Sommerschule 2011

CHRONIC OTITIS MEDIA

Prof. Thomas Linder

Kantonsspital Luzern

CHRONIC OTITIS MEDIA

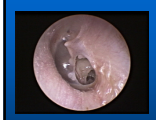
Classification

1. cOME (chronic otitis media with effusion)
2. OMC simplex
   (chronic otitis media with central perforation)
3. OMC cholesteatomatosa

CHRONIC OTITIS MEDIA SIMPLEX

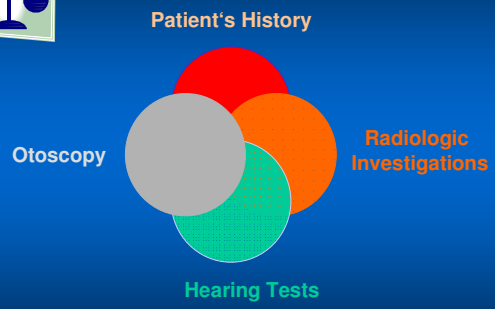
Definition

Chronic (central) perforation of the drum



- Dry
- Moist or chronic drainage
- Intermittently drainig

Preoperative Evaluation



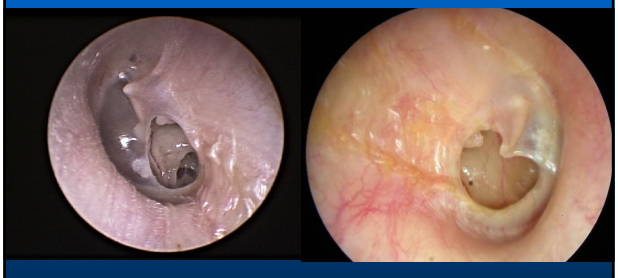
CHRONIC OTITIS MEDIA SIMPLEX

Patient history

CHRONIC OTITIS MEDIA SIMPLEX

Otoscopy

What to see ? Checklist ?

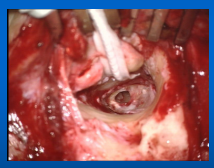


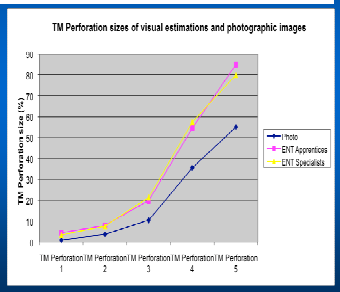
How big is a TM perforation ?

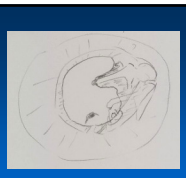
A computational method for the semi-automated quantitative analysis of tympanic membrane perforations and tympanosclerosis

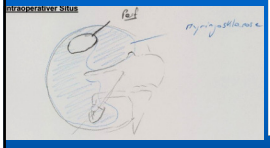
Eros Comunello[b], Aldo von Wangenheim[a,*], Vilson Heck Junior[a], Cristina Dornelles[c], Sady Selamen Costa[c]

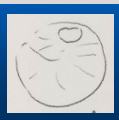
[a]Universidade Federal de Santa Catarina - UFSC, Brazil
[b]Universidade do Vale do Itajaí - UNIVALI, Brazil
[c]Universidade Federal do Rio Grande do Sul - UFRGS, Brazil

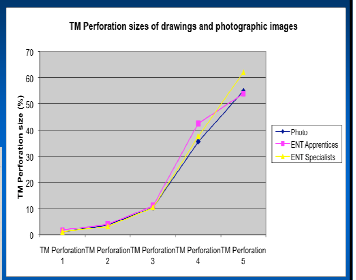












Adequate estimation of perforation size

MESSAGE I

Adequate size estimation of a TM perforation should be made with

- an endoscopic picture and software (objective)

- a surgical drawing (subjective, but close to objective!)

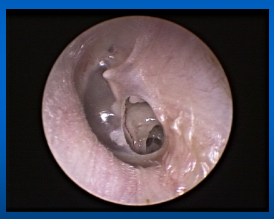
Tympanic membrane perforations
Size categories

Microperforation <2.5%

1 Quadrant Perforation 2.5 -12.5%

2 Quadrant Perforation 12.5 - 35%

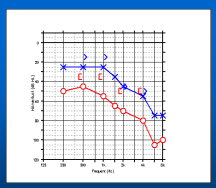
Subtotal Perforation > 35%

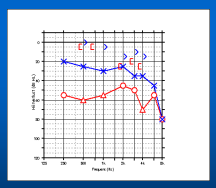


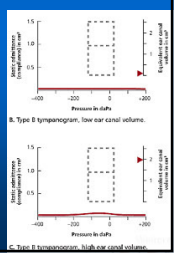
CHRONIC OTITIS MEDIA SIMPLEX

Audiology

Which tests do you perform ?

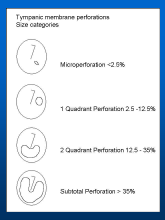






Tympanic membrane perforations and hearing impairment: Size Matters ?

Is there a ***linear*** relationship between TM – perforation size and hearing loss (ABG) ?



n = 151 Pat (155 TM-Perforations)

* Lerut B, Pfammatter A, Linder Th. In print

Is the location of the

TM-perforation

relevant to the

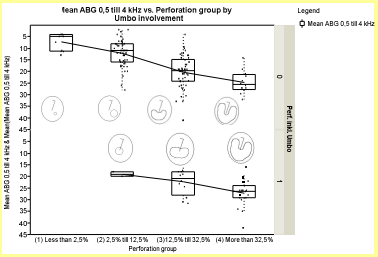
hearing impairment ?

Other factors

involved in

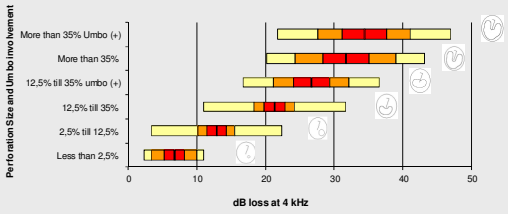
hearing impairment ?

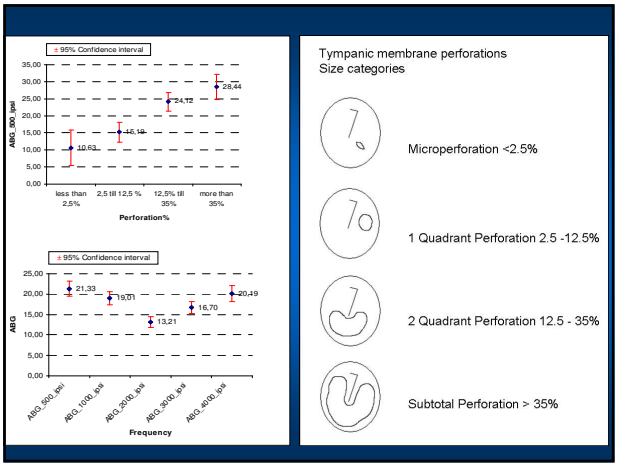
Umbo involvement had a 3-5dB worse ABG independent of the perforation size



Effect of **mastoid volume** was not evaluated

Summary





Tympanic membrane perforations
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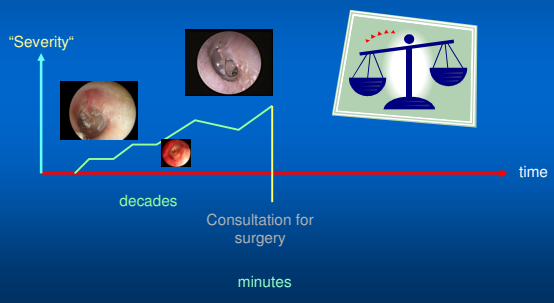
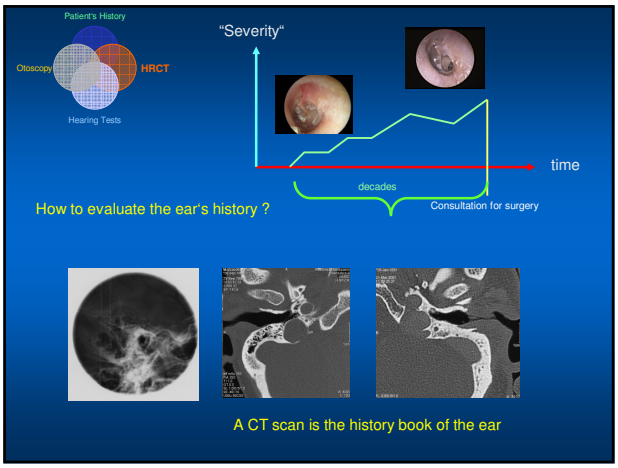
CHRONIC OTITIS MEDIA SIMPLEX

Radiology

Yes …, No…, Why ?

Disease Progression and Decision Making





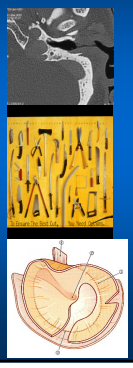
CHRONIC OTITIS MEDIA SIMPLEX

Who needs surgery ?

... and who does not ?

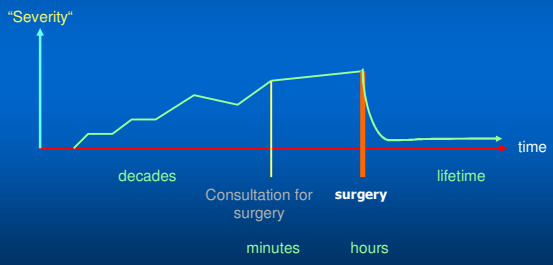
What do we need for surgery ?

- Knowledge of patient's anatomy
- Adequate instrumentation and proper drilling technique
- Surgical Concept



Chronic middle ear disease

Its evolution and its implications for surgery



Surgical Considerations

"Tympanoplasties" in cOM simplex

- Which approach ?
- Additional steps to "myringoplasty" ?
- Success and complications ?

Which approach ?

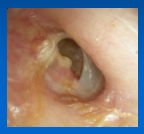
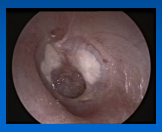
Endaural < 5%



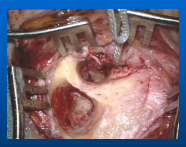
Indications:

- Posteroinferior central perforation
- No myringosclerotic plaques
- Adequate ventilation (no antrostomy required)

Retroauricular > 95%

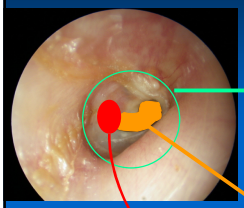
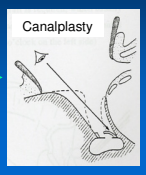





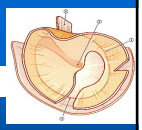



goal: maximum exposure

Why additional steps for a *"simple"* Tympanoplasty ?

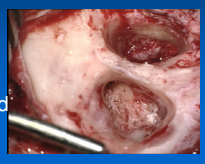
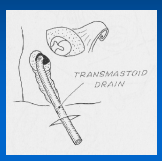



Myringoplasty




Ossiculoplasty

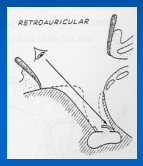
(4) Antrostomy with mastoid drainage

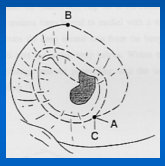



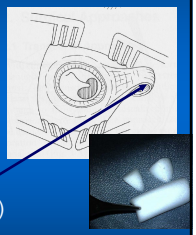
(5) Meatoplasty


Canalplasty

to expose the entire tympanic ring with one position of the microscope

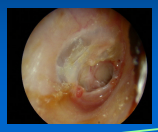


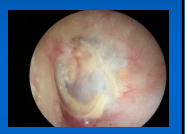




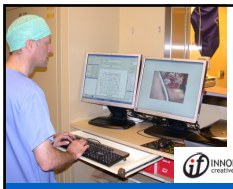
- Soft tissue work: pedicled skin flap(s)
- Bone work: removal of all bony overhangs (360°)

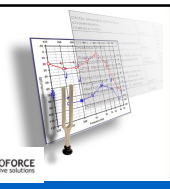
Canal- Myringoplasties, +/- Antrotomy

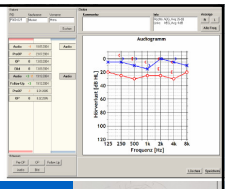




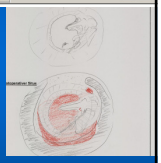
What is (your) success rate ?







2002 – 2009 : Primary Myringoplasties
n = 205 OMC simplex (189 Pat)
Follow-Up = 1 – 8 yrs (mean 2,7 yrs)

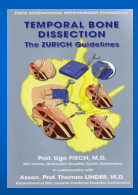


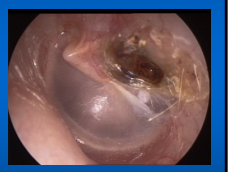
Success** rate (TM closed): 89,3%
Reperforation in 10,7%

** children / surgeon

* Master Arbeit Ben Spieler & Th. Linder, 2011

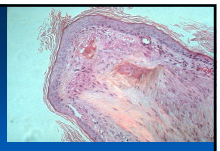
Otitis media chronica cholesteatomatosa





Prof. Thomas Linder, Luzern

Definition



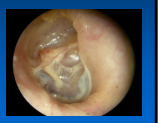
Skin and Retention of Keratin

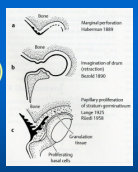
in the Middle Ear/Temporal Bone

with bone resorption

Classifications: Cholesteatoma

- Acquired Cholesteatoma





  - primary acquired
    (papillary ingrowth, children, rOM)
  - secondary acquired
    (marginal perforation)

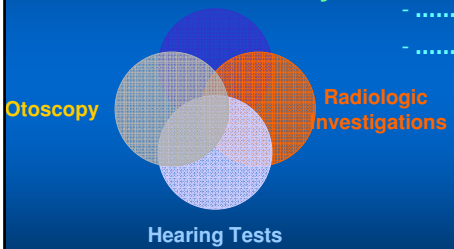
Classifications: Cholesteatoma

- congenital cholesteatoma
  - cong. middle ear cholesteatoma
  - temporal bone cholesteatoma
    - supra- or infralabyrinthine
    - apical

Preoperative Evaluation: "Thinking"

Patient's History

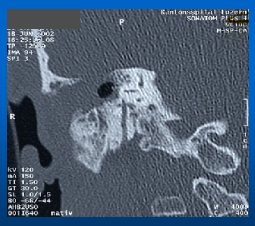
Typical symtoms ?
- .....
- .....

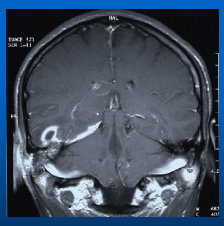


Nowadays rare presentation

Previuos history of foul smelling otorrhea & hearing loss

Subacute headache and progressive somnolence





CHRONIC OTITIS MEDIA WITH CHOLESTEATOMA

Who needs surgery ?

... and who does not ?

GOALS OF PRIMARY SURGERY

Complete eradication of the disease

and

Prevention of recurrent disease

and

Hearing reconstruction

Surgeon‘s Thinking

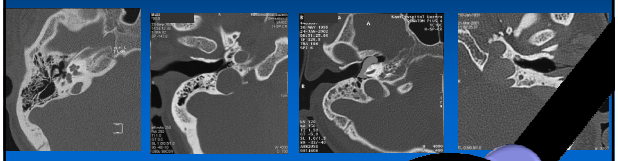
Avoid residual cholesteatoma

Maximum exposure
(no keyhole surgery)

Prevent recurrent cholesteatoma

Evaluate Pneumatization
and
Ventilation

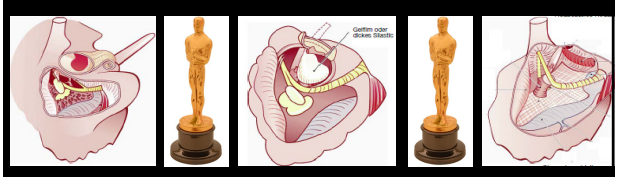
CT Analysis to estimate the chronicity of middle ear disease



Pneumatization	Ventilation Mastoid /	Outcome
+++	++ /	Good
+	-- / +	Favourable
-	-- / --	Poor

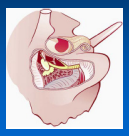
3 main surgical approaches / principles

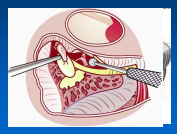
“closed cavity setting“ “open MET“ “subtotal Petrosectomy“ “Combined Approaches“



to achieve success

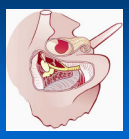
Closed cavity setting

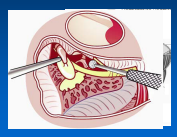




Indications:
- p/s acquired and congenital middle ear cholesteatomas
- sufficient surgical exposure for complete removal
- moderate pneumatization and good ventilation

Closed cavity setting





Technique:
- circumferential canalplasty or endaural atticotomy
- mastoidectomy with posterior tympanotomy

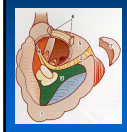
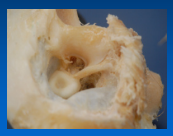
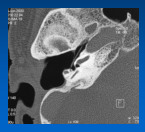
Modifications:
- temporary removal of posterior canal wall (cartilage, bone, titanium,...)
- obliteration of the mastoid

Open Mastoidoepitympanectomy



Indications:
- p/s acquired cholesteatomas
- insufficient surgical exposure for complete removal with closed technique
- reduced pneumatization and poor ventilation
- poor follow-up of patient expected
- irrespective of age of the patient

Open Mastoidoepitympanectomy

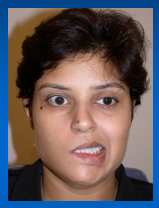





Technique:
- Exteriorization of the cavity
- Exenteration of all tympanomastoid air cells (5 tracts)
- Skeletonization of facial nerve, sigmoid, dura
- partial obliteration of mastoid with musculoperiosteal flap

Modifications: - none ! ! !

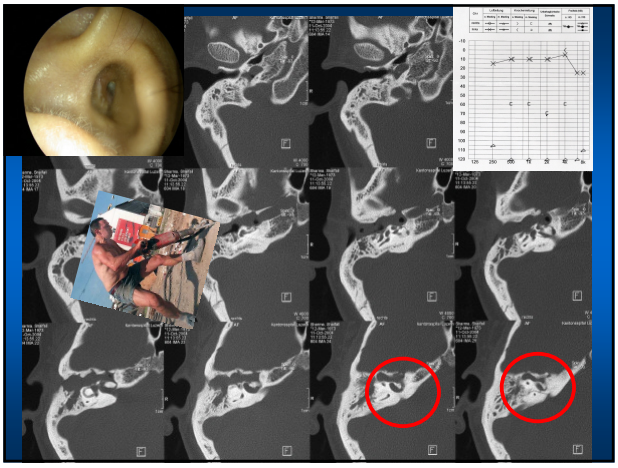
Patient S.S., 40 years old



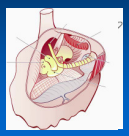


2 yrs. ago: slight facial weakness (right side)
Exploratory surgery revealed cholesteatoma

Referral: Facial paralysis, chronic drainage, right deafness

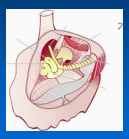


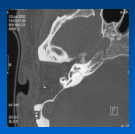
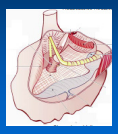
Subtotal Petrosectomy and combined approaches




Indications:
- supra- or infralabyrinthine cholesteatomas
- apical cholesteatomas
- total deafness or no chance for staged ossiculoplasties
- severe cognitive deficits, no follow-up possible

Subtotal Petrosectomy and combined approaches



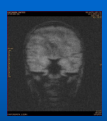
Technique:
- blind sac closure of EEC and Eustachian tube
- with/without removal of the otic capsula
- obliteration of the cavity with abdominal fat and muscle flap

Modifications:
- combined approaches (middle fossa, Infratemporal Type B)
- Implantation of BAHA or Vibrant Soundbridge (round window)

"Success" rates (2002-2010)

Primary Surgeries for Cholesteatoma

	"closed cavity setting"	"open MET"	"subtotal Petrosectomy" "Combined Approaches"
	 n = 149	 n = 100	 n = 9 (Rev. 22)
Residual*	~ 10 %	5 %	0%
Recurrent*	~ 5 %	2 %	0%
Dry ear **	~ 90%	93%	100%



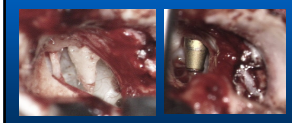
* Masterarbeit von Ch. Thüring & Linder, 2011

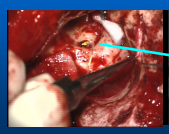
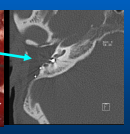
** Study A. Lall & Linder, in preparation

Hearing Reconstruction

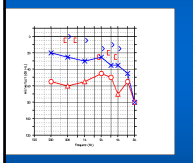
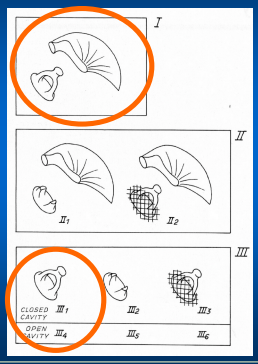
Ossiculoplasties
(primary or staged)

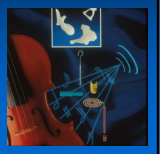
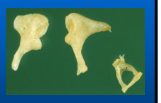
Implants
(primary or staged)



Surgical Concepts in Ossiculoplasties

Fisch & May & Linder: Tympanoplasty, Thieme

3 main surgical approaches / principles

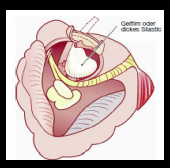
Hearing Reconstruction

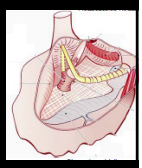
"closed cavity setting"

"open MET"

"subtotal Petrosectomy"
"Combined Approaches"







Primary ossiculoplasty
(staged)

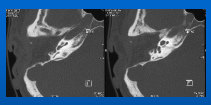
Staged ossiculoplasty
(primary)

None
Implants

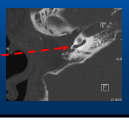
Subtotal Petrosectomy *and* Implants


Cochlear implant

(otitis media chronica, malformations)

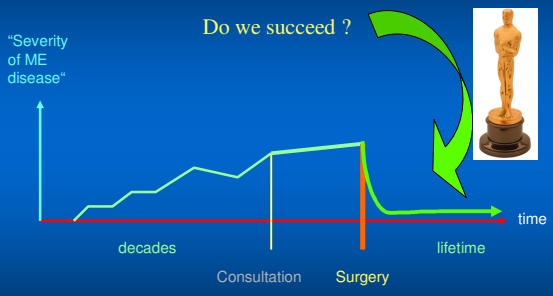
BAHA

Vibrant Soundbridge

(round window placement)

Primary Surgery for COM



Thinking Drilling