Os Odontoideum: Review of Anatomy, Variants, Associations and Described Pathogenesis

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Introduction

Os odontoideum is a usually asymptomatic and often incidentally discovered entity that may lead to severe neurological impairment, making a diagnosis as a result of this pathology particularly difficult.

Methods

We focus on the relevant embryology, different etiological hypotheses, and cases of variant anatomy associated with os odontoideum.

Results

The odontoid process is derived from three important structures:the proatlas, the first cervical sclerotomes and the second cervical sclerotomes. The definition of os odontoideum is universally understood and accepted, but its etiology is controversial. There are two leading hypothesis for its etiology: traumatic and congenital as a result of variations in gene expression. Furthermore, it can be subclassified into dystopic and orthotopic anatomic variants.

Conclusions

Neurological presentation is variable and may not be a good indicator of overall prognosis. Historical case studies have emphasized possible embryological and traumatic causes for os odontoideum but its etiology has not been elucidated.

Learning Objectives

1.Os odontoideum is a usually asymptomatic and often incidentally discovered entity that may lead to severe neurological impairment, making a diagnosis as a result of this pathology particularly difficult.

2.Os odontoideum can be sub-classified into two anatomical subtypes: orthotopic and dystopic.

3.An orthotopic os odontoideum is an ossicle that moves in unison with the anterior arch of the atlas and can potentially be reduced to normal alignment with the dens.

4.The dystopic subtype is an ossicle that has migrated towards the clivus and is functionally fused with the basion.

References

See Word document attached

fig 1

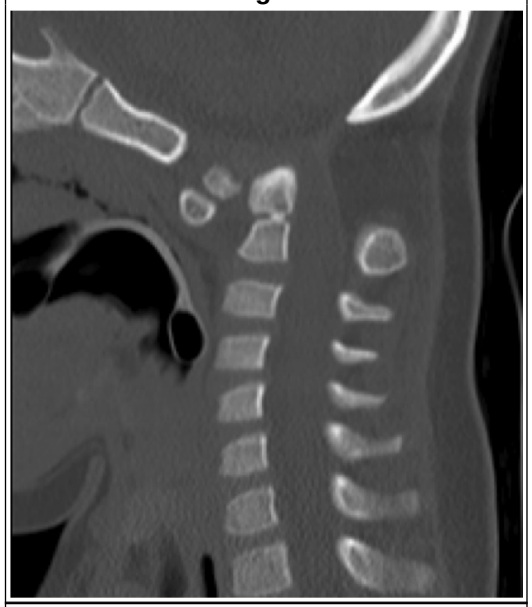

fig 2

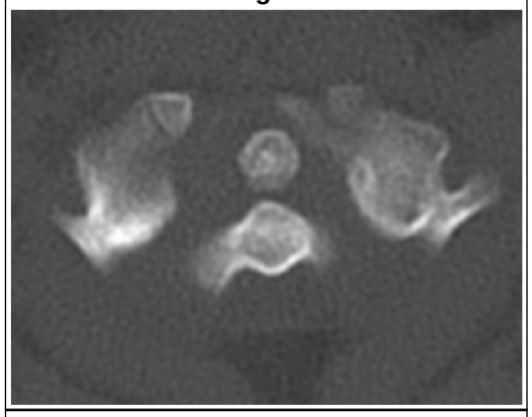

fig 3