Case Report

Traumatic cervical epidural hematoma due to fusion mass fracture following elective rod removal

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ABSTRACT

Many studies have examined complications associated with spinal instrumentation, however, few have analyzed complications associated with removal. In this case report, we outline the course of a patient who presented with cervical epidural hematoma secondary to fusion mass fracture five years after removal of spinal hardware.

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1. Introduction

There are multiple studies in the literature examining complications associated with spinal instrumentation. However, only a few studies describe complications associated with removal of spinal hardware.^{1,2} In these series, patients underwent removal of hardware due to infection, pain secondary to the hardware, or hardware failure. In the adolescent idiopathic scoliosis patients with a solid fusion mass, there are reports of loss coronal plane correction following removal of instrumentation due to symptomatic hardware or late infection.¹ Similarly, loss of sagittal plane correction has been described following removal of hardware in adult patients with fusion of five or more spinal segments.² To our knowledge, no previous studies documented fusion mass fracture following removal of spinal implants. In this case report, we outline the course of a patient who presented with cervical epidural hematoma secondary to fusion mass fracture five years after removal of spinal hardware (Fig. 1).

2. Clinical case

A 71-year-old female presented to the Emergency Department after a rollover motor vehicle collision complaining of neck pain and bilateral arm weakness. Examination in the Emergency Department demonstrated an incomplete motor deficit, classified as ASIA D on the ASIA Impairment Scale. She had a history of multiple prior cervical spine operations, including a C2-T2 posterior decompression and instrumented fusion in the remote past, followed by removal of the distal rods 5 years prior to the injury (Image A). One month prior to injury, an MRI was obtained due to possible radicular arm pain, which revealed a solid fusion mass from C2-T2 with no central or neuroforaminal stenosis (Image B).

Following the injury, CT scan revealed a nondisplaced fracture through the fusion mass at C6 at the caudal terminus of the intact rods (Image C, arrow). Cervical MRI revealed a T2 heterogenous mass consistent with acute hematoma from C5-7 with severe cervical cord compression (Image D, arrow) and inferior endplate edema at C6 and superior endplate edema at C7 representative of a fracture through the anterior and posterior fusion mass (Image D, arrowhead).

The patient was taken to the operating room for emergent decompression of the cervical epidural hematoma and revision of her instrumented fusion from C2-T3. She was managed in a hard cervical collar for 6 weeks. There were no specific medical modalities during her hospitalization or post-operative period. The

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Fig. 1. (A). Pre-operative fluoroscopy imaging showing fusion construct after distal rod removal. (B). Mid-sagittal T2-weighted image one month prior to injury demonstrating solid fusion mass. (C). Para-sagittal CT scan revealing non-displaced fracture through fusion mass at C6 level. (D). Mid-sagittal MRI from Emergency Department shows acute hematoma with severe cervical spinal cord compression and injury to anterior and posterior soft tissues with bony edema of C6 and C7 endplates.

patient returned to her baseline neurological status of ASIA E following surgery. She continues to have no neurologic deficits at 1-year follow-up.

3. Discussion

Complications associated with placement of spinal instrumentation are well documented in the literature, but few studies describe complication associated with removal of spinal implants. No previous studies reported traumatic fusion mass fracture after spinal hardware removal. However, a recent case series recommended reimplantation of hardware across a solid fusion mass in patients with adult spinal deformity to prevent spontaneous fusion mass fractures.³ The cervicothoracic and thoracolumbar junctions are well-defined areas of potential instability in the spine.^{4,5} Spinal surgeons may consider retention of rods for long-term stabilization across the cervicothoracic⁶ and thoracolumbar⁷ junctions, even in patients with evidence of a solid arthrodesis, to protect against fusion mass fracture.

Conflict of interest

None.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:[10.1016/j.jor.2017.07.014](https://doi.org/10.1016/j.jor.2017.07.014).

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