

Introduction

Femoral allograft is an ideal bone graft for reconstruction of osteomyelitis due to biocompatibility, size, and stability. The challenges of any lumbar vertebrectomy reconstruction procedure for these very challenging reconstruction problems is usually due to chance of graft dislodgement and the limited exposure of adjacent vertebral body that prevents anterior plating. We have used a unique fixation technique that we have developed using small and large fragment bone screws placed across the femoral allograft into adjacent vertebral bodies to achieve solid fixation of the anterior reconstruction and prevent graft dislodgement.

Methods

We performed retrospective chart reviews of 9 patients treated for thoracolumbar spinal osteomyelitis that progressed to anterior column failure and spinal instability. All underwent femoral allograft interbody reconstruction with anterior fixation of the graft with a unique bicortical, transvertebral lag screw technique at both ends of the graft to achieve solid fixation of the graft. The constructs were further stabilized with posterior pedicle screws. All patients were followed with TLSO brace and immediate ambulation post-operatively.

Results

After circumferential spinal fusion, none of the patients experienced any reposition of the graft or failure of the construct. They had stable post-operative neurological exams with reduced morbidity due to immediate ambulation and therapy.



Figure 1.

52yo female with history of L5 burst fracture status post kyphoplasty presenting with progressive compression and kyphosis of L5. Subsequent correction with circumferential fixation, L5 corpectomy and placement of femoral strut allograft with lag screw fixation.

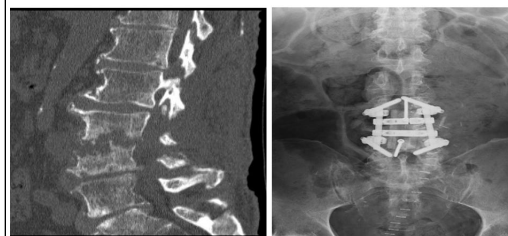


Figure 2A. 76yo male with history of L3-4 diskitis and erosive osteomyelitis presenting with sepsis and back pain. Partial vertebrectomy L3 and complete vertebrectomy of L4.

Placement of femoral strut allograft with lag screw fixation augmented with posterior instrumentation. AP and Lateral radiographs of the lumbar spine



Figure 2B. 5-year lateral radiograph follow-up showing stable construct with incorporation of allograft.

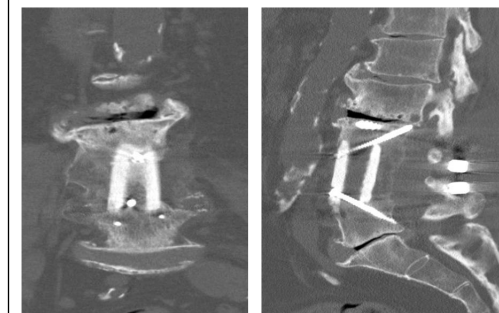


Figure 2C. 8-year follow-up axial and sagittal CT showing stable graft over time.

Conclusions

Femoral allograft interbody fusion with two end graft-body bicortical lag screws provides an anterior column construct which prevents graft repositioning and reduces hardware in a previously infected spine. This novel technique, combined with posterior pedicle screw fixation, creates a durable circumferential fusion allowing patients to be active post-operatively with reduced morbidity.