

CASE REPORT

Traumatic cervical spine injury during sexual activity

Caroline Davidson, Clifford L. Crutcher, and Gabriel C. Tender*

Department of Neurosurgery, Louisiana State University Health Sciences Center, New Orleans, LA 70112, USA

*Correspondence address. Department of Neurosurgery, Louisiana State University Health Sciences Center, 2020 Gravier Street, Suite 744, New Orleans, LA 70112, USA. Tel: +1-504-722-4711; Fax: +1-504-568-6127; E-mail: gtende@lsuhsc.edu

Abstract

Sexual activity is unlikely to result in spinal injuries. We present the first case of a cervical fracture-subluxation and spinal cord injury following sexual activity. This 31-year-old female presented to the emergency room with neck pain and quadriplegia, following sexual activity in an extreme position. Imaging revealed a hyperflexion cervical fracture-subluxation injury, requiring reduction by traction, followed by circumferential surgical fixation. At 6 months postoperatively, she reported baseline return of function. This case demonstrates that sex-induced spinal injuries are possible and may require urgent surgical treatment.

INTRODUCTION

Sexual activity may result in significant untoward effects, such as myocardial infarction and penile fractures [1, 2]. Patients with low back pain may also suffer episodes of acutization during or after intercourse [3, 4]. However, to our knowledge, there have been no reports of significant spine and spinal cord injuries as a direct result of sexual activity. Here, we report the first case of a cervical spinal fracture-subluxation, with resultant spinal cord injury, induced by extreme sexual activity.

CASE REPORT

A 31-year-old African American female reported to the Emergency Department for complaints of neck pain and generalized weakness. The pain started suddenly, following neck hyperflexion during sexual activity with her significant other. The patient reported being in an unusual position, resting the back of her head against the floor, with the neck in hyperflexed position, and the torso and lower body up in the air, supported by her significant other. Upon forced hyperflexion, the patient felt a ‘pop’ and then immediate onset of pain and weakness. She did not lose consciousness. She reported consuming ‘a fair amount’ of alcohol prior to the event.

On arrival at the emergency room, she complained of neck pain and exquisite bilateral hand tenderness. Motor exam revealed weakness in elbow extension (American Spinal Injury Association—ASIA grade 4/5 on left, 0/5 on right), hand grip (2/5

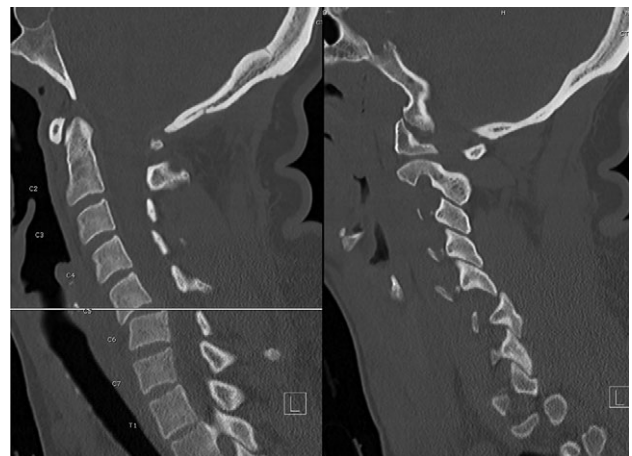


Figure 1: Preoperative CT, sagittal images through the center (left) and right side (right), illustrating the C5-6 fracture-subluxation and right jumped facet.

Received: May 14, 2019. Accepted: June 19, 2019

Published by Oxford University Press and JSCR Publishing Ltd. All rights reserved. © The Author(s) 2019.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact journals.permissions@oup.com



Figure 2: Postoperative CT-myelogram, sagittal images through the left (left), center (center) and right (right) sides, illustrating good realignment and incipient fusion at C5-6.

bilaterally), and left leg (3–4/5). There was preserved bowel and bladder control. The patient was diagnosed with an incomplete spinal cord injury, ASIA C.

A computed tomography (CT) of the cervical spine without contrast revealed a C5-6 fracture dislocation and subluxation (Fig. 1) with spinal cord compression. The injury also included a posterior ligamentous complex rupture at C5-6, with fracture of the posterior lamina of C5 and right-sided jumped facet.

The patient's Subaxial Cervical Spine Injury Classification (SLIC) score was 8, indicating a surgical lesion [5]. The patient was initially placed in cervical traction, with successful realignment at 30 lbs of weight. Surgical options were discussed at length with the patient, including an anterior only approach, followed by immobilization in cervical collar, versus a circumferential approach. The patient chose the latter, anticipating a more intense physical therapy for postoperative recovery. In the operating room, a single level C5-6 anterior discectomy and fusion was initially performed, followed by a posterior approach with lateral mass screws and rods at C5 and C6. The disc was found to be severely disrupted, as expected, but no dural violation was observed. The patient had an excellent postoperative course, with immediate resolution of the hand pain and progressive return of motor function. She was transferred to the hospital's inpatient rehabilitation center and at 2 weeks postoperatively she only exhibited trace weakness (4+/5) in the left leg and right triceps. At the 6-month postoperative visit, the patient had no residual deficits and a CT-myelogram showed good incipient fusion across the disc space (Fig. 2).

DISCUSSION

Traumatic cervical spine injuries are often reported in motor vehicle accidents and contact sports, such as football for males and horseback riding for females [6]. The degree of severity can be determined using the SLIC score [5]. Patients with a SLIC score of 5 or more are considered surgical candidates. Prompt stabilization and imaging are crucial for the correct diagnosis and treatment.

The initial treatment for patients with cervical fracture-subluxation is traction, in an attempt to reduce the subluxation. This was successful in our case, obviating the need to perform an initial posterior surgical approach to reduce the slippage. The next step after reduction was to stabilize the affected spinal segment anteriorly, by performing a discectomy

and fusion. Due to the high degree of instability, as well as per patient's wishes, a final surgical step consisting in a short segment posterior fixation was performed. This allowed for the strongest segmental fixation and permitted the patient to undergo intense postoperative physical therapy, without the need for a cervical collar.

Literature regarding spinal cord injuries and sexual activity addresses mostly fertility and the capability of having sex as a complete or incomplete quadri- or paraplegic [7, 8]. We have found no reports on spinal column or spinal cord injuries directly caused by sexual activity. Therefore, it appears that this is the first case report showing that sexual activity can result in serious spine and spinal cord injuries when extreme positions are adopted.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no competing interests.

FUNDING

No funding was received for this article.

CONSENT FOR PUBLICATION

The patient consented for publication of this case report and any accompanying images.

REFERENCES

1. Dahabreh IJ, Paulus JK. Association of episodic physical and sexual activity with triggering of acute cardiac events: systematic review and meta-analysis. *JAMA* 2011;305:1225–33.
2. Falcone M, Garaffa G, Castiglione F, Ralph DJ. Current management of penile fracture: an up-to-date systematic review. *Sex Med Rev* 2018;6:253–60.
3. Sidorkewicz N, McGill SM. Male spine motion during coitus: implications for the low back pain patient. *Spine* 2014;39:1633–9.
4. Sidorkewicz N, McGill SM. Documenting female spine motion during coitus with a commentary on the implications for the low back pain patient. *Eur Spine J* 2015;24:513–20.
5. Vaccaro AR, Hulbert RJ, Patel AA, Fisher C, Dvorak M, Lehman RA Jr., et al. The subaxial cervical spine injury

classification system: a novel approach to recognize the importance of morphology, neurology, and integrity of the disco-ligamentous complex. *Spine* 2007;**32**:2365–74.

6. DePasse JM, Durand W, Palumbo MA, Daniels AH. Sex- and sport-specific epidemiology of cervical spine injuries sustained during sporting activities. *World Neurosurg* 2019;**122**:e540–5.
7. Davidson R, Phillips A. Cardiovascular physiology and responses to sexual activity in individuals living with spinal cord injury. *Top Spinal Cord Inj Rehabil* 2017;**23**:11–9.
8. Stoffel JT, Van der Aa F, Wittmann D, Yande S, Elliott S. Fertility and sexuality in the spinal cord injury patient. *World J Urol* 2018;**36**:1577–85.