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Early Surgical Reduction without Traction for Acute Traumatic Sub-Axial Cervical Spine Injuries

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Introduction

Spinal cord decompression after cervical spinal cord injury (SCI) is the standard of care. There is lack of consensus regarding optimal management of these injuries, including the role of traction and timing of surgery. We report our experience of early surgery with intra-operative fracture reduction for acute cervical spinal cord injury.

Methods

We reviewed a prospectively collected series of acute traumatic sub-axial cervical (C3-C7) spine fractures treated between 2004 and 2016. Patients underwent anterior cervical discectomy or corpectomy and fusion within 24 hours of injury. Preoperative traction was not used in order to avoid delaying transfer to the operating room to definitively surgically stabilize the injury.

Conclusions

Early surgical treatment in cases of acute SCI due to subaxial cervical spine fractures is both safe and efficient when performed via the anterior cervical approach. Preoperative traction is not necessary in these cases, and direct surgical stabilization can be undertaken.

Results

Thirty-six patients (27 male, 9 female), with mean age of 34.9 years (range 14-79) were included in the study. There were 25 motor-vehicle accidents, 4 sports-related injuries, and 7 falls. Fracture-dislocations were seen in 25 patients, while burst fractures were seen in 10. Patients with central cord injury and no compressive lesion were excluded. All patients underwent pre-operative CT and MRI. There were 2 injuries at the C3-4 level, 13 at C4-5, 13 at C5-6, and 8 at C6-7. Complete SCI occurred in 10 patients. Incomplete SCI was seen in 26 patients. Sixteen patients required vertebrectomy as part of stabilization. Intraoperative reduction was achieved in all patients using a Cobb elevator or distraction pins without use of pre-anesthesia traction. There were no intraoperative complications. One patient (2.8%) had a postoperative hematoma. The average hospital length of stay was 10.6 days (range 1-39). No patient had neurologic deterioration, and 25 patients showed some improvement.

References

1. Harrop, J.S., et al., The cause of neurologic deterioration after acute cervical spinal cord injury. Spine (Phila Pa 1976), 2001. 26(4): p. 340-6.

2. Fehlings, M.G., et al., Current practice in the timing of surgical intervention in spinal cord injury. Spine (Phila Pa 1976), 2010. 35(21 Suppl): p. S166-73

3. Liu, Y., et al., Timing of surgical decompression for traumatic cervical spinal cord injury. Int Orthop, 2015. 39(12): p. 2457-63

Learning Objectives

By the conclusion of this session, participants should be able to:

1) identify subaxial traumatic fractures

2) understand that early anterior-approach reduction is a feasible way to treat these injuries

3) comment on early surgical treatment without preoperative traction