Inflammatory arthritis of the cervical spine is a sequelae of rheumatoid arthritis. Atlantoaxial instability is the most frequent abnormality, although basilar invagination and subaxial subluxations also occur. Development of instabilities. Although it occurs secondary to erosive changes in the atlantoaxial and occipitoatlantal joints, the detailed pathophysiology has not been described in detail. Additionally, despite recognition as a troublesome instability in myelopathy, end stages of superior migration of the odontoid are not widely described in the literature.

This article presents an aggressive form of rheumatoid arthritis with substantial, end-stage basilar invagination.

CASE REPORT

A 62-year-old man with rheumatoid arthritis of 27 years’ duration presented with insidiously increasing cervical and occipital pain and upper-extremity numbness. Previously, the patient was treated conservatively for his arthritis, however, he was taking no specific medicines at presentation. Bedridden for approximately 10 years, he had an aggressive form of arthritis, and developed advanced periarticular destructive changes and contractures in all major joints.

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History was significant for neck discomfort, but symptoms worsened a few weeks prior to presentation with developing upper-extremity numbness. He reported no bowel or bladder problems, and no new lower-extremity symptoms.

On examination, severe contractures and deformities were seen in every joint with limited cervical range of motion. Within the limits of motion, no upper-extremity symptoms could be reproduced. L’hermites sign was negative. Mild, generalized cervical tenderness was noted.

Neurologic motor examination was impossible to perform secondary to the contractures, with the exception of some motor function in all extremities. No long tract signs were noted. No clearly defined sensory abnormalities were present. Cranial nerve examination was entirely intact, with no observable cerebellar dysfunction.

Radiographs showed erosive changes, particularly in the upper cervical spine. The patient could not tolerate magnetic resonance imaging (MRI). Computed tomography (CT) revealed profound disease (Figures 1-3). C-1 had been almost completely destroyed, resulting in direct articulation of C-2 with the occipital condyles. None of the CT images or reconstructions documented remnants of C-1 remaining interposed between the occipital condyles and the superior articular facets of C-2. Subsequent 2.5-cm superior migration of the odontoid with a marked degree of medullary compression was documented.

Figure 1: Sagittal reconstruction showing advanced basilar invagination of the odontoid.
The patient was a poor operative risk, and had no interest in surgical intervention. The patient returned home after the pain was satisfactorily controlled with oral narcotic medication.

The patient died within 1 year of presentation. The cause of death was presumably related to complications of his disease, although no autopsy was performed, and no specific medical care or orthopedic follow-up subsequent to hospitalization was performed.

**DISCUSSION**

Rheumatoid arthritis commonly affects the cervical spine. Traditionally, initial management is conservative. Despite treatment, inflammatory arthritis can result in progressive cervical instability. Of these instabilities, basilar invagination is of utmost concern.\(^1,4\) Natural history studies emphasize the variable nature of progression and inconsistent correlation of symptoms with radiographic disease.\(^3,5,6\) However, severe progressive upper cervical destruction has been described that can progress to medullary compression with respiratory failure.\(^7,8\) As a result, described indications for operative management have included the development of radiographic instability, cervical radiculopathy, or myelopathy, although absolute indications are controversial.\(^2,3,9-13\)

This patient presented with advanced superior migration of the odontoid and significant medullary compression. The magnitude of invagination was well accommodated with no documentable signs of neurologic dysfunction; although we recognize that the accuracy of his neurologic examination was compromised by his multiple joint contractures. Further, this case demonstrates a mechanism for basilar invagination, specifically erosion of the C-1 lateral masses. Despite near complete disappearance of the C-1 lateral mass, little disease was noted at the neighboring occipital or axial articulations. This demonstrates that the disease can progress to massive and complete destruction, and the occipital condyles and facet joints of C-2 can accommodate to a new neighbor with stable result.\(^\text{[6]}\)

**REFERENCES**