

Player

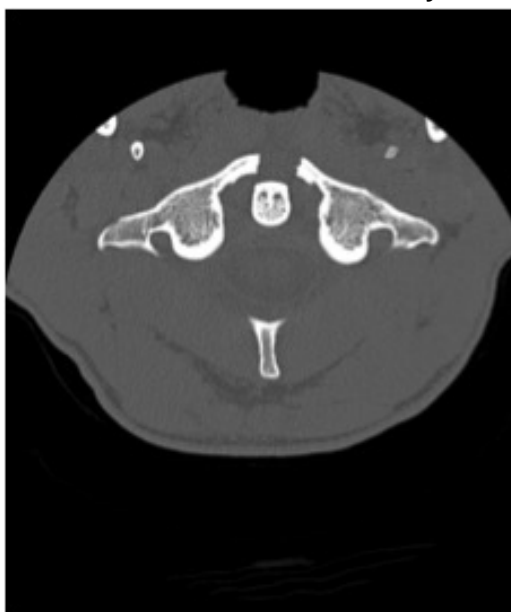
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Introduction

Unstable C1 Jefferson fractures are frequently treated with surgical stabilization. Posterior O-C or C1-2 methods have been employed. Presented here is an unstable Jefferson fracture treated with a two stage procedure.

Jefferson Fracture in NFL Player



Axial CT image demonstrating anterior ring fracture of Jefferson Fracture in an NFL player

Posterior Ring Defect in Jefferson Fracture



3D Reconstruction of Jefferson Fracture



Methods

A professional football player suffered an unstable Jefferson fracture. He presented with neck pain but no other neurological complaints. CT and MRI revealed a widely-displaced Jefferson. The transverse alar ligament remained intact. Transoral plate/screw fixation of the fracture was offered. This was performed through a transoral midline approach. An anterior plate anchored the reduced fracture with screws into the C1 lateral masses and anterior arch of C1. The patient tolerated the procedure well. Post-op CT scans demonstrated increased separation of the posterior arch fracture. The posterior fracture did not heal. Eight months later a minimally-invasive posterior fixation and arthrodesis of the posterior defect was performed.

Results

The posterior ring fracture then went on to heal completely within 4 months. The patient now has near full range of motion with minimal pain. The AADI does show an increase to 4 mm on flexion views. Flexion and extension MRI and rotational CT demonstrate a stable occipital-C1-C2 complex. The anterior fracture line, however, healed incompletely. The consensus opinion was to recommend not returning to play professional football.

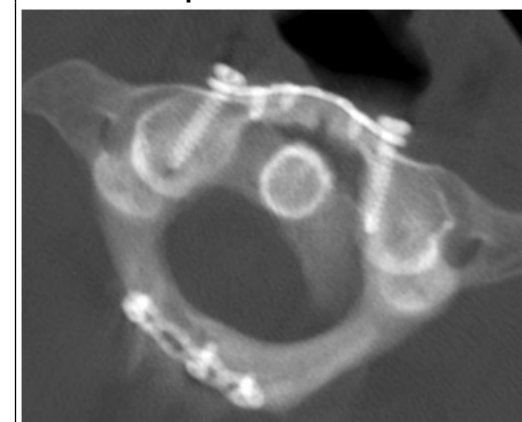
Post Op Lateral Radiograph



Conclusions

Significant morbidity is associated with posterior O-C or C1-2 procedures including limitation in range of motion. Transoral fracture reduction and fixation or combined transoral fixation/posterior fixation and fusion of the two fracture sites may be an alternative strategy for treating these unstable injuries as long as the transverse ligament is intact with or without injury to the other ligamentous components of the occiput-C1-C2 complex. This strategy can preserve motion and lessen morbidity.

Post Op Rotational Axial CT



Learning Objectives

An alternative strategy for treatment of unstable fractures of C1 may include direct fracture reduction and fixation via a transoral approach with or without (if needed) posterior reduction and monosegmental fusion of the posterior defect.