Balloon Kyphoplasty for Refractory Vertebral Compression Fractures in a Growing Child with Duchenne Muscular Dystrophy with Long-Term Follow-Up

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Introduction

Long-term daily corticosteriod treatment in patients with Duchenne muscular dystrophy(DMD) has been shown to improve muscle strength, prolong ambulation, and lower the prevalence of scoliosis.

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However, these patients have an increased risk of osteoporosis and vertebral fractures.

We report on the use of balloon kyphoplasty for painful vertebral compression fractures (VCFs) in a child with DMD which were refractory to conservative therapy.

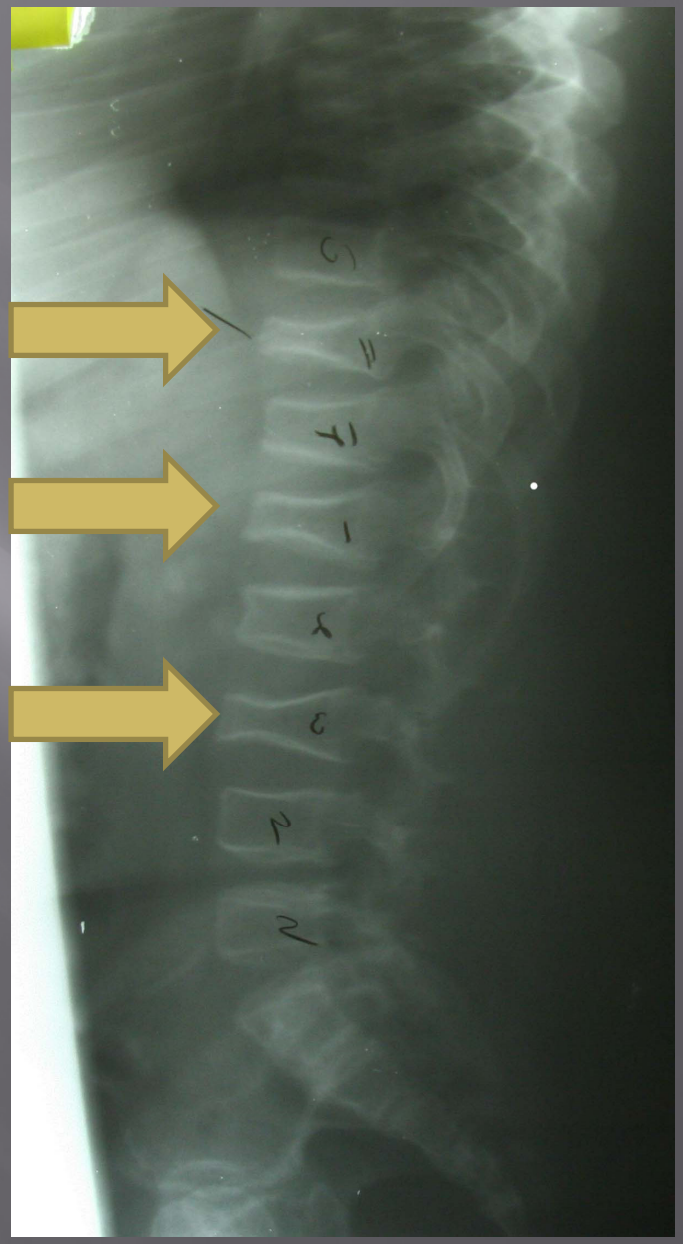
Method

- An 8-year-old with DMD on chronic corticosteroid treatment presented with complaints of back pain.

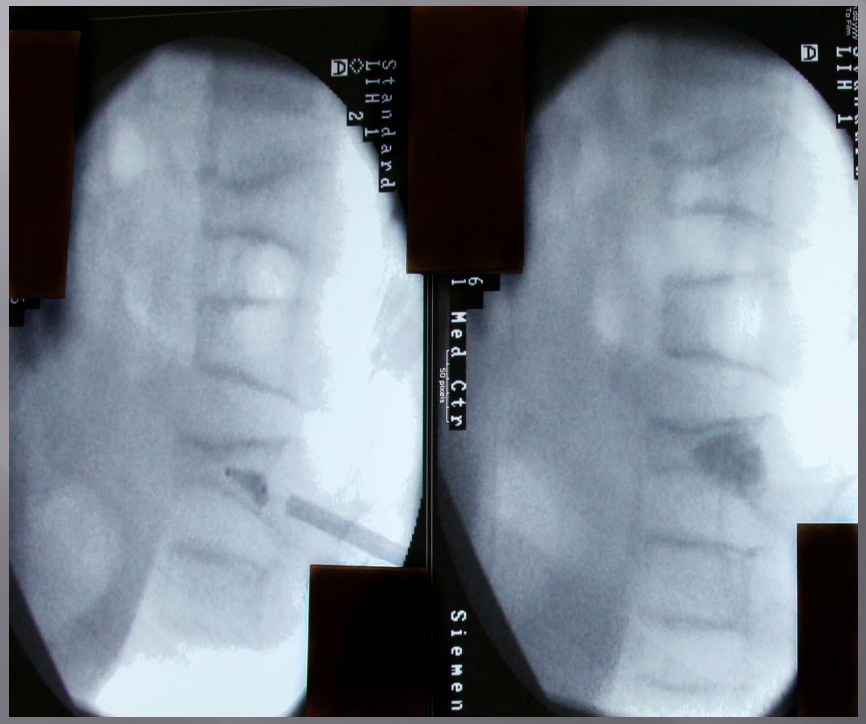
- On physical exam he was in acute pain and nonambulatory.

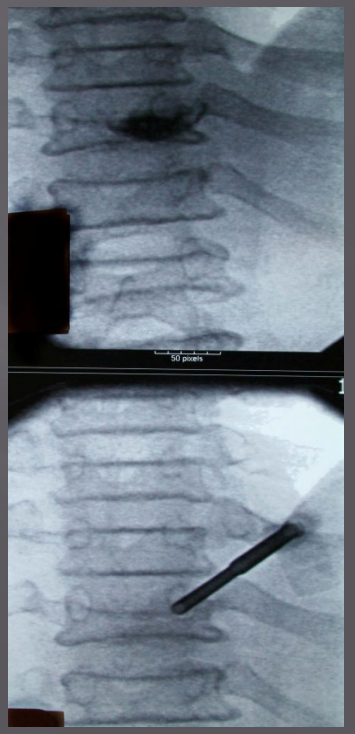
Plain radiography revealed multiple VCFs at T11, L1, and L3. Serial radiography over 6 months showed progression.

Given that the long-term effects of kyphoplasty on a growing child were as yet unknown, it was elected to treat only the worst VCF at T11 with balloon kyphoplasty to diminish the patient's pain.



Intraoperative Radiographs of T11 Cement Injection

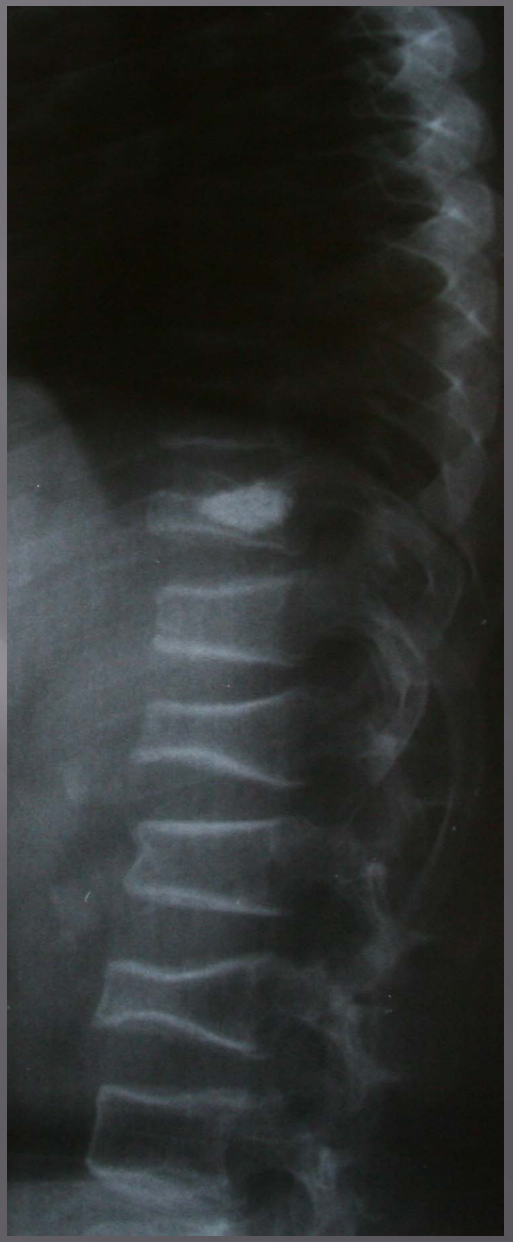




Results

Two weeks after the procedure the patient experienced a significant decrease in pain.

Given the procedure's effectiveness and perioperative safety, kyphoplasty was carried out on the remaining VCFs at L1 and L3.



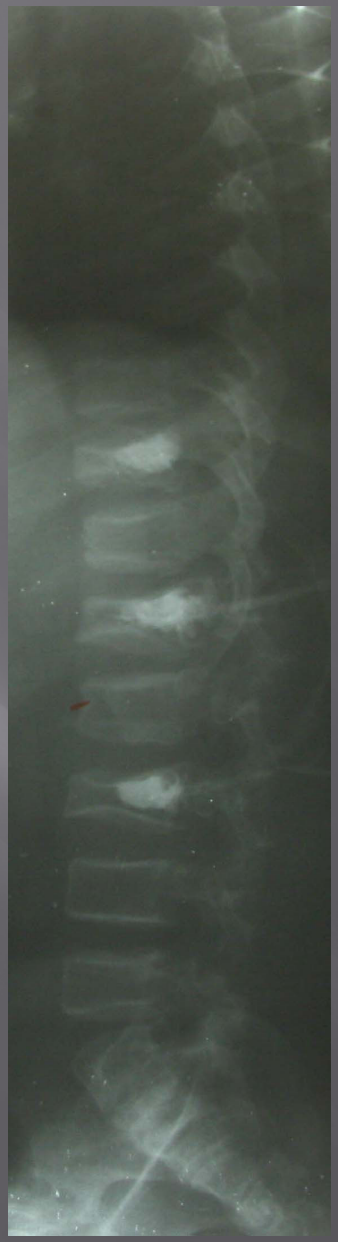
Results

12 days after the second procedure the patient was doing exceptionally well.

He could now stand, which he could not do before the procedure.

His vicodin intake decreased from

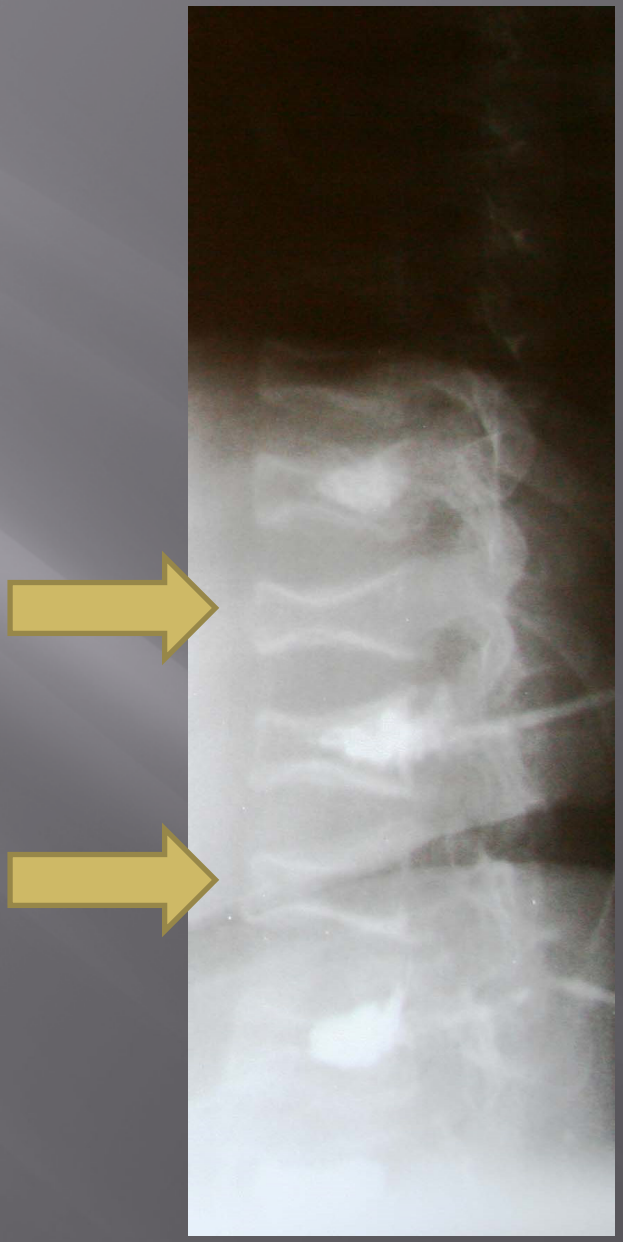
10/24 hrs to 1-2/24hrs.



5 Year F/U

5 years after the procedure, patient now 13 yrs old, the height of the vertebral bodies treated with balloon kyphoplasty remain stable and reconstituted height.

Vertebrae not treated with kyphoplasty, T12 and L2 (arrows), now had fracture and collapsed.



Conclusions

To our knowledge this is the first reported case of balloon kyphoplasty used to treat a child with refractory VCFs resulting from chronic corticosteroid treatment for DMD.

Conclusions

- Typically, conservative treatment of VCFs in children is done.
- In cases where VCFs are refractory, this report demonstrates that balloon kyphoplasty is a viable option for children.

Conclusions

- In children, balloon kyphoplasty allows rapid stabilization and analgesia over a 5-year follow-up period.
- In this subgroup of compression fractures, balloon kyphoplasty not only caused no apparent growth problems, but actually appeared to allow height of the vertebrae to be restored with growth.