial recess and ossicles was far superior by the rod telescope. The degree of epithelialization and condition of the graft margins could be accurately assesed by the telescope.

The sinodural angle and tip cells evaluated with 70^0 telescope. sinus tympani, facial recess and eustachian tube opening were visualized with 30^0 telescope. Rest all structures were seen with an end on telescope (0^0).

We have performed various procedures under telescopic control which include-

1. Removal of granulations by crocodile forceps and suction.
2. Removal of epithelial debris.
3. Removal of otomycotic flakes.
4. Removal of residual cholesteatoma.
5. Removal of foreign bodies (cotton ball in one case and gauze threads in another).
6. Polypectomy-in one case where a polyp presented at the sinodural angle.
7. Lowering of high facial ridge using curette in one case (local anaesthesia had to be used here).
8. Removal of necrosed meatal flap in one case.
9. Promotion of epithelialization by application of gentian violet to the cavity in case of delayed onest of epithelization (after one month post-operative)

The only disadvantage that we faced with the telescope was that only one hand was left free to do the manoeuvring of instruments.

In follow-up cases, we observed that removal of granulations, residual cholesteatoma and polypi under telescopic control with promotion of epithelialization has helped us in attaining a high percentage of dry cavities.

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