



## Case Report

# Bilateral cervical facet dislocations at two adjacent levels: A case report

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## ABSTRACT

**Background:** Cervical facet dislocations are rare in patients sustaining traumatic subaxial injuries. They occur due to hyperflexion-distraction and can occur unilaterally or bilaterally resulting in significant spinal instability. Bilateral facet dislocations at one level are less common than unilateral dislocations, while bilateral facet dislocations at adjacent spinal levels have only been reported twice in literature.

**Case Description:** A 31-year-old male presented with bilateral facet dislocations at two adjacent cervical levels (C6/C7 and C7/T1) following a fall from 40 to 50 feet. The patient had undergone a C6/C7 disk arthroplasty a few weeks before the traumatic event.

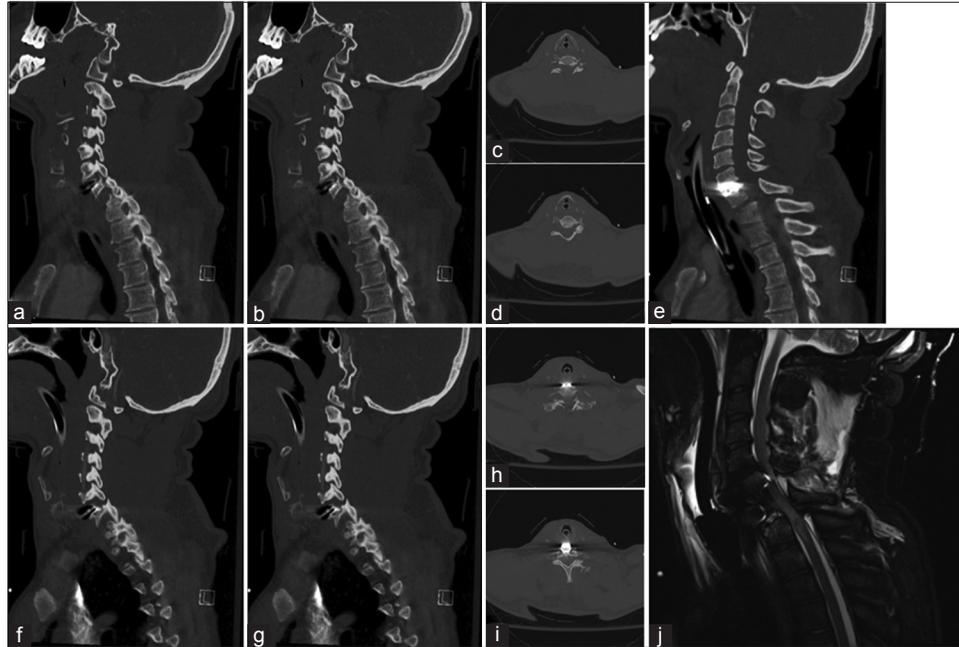
**Conclusion:** Here, we present the unique case of cervical bilateral jumped facets occurring at two adjacent levels (i.e., C6–C7 and C7–T1). Notably, the antecedent cervical C6–C7 arthroplasty likely contributed to the altered load distribution, leading to this unusual instance of bilateral adjacent level facet dislocations. In such cases, surgical reduction and fixation may prove technically challenging warranting, therefore, careful preoperative planning.

**Keywords:** Cervical, disk arthroplasty, double-level bilateral facet dislocation, spinal trauma

## INTRODUCTION

Cervical facet dislocations occur in 5–10% of cervical spinal trauma cases due to hyperflexion-distraction injuries. Bilateral adjacent-level dislocations are very rare and have thus far only been reported twice in literature.<sup>[1,3]</sup> Here, we present a 31-year-old male, who previously had a C6–C7 arthroplasty and sustained a 40–50 feet fall resulting in bilateral C6–C7 and C7–T1 facet dislocations treated initially with closed reduction followed by delayed open reduction and posterior cervical fusion.

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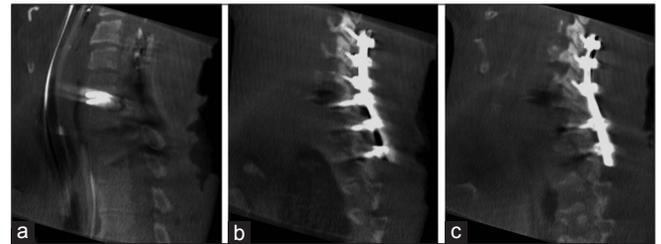
**Figure 1:** Locked facets are demonstrated at the C6/7 level. (a-d) On the right. (a and c) And left side. (b and d). and C7/T1 level. (f-i) On the right side. (f and h) And the left side. (g and i). Grade 1 anterolisthesis of C7 on T1 and a disc arthroplasty at the C6/7 level are appreciated. (e). Disruption of the ligamentum flavum and cord signal change is seen from C5 to T2 (j).

## CASE REPORT

A 31-year-old male fell from a balcony approximately 40–50 feet height. On admission with a GCS score of 5, he was unable to move his extremities and had no rectal tone. A computed tomography (CT) scan of the cervical spine demonstrated bilateral locked facets at C6/C7 [Figure 1a-d] and C7/T1 [Figure 1f-i] with Grade 1 anterolisthesis at C7/T1. There was also a C6/C7 arthroplasty that was performed a few weeks before the event [Figure 1e].

The magnetic resonance imaging (MRI) scan demonstrated injury to the C6/C7 and C7/T1 ligaments: the ligamentum flavum and interspinous, anterior, and posterior longitudinal ligaments [Figure 1j]. This was accompanied by severe canal narrowing and a high intramedullary cord signal/edema at these levels, plus a small C5–T1 epidural hemorrhage. The brain MRI also demonstrated several foci of punctate hemorrhage consistent with diffuse axonal injury requiring placement of an intracranial pressure monitor.

The patient underwent emergent posterior spinal decompression with fusion from C4 to T2. The pedicles of C7 were fractured bilaterally and several attempts to achieve reduction were unsuccessful. The posterior elements of C7 were considerably loose due to the bilateral pedicle fractures. Ultimately, removal of the superior facets of C7 and T1 allowed for C6–C7 and C7–T1 reduction. The left C8 nerve root was entirely exposed due to the lateral mass fracture at C7 and was exposed further to ensure decompression of the C8 roots. A postoperative CT scan demonstrated adequate localization of the instrumentation and alignment despite slight unilateral facet subluxation at C6/C7 and minor unilateral facet



**Figure 2:** Postoperative sagittal images demonstrating posterior cervicothoracic instrumentation and fusion from C4 to T2 at midline. (a) And lateral views. (b and c) With the facets at the respective side.

subluxation at C7/T1 [Figure 2]. Postoperatively, the patient was monitored closely in the ICU. He had upper extremity function but appeared plegic in the lower extremities without sphincter tone. He ultimately expired secondary to his severe brain injury.

## DISCUSSION

Multiple facet fractures/dislocations occur at all spinal levels in up to 4% of patients sustaining spinal injuries.<sup>[2]</sup> These fractures are typically separated by several spinal segments. Complete bilateral dislocations occurring at adjacent segments are very unusual. Here, we present this unique entity which to our knowledge not yet been reported in literature. Facet dislocations occurring at two adjacent levels are likely attributed to unique biomechanical and pathophysiological forces.<sup>[4,5]</sup> Such facet dislocations are much more likely to occur at a single level as loads are absorbed at that one level. In this case, the disk arthroplasty likely distributed the

loads, leading to the unique dislocation pattern at two adjacent levels. Due to the previous cervical C6–C7 arthroplasty, a posterior approach was chosen to unlock the facets and achieve a reduction, decompression, and fusion. Several reduction maneuvers were attempted. Ultimately, the superior facets of C7/T1 were resected to achieve reduction at both the C6/7 and C7/T1 levels.

## CONCLUSION

Here, we present the unique case of a 31-year-old male, who sustained bilateral cervical jumped facets (C6/C7 and C7/T1) occurring at two adjacent levels shortly after he had undergone a C6/C7 arthroplasty. Due to the rare entity, surgical reduction and fixation may prove special technical challenges. The authors chose to perform a posterior approach to achieve reduction, decompression, and fusion.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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