Egyptian Journal of Ear, Nose, Throat and Allied Sciences (2016) 17, 1–6

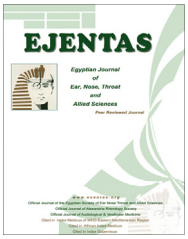
HOSTED BY

ELSEVIER

Egyptian Society of Ear, Nose, Throat and Allied Sciences

Egyptian Journal of Ear, Nose, Throat and Allied Sciences

www.ejentas.com



ORIGINAL ARTICLE

Acquired cholesteatoma in children: Clinical features and surgical results

Olfa Ben Gamra, Wafa Abid, Ines Nacef *, Nadia Romdhane, Ines Hariga, Chiraz Mbarek

Department of Otorhinolaryngology, Head and Neck Surgery, Habib Thameur Hospital, Tunisia

Received 8 July 2015; accepted 27 September 2015

KEYWORDS

Cholesteatoma;
Children;
Middle ear surgery;
CWUT

Abstract Acquired cholesteatoma in children is an aggressive disease due to its rapid growth and high recurrence rate.

Objective: To assess clinical features of cholesteatoma in children and evaluate our experience in the surgical management of this disease.

Methods: Fourty children aged 5–16 years operated on for acquired middle ear cholesteatoma (2002–2011), were included in our study. Surgery was bilateral for 3 patients, which makes a total number of 43 operated ears. Functional and anatomical results were evaluated after a minimum follow-up of 3 years.

Results: Mean age at the first operation was 11.7 years. Canal wall-up tympanoplasty (CWUT) was performed as first-line procedure in 74% of cases. Canal wall-down tympanoplasty (CWDT) was performed in 26% of cases when cholesteatoma was hardly controllable with a CWUT. Cartilage graft was used in all cases for eardrum reinforcement. After a mean interval of 12.2 months, second look procedure aimed to verify a residual cholesteatoma in 8 cases and perform an ossiculoplasty in one case. Total cholesteatoma recurrence rate was 18% with CWUT and 9% with CWDT ($p = 0.4$). Predictive factors for recurrence were: children < 10 years ($p = 0.02$) and ossicular chain resorption ($p = 0.04$). Post-operative ABG $\leqslant 25$ dB was seen in 53% of CWUT against 18% of CWDT ($p = 0.04$).

Conclusion: CWUT is the optimal management technique offering better hearing results, however, prevention of recurrences are considered to be better with CWDT.

1. Introduction

Acquired cholesteatoma in children is an aggressive disease due to its rapid growth and high recurrence rate.[1,3] Surgical management aims to eradicate the disease process, prevent

* Corresponding author. Tel.: +216 52875691.
E-mail addresses: olfabengamra@yahoo.fr (O. Ben Gamra), abid.wafa@yahoo.fr (W. Abid), inesnacef@gmail.com (I. Nacef), romdhanenadia@ymail.com (N. Romdhane), ines.hriga@gmail.com (I. Hariga), chiraz.chaouch@rns.tn (C. Mbarek).

Peer review under responsibility of Egyptian Society of Ear, Nose, Throat and Allied Sciences.

http://dx.doi.org/10.1016/j.ejenta.2015.09.002

recurrences and preserve auditory function thus preventing learning difficulties.[9]

The choice of the adequate surgical technique, either canal wall down tympanoplasty (CWDT) or canal wall up tympanoplasty (CWUT) must be determined for each individual case according to the extent of the cholesteatoma.[2,3] CWUT technique has gained favor among most surgeons for treating cholesteatomas in the pediatric population. It is currently considered to be the reference procedure when it is technically feasible.[26]

1.1. Objective

To assess clinical features of cholesteatoma in children and evaluate our experience in the surgical management of this disease.

2. Methods

We present a retrospective descriptive study (January 2002–December 2011) reviewing a total of 40 children aged 5–16 years, operated on for acquired middle ear cholesteatoma in our ENT Department.

Preoperatively, all patients had temporal bone tomodensitometry and tonal audiometry. Selection of the applied surgical technique (CWUT or CWDT) was made according to pre- and intraoperative ascertainment. CWUT was indicated as a first-line procedure for patients with a large well pneumatized mastoid and a well-controlled disease. CWDT was performed, depending on anatomical conditions, when cholesteatoma was hardly fully controllable with a CWUT technique. A planned second look surgery was indicated after a mean interval of 12 months to rule out a residual cholesteatoma or perform an ossiculoplasty if needed. Patients were operated on by four different surgeons.

The results were evaluated in terms of hearing improvement and recurrence rate. Preoperative audiometry and the last available audiometry were analyzed with calculation of air conduction (AC), bone conduction (BC) thresholds and air-bone gap (ABG) by averaging thresholds at 500 Hz, 1 kHz and 2 kHz.

Statistical analysis was performed using SPSS-19. We conducted a descriptive study of quantitative and qualitative variables, as well as univariate Chi-square study of qualitative variables. Statistical significance was assigned to a p-value of 0.05.

3. Results

Middle ear surgery was bilateral for three patients which makes a total number of 43 operated ears. For all cases, primary surgery was done in our institution with a minimum follow-up period of 3 years.

Mean age at the first operation was 11.7 years ranging from 5 to 16 years with a male predominance (sex-ratio of 2.3). A history of serous otitis media was observed in 2 cases. Among the cases of bilateral cholesteatoma, two had a cleft palate. There was no history of eardrum trauma.

The main symptoms reported by our patients were chronic otorrhea (93%) and hearing loss (72%), evolving for a mean duration of 38 months (Fig. 1). Four children presented a complication revealing the disease: acute mastoiditis (2 cases), facial palsy (1 case) and dizziness due to a labyrinthine fistula (1 case).

Preoperative otoscopy revealed cholesteatoma in 69%, attic perforation in 51%, pars flaccida retraction in 25% and an attic polyp in 25% (Table 1).

Abnormalities in the contralateral ear were observed in 11 ears (25%): attic cholesteatoma (3 cases), attic retraction (4 cases), adhesive otitis (2 cases) and tympanic perforation (2 cases). Nasal endoscopy showed a non-obstructive septal deviation in 3 cases and adenoid vegetations in 7 patients.

Preoperative audiometry revealed a mean air conductive hearing loss of 40 dB in 32 cases. A mixed hearing loss was found in 5 cases, with a mean threshold of 50 dB and a mean ABG of 40 dB. Auditory function was normal in 6 patients.

On CT scan, cholesteatoma extended to the epitympanum and the antrum in most cases (79%) (Table 2). Ossicular chain was complete in 25% (n = 11) and eroded in 75% (n = 32). The incus was the ossicle most frequently lysed (84%), followed by the malleus (55%) and the stapes (32%). CT also revealed complications including a facial canal lysis in 2 cases, a labyrinthine fistula in one case and a protruding jugular bulb in another.

Intra operatively, sites involved by cholesteatoma are detailed in Table 3. Ossicular chain was disturbed in 38 cases (88%). The ossicle most commonly destroyed was the incus (86%), followed by the malleus (53%) and the stapes (46%).

Among our patients, 35 underwent a single operation, 4 were operated twice and one had a third operation. The mean interval between the first two procedures was 12.2 months.

CWUT is the preferred operative technique in our center, performed in 74% of cases (n = 32). It was indicated for patients with a large well pneumatized mastoid and a well-controlled disease. It was combined with a mastoidectomy in 24 cases (75%) and a posterior tympanotomy in 2 cases (6%).

CWDT was performed in 26% of cases. It was advocated to the following findings: lateral sinus protrusion (6 cases), meningeal protrusion (3 cases) and extension of cholesteatoma to the retrotympanum (5 cases). Considering these anatomical conditions, cholesteatoma was hardly controllable with a CWUT technique.

One child had a large mesotympanic cholesteatoma extending to the protympanum, responsible for a labyrinthine fistula of the lateral semicircular canal (Fig. 3). A CWDT helped to control the disease, remove the matrix completely and seal the fistula.

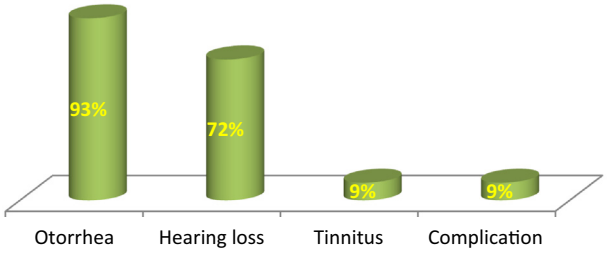


Figure 1 Main symptoms reported by patients.