The APOM or Odontoid-peg view can be troublesome because there is a fine line between good and poor positioning. The importance of this projection is however significant as we’ll see below.
26 YOM fell off his mountain bike and landed on his head

**FINDINGS**

Offset of the lateral masses of the atlas from the articular surface of C2, more on the left.

Increased paraodontoid space, asymmetric but increased bilateral.

**DIAGNOSIS**

Jefferson’s fracture of C1

A.K.A : Burst fracture of C1. Fracture(s) of the anterior and posterior arch of C1. Originally described as a four part fracture with two fractures in each the anterior and posterior arch however two or three part fractures are possible. Generally caused by axial loading through the head. Immediate stabilisation is required!
CASE STUDY 2

67 YOF with known history of upper cervical abnormality. This is the only history provided.

FINDINGS

Offset of the lateral masses of the atlas from the articular. The odontoid peg is hypoplastic. A smooth, well corticated separate circular bony fragment resides proximal to the base of the odontoid peg.

(Note: on this APOM radiograph, the head is extended too far and thus the occiput has been projected over the odontoid)

DIAGNOSIS

Os odontoid

Although originally thought to be a failure of ossification centre at the base of the dens, it may actually represent an unrecognised fracture through the synchondrosis/dens growth centre before the age of 5 or 6. The level of defect is below the transverse ligament therefor there may be increased mobility of the dens in respect of C2 with increased atlantodental interval or on occasion, retrolisthesis of C1 on C2 has been seen. The os odontoideum may sit directly above the hypoplastic odontoid peg with a wide gap between them (orthotopic) or the os odontoideum may be displaced (dystopic).
CASE STUDY 3

45 YOM, No relevant history provided

FINDINGS

There is a small separate ossicle at the tip of the odontoid process separated by a 'v' shaped lucency.

DIAGNOSIS

Os odontoid
Os terminale (of Bergman)

This is a secondary ossification centre of the dens that appears between the ages of 3-6 and should normally fuse by the age of 12. Failure of ossification results in a persistent ossicle as a normal variant. This defect lies above the transverse ligament so there is no associated instability.
DIAGNOSIS

Os odontoid

Type II fracture of the odontoid

This is the most common fracture of the odontoid and accounts for 10-15% of all cervical fractures. The fracture occurs at the base of the dens, the fragment may be displaced anterior (hyperflexion) or posterior (hyperextension). The defect occurs below the transverse ligament and thus is generally unstable. There is a high risk of non-union.

CASE STUDY 4

34 YOM, motorbike accident with abnormal sensorium but excruciating neck pain and headache

FINDINGS

Large increased lucency between the base of the odontoid and irregular, non-corticated margins at the inferior odontoid peg.
CASE STUDY 5

43 YOM, chronic headaches

FINDINGS

Prominent oval lucency adjacent to the pedicle and transverse foramen of C2

DIAGNOSIS

Hadley's lesion of C2, awaiting MRI/ MRA

This finding may be the result of tortuosity (less commonly dilation) of the vertebral artery with subsequent erosion around the foramen and pedicle. MR angiogram (MRA) is the study of choice to evaluate the course of the vertebral artery.
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L50, 120 Collins Street, Melbourne VIC 3000
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