Incidence of Re-operation for Posterior Cervical Fusion: A Large Scale Retrospective Analysis

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Introduction

Posterior cervical fusions have been increasingly used to treat a variety of spinal pathologies. With this, there has been an increase in re-operations and construct failures. While it is generally accepted that C2 provides a rostral anchoring point due to the ability to place a more robust screw, and fusion across the cervico-thoracic junction (CTJ) reduces adjacent segment disease, there are currently no guidelines with regards to extent of fusion required for different scenarios.

Methods

This is a retrospective review of 370 patients who underwent posterior cervical fusions over a 12 year period at a single institution. This study looks at the re-operations, from all causes, of posterior cervical fusions at a single institution and compares different fusion techniques, including the failure rate for subaxial fusions with those that include C2, as well as those that cross the cervico-thoracic junction.

Results

Of the 370 patients reviewed 44 patients (11.9%) that required a revision of any kind. 11 patients (3.0%) had failure related to ASD and 5 (1.4%) related to hardware failure. There was not a higher revision rate (for any cause) for patients who had a subaxial fusion and compared with those that included C2. When looking at biomechanical failures only (adjacent segment disease and screw pullout), patients were less likely to require a revision procedure if their fusion crossed the CTJ ($p = 0.038$). Of patients requiring revision there were a higher percentage of patients with previous ACDF ($p < 0.001$).

Conclusions

This study did not show an increased risk of failure based on the decision to incorporate C2; however, there was a significantly increased re-operation rate in patients who did not have fusions crossing the CTJ. When indicated, posterior cervical fusion constructs should cross the CTJ, however there is no evidence to support inclusion of C2 for prevention of biomechanical failures.

Learning Objectives

By the conclusion of this session, participants will able to describe the risks of failure of posterior cervical fusions, and discuss the importance of the inclusion of C2 and crossing the CTJ. When indicated posterior cervical fusion constructs should cross the CTJ, however there is no evidence to support inclusion of C2 to prevent biomechanical failures.

References

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