

Incudostapedial dislocation

Published on 19.11.2005

DOI: 10.1594/EURORAD/CASE.2685

ISSN: 1563-4086

Section: Neuroradiology

Imaging Technique: CT

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Case Type: Clinical Cases

Authors: De Temmerman G, Verstraete K

Patient: 24 years, male

Clinical History:

A 24-year-old man presented with a left-sided conductive-type hearing loss.

Imaging Findings:

A 24-year-old man was referred by the otorhinolaryngologist to our department of radiology because of left-sided hearing impairment after a minor head trauma. The otologic tests had shown conductive-type hearing loss. Otoscopic examination was unremarkable. A thin-section CT-scan of the middle ear and ossicular chain showed a disarticulation of the incudostapedial joint on the left side. The lenticular process of the incus was found to have been disconnected from the head of the stapes. The axial section at the level of the round window showed an anterior orientation of the incus in relation to the stapes. The long process of the incus was found to be facing the manubrium of the malleus. The rest of the ossicular chain was found to be intact. The mastoid air cells and middle ear cavity were well aerated and no fractures were seen.

Discussion:

Trauma-related conductive hearing loss can be due to tympanic membrane lesions, hematotympanum or ossicular chain disruptions or fractures. When the otoscopic examination is found to be normal, an ossicular chain lesion must be suspected. A high-resolution CT- scan with 1 mm contiguous sections is the method of choice for assessing the etiology of a conductive hearing loss. A meticulous inspection of the ossicles and joints should be carried out both on the axial and the coronal sections. The incudostapedial joint is best seen on axial sections. An easy way to find the joint is to look for the section through the crura of the stapes. The incudostapedial joint lies just one section beneath this level. A normal joint is seen as a small dark cleft between the lenticular process of the incus and the head of the stapes. The dislocation of the incudostapedial joint appears as an enlargement of this cleft. The enlargement can be subtle or significant as in our case. The stapes usually holds its normal position due to its strong anchoring. The incudostapedial joint is commonly the first to be injured due to the tenuous suspension of the incus between the firmly attached malleus and the stapes. It is generally believed that the incudostapedial joint is the most frequently injured site. Ossicular chain disruptions can occur with or without a fracture of the temporal bone.

Differential Diagnosis List: Incudostapedial dislocation.

Final Diagnosis: Incudostapedial dislocation.

References:

Meriot P, Veillon F, Garcia JF, Nonent M, Jezequel J, Bourjat P, Bellet M. CT appearances of ossicular injuries.

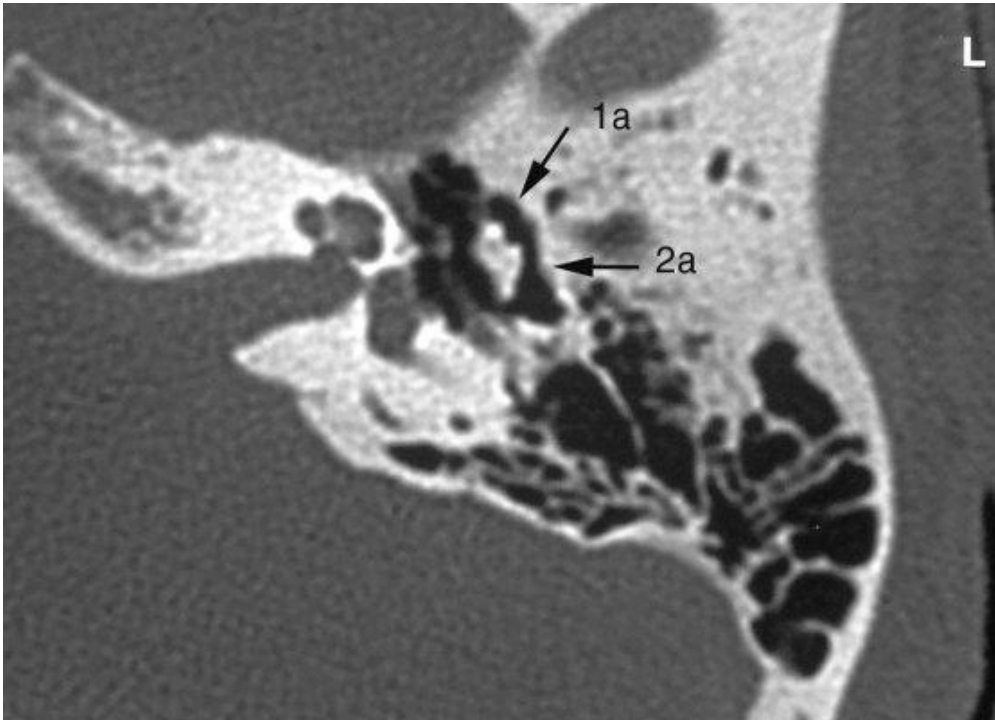
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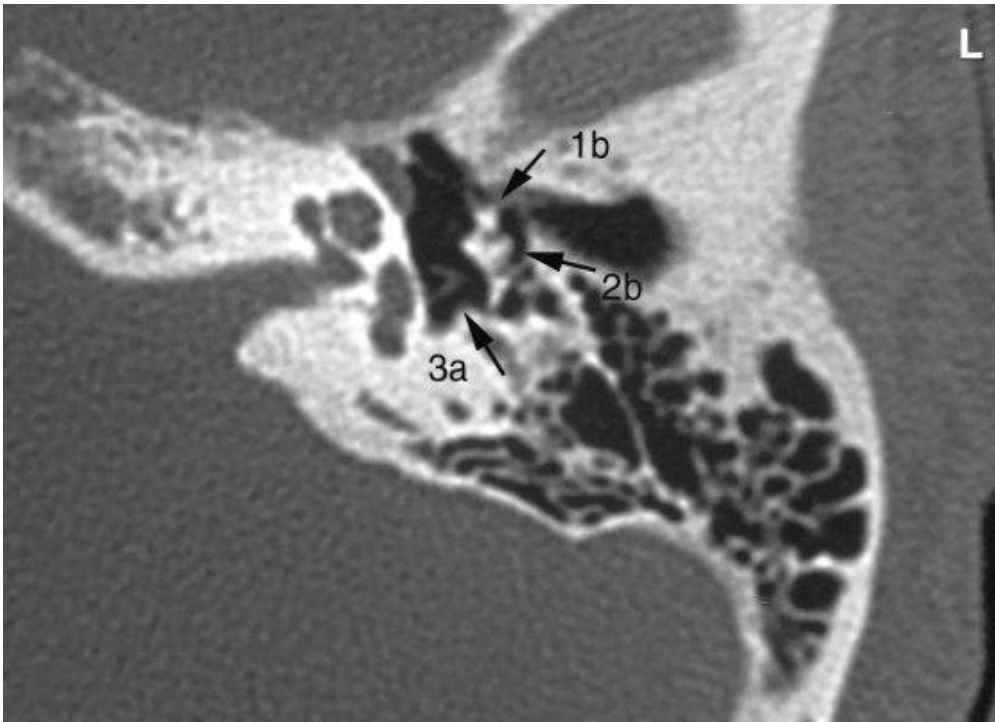
Figure 1

a



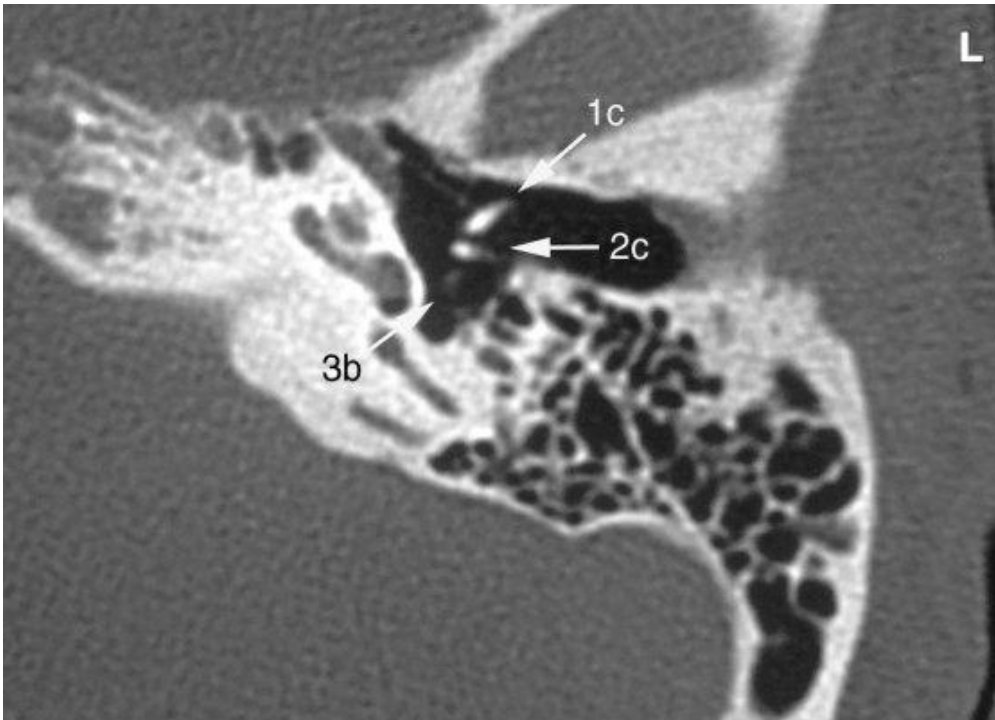
Description: Incudostapedial disarticulation. An axial CT-scan of the left ear showing the lenticular process of the incus (2c) pulled away from the head of the stapes (3b). The long process of the incus (2b) is displaced anteriorly and laterally, and faces the manubrium of the malleus (1c). Notice the normal position of the head (1a) and neck (1b) of the malleus, the body of the incus (2a) and the crura of the stapes (3a). **Origin:**

b



Description: Incudostapedial disarticulation. An axial CT-scan of the left ear showing the lenticular process of the incus (2c) pulled away from the head of the stapes (3b). The long process of the incus (2b) is displaced anteriorly and laterally, and faces the manubrium of the malleus (1c). Notice the normal position of the head (1a) and neck (1b) of the malleus, the body of the incus (2a) and the crura of the stapes (3a). **Origin:**

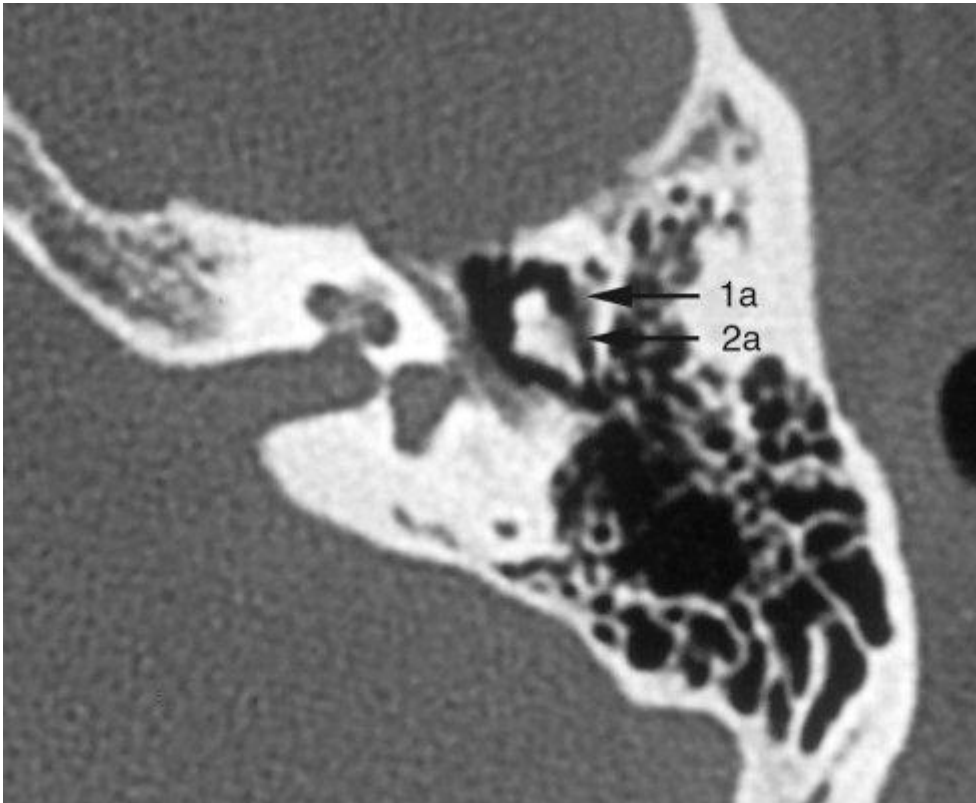
c



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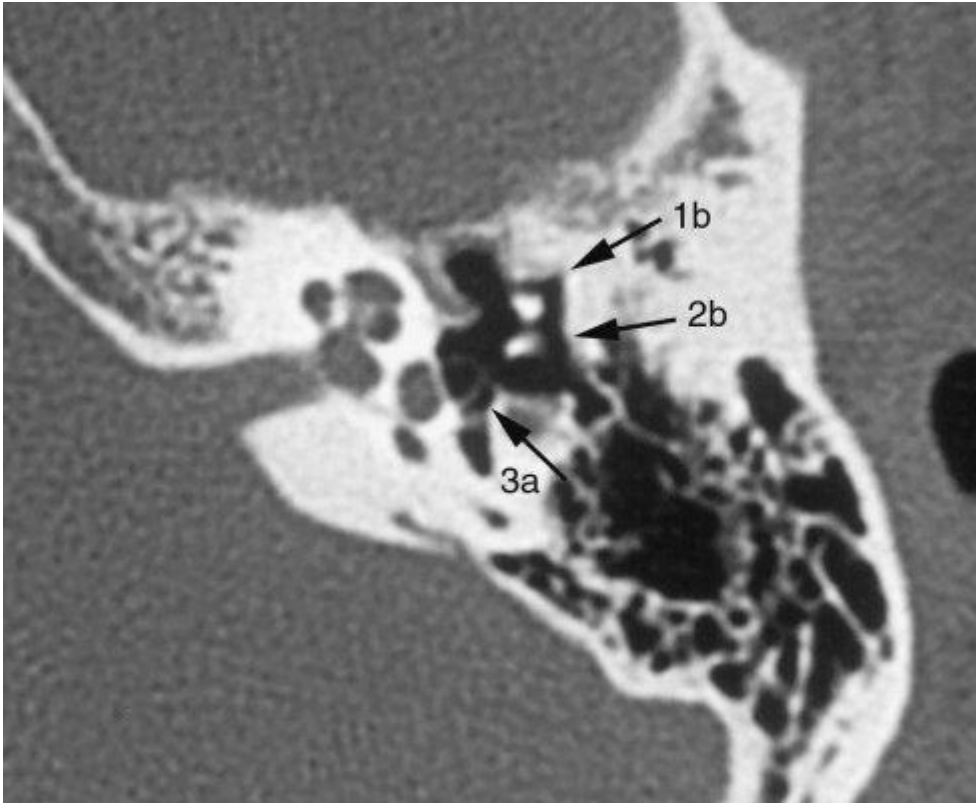
Figure 2

a



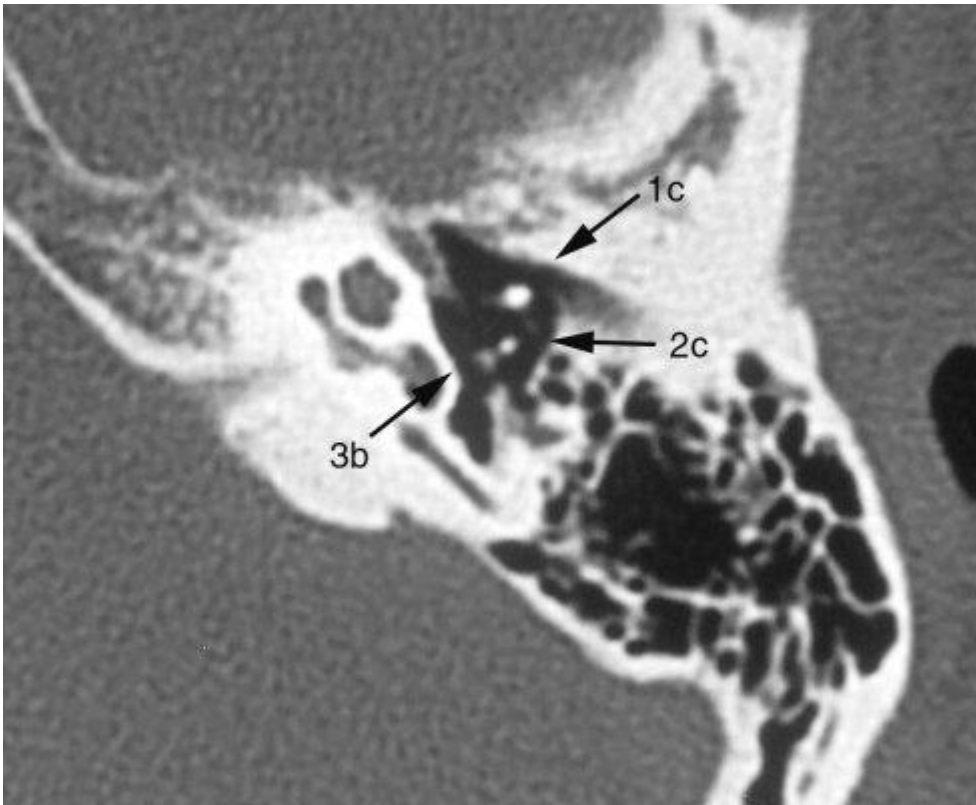
Description: Axial CT-sections through the malleoincudal joint (Fig. 2a), the vestibulostapedial joint (Fig. 2b) and the incudostapedial joint (Fig. 2c), showing a normal left ear. **Origin:**

b



Description: Axial CT-sections through the malleoincudal joint (Fig. 2a), the vestibulostapedial joint (Fig. 2b) and the incudostapedial joint (Fig. 2c), showing a normal left ear. **Origin:**

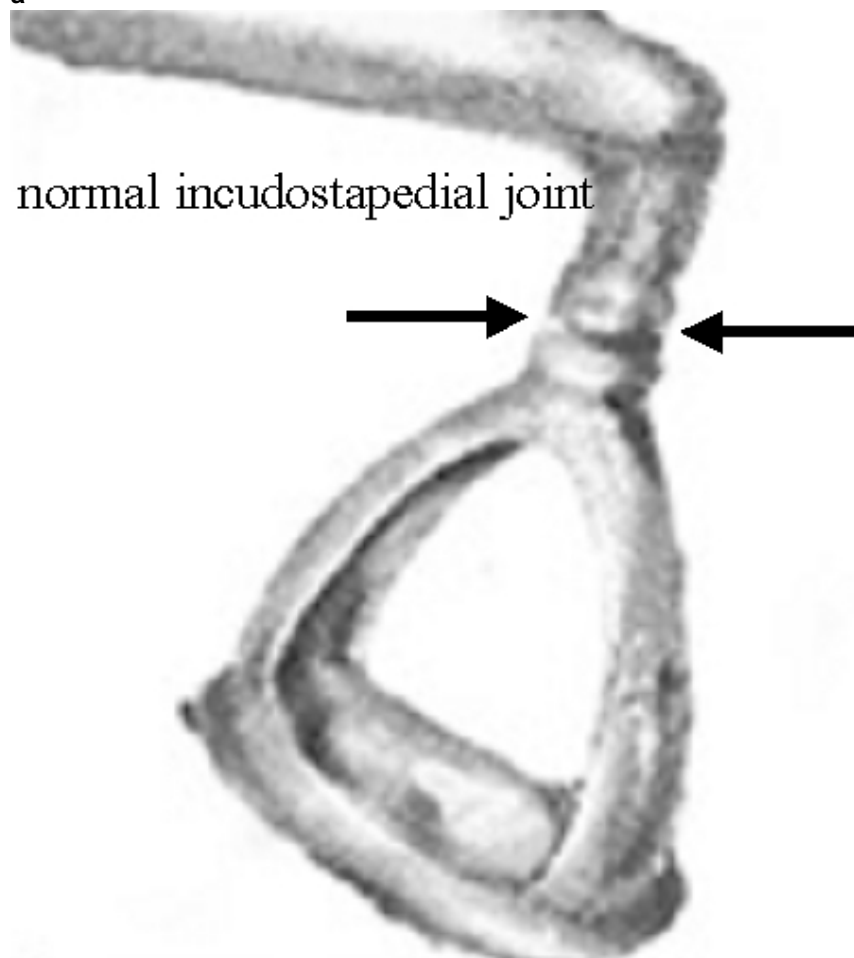
c



Description: Axial CT-sections through the malleoincudal joint (Fig. 2a), the vestibulostapedial joint (Fig. 2b) and the incudostapedial joint (Fig. 2c), showing a normal left ear. **Origin:**

Figure 3

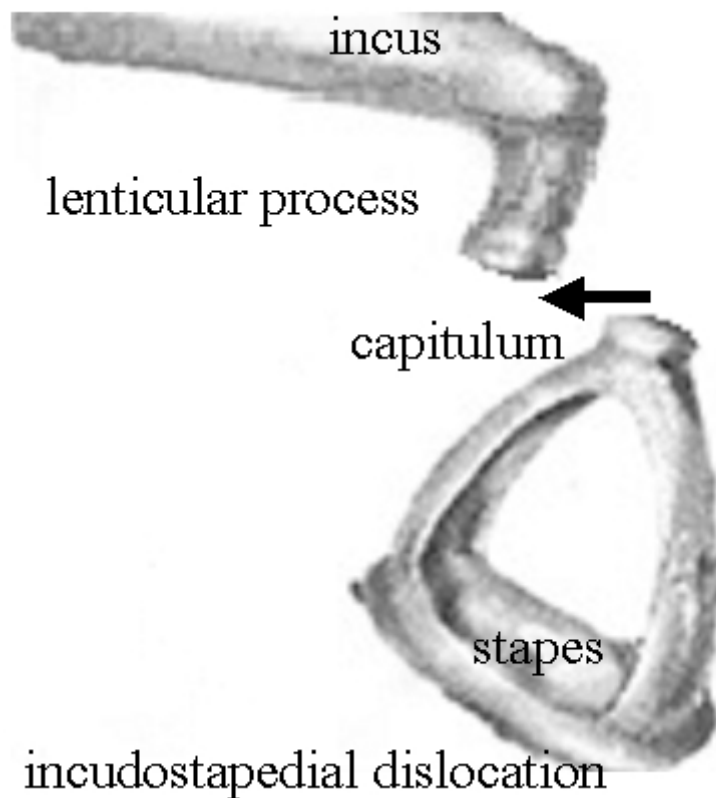
a



Description: Origin:

Figure 4

a



Description: Origin: