

Management of Acute Combined Atlas and Axis Fractures: A Series of 48 Patients

Joseph D DiDomenico BS; Ryan Khanna BS; Kingsley O. Abode-lyamah MD; Helena Roberts; Zachary A Smith MD; Nader S. Dahdaleh MD
[Institution]

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Introduction

Combination fractures of the atlas and axis comprise a small percentage of cervical spine injuries, but compared to isolated fractures, may present with a higher rate of neurological deficits and biomechanical instability. When managing these, cervical immobilization and selective early surgical intervention are often recommended, however non-operative management maybe also be successful. We present our experience managing these fractures.

Methods

Electronic databases from two level-one trauma centers were queried to identify all patients diagnosed with C1-C2 combination fractures from 2009 to present. Records from 48 patients with combination fractures were reviewed. Patient characteristics, fracture characteristics, treatment modality, complications, Nurick scores, and fusion status were collected. Patients were separated into surgical and non-surgical cohorts, and comparisons were made between the two groups.

Results

Of the 48 patients, 19 underwent operative intervention, and 29 were treated non-operatively. The mean age was 76.1 and 75.3, respectively ($p=0.877$). The mean Nurick score before intervention was 1.9 in the operative group compared to 1.5 in the non-operative group, respectively ($p = 0.38$). The mean Nurick score on last follow-up was 1.4 undergoing surgery and 1.3 in those not undergoing surgery ($p=0.880$). Fractures of both the anterior arch and posterior arch of C1 were present in 41.2% patients undergoing fusions compared to 27.6% of patients treated non-operatively. Fusion rates were 63.6% in the surgical group compared to 56.3% in the non-surgical group ($p=0.702$). No significant differences in comorbidities, neurologic deficits, or radiographic measurements were observed across the two groups.

Conclusions

Multiple options are available for treating patients with combined C1-C2 fractures. Patients managed operatively tend to have both anterior and posterior C1 arch fractures, while patients managed non-surgically tend to have either anterior or posterior arch fractures. Generally, treatments are tailored to patients' needs on case-by-case

Learning Objectives

By the conclusion of this session, participants should be able to 1.) understand the commonalities and differences of the treatment modalities utilized in the care of combination fractures of the atlas and axis. 2.) understand when each treatment is used

References