

## Cholesteatoma Behind Intact Tympanic Membrane: A Complication of Ventilation Tube Insertion in Adult Patient

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Received: 04 May 2021

Accepted: 19 May 2021

Published: 25 May 2021

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### Citation:

Al-juboori AN. et al., Cholesteatoma Behind Intact Tympanic Membrane: A Complication of Ventilation Tube Insertion in Adult Patient. Clin Surg. 2021; 5(10): 1-3

### Keywords:

Cholesteatoma; Intact Tympanic Membrane; Ventilation Tube; Adult

## 1. Abstract

**1.1. Introduction:** Cholesteatoma behind Intact Tympanic Membrane (CITM) and the underlying mechanism is controversial. Acquired ITMC after ventilation tube insertion is very rare especially in adult patient.

**1.2. Case report:** Thirty-nine years old female suffered from right sided hearing impairment. The patient underwent grommet insertion on the same ear few years back and the ventilation tube was dropped out. On examination there was a dull right tympanic membrane. CT scan of the temporal bone showed there was soft tissue density mass lesion occupying the right middle ear cavity destroying the bony ossicles. Exploration of the right mastoid and middle ear showed cholesteatoma involving attic and aditus antrum. Right-sided modified radical mastoidectomy with canal wall down procedure had been performed, examination of postnasal space was not remarkable. The patient developed good postoperative recovery.

**1.3. Discussion:** Acquired CITM after ventilation tube insertion were found in 1% and were related to longer periods of intubation of ventilation tube. Our search for the mentioned complication in adult age group revealed that reported complication in is very rare.

**1.4. Conclusion:** CITM after grommet insertion is very rare especially in adult patient.

## 2. Introduction

Congenital cholesteatomas of the temporal bone are epidermoid

cysts of embryologic origin that result in progressive desquamation and impaction of squamous epithelium behind an intact tympanic membrane. They are benign, slowly progressive lesions that can be found in various areas of the temporal bone. Secondary acquired cholesteatomas are believed to result from the migration of tympanic membrane keratinocytes into the middle ear and mastoid from the margins of a tympanic membrane perforation or along the shaft of a ventilation tube [1]. Although they are apparently a rare complication of myringotomy alone, they do occur mainly in childhood. Myringotomy (with or without tympanostomy tube insertion) is an established treatment for otitis media with effusion and conductive hearing loss in children and adult with examination of post nasal space to rule out adenoids hypertrophy or postnasal space growth [2], or patient who have required another ventilation tube placement which stay longer duration. In large prospective series, it has a low incidence of complications and results in reduced time with effusion compared with tympanostomy tube placement alone.

Here, we reported a case of cholesteatoma behind intact tympanic membrane (CITM) in 39 years old lady previously she underwent myringotomy and ventilation tube insertion.

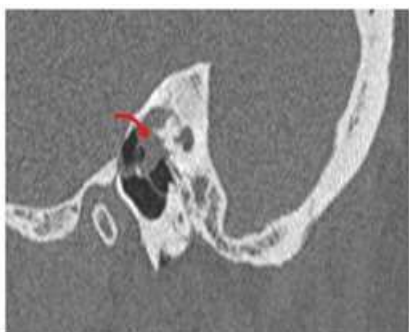
## 3. Case Report

Thirty-nine years old Pakistani female presented to Ear, Nose and Throat outpatient clinic in AlWakra Hospital, Hamad Medical Corporation in Qatar, suffered from right sided hearing impairment. The patient underwent myringotomy and grommet insertion

on the same ear few years back in a private hospital, and she attended regular follow-up till the ventilation tube was dropped out. On examination there was a dull right tympanic membrane. Facial movements were intact and fistula test was negative. Audiometric test showed right-sided conductive hearing loss, around 60 dB on the speech frequency. CT scan of the temporal bone showed there was soft tissue density mass lesion occupying the right middle ear cavity (epitympanum and mesotympanum) destroying the bony ossicles, lateral wall of bony cochlea and lateral semicircular canal as well as the bony part facial canal. The tegmen tympani and tympanic membrane looks intact (Figure 1). Exploration of the right mastoid and middle ear showed cholesteatoma involving attic and aditus antrum. The stapes and incus were absent; there was erosion of lateral semicircular canal with fistula and destruction of bony canal of vertical part of facial nerve. Right-sided modified radical mastoidectomy with canal wall down procedure had been performed, examination of postnasal space was not remarkable. The patient developed good postoperative recovery.



(A)



(B)

**Figure 1:** (A) CT scan coronal section of the right temporal bone, revealed soft tissue shadow in the attic and antrum with intact tympanic membrane, (B) sagittal view.

#### 4. Discussion

Congenital cholesteatomas are epidermoid cysts that arise as a result of progressive desquamation and trapping of the epithelium [3], unlike acquired cholesteatomas, they are often developed due to retraction pocket or squamous epithelium migration from tympanic membrane perforation or through ventilation tube [4].

Congenital CITM usually asymptomatic, but it could present with hearing impairment, Tang et al revealed that congenital cholesteatoma represented 9.8% of the case of conductive hearing loss with intact tympanic membrane [5, 6], while acquired CITM usually presented with hearing impairment, as it was with our reported case. The first symptom is usually hearing impairment, but later on the symptoms of cholesteatoma complications might developed due to non-discovered or undiagnosed cases [7]. Regarding the site of CITM, congenital one often arise from the anterosuperior quadrant of the mesotympanum and are often found to involve the mastoid, middle ear, and petrous bone [3], while the site in acquired cholesteatoma due to retraction pocket will be in the attic and aditus antrum, on the other hand, CITM that it is from acquired origin due to myringotomy and or ventilation tube insertion supposes to be in the anterior or in mesotympanum, and rarely in the posterosuperior part of the mesotympanum and attic as it is described in presented patient. Cholesteatoma can complicate myringotomy with ventilation tube insertion. Golz et al followed 2829 children for 1 to 20 years after tympanostomy tube placement [8], they found that acquired primary and secondary cholesteatoma were found in 1% and were related to longer periods of intubation of ventilation tube. Cholesteatoma due directly to the presence of grommets is rare, it appears that children who require multiple grommet insertions constitute a high risk group and should be very closely monitored. Our search for the mentioned complication in adult age group revealed that reported complication is very rare in adult age group, because all reviewed article was mainly belonging to pediatric age group [9]. In our patient, there was a history of myringotomy and ventilation tube insertion few years back and this in favor of acquired origin, because secondary acquired cholesteatomas are believed to result from the migration of tympanic membrane keratinocytes into the middle ear from along the shaft of a ventilation tube [10], although it is apparently a rare complication of myringotomy alone, but it does occur.

#### 5. Conclusion

CITM in adults may have both congenital and acquired origin. In the above described adult patient, there is evidence that cholesteatoma was developed after grommet insertion, it considered a very rare complication in adult age group.

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