Follow-up after CWU bony mastoid obliteration in cholesteatoma surgery

Kjell Tveterås

Michael Lyhne Gaihede

Suzan Al Kole

AALBORG HOSPITAL
Aarhus University Hospital

Introduction

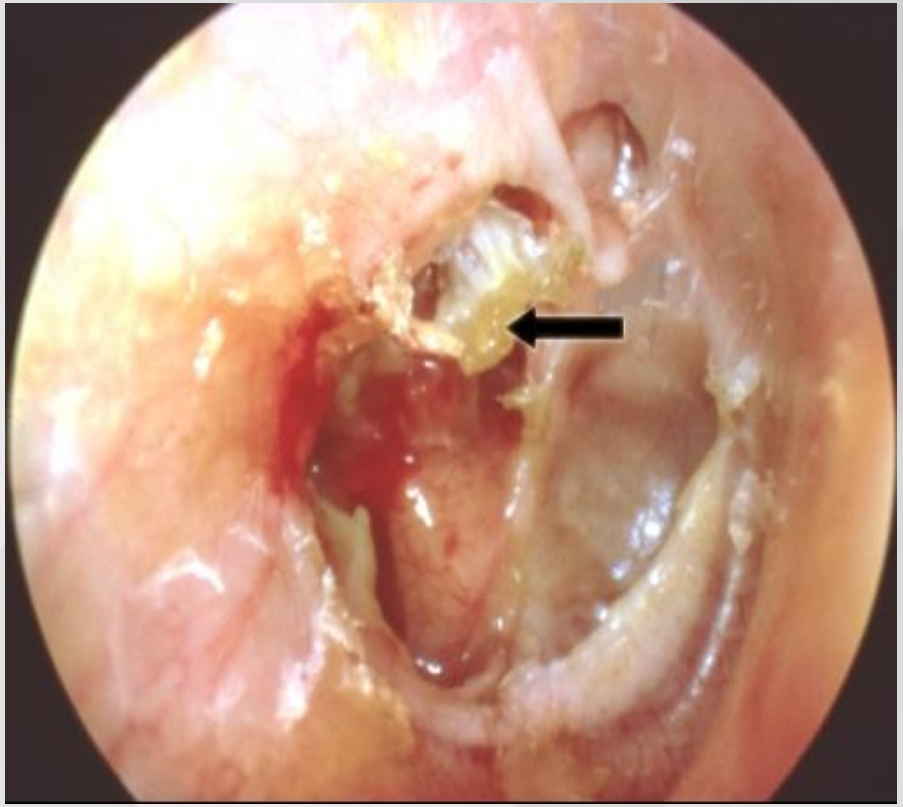
The goals of cholesteatoma surgery are complete eradication of pathology with preservation or improvement of hearing, restoration of hygiene status, and prevention of recurrent disease.

Surgical procedures with **canal wall up** (CWU) techniques generally provide a *better functional outcome* than canal wall-down (CWD) techniques, but entail a *higher risk* of residual as well as recurrent disease.

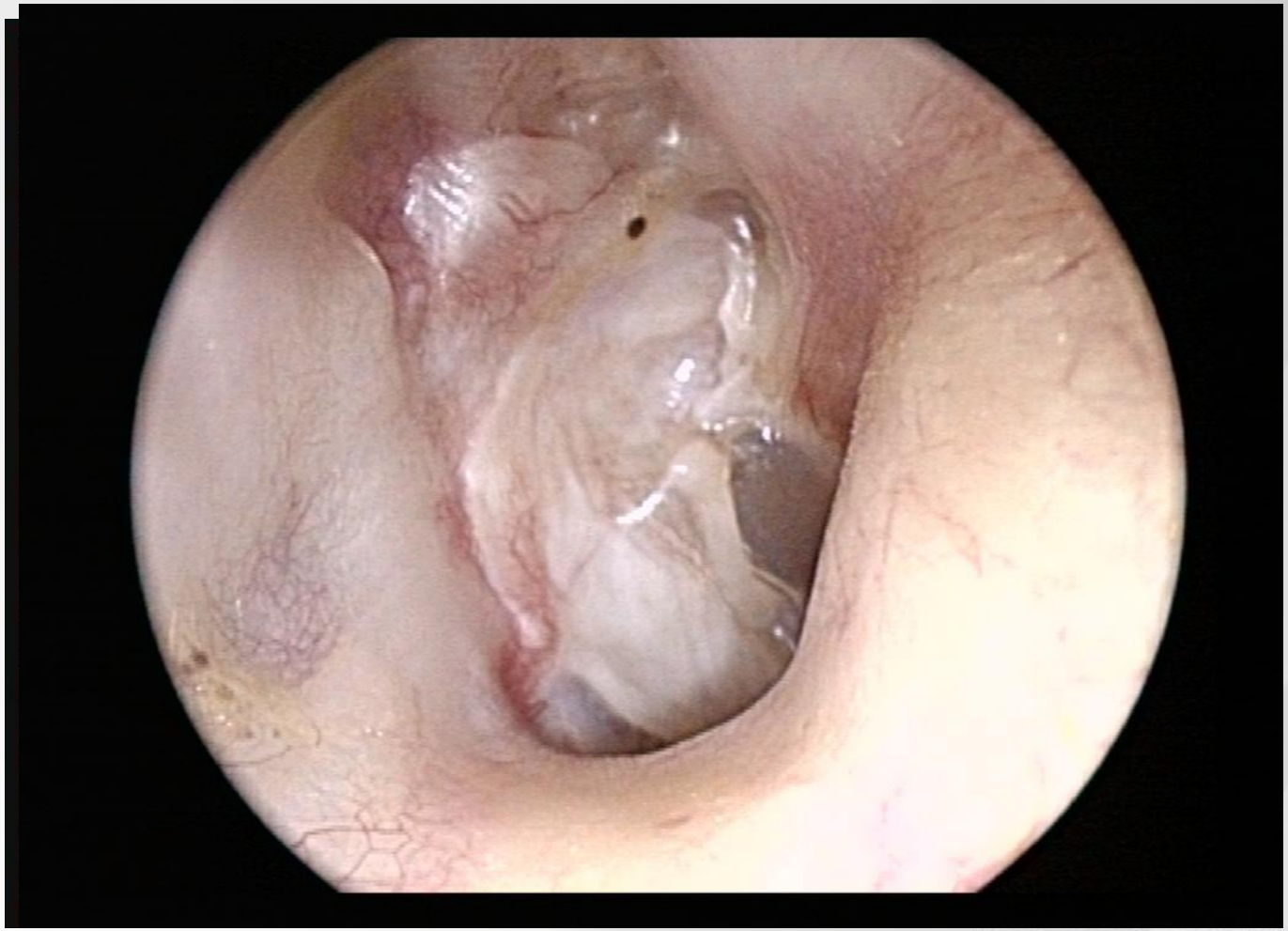
Recurrence after CWU procedures most commonly result from redevelopment of retraction pockets, due to *negative middle ear pressure* caused by *Eustachian tube and/or mastoid dysfunction*.

Mastoid obliteration Indications

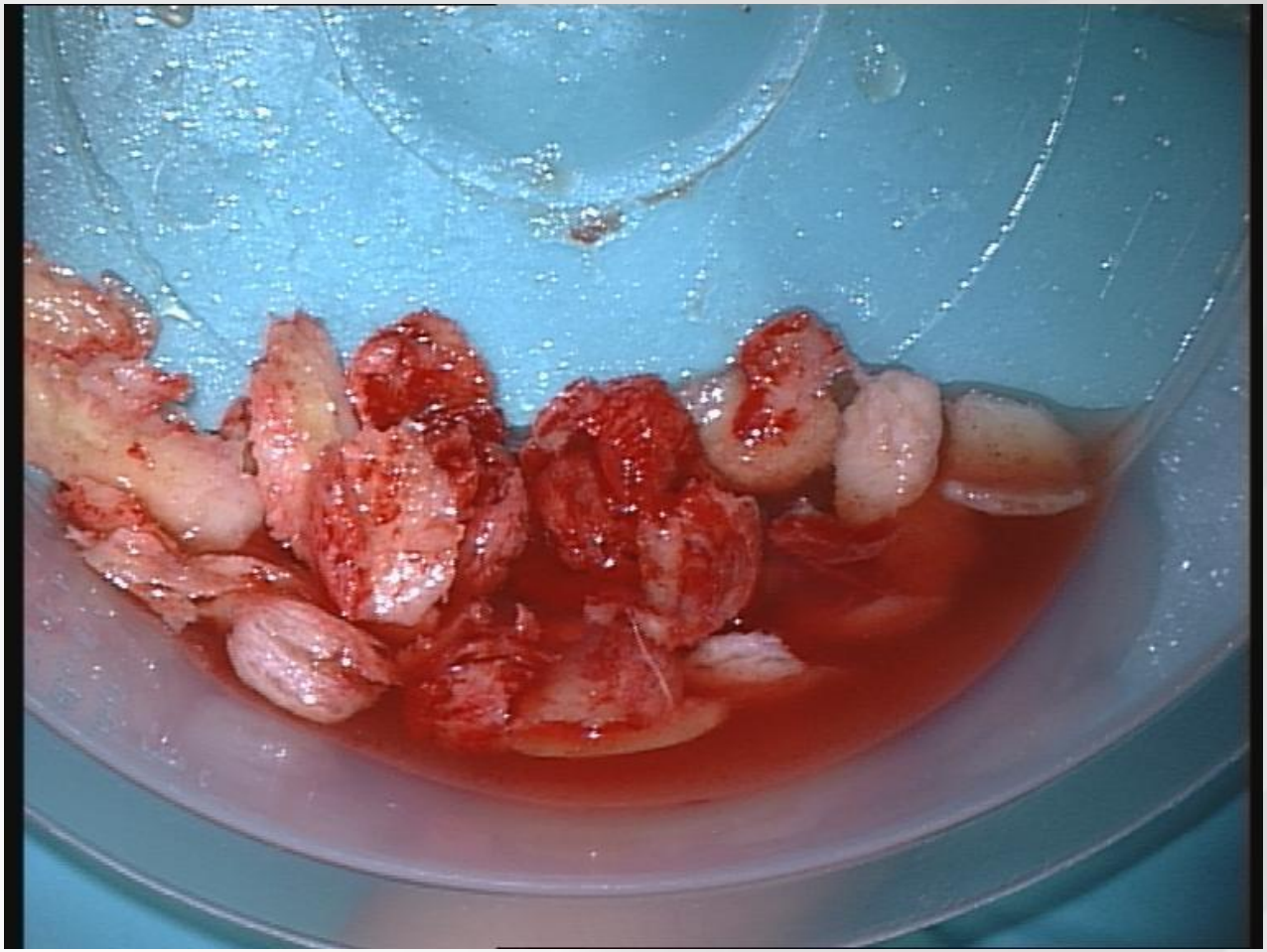
- Attic or combined cholesteatoma extending into the mastoid.
- Disrupted ossicular chain – either by the disease or by the surgeon



Surgical technique



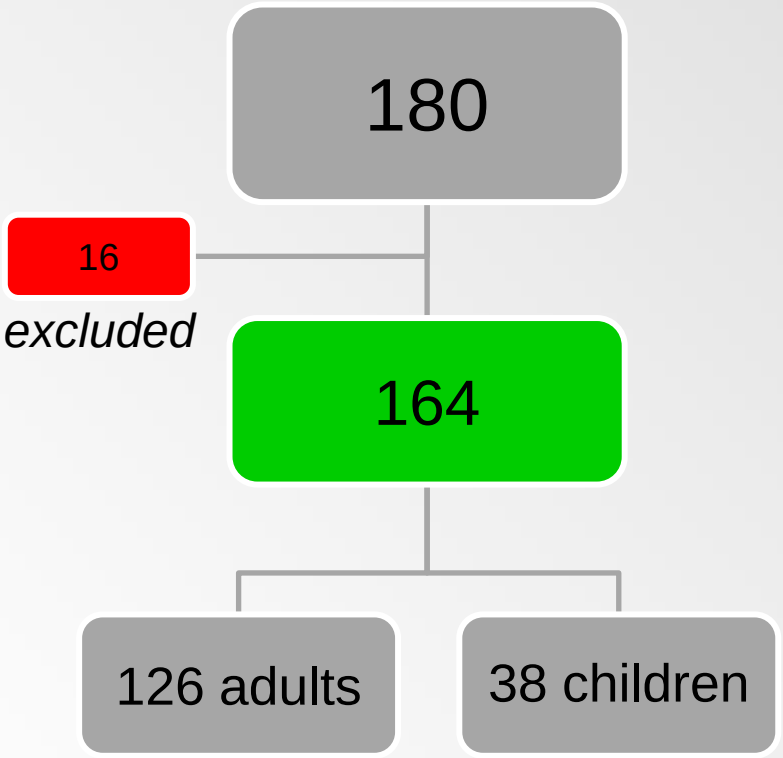
Bone chips in ciprofloxacin suspension



Materials & methods

Study design:	Retrospective study (1997-2009) of **180 patients** operated with CWU mastoidectomy and Bony Mastoid Obliteration
Inclusion criteria:	Cholesteatoma with attico-antral involvement (primary acquired (**n=131**) or recidivistic (**n=32**))
Exclusion criteria:	Follow-up time less than 1 year (**n=16**) ***One year follow-up rate: 91%***
Outcome measures:	• Residual and recurrent cholesteatoma • Hearing results (PTA, ABG, SRT, DS) • Postoperative complications

Patient data



Age *(years)*

mean	34.0 ±19.6 (range: 2-78)
adults:	126 (76.8%)
children:	38 (23.2%)

Sex

male:	92
female:	72

Follow-up time *(months)*

mean	42 (range 10.5-162.5)
SD	36.4
median	28.1

AALBORG HOSPITAL
Aarhus University Hospital

Results

Incidence of **residual and recurrent cholesteatoma**

	Residual (%)	Recurrent (%)	Total cases (%)
Children (n=38)*	2 (5.2%)	5 (13.1%)	7 (18.4%)
Adult (n=126)	0 (0%)	7 (5.5%)	7 (5.6%)
Total (N=164)	2 (**1.2%**)	12 (**7.3%**)	14 (8.5%)

*) children: <16 years of age

Results

Preoperative and postoperativ **hearing results**

	Pre-operative	**Post-operative**	**Gain**	
	mean (SE)	mean (SE)	mean	*p*-value
ABG (dB)	29.6 (1.1)	20.5 (1.0)	9.2	**<0.01**
PTA (dB)	40.9 (1.6)	36.1 (1.6)	4.8	**0.03**
SRT (dB)	35.2 (1.7)	31.1 (1.6)	4.1	0.07

ABG air-bone-gap
PTA pure tone average (500, 1000, 2000 and 4000Hz)
SRT speech recognition threshold

AALBORG HOSPITAL
Aarhus University Hospital

Results

Incidence of **postoperative complications** (n = 164)

Major complications:		
(Anacusis, sinus thrombosis, meningitis, brain abscess)	0	(0%)
Minor complications:		
Postoperative wound infection	**10**	**(6%)**
Facial nerve palsy (transcient)	1	(0.6%)
Total	**164**	**(100%)**

Results

Incidence of **postoperative complications** (n = 164)

Major complications:		
(Anacusis, sinus thrombosis, meningitis, brain abscess)	0	(0%)
Minor complications:		
Postoperative wound infection	**10**	**(6%)**
Facial nerve palsy (transcient)	1	(0.6%)
Total	**164**	**(100%)**

Conclusion

The present study clearly indicates that **CWU mastoidectomy** with **bony obliteration** is a safe method for treating primary or recurrent cholesteatoma, and a useful technique to eliminate cavity problems while preserving auditory function.

Exenteration of the gas-absorbing epithelium followed by sealing of the posterior epitympanon and mastoid obliteration, effectively prevent long-term postoperative reformation of retraction pockets.

Obliteration of the mastoid cavity cannot prevent recurrence of cholesteatoma.

Nevertheless, recurrence rates seem to be significantly lower compared to conventional CWU surgery – longer follow-up time though desirable.

As underpressure probably develops in the diseased mastoid, obliteration of the mastoid cavity therefor can be considered as a causative treatment of retraction cholesteatomas.