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Learning Objectives: Safety and efficacy of mastoid obliteration with autologous bone.

Introduction: Canal wall down (CWD) mastoidectomy is credited to low cholesteatoma recidivism, however drainage and infection of the mastoid bowl is sometimes a complication of surgery. Obliteration with autologous bone of the mastoid cortex can avoid the disadvantages of the CWD approach by combining the benefits of a smaller cavity less prone to infections. The aim of the study was to compare anatomical and functional results of “non-obliterated CWD mastoidectomy” (NO) and “obliterated CWD mastoidectomy” (O).

Methods: Consecutive CWD mastoidectomy from 1994 to 2014 have been reevaluated to analyze incidence of post-operative synechiae and recurrent infections of the mastoid bowl, retraction pocket and perforation of the neotympanum, recurrence of cholesteatoma, and hearing threshold change (more than 10 dB in average 0.5–3 kHz).

Results: The study group included 317 adult patients (149 males and 168 females). Mastoid obliteration was performed in 88 patients (28%). There were 217 primary surgeries and 100 treatments for a recurrence (33% NO and 27% O) ($P = 0.3$). The cholesteatoma involved the middle ear in 71 patients, 246 had also a mastoid extension (76% in NO and 81% in O) ($P = 0.4$).

Dry synechiae developed in 11% (25/229) of NO and 16% (14/88) of O ($P = 0.2$). Recurrent discharge were observed in 8% (18/229) of NO and 3% (3/88) of O ($P = 0.1$). Dry retractions developed in 14% (32/229) of NO and 11% (10/88) of O ($P = 0.7$). Perforations were observed in 2.5% (6/229) of NO and 3% (3/88) of O ($P = 0.7$). Cholesteatoma recurred in 2% (4/229) of the NO and in none of O ($P = 0.6$). Hearing threshold improvement was observed in 28% (59/214) of NO and in 61% (38/62) of O ($P = 0.001$), impairment was observed in 12% (26/214) of NO vs. 13% (8/62) of O ($P = 0.9$).

Conclusions: Postoperative complication and anatomical results were comparable between NO and O, while functional results were superior in O.

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Free Papers (F632)

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Life table analysis of results of staged intact canal cholesteatoma surgery using bone pate to reconstruct the lateral attic wall

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Introduction: An insidious problem hampering treatment of cholesteatoma is the propensity of the disease to recur; this is considered to be a particular problem after intact canal surgery.

We continue to perform intact canal surgery for cholesteatoma, because this allows preservation of the ossicular chain, which has been shown to provide the best hearing after cholesteatoma surgery.

We review a technique developed in our institution thirty years ago to minimise recurrence of cholesteatoma after intact canal cholesteatoma surgery.

Method: Inclusion criteria: ears with attic cholesteatoma that underwent reconstruction of the lateral attic wall at primary surgery using bone pate.

Patients underwent second look procedures to exclude residual disease. This afforded an opportunity to further strengthen the lateral attic wall, if needed.

Patients were reviewed annually until five years after their original surgery.

The primary outcome was the need for further surgery for recurrent cholesteatoma.

Life table analysis was used to take account of patients lost to follow up before five years.

Results: 150 ears were included.

Ninety six per cent of the ears survived to five years without need for further surgery due to recurrent cholesteatoma.

Conclusion: Reconstruction of the lateral attic wall in staged intact canal cholesteatoma surgery with bone pate reduced the risk of recurrent cholesteatoma to levels similar to those seen in the best alternative techniques.

Learning Point: Surgery aimed at maintaining the best hearing after cholesteatoma surgery need not be associated with high rates of recurrent cholesteatoma.

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The use of S53P4 bioactive glass for mastoid obliteration in cholesteatoma surgery

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Learning Objectives: To inform about the results of the use of S53P4 bioactive glass for obliteration of the mastoid cavity in cholesteatoma surgery. To demonstrate the advantages and limitations of the technique.

Introduction: Mastoid obliteration has been reported to reduce the number of recurrences and improve the quality of life in both canal wall up (CWU) and canal wall down (CWD) procedures, in the treatment of cholesteatoma. Confronted with a rather high recurrence rate after CWU surgery without obliteration, we implemented the use of S53P4 bioactive glass (BonAlive). Our choice was made

due to the unlimited availability and the alleged antibacterial, osteoconductive and osteopromotive properties. Here we report on the safety and efficacy of the use of S53P4 as obliteration material in cholesteatoma surgery.

Methods: Retrospective cohort study carried out in a secondary referral center. All patients were treated for cholesteatoma with tympanomastoidectomy and mastoid cavity obliteration using S53P4 granules between 2012 and 2015. Main outcome measures were procedure safety, cholesteatoma recurrence, and functional outcome (hearing levels and incidence of otorrhea).

Results: One hundred eleven patients (111 ears) were included. Mean age was 36 years (range 7–80). Eighteen patients were treated with canal wall up tympanoplasty. Ninety-three patients underwent a canal wall down procedure. Mean follow-up was 12.6 months. No wound infections occurred. Cholesteatoma recurrence was 9% (CWU: 17%, primary CWD: 8%, revision CWD: 0%). A dry ear was achieved in 96% of patients. No cases of perceptible hearing loss were encountered. Preparing and implanting the S53P4 granules was technically feasible.

Conclusions: S53P4 bioactive glass granules are safe and easy to use as a filler material in mastoid obliteration. Obliteration of the mastoid cavity with S53P4 granules resulted in less recurrences as compared to our previous results without obliteration

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Subtotal petrosectomy performed between 2005 and 2015 in a tertiary referral centre in the Netherlands: indications, outcome and follow-up

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Learning Objectives: Subtotal petrosectomy is a 'last resort' type of surgery where complex anatomy in pathologic ears makes surgery difficult. In case of cholesteatoma, residual disease remains an issue, but as long as patients lack any complaints, follow-up with diffusion-weighted MRI may be acceptable.

Introduction: In chronic otitis media (COM) (with or without cholesteatoma) a subtotal petrosectomy can be a 'last resort' surgical treatment after multiple prior surgeries. Subtotal petrosectomy can also be used as part of a lateral skull base procedure or as a first stage preparation before cochlear implantation. This study describes the results of subtotal petrosectomies performed in our center between 2005 and 2015, mainly focussed on COM.

Methods: All patients who underwent a subtotal petrosectomy in our centre between 01-01-2005 and 01-03-2015 were included in this retrospective chart review. Patient

characteristics, pre-operative complaints and indications for surgery were noted. The main outcome measure for COM patients was complete eradication of the disease and resolution of otorrhea. Complications and number of necessary revision surgeries were noted.

Results: A total of 56 patients (57 ears) were identified. Indications for subtotal petrosectomy were chronic otitis media (COM) with cholesteatoma (n = 28), COM without cholesteatoma (n = 12), prior to cochlear implantation (n = 4), oncology (n = 7) and 'other' (including 2 cases of liquorrhea) (n = 6). Of all COM cases (n = 40) 30 patients had otorrhea prior to surgery. After surgery otorrhea resolved in all 30 ears. In three out of four revisions residual cholesteatoma was found. Another 5 cases show a lesion with diffusion restriction on diffusion weighted MRI and are followed with sequential MRI's. Reported complications were transient infection (n = 7) and vertigo (n = 6). The median follow-up for all 40 COM cases was 18 months (0–106).

Conclusions: This study gives an insight into the results of subtotal petrosectomy in a tertiary referral centre in the Netherlands. Subtotal petrosectomy in patients with otorrhea resulted in a dry ear in all 30 cases. Residual cholesteatoma was proven in 3 out of 28 cases.

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Mastoid Cavity Obliteration Using BonAlive Bioactive Glass

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Learning Objectives: To review the rationale, technique & outcomes in mastoid cavity obliteration.

Introduction: Canal wall down (CWD) surgery is associated with lower rates of residual/recurrent disease. CWD surgery followed by mastoid cavity obliteration is one potential method of reducing the burden of managing the open cavity. We present our results using BonAlive® Granules for mastoid cavity obliteration.

Methods: Retrospective chart review and telephone survey.

Results: Between 2012–2015 we used this technique in a cohort of 20 patients; 16 male and 4 female. Mean age was 46 (median 47, range 32–67). Mean follow up was 19 months (median 15, range 7–46). Recurrence rate was 5% (1/20) of patients. In this case a small attic pearl was noted and this was managed on an out-patient basis. 10% (2/20) patients reported occasional discharge whereas in the remaining 90% (18/20) the ears were completely dry. We also conducted a telephone survey of patients using the Glasgow Benefit Inventory (GBI) with 18/20 patients responding. Mean GBI score was 63 (median 65, range 49–67). 16/18 patients responding to the GBI survey reported a net benefit from their procedure.