



Case Report

Spinal fractures in patients with ankylosing spondylitis: A case report and literature review

Eduardo Augusto Iunes¹, Enrico Barletta², Telmo Augusto Barba Belsuzarri³, Daniel Paz Araujo¹, Fabio Sparapani¹, Franz Onishi¹, Sergio Cavalheiro¹, Thiago Salati¹, Vinicius De Meldau Benites¹, Andrei Joaquim⁴

¹Department of Neurosurgery, UNIFESP, Departments of ²Medicine, ³Neurosurgery, Pontifical Catholic University of Campinas, Campinas, ⁴Department of Neurosurgery, UNICAMP, Cidade Universitária Zeferino Vaz - Barão Geraldo, Campinas, São Paulo, Brazil.

E-mail: *Eduardo Augusto Iunes - eduardo@dreduardoiunes.com.br; Enrico Barletta - enrico.barletta333@gmail.com; Telmo Augusto Barba Belsuzarri - telmobelsuzarri@hotmail.com; Daniel Paz Araujo - danieldearaujopaz@gmail.com; Fabio Sparapani - fspara@yahoo.com.br; franz onishi - franzonishi@gmail.com; Sergio Cavalheiro - sergiocavalheironeuro@gmail.com; Thiago Salati - thiago_salati@yahoo.com.br; Vinicius De Meldau Benites - vmbenites@hotmail.com; Andrei Joaquim - andjoaquim@yahoo.com



***Corresponding author:**

Enrico Barletta,
Department of Medicine,
Pontifical Catholic University of
Campinas, São Paulo, Brazil.

enrico.barletta333@gmail.com

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ABSTRACT

Background: Severe ankylosing spondylitis (AS) affects the entire spine, increasing the risk of vertebral fractures. There are several fusion procedures used (e.g., anterior, posterior, or combined 360° procedures) to stabilize these fractures.

Case Description: A 45-year-old male with a 33-year diagnosis of AS presented with a progressive quadriparesis of 6 months' duration. Previously, he had surgery on both hips. The medical report documented degenerative spondylolisthesis at the C5-C6 level along with syndesmophytes a herniated disc and stenosis. Following a circumferential decompression/fusion without complications, the patient's symptoms resolved.

Conclusion: For patients presenting with cervical fractures and AS, circumferential surgical decompression/fusion may result in good outcomes.

Keywords: Ankylosing, Cervical and fracture, Spondylitis, Treatment

INTRODUCTION

Ankylosing spondylitis (AS) may present in patients under the age of 40 and is more prevalent in males (e.g., 80% under age 30).^[7] Severe AS affects the entire spine, increasing the risk of vertebral fractures. However, there are few guidelines regarding the optimal management of cervical fractures attributed to AS.

METHODS

We performed a literature review in PUBMED for AS. We included 13 AS articles involving a total of 221 patients.

Here, we also present a 45-year-old male who in 2019 presented with a C5-6 cervical fracture attributed to AS.

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CASE REPORT

Case description

A 45-year-old male with a 33-year history of AS presented with a progressive quadriparesis (e.g., hypertonia, hyperreflexia positive bilateral Babinski and Hoffman signs, and neck disability index [NDI] of 10) of 6 months duration. The neurological findings included Grade IV quadriparesis, with hypertonia/hyperreflexia, and bilateral Hoffman's and Babinski signs. Previously, he had surgery on both hips for AS deformities.

Radiologic findings

The preoperative medical report showed degenerative changes of the atlantoaxial joint, and at the C5-C6 level, degenerative spondylolisthesis, posterior syndesmophytes, thickening of ligamentum flavum, bilateral uncoarthroses, degenerative changes of the interapophyseal articulation, C5-C6 joint effusion, and disc dehydration/herniation and stenosis [Figure 1a-c].

Surgical procedure

The patient underwent a circumferential surgical procedure. The first operation included an anterior C5-C6 discectomy and fusion that utilized a cage containing iliac autograft; a plate was also applied. The secondary surgery involved a

posterior approach (e.g., C5-C6 laminectomy with bilateral lateral mass screw placement).

Postoperative course

Up to 2 years postoperatively, the patient remained asymptomatic (e.g., NDI of 0) with final fluoroscopic images confirming adequate C5-C6 circumferential fusion [Figures 2a and b, 3].

DISCUSSION

We presented our case of AS and a review of 13 studies of cervical AS. Those cases are presented in [Table 1]. The latter series involved 127 (57.2%) patients who were treated by posterior surgery alone, while 63 (28.3%) underwent combined anterior and posterior operations. Interestingly, 134 (60.3%) patients demonstrated unsatisfactory outcomes. This high failure rate was largely attributed to performing posterior fusions only.

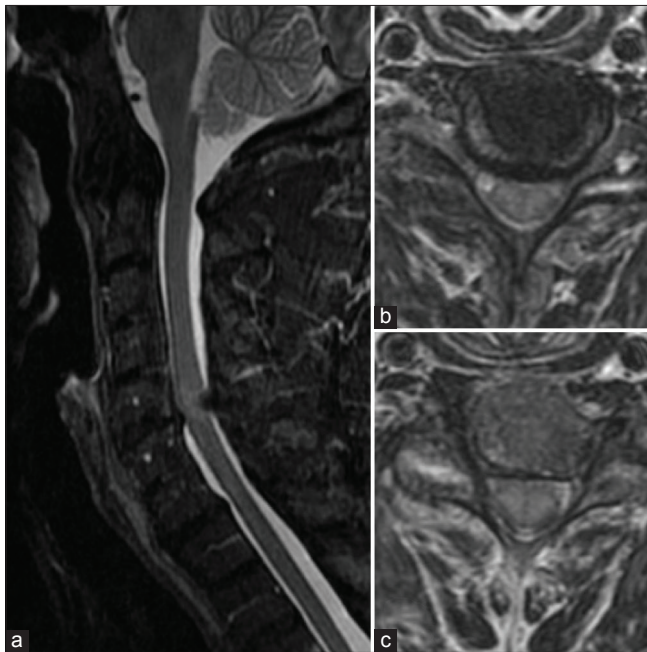


Figure 1: (a) The herniation of C5-C6, a suspicious traumatic lesion, and the C5-C6 compression by the thickened flavum ligament and posterior longitudinal ligament on the magnetic resonance imaging. (b) The reduced amplitude of spinal canal. (c) The spinal edema.

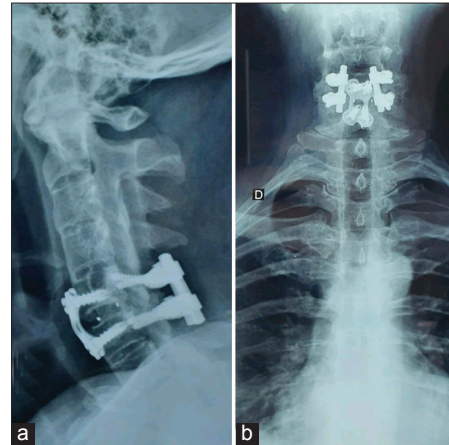


Figure 2: (a) The final sagittal postoperative fluoroscopy after 14 months. (b) The last coronal fluoroscopy.

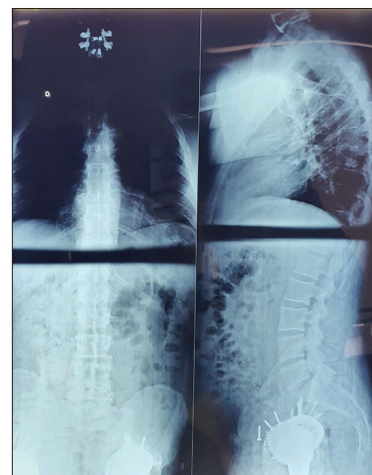


Figure 3: A panoramic fluoroscopy disclosing several classic findings of AS, such as the presence of osteophytes.

Table 1: Our literature finding with our case is presented.

| Study - year | Rowed et al., 1992 | Cornefjord et al., 2005 | Westerveld et al., 2009 | Ma et al., 2015 | Chon et al., 2017 | Liu et al., 2018 | Our case, 2019 |
|---------------------------------------|--|--|--|---|--------------------------------------|---|---|
| Number of patients surgically treated | 10 | 19 | 190 | 25 | 1 | 1 | 1 |
| Approach chosen | 60% – posterior fixation, 40% – decompressive procedures | 79% – posterior fixation, 21% – combined posterior and anterior fixation | 50% – posterior fixation, 25% – combined anterior and posterior fixation, 15% – anterior fixation, 10% – other | 40% – Combined anterior and posterior fixation, 36% – posterior fixation, 24% – anterior fixation | Posterior fixation and decompression | Posterior arthrodesis and decompression | Combined anterior and posterior arthrodesis and decompression |
| Improved symptoms | | | | | | | |
| In postoperative | 2 | 7 | 51 | X | X | X | 1 |
| In follow-up | X | X | 28 | 22 | 1 | 1 | X |
| Worsened or maintained symptoms | | | | | | | |
| In postoperative | 8 | 12 | X | 1 | X | X | X |
| In follow-up | X | X | 111 | 2 | X | X | X |

Ma et al.^[5] had certainly promoted performing 360° fusions for patients with cervical AS involving spinal cord injuries. Certainly, circumferential fusion utilized in our patient yielded an excellent outcome.

CONCLUSION

The operative technique utilized to treat patient with cervical AS fractures should depend on the type/location of these fractures with the clinical findings.^[1-4] However, most studies showed that a circumferential surgery for these cases correlates with the best outcomes.^[6-8]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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