Bilateral Cervical Facet Dislocation Without Neurological Injury

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Bilateral facet dislocations represent significant high-energy trauma to the cervical spine. Neurological morbidity is common, occurring in up to 85% to 90% of cases, and usually is severe among patients with bilateral facet injury. Treatment of these injuries is directed at emergent reduction and stabilization of the spine to prevent worsening of any preexisting neurological deficits.

Rupture of the posterior longitudinal ligament and annulus fibrosus with an associated disk herniation is common after bilateral facet dislocations. Previous studies have shown these herniations can reduce the space for the spinal cord within the canal and can contribute to neurological worsening following a reduction. Because of this possibility, many investigators have recommended the importance of obtaining prereduction imaging studies including magnetic resonance imaging (MRI).

However, other studies suggest significant neurological worsening following reduction is rare and its relation to intervertebral disk herniation has not been well established. Thus, an argument can be made that the delay in reduction required to obtain MRI justifies foregoing the MRI study for expeditious reduction of cord compression caused by the persistent dislocation. Animal research has shown the extent of neurological injury after spinal cord compression is related to both the rate of injury and the duration of compression. Basic animal research also has demonstrated a relatively brief window of 1 to 3 hours is available, after which injury to the spinal cord caused by mechanical compression may become irreversible.

Patients who present with an incomplete neurological injury represent a more difficult situation in the decision-making process because the time required to obtain a prereduction MRI can be as long as several hours and thus the potential to cause further neurological injury in these patients is real. This article reports a rare case of bilateral cervical facet dislocation in an elderly patient who remained neurologically intact.

CASE REPORT

An 84-year-old man sustained a C3-C4 bilateral facet dislocation and an associated C3 lamina fracture after falling backward down a flight of stairs at his home. On initial
evaluation, the patient complained of posterior neck burning without any loss of motor or sensory function.

Computed tomography demonstrated the C3-C4 bilateral facet dislocation and the associated lamina fracture of C3 (Figure 1). Following mild sedation, traction was applied using Gardner-Wells tongs. The reduction weight was sequentially increased, and periodic fluoroscopic imaging was used until successful closed reduction to near normal sagittal alignment was obtained (Figure 2).

Stabilization and complete reduction was then obtained with a posterior cervical fusion using a unilateral lateral mass plate with spinous process wiring from C2-C4 (Figure 3). This combination was used secondary to the patient’s poor bone quality providing insufficient stability with the contralateral lateral mass construct.

At latest follow-up, the patient remained neurologically intact and was recovering well from an orthopedic standpoint. The patient’s postoperative course was complicated by two episodes of respiratory arrest secondary to a pulmonary embolus.

**DISCUSSION**

Neurological injury with a bilateral cervical facet dislocation is common. There is continued controversy for obtaining MRI before treatment and reduction of cervical facet injuries. The primary concern is an unrecognized cervical disk herniation may produce or worsen a compressive spinal cord injury if reduction is attempted before decompression. Many researchers believe disruption of the posterior longitudinal ligament and a portion of the intervertebral disk also occurs with these injuries. Studies have suggested a prereduction MRI can demonstrate the full extent of injury and should be considered before a treatment plan is developed or administered.²,⁴

However, previous animal studies have shown the extent of neurological injury after spinal cord compression is related to both the rate of injury and the duration of compression.³ The time required to obtain an MRI often can be as long as several hours; in some cases, MRI may not be readily available or can even cause difficulty for medical personnel to assess any change in neurological function while obtaining the MRI. In addition, reports have shown any worsening of neurological function may not be attributable to a herniated nucleus pulposus.²,⁵,⁷,⁸

Many factors need to be considered in the treatment of bilateral cervical facet dislocations. These include but are not limited to the patient’s age, general health, and neurological status; the availability of MRI; and the patient’s ability to cooperate with a thorough neurological examination. Because our patient was elderly, sustained a high cervical level injury, remained neurologically intact, and MRI was not readily available, it was believed avoiding a delay in reduction was more important than obtaining a prereduction MRI.

**REFERENCES**