



Isolated Destruction of the Short Process of the Incus Without Hearing Loss in a Case of Cholesteatoma

Kolesteatom Olgusunda İşitme Kaybının Eşlik Etmediği İzole İnkus Kısa Kolu Destrüksiyonu

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Abstract

Cholesteatoma frequently results in destruction of the ossicles and the surrounding structures. The most frequent consequence is erosion of the long process of the incus, however, necrosis may be observed anywhere along the ossicular chain. Isolated destruction of the short process of the incus is an extremely unusual condition. In this study, we describe a patient who presented with otorrhea and hearing impairment. The diagnosis of attic-antrol cholesteatoma was established and surgery was performed. During surgery, it was observed that the ossicular chain was intact with the exception of an absent short process of the incus. In the audiometric analysis of the patient 6 months post-operatively, the air-bone gap had recovered from 15 dB preoperatively to a postoperative hearing threshold with an average of 5dB at the airline as well as the bone line. This case opens up new dimensions in the discussion of whether the incus short process contributes to hearing. (*The Medical Bulletin of Haseki 2013; 51: 24-5*)

Key Words: Cholesteatoma, hearing loss, incus, ossicular chain

Özet

Kolesteatom sıklıkla kemikçiklerin ve çevre yapıların destrüksiyonuna neden olur. En sık inkus uzun kolu erozyona uğrar. Bununla birlikte kemikçik zincirin herhangi bir yerinde nekroz görülebilir. Ancak izole inkus kısa kol destrüksiyonu sıra dışı bir durumdur. Otore ve işitme azlığı şikayetleri ile tarafımıza başvuran ve attikoantral kolesteatom nedeniyle opere ettiğimiz bu vakada operasyon sırasında kemikçik zincirin intakt olduğunu, ancak inkus kısa kolunun olmadığını gördük. Hastanın postoperatif 6. ayda yapılan odyometrik analizinde, preoperatif dönemde 15 dB olan hava kemik yolu açıklığı (gap) kapandı. Postoperatif dönemde hem havayolu, hem kemik yolu eşliği ortalama 5 dB olarak saptandı. Bu durum inkusun kısa kolunun işitmeye katkısı olup olmadığı tartışmalarına yeni bir boyut kazandıracak niteliktedir. (*Haseki Tıp Bülteni 2013; 51: 24-5*)

Anahtar Kelimeler: İnkus, işitme kaybı, kolesteatom, kemikçik zincir

Introduction

Cholesteatoma is a destructive disease of the middle ear. It frequently results in erosion of constituents of the ossicular chain, and although any part may be affected, the long process of the incus is most frequently affected (1,2). An intact ossicular chain has been reported frequently with attic cholesteatoma. However, isolated erosion of the short process of the incus with an otherwise intact ossicular chain is rarely seen. This case is even more interesting as a result of the completely normal postoperative audiometric result despite the absence of short process of the incus, which has been thought to have a role in hearing.

Case Report

A 30-year-old female patient presented to our clinic with pain in her left ear accompanied by drainage from and swelling behind that ear. The patient had a history of tympanomastoidectomy and tympanoplasty procedures of the left ear 10 and 11 years ago, respectively. Although she had recovered completely from these operations, otorrhea had started in the left ear 6 months before presentation. Otoscopic examination revealed deep retraction of the left-sided tympanic membrane with a cholesteatoma in the posterior superior quadrant and a scutum defect. There was also a fluctuation in the postauricular region which was compatible with mastoiditis

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Received/Geliş Tarihi: 17 Ağustos 2012 **Accepted/Kabul Tarihi:** 04 Aralık 2012

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Haseki Tıp Bülteni,
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that had caused the skin changes. Odiometric analysis revealed a conduction-type hearing loss in both ears. The air-bone gap was 15 dB and 20 dB in the left and right ear, respectively. In the left ear, the air threshold was 20 dB, and the bone threshold was 5 dB. Computerized tomography imaging of the right ear was normal with the exception of mild sclerosis of the mastoid cells. There was a soft tissue density in the left ear which completely filled the antrum and reached the subcutaneous tissue, and which had also eroded the posterior wall of the external ear canal and scutum. The short process of the incus was not observed in the left ear (Figure 1).

A modified radical mastoidectomy was performed. During the operation, the cholesteatoma was observed to fill the cavity and was invading the subcutaneous tissue (Figure 2). Cholesteatoma has been thoroughly removed. The posterior wall of the external auditory canal was partially eroded, and the ossicular chain was intact with the exception of the short process of the incus (Figure 3). The cavity was partially obliterated by an inferior based musculoperiosteal flap with no further interference to the ossicular chain. The defect in the attic

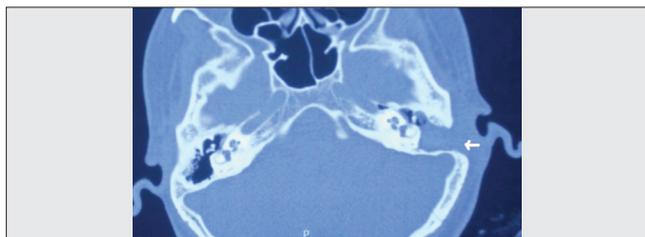


Figure 1. Preoperative temporal bone computerized tomography image. White arrow, mastoid cavity is completely fill by the soft tissue density



Figure 2. Intraoperative view of the cholesteatoma, which completely fills the mastoid cavity

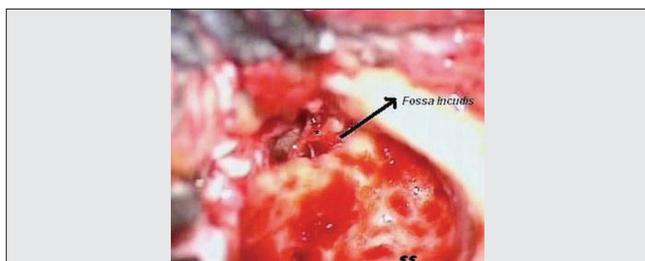


Figure 3. Intraoperative view after the cholesteatoma was completely removed and a canal wall down mastoidectomy was performed. White *, chorda tympani; black *, long process of the incus; black arrow, empty fossa incudis together with the eroded short process of the incus; SS, sigmoid sinus

was closed using temporal muscle fascia. The cavity appeared to be completely healthy by the sixth month of the postoperative period. A postoperative odiometric analysis showed that the air-bone gap in the left ear had completely closed, and the hearing threshold was 5 dB.

Discussion

An intact ossicular chain can be observed in chronic middle ear disease with cholesteatoma, and this usually occurs in cases of attic cholesteatomas (3-6). However, cholesteatomas frequently lead to destruction of the long process and/ or body of the incus.

According to the English literature, we encountered only one case report that described how the short process of the incus had been eroded with otherwise intact components of ossicular chain (7). The odiometric outcomes in the preoperative period of that case were similar to our case. The authors proposed that the preoperative air-bone gap of 15 dB was the result of the absence of the short process of the incus in addition to the conductive effect of the cholesteatoma.

The same procedure was used in our case as the previously described case, but our case was a revision surgery. The most striking difference was observed during the postoperative odiometric examination at the sixth postoperative month of the follow-up period. The air-bone gap had decreased to zero and the hearing threshold was 5 dB. The contribution of the short process of the incus to hearing is a controversial issue. In the previously reported case, there was no difference in the audiograms performed during the pre- and post-operative periods. The gap of 15 dB in both observations was attributed to the absence of the short process of the incus and incudal ligaments (8). However, in our case, we encountered the opposite finding. According to our observations, the reason for hearing loss was not the absence of the short process of the incus, but the mass effect induced by the cholesteatoma.

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