Complications and Long-term Outcomes After Open Surgery for Traumatic Subaxial Cervical Spine Fractures: A Consecutive Series of 303 Patients

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Introduction

Knowledge of surgical complications, and expected long-term outcomes after surgery, are important in the decision process for surgical treatment of subaxial cervical spine fractures (S-CS-fx).

Methods

Medical charts for 303 patients surgically treated for S-CS-fx in the years 2002- 2010 were retrospectively reviewed. The surviving patients participated in a prospective long-term follow-up, including clinical history, physical examination and updated cervical CT.

Results

The median patient age was 49 years (range 14.7–93.9), and 74% were males. Preoperatively, 43% had spinal cord injury (SCI), and 27% exhibited isolated radiculopathy. The risks of SCI deterioration and new-onset radiculopathy after surgery were 2.0% and 1.3%, respectively. Surgical mortality (death within 30 days)was 2.3%. These patients were all >80 years of age or had a severe head injury. The reoperation rate was 7.3%. At the long-term follow-up conducted a median of 2.6 years after trauma (range 0.5–9.1), 256 (99.2%) of the patients who had survived and were living in Norway participated. Of the patients with American Injury Severity Scale (AIS) A–D at presentation, 51% had improved one or more AIS grades. Of the patients with preoperative radiculopathy, 89% were without symptoms. The bony fusion rate was 98%.

Conclusions

In this large consecutive series of patients with S-CS-fx treated with open surgical fixation, the surgical mortality was 2.3%, the risk of neurological deterioration was 3.3% and the reoperation rate (any cause) was 7.3%. The neurological long-term results were good, with 51% improvement in AIS grade and resolution of radiculopathy in 89% of the patients. Bony fusion was 98%. Considering the high risk of morbidity that subaxial cervical spine fractures may entail, the surgical risk in this series was considered acceptable.

Learning Objectives

To describe complications and outcome in surgically treated subaxial cervical spine fractures.