



# Odontoideum Bone and Not a Fracture

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## Clinical image description

A 32-year-old man presented to the Emergency Department (ER) with a whiplash injury. He was thrown, following a traffic accident, by his right arm and landed on top of his head. The patient has no significant medical history or a history of head or neck trauma. The physical examination revealed a conscious young man with a rigid cervical collar in place. The vital signs were all within normal limits. His head was atraumatic. The clinical examen shows that the Patient had palpable midline posterior cervical spinal tenderness along C1 to C2 with no step-offs noted. Cranial nerves were intact, and he had no sensory or motor deficits on his neurologic examination. The remainder of his examination was without abnormalities. Cervical CT scan with multiplanar reconstruction was performed urgently, it shows a free ossicle with smooth, sclerotic edges, usually half the size of a normal den, but separated from a slightly foreshortened odontoid peg.

Odontoideum bone is a congenital or posttraumatic abnormality of the second cervical vertebrae in which the odontoid

process is separated from the body of the axis by a transverse gap. The lesion is frequently asymptomatic, CT scans with reconstruction views and MRIs are helpful in making the diagnostics. The aetiology of odontoideum bone is highly debated, it is of embryonic origin, vascular or traumatic origin [1,2]. The congenital theory is based on a presumed failure of fusion of the ossification centers of the odontoid to the body of C2, which supported by the association of odontoideum bone with other congenital ailments such as Klippel–Feil syndrome, trisomy 21 or multiple epiphyseal dysplasia [1]. Cervical CT scan with multiplanar reconstruction is the key investigation shows that odontoideum bone is an independent ossicle of variable size with smooth circumferential margins separated from a foreshortened odontoid peg. The ossicle stands apart from the hypoplastic dens and can adopt two anatomic types: Orthotopic and dystopic. An ossicle located in the position of the normal odontoid is referred to as orthotopic [2]. The main complications are the atlo-axial instability and to the vital risk of bulbo-medullary compression.



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**Figure 1:** Cervical CT scan with 3D reconstruction (A: Coronal section; B: sagittal section): The odontoid bone consists of a free ossicle with smooth, sclerotic edges, usually half the size of a normal den (white arrow). The ossicle is located in the position of the normal odontoid is typically referred as orthotopic.

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