

Radiographic Evaluation of a Biologic Option for Vertebral Augmentation



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Introduction

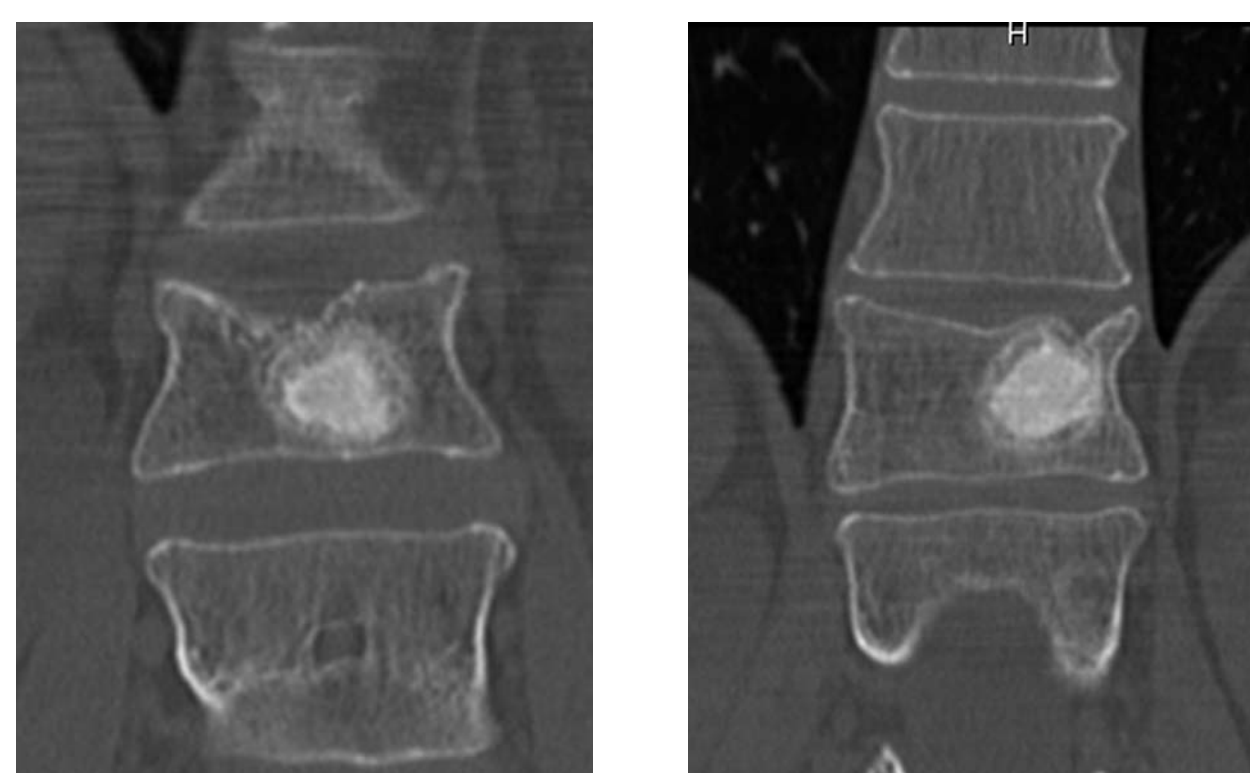
Vertebroplasty/kyphoplasty has been a tremendous medical advancement for the treatment of painful vertebral compression fractures. Concerns persist however, such as; PMMA injection viscosity, toxicity, exothermic reaction, and modulus. A newly available alternative to PMMA is a containment system that enables bone graft augmentation of a vertebra and has an MIS application. Bone graft augmentation offers fracture reduction and trabecular stabilization. Long-term findings suggest that bone graft augmentation in osteoporotic patients yields a stable yet less rigid segment, which may reduce the risk of adjacent level fracture. For younger people, the potential now exists for biologic fracture repair.

44-year-old female, T12 / L1 Traumatic Fx



Pre-Op MRI

14 Month CT



L1 - 14 Month CT

T12 - 14 Month CT

Results

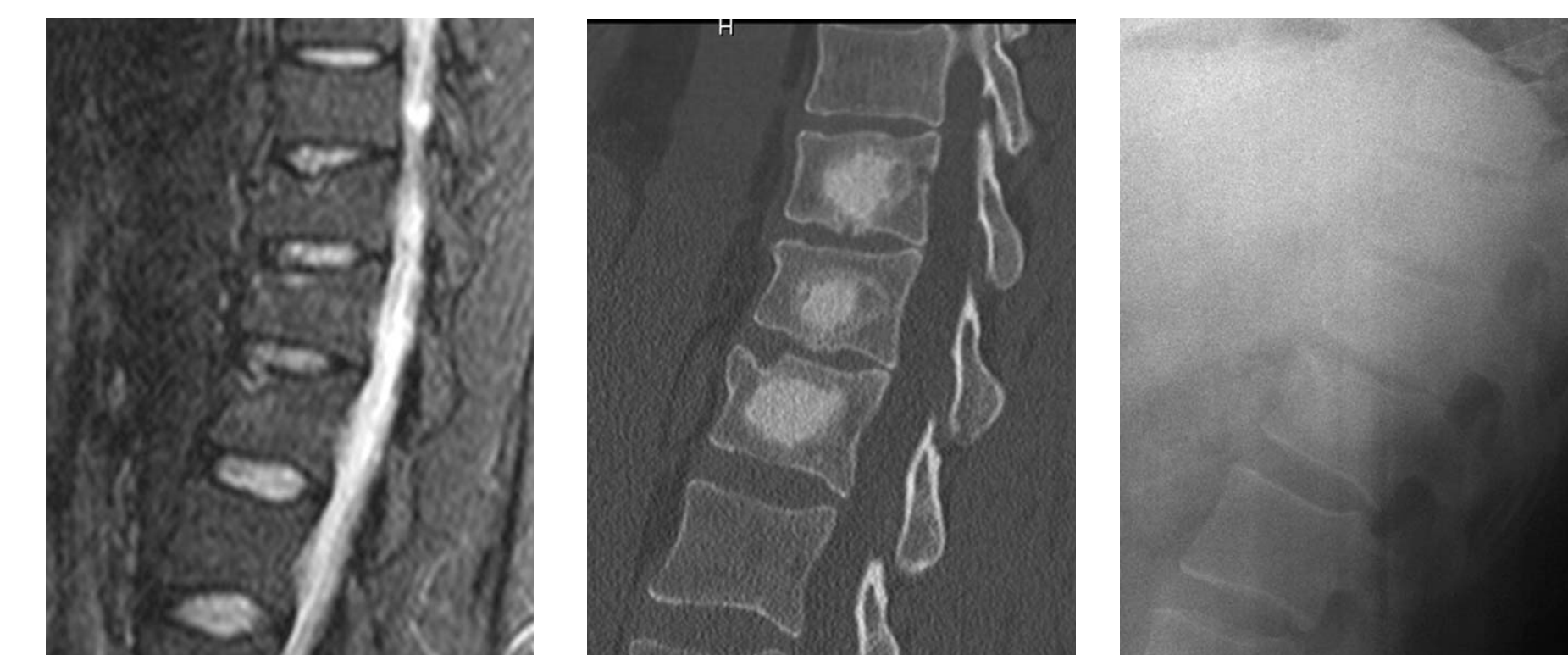
Fifty-one patients (92 levels) were treated consecutively with OptiMesh filled with allograft bone between 11/1/05 and 10/17/07. Under the IRB approved study protocol, 23 patients (45%) completed a telephone questionnaire or came back into the clinic to complete a questionnaire and get a new spine x-ray. The remaining 28 patients (55%) were excluded because they could not be contacted, were physically unable to return to the clinic, or had more than 3 levels treated per protocol.

The mean of the VAS scores immediately post-op was 1.8 (N=20) and the mean at greater than 12mo follow up was 1.6 (N=22). There were no procedure-related complications or deaths.

Of the 23 study patients, there were 17 females, and 6 males with mean age of 71 years (range 33-88). There were 19 osteoporotic fractures (31 levels), 3 traumatic fractures (7 levels), and one patient treated for endplate fractures in a complicated scoliotic spine (2 levels). The levels treated ranged from T11 to L4 (T11-3, T12-6, L1-9, L2-7, L3-10, L4-5).

Twenty-two patients had a greater than 6mo post-op radiographic study. Fifteen patients returned for a 12mo CT scan as standard care for the practice. There were adjacent level fractures in 4 patients (4/22=18%). Only 1 of 22 (4.5%) showed minimal (3mm) loss of restored height and CT scans show evidence of progressive graft incorporation within the mesh.

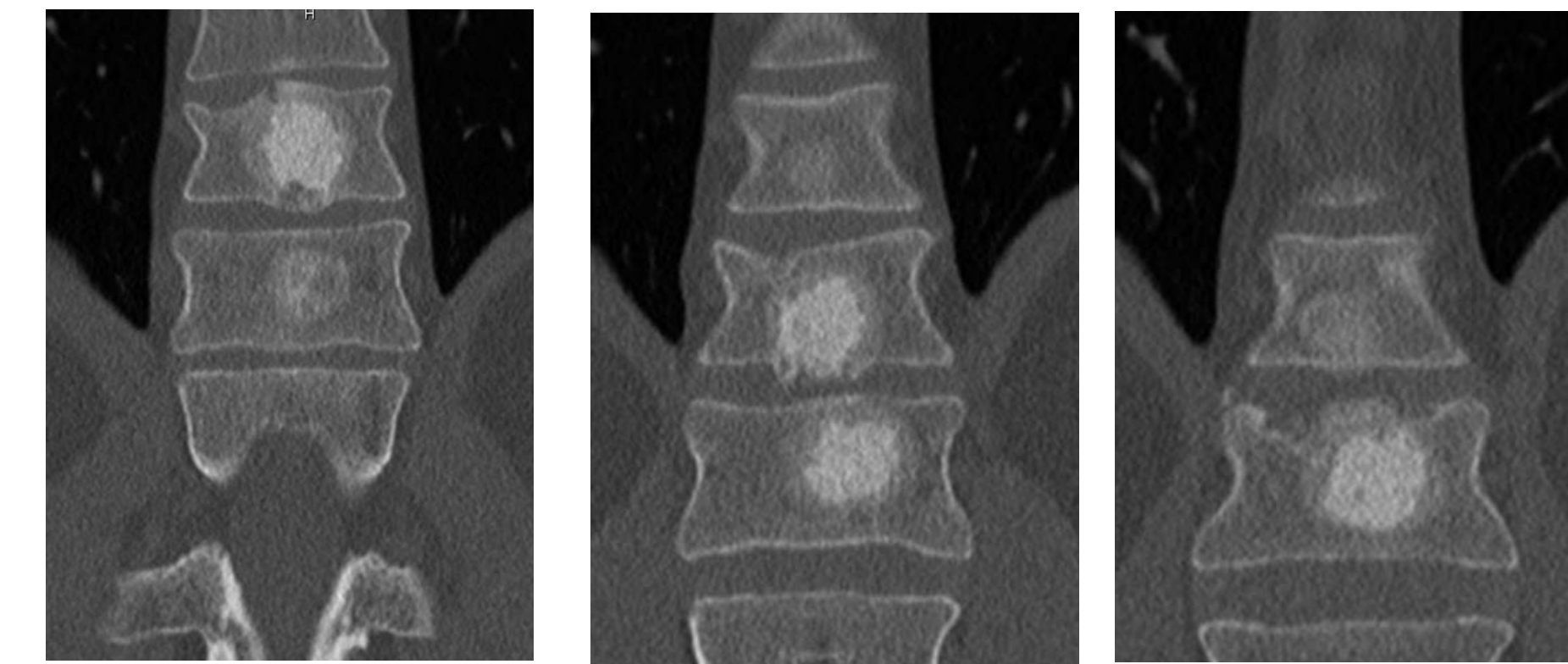
33-year-old female, T11 / T12 / L1 Traumatic Fractures



Pre-Op MRI

12 Month CT

12 Month Lateral

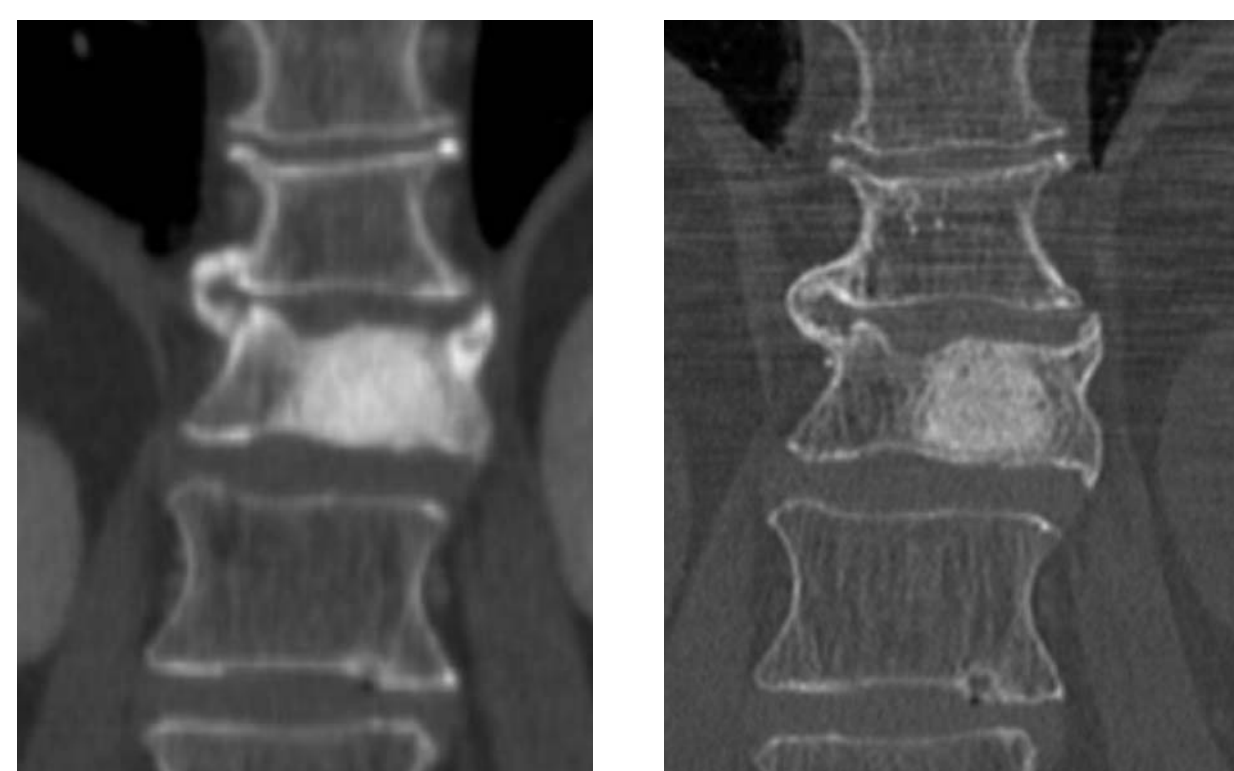


T11- Pre-Op MRI

T12 - 12 Month CE

L1 - 12 Month Lateral

74-year-old male, T12 Osteoporotic Fx



4 Month CT

23 Month CT



23 Month Lateral

23 Month CT

Objective

To demonstrate the long-term maintenance of vertebral body integrity and bone graft incorporation following treatment of compression fractures using a porous mesh filled with bone graft.

Methods

An IRB approved retrospective study was conducted to review clinical and radiographic outcomes of consecutive patients implanted with a porous polyethylene terephthalate (PET) mesh filled with corticocancellous allograft. CT scans and x-rays of patients more than 6mo post-op were evaluated for maintenance of restored vertebral body height and evidence of graft incorporation.

Conclusion

Vertebral augmentation using a conformable mesh filled with bone graft offers an effective treatment option for painful osteoporotic and traumatic fractures. Restored vertebral height is maintained at long-term follow up and the bone graft incorporates and heals even in osteoporotic patients.