

Management of C4-C5 Fracture with Approach 360° Without the Spinal Instrumentation

Case Report

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Abstract

Introduction: Usually, cervical pedicle screw fixation has been considered too risky for neurovascular structures. The purpose of this case report is to present a young male patient who suffered a C4-C5 fracture after a motor vehicle accident treated with a 360° surgical approach without spinal instrumentation.

Case report: A young male patient suffered a motor vehicle accident driving the vehicle without seat belt. Instantly after the accident he reports about severe neck pain, inability to move his left extremities, difficulty moving his right extremities, burning pain. All patients had various degrees of cord injury, and they were classified according to the American Spinal Cord Injury Association (ASIA) Impairment Scale and Denis classification.

Results: We present this young patient, where the selected surgical approach without using spinal instrumentation resulted has favorable outcome.

Conclusion: Surgical options regarding to cervical spine fractures include stabilization and decompression with and without spinal instrumentation. Carefully selected cases may be treated safely without instrumentation avoiding potential complications of spinal instrumentation such pseudoarthrosis, instrumentation failure, infection, etc.

Keywords: Lower cervical spine, Fracture-dislocation, Classification regarding ASIA,

Introduction

Since 2005, the most common causes of spinal cord injury (SCI) remain: (1) motor vehicle accidents (40.4%); (2) falls (27.9%), most common in those aged 45 y or older. Spinal cord injury (SCI) due to trauma has major functional, medical, and financial effects on the injured person, as well as an important effect on the individual's psychosocial well-being.

Methods

We present a case report of a young male patient who suffered a C4-C5 fracture after a motor vehicle accident treated with a 360° surgical approach without spinal instrumentation.

Results

We present this young patient, where the selected surgical approach without using spinal instrumentation resulted has favorable outcome.

Discussion

In cases of cervical traumatic fractures in carefully selected patients spinal instrumentation is not necessary, avoiding the high risk of infection and pseudoarthrosis.

Medical History

A young male patient suffered a motor vehicle accident driving the vehicle without seat belt. Instantly after the accident he reports about severe neck pain, inability to move his left extremities, difficulty moving his right extremities, burning pain.

- **Neurological examination revealed:** asymmetrical tetraparesis with superior extremity 4/5 flexion, 3/5 extension. Inferior extremity 3/5 flexion, 3/5 extension at the right, superior extremity 1/5 flexion, 0/5 extension. Inferior extremity 1/5 flexion, 1/5 extension at the left.

Sensibility: hypo sensibility from C6 dermatome and below without anesthetic areas.

Proprioceptive sensibility was present.

The patient was unable to control the sphincters.

- Classification regarding ASIA (Frankel I modified) was : Type B

Classification of the lesion: Type D II lesion asymmetrical, with rotator vector in one side, articular fracture-dislocation disc-ligament instability and anterolyshtesis.

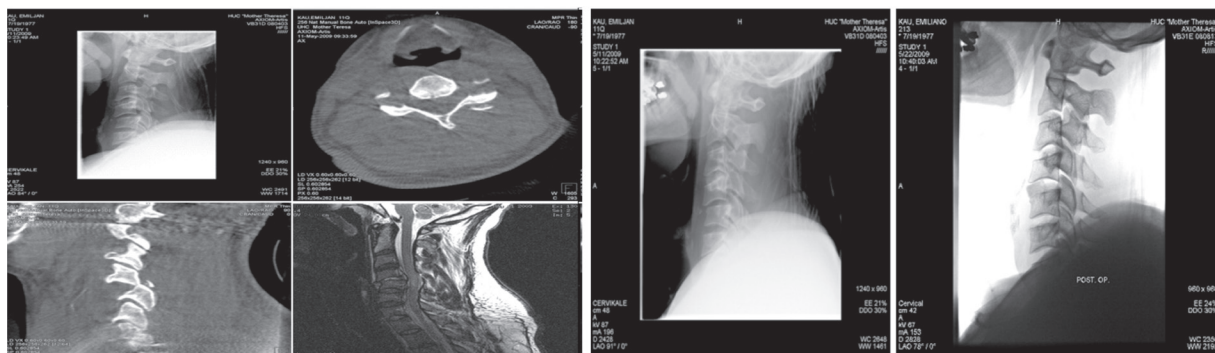


Figure 1. Imaging studies before and after the surgical procedure.

Surgical approach

Initially posterior approach, skin incision over the spinous processes of the C3-C5 vertebrae, skel-etization on the left, the dislocation between articular fascets was identified and with the help of a spatula the inferior C4 articular fascet was

put back in the normal anatomical position.

Second step: anterior approach with dicectomy and herniectomy at C4-C5 level, three-cortical bone graft was harvested from illiac crest and was placed between C4 and C5 vertebrae.

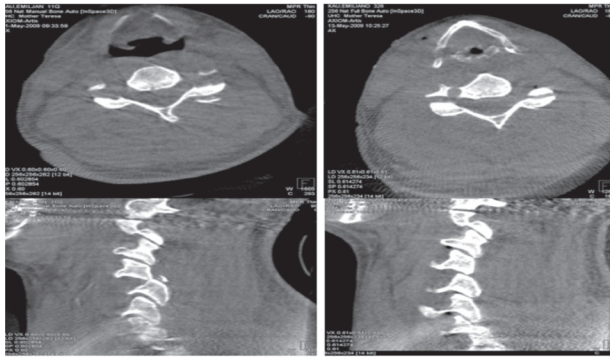


Figure 3. 3D riconstruction after the surgery.

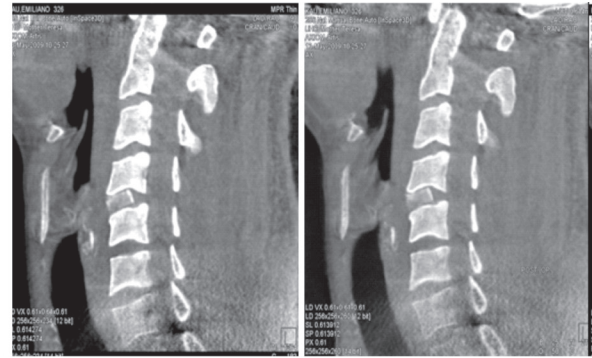


Figure 2. 3D radiographs before and after the surgical procedure.



Figure 4. T2 weighted MRI before and after the surgical procedure.

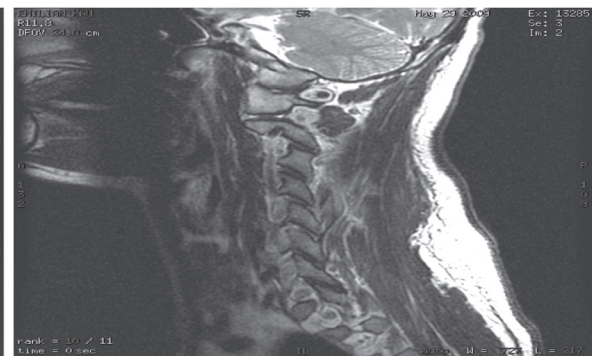
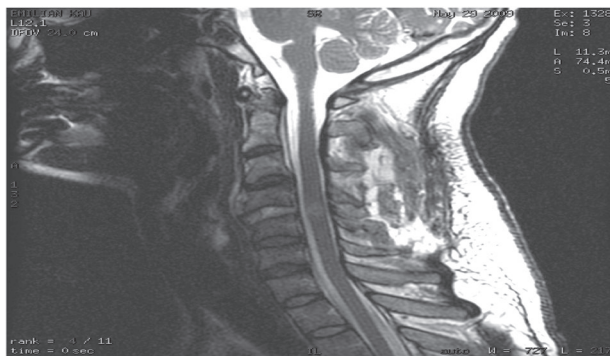


Figure 5. MRI after the surgical approach.

Discussion

The spinal instrumentation in this era of modern surgery is widely practice in treatment of spinal diseases. Although the excellent results in spinal instrumentation, the morbidity and mortality is not negligent. In cases of cervical traumatic fractures in carefully selected patients spinal instrumentation is not necessary, avoiding the high risk of infection and pseudoarthrosis.

In the reported case, the patient was immobilized with rigid cervical collar for six weeks after the surgery.

Periodic follow up (two and six months after the surgery) showed marked improvement in neurological examination with complete recovery of motor function and minor sensory disturbances.

Conclusion

Surgical options regarding to cervical spine fractures include stabilization and decompression with and without spinal instrumentation. Carefully selected cases may be treated safely without

instrumentation avoiding potential complications of spinal instrumentation such pseudoarthrosis, instrumentation failure, infection, and other complication as well.

References

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