



Research Week 2021

Utility of Upright Radiographs in Management Assessing Vertebral Fractures

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Keywords

vertebral fracture, radiographs, thoracolumbar, surgery

Abstract

Introduction

Management of thoracolumbar vertebral fractures is a common consult question encountered by spine surgeons in the emergency setting. When a fracture appears likely to be stable, it is often assessed for stability with an upright thoracolumbar radiograph either with or without a TLSO brace. However, it is unclear how often these upright radiographs change clinical management. Here we present a retrospective study assessing the clinical utility of upright spine radiographs in the setting of acute thoracolumbar vertebral fractures. Our null hypothesis is that these radiographs rarely change management in this subset of fractures.

Methods

Records at a single level 1 trauma center from January 2015 through July 2020 were reviewed. Patients with a thoracolumbar fracture and subsequent standing thoracolumbar x-ray were assessed for conversion from conservative management to surgery. Lateral Cobb angle of the fracture vertebra on CT imaging and subsequent upright radiographs was measured and compared between the operative and non-operative groups.

Results

5 out of 75 patients had a change from non-operative to operative management during their initial hospitalization. A further 2 patients converted to surgical management based on progression of kyphosis on outpatient radiographs; making a total of 7 out of 75 who converted to surgical management. Patients who converted to operative management had an average kyphosis progression (from CT) of 11.1 degrees vs. 4.1 degrees in the non-operative group. This difference was significant ($p= 0.023$). Absolute degrees of kyphosis was not significantly different between the two groups.

Discussion/Conclusion

Upright radiographs led to a significant change in plan in our retrospective review with a total of 9.3% of patients converting from non-operative treatment to operative treatment of their thoracolumbar vertebral fracture. This suggests that standing radiographs are still an effective tool for guiding management.