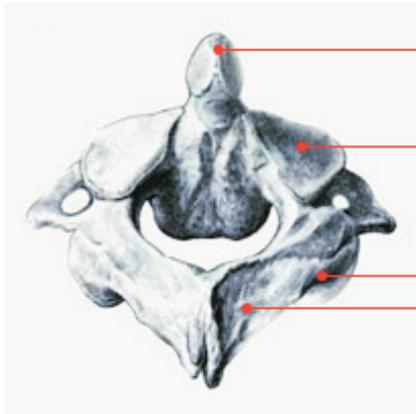


What kind of injury is this?

Traumatic spondylolysis C2 involves the fracture of the pedicles of the 2nd cervical vertebra (axis) resulting from hyperextension distraction.

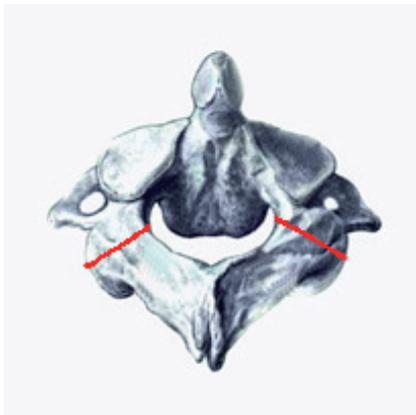
This fracture type is typical of hanging victims, which is why the fracture is also known as the "hangman's fracture."

- 2nd cervical vertebra, axis



- Dens axis
- Articular surface for atlas (processus articularis superior)
- Articular surface for 3rd cervical vertebra
- Vertebral arch, arcus axis

- Arch fracture of the axis



What symptoms can occur with this injury?

A fracture caused by hanging ruptures the medulla oblongata (extended spinal cord), the intervertebral disc, and the ligamentous apparatus between the 2nd and 3rd cervical vertebrae.

Vertebral arch fractures resulting from other accidents may involve the most severe neurological deficits, or in some cases no neurological symptoms at all, since the fracturing of the vertebral arches opens the spinal canal farther, causing a decompression of the spinal cord. This mechanism is also known as a salvage pedicle fracture. The arteria vertebralis is also frequently injured in such cases.

How is this injury detected?

X-ray images of the cervical spine in 2 planes, functional images and a CT scan are all used for diagnosis.

How are vertebral arch fractures of the 2nd cervical vertebra classified?

In 1981, Effendi introduced a classification of these fractures differentiating the following subtypes:

Effendi Type I

This type involves an isolated fracture of the axial pedicles. The intervertebral disc on the side of the 3rd cervical vertebra is intact, the corpus of the axis is only slightly dislocated. This fracture type is stable.

- Axial arch fracture, Effendi Type I



Effendi Type II

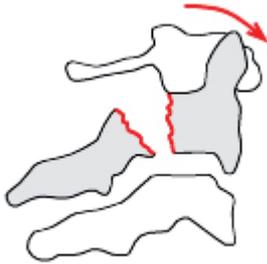
Effendi Type II fractures of the axis involve a dislocation of the fracture fragments with involvement of intervertebral disc C2/C3.

Depending on the applied force, the anterior portion of the vertebra angles toward the back or front, or the anterior portion of the axis is dislocated towards the front.

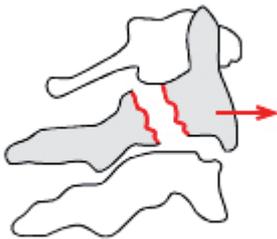
- Dorsal angulation, axial arch fracture, Effendi Type II



- Anterior angulation, axial arch fracture, Effendi Type II



- Forward dislocation, axial arch fracture, Effendi Type II



Effendi Type III

Type III fractures are characterized by ventral angling of the anterior fragment of the axis, rupturing of the intervertebral disc C2/C3, and luxation of the vertebral joints C2/C3.

- Axial arch fracture, Effendi Type III



How is this injury treated?

The decisive factor in determining the therapeutic approach for treatment of these fracture types is the extent of intervertebral disc injury.

For a fracture with minimal or no disc involvement, there are two therapeutic approaches available:

- Conservative treatment with immobilization in a halo brace for 12 weeks
- Surgical treatment with direct C2 screw fixation using the Judet method

If severe disc involvement is confirmed, spondylodesis (rigidification) of C2/C3 is indicated, where the procedure can be done via dorsal or ventral access.