

CASE REPORT

# Spontaneous odontoid process fracture in rheumatoid arthritis: Diagnostic difficulties, pathology and treatment

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## Introduction

We report a case of spontaneous odontoid process fracture as a complication of rheumatoid arthritis. We aim to illustrate the diagnostic difficulties that are faced in dealing with this unusual complication. We also present the possible underlying pathology and the recommended treatment for this fracture.

## Case report

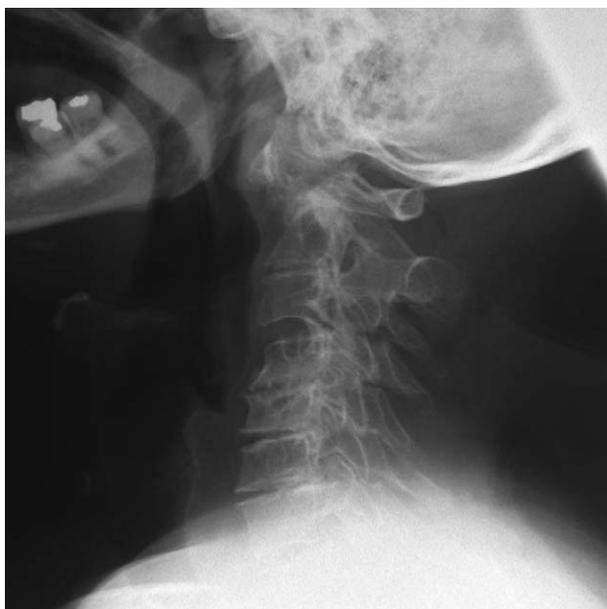
A 69-year-old man presented with sudden onset of severe neck and occipital pain. He had suffered from seropositive rheumatoid arthritis for 15 years, and had synovitis of many joints and other stigmata of rheumatoid arthritis. There was no recent head or neck injury and no cervical myelopathy. Plain anteroposterior and lateral cervical spine flexion and extension radiographs showed anterior atlanto-axial subluxation and possible osteolysis of the odontoid process (Figs. 1 and 2). MRI showed a pannus around the odontoid process; no cord impingement, fracture or dislocation was noted (Fig. 3). Neck pain

persisted, and 2 months later CT revealed a fracture through the base of the odontoid process, with anterior atlanto-axial subluxation. There was no significant increase in the atlanto-dental interval, as the odontoid process moved forward with the arch of the atlas (Fig. 4). A retrospective review of



**Figure 1** Lateral plain radiograph of the cervical spine in flexion.

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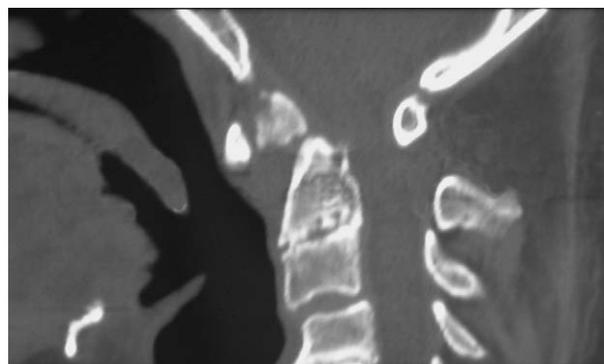
**Figure 2** Lateral plain radiograph of the cervical spine in extension.

the MRI revealed that the fracture was obscured by the pannus.

The patient underwent surgical stabilisation with a posterior occipital-C5 fusion (**Fig. 5**). He wore a hard collar for 6 weeks, and had an uneventful recovery. At 3 months postoperatively, the neck and occipital pain had resolved completely.

## Discussion

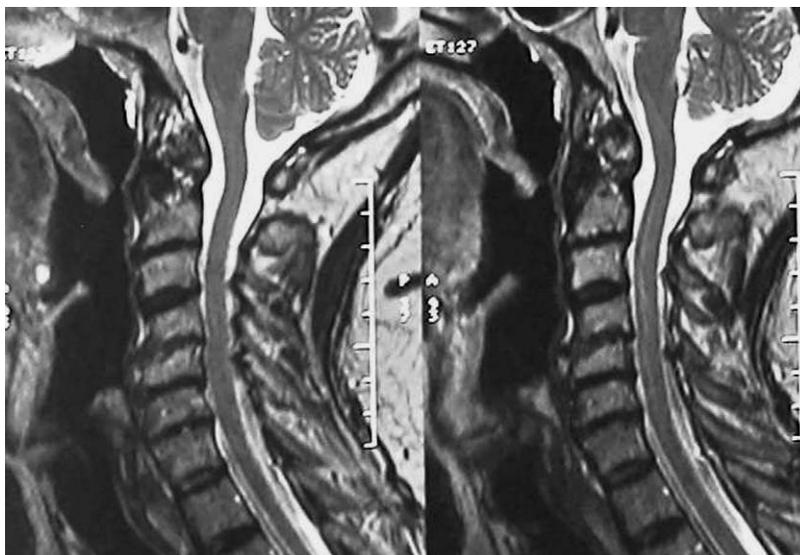
Cervical spinal lesions are common in rheumatoid arthritis. The most frequent rheumatoid abnormal-



**Figure 4** CT showing the odontoid fracture with anterior displacement.

ity of the cervical spine is anterior atlanto-axial subluxation, with a prevalence of 19–70%.<sup>3</sup> This is followed by vertical atlanto-axial impaction and subaxial subluxations, with frequencies of 4–35% and 7–29%, respectively.<sup>3</sup> Spontaneous fracture of the odontoid process has been very rarely reported, as a complication in rheumatoid arthritis; a literature review found 10 documented cases.<sup>1,8,7,9</sup> The common symptom in all those cases was the sudden increase of neck and occipital pain.

Adequate radiological examination is essential for diagnosis. Conventional radiographs are not always reliable in this condition, as they may fail to show the fracture because of the degeneration and osteopenia that accompany the disease.<sup>10</sup> In the case we report, conventional radiographs did not show the odontoid process fracture, which was also missed by MRI of the cervical spine. Subsequent CT, however, revealed the fracture clearly,<sup>10</sup> with anterior displacement. As the odontoid was



**Figure 3** MRI showing the pannus around the base of the odontoid process.

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