



Case Report

Posttraumatic C2-C3 spondyloptosis without focal neurological deficit, treated with anterior and posterior approaches: A case report

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Received : 09 May 2021

Accepted : 13 June 2021

Published : 06 July 2021

DOI

10.25259/SNI_462_2021

Quick Response Code:



ABSTRACT

Background: Cervical spondyloptosis is usually caused by trauma, and correlated with significant neurological deficits that can include quadriplegia, respiratory disorders, vertebral artery injury, and death.

Case Description: A 34-year-old male presented with C2-C3 spondylolisthesis after a fall from a tree. Although he had no neurological deficits, CT and X-ray studies confirmed C2-C3 a spondyloptosis. He was treated with emergent anterior and posterior cervical reduction, decompression, and fixation, remaining neurologically intact in the postoperative period.

Conclusion: Patients with C2-C3 spondyloptosis documented on X-ray/CT studies should be considered for circumferential decompression/fusion to preserve neurological function.

Keywords: Cervical fusion, Cervical spondyloptosis, Hangman's fracture, Trauma

INTRODUCTION

Cervical spondyloptosis is the most severe type of spondylolisthesis and is^[1] usually attributed to trauma.^[3] It usually results in a significant neurological deficit often characterized by; quadriplegia, respiratory disorders, vertebral artery injury, and even death.^[3]

CASE STUDY

A 34-year-old male fell from a tree 3 m high. When transferred, he was neurologically intact. The cervical CT scan demonstrated traumatic C2-C3 spondylolisthesis with bilateral C2 pars interarticularis fractures (i.e. A hangman's fracture). The patient underwent Gardner-Wells traction (i.e. 7.5 kg). However, when this failed to provide realignment, he first underwent an anterior fusion Consisting of C2-C3 discectomy, partial C2 and C3 corpectomy with cage/plate placement [Figure 1].

Three weeks later, due to increased anterior displacement, a secondary posterior fusion was performed warranting. C1-C3 fusion with bilateral C1 hooks, C2 trans-pars screws, and C3

lateral mass screws and rods. Four months later, the patient went on to fuse without any neurological deficit [Figure 2].

DISCUSSION

We identified four other cases of spondyloptosis at the C2-C3 level. These were attributed to; new trauma (1 case),

old trauma (1 case), absence of all C2 vertebral posterior elements, (1 case), and a motor vehicle accident (1 case) [Table 1].^[2-5] Traumatic cervical fractures should be observed carefully, with great attention to “red flag symptoms” (i.e. the onset of neurological deficits, and further subluxation) Many of these patients warrant early consideration of decompression/fusion [Table 1].

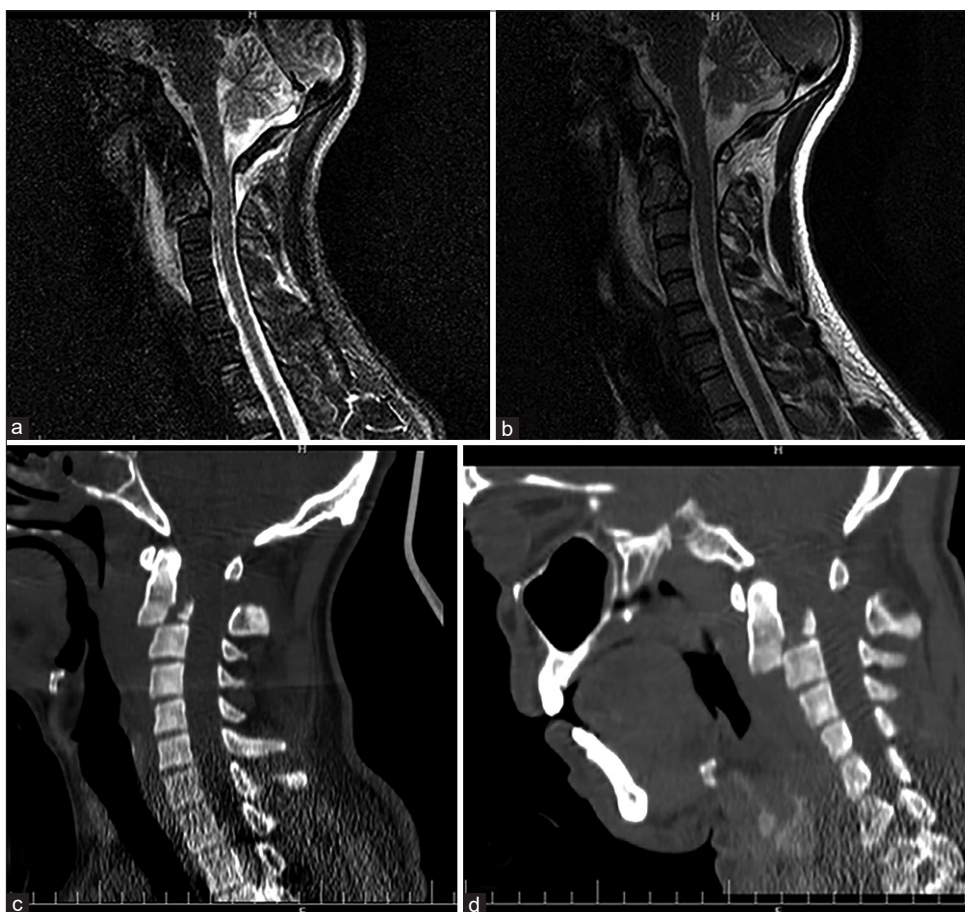


Figure 1: Radiologic view of cervical spine before surgery: first day Cervical MRI (STIR view) (a), 1st day Cervical MRI (T2 view) (b), 1st day cervical CT (c), and CT scan on the 14th day (d).

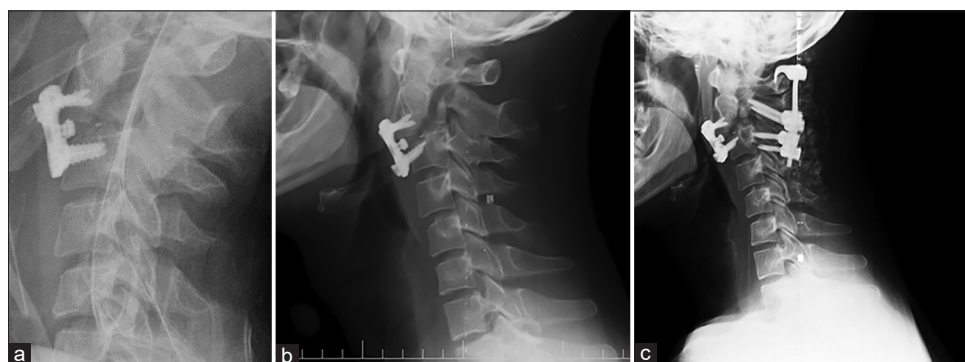


Figure 2: Radiologic view of cervical spine after surgery: after anterior approach cervical XR, (a) cervical XR on the 3rd week after anterior approach (b), and cervical XR after posterior approach (c).

Table 1: Cases reported with C2-C3 spondyloptosis.

Authors and year	Predisposing condition	Age (sex)	Symptoms	Additional finding on radiography	Management	Outcome on follow up
Singh <i>et al.</i> (2020)	Road traffic accident	32 (M)	Weakness of limbs and paresthesia below the neck	C2 vertebral body resting anterior to the superior portion of the C4 vertebral body	Anterior and posterior approach	patient's ASIA scale grade had improved
Manjila, <i>et al.</i> (2014)	Motorcycle accident	39 (M)	Progressive deformity of neck Painful head tilt	Rt C-2 pedicle fx Fracture of superior articular process of C-3 Coronal-plane spondyloptosis of C-2 over C-3	Anterior and posterior cervical fusion	Excellent pain control Tetraparetic with minimal movement of his upper extremities Patchy sensation below his level of injury at C-3
Jayakumar, <i>et al.</i> (2008)	Blunt trauma to neck, 4 years before referral	58 (M)	Increasing neck pain No significant neurological symptoms Neck flexion posture	Bilateral fractures of the pars interarticularis of C2 60% central canal narrowing at the C2/C3 level	Posterior occipitocervical fusion	Resolution of his neck pain No neurological deficit
Muzumdar and Goel (2004)	No history of any trauma Short neck since birth	31 (M)	Spastic quadriparesis Upper motor neuron sign	Complete absence of all the posterior elements of the axis vertebra	C3 radical corpectomy + Anterior plate	Remarkable neurological recovery

Although Gardner-Wells traction should be acutely utilized to prevent further subluxation and increased neurological injury, circumferential surgical decompression/stabilization is the “gold standard.”

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Fattahi A, Daneshi A, Mohajeri SM. Posttraumatic C2-C3 spondyloptosis without focal neurological deficit, treated with anterior and posterior approaches: A case report. *Surg Neurol Int* 2021;12:332.