Imaging Characteristics of Symptomatic Bone Overgrowth from rhBMP after Lumbar Interbody Fusion

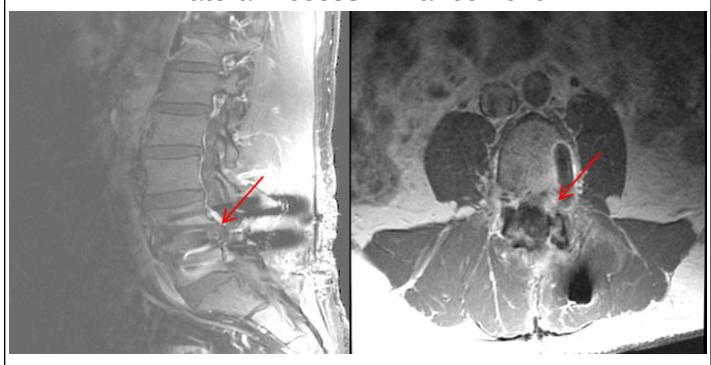
John Amburgy MD; Amber Gordon MD; Thomas A. Moore MD; Mark N. Hadley MD, FACS

University of Alabama at Birmingham

Introduction

Patients treated with lumbar interbody fusion via PLIF or TLIF using rhBMP may develop late onset ipsilateral lumbar radiculopathy after a period of postoperative quiescence or improvement. Follow-up MRI studies typically reveal ipsilateral intraspinal and lateral recess enhancement often interpreted as "scar" formation.

Lateral Recess Enhancement



MRI with contrast consistent with "scar" formation.

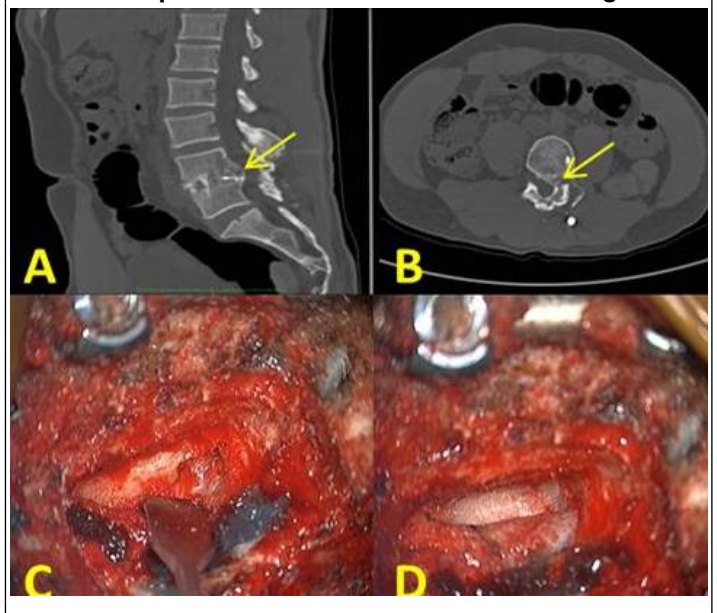
Methods

Five patients with delayed onset of severe and progressive symptoms and signs of lumbar radiculopathy as described above are presented. Pre-assessment median VAS scores for back and leg pain are 4 and 8 respectively. Three of five patients had objective weakness in ankle dorsiflexion; all had positive straight leg raise sign. MRI studies revealed intraspinal epidural enhancement with contrast administration. All five patients underwent CT imaging to assess for hypertrophic bone formation in the lateral recess.

Results

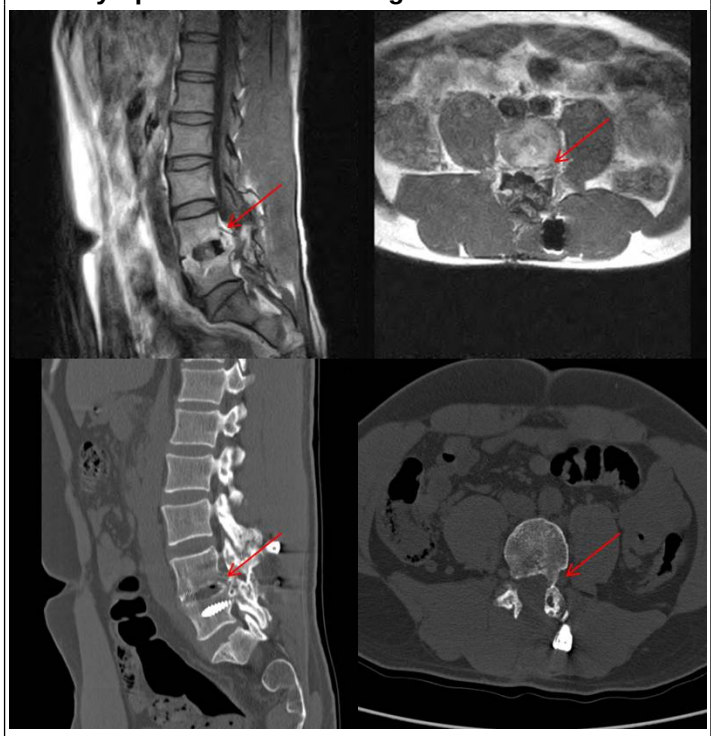
CT studies revealed atypical ipsilateral bone growth in the lateral recess at the site of interbody fusion with rhBMP, but not as dense or calcified as vertebral bone. No patient had retropulsion of the interbody cage as a cause of the recurrent radiculopathy. Two of the five patients had bone growth in the superior foramen as well as in the lateral recess, compromising both ipsilateral nerve roots of a single interspace level. All five patients were treated with re-operative laminectomy for decompression. All patients had bony overgrowth in and around the interbody device previously packed with rhBMP. All had extensive bony overgrowth in the ipsilateral lateral recess with compression of the thecal sac and adjacent traversing nerve root. Follow up VAS scores at 3-24 months post decompression were 1(back) and 2(leg) respectively.

Intraoperative Correlation with CT Findings



Intraoperative findings of bony overgrowth (C). Decompressed lateral recess (D).

Symptomatic Bone Overgrowth from rhBMP



MRI with contrast shows lateral rescess enhancement consistent with "scar" formation; however, CT scan shows bony overgrowth.

Conclusions

Bone overgrowth following lumbar interbody fusion with rhBMP can result in delayed and progressive ipsilateral radiculopathy. Conventional MRI studies with and without contrast suggest lateral recess scar formation. Subsequent CT imaging in these patients can reveal bony overgrowth as the cause of delayed neural impingement.