Beware the Risks of Instrumentation to the Pelvis in Ambulatory Early Onset Scoliosis Patients Treated with Growth Sparing Surgery

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Growing Spine Study Group

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Disclosures

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a. Grants/Research Support
b. Consultant
c. Stock/Shareholder
d. Speakers' Bureau
e. Other Financial Support

Introduction

- Pelvic instrumentation (PI) is the most commonly used technique in non-ambulatory patients with neuromuscular scoliosis to control pelvic obliquity and improve sitting posture.

- The utility of PI in **ambulatory scoliosis** patients has not been well studied, particularly when used with growth sparing surgical techniques.

- The purpose of this study was to characterize the use of PI in distraction-based growth sparing surgery.

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Methods

- Retrospective, multi-center review of an EOS database
- Patients were selected based on the following criteria:
  - Distraction-based growth sparing surgery
  - Instrumentation to sacrum and/or ilium
  - Minimum 6 month follow up
- 10 patients qualified for inclusion

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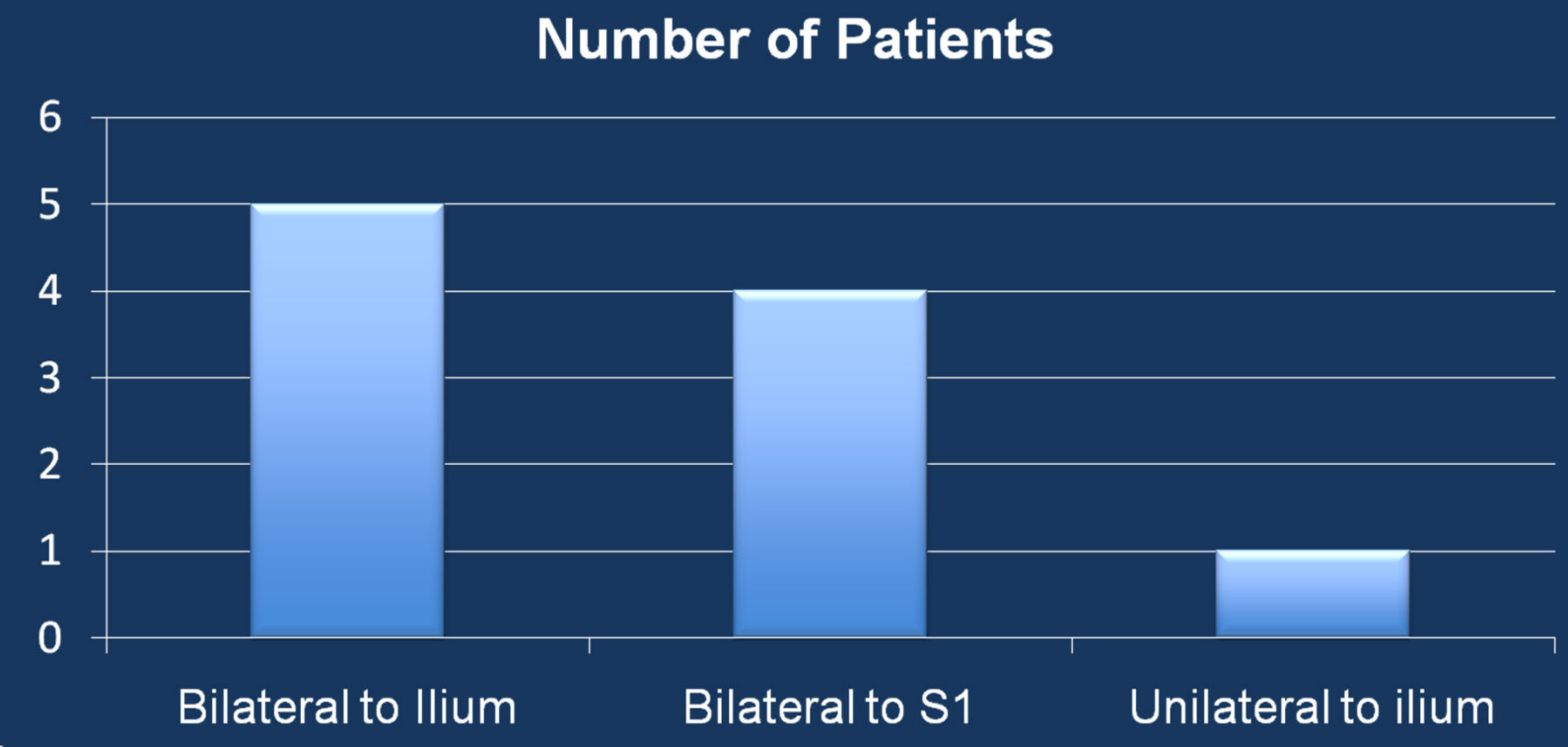
Results

- 10 ambulatory patients: female=5; male=5
- Mean age = 6.3 yrs (range 3.2–11.5)
- Growing rods: n=6; VEPTR: n=4
- Mean follow up = 2.5 years (range 0.5-5.2)
- Diagnoses:
  - Congenital = 4
  - Syndromic = 4
  - Idiopathic = 2
- Radiographic data:

	Pre index	Post index	Latest follow up
Primary Coronal Deformity	80° (range 57°-106°)	53° (range 39°–67°)	58° (range 47°–71°)
Sagittal Imbalance	46 mm (range 12 to 128)	54 mm (range 1.5–105)	65 mm (range 1–115)

Results

- Distribution of pelvic instrumentation
  - NOTE: One patient was instrumented to L2 initially and later revised to bilateral iliac fixation.



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Complications

- Instrumentation failure was the most common complication.

Surgical Procedures	Revision Surgery	Complications
VEPTR (16)	3/16 (19%)	Anchor pull-out (2); medical (2); neuromonitoring changes (2)
GR (34)	11/34 (32%)	Coronal and sagittal decompensation (2); suture abscess (1); rod fracture (9); medical (1)
Total (50)	**14/50 (28%)**	

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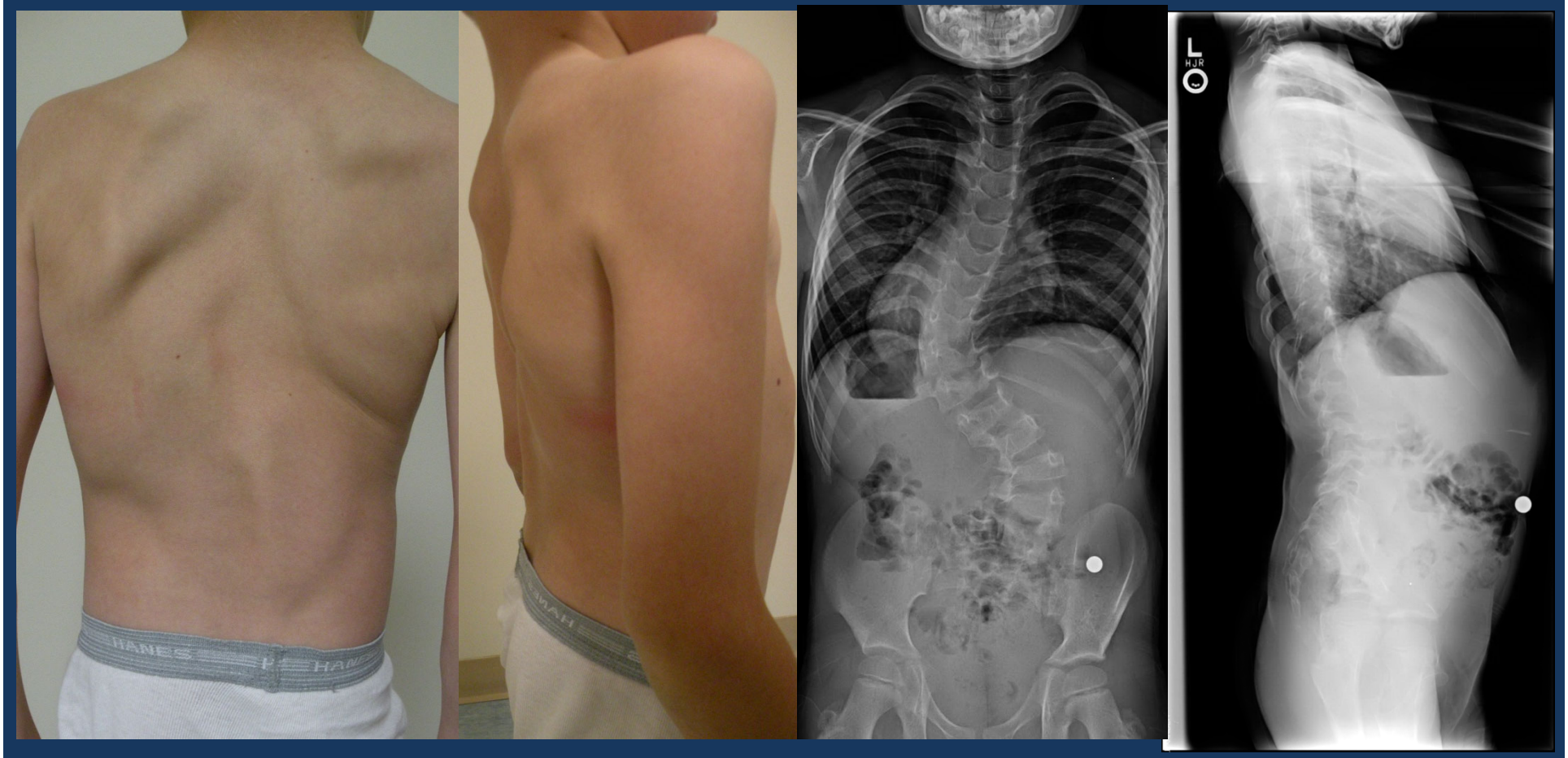
EOS in Beals Syndrome



6 yr old boy
Pre-op Assessment 05-27-2009

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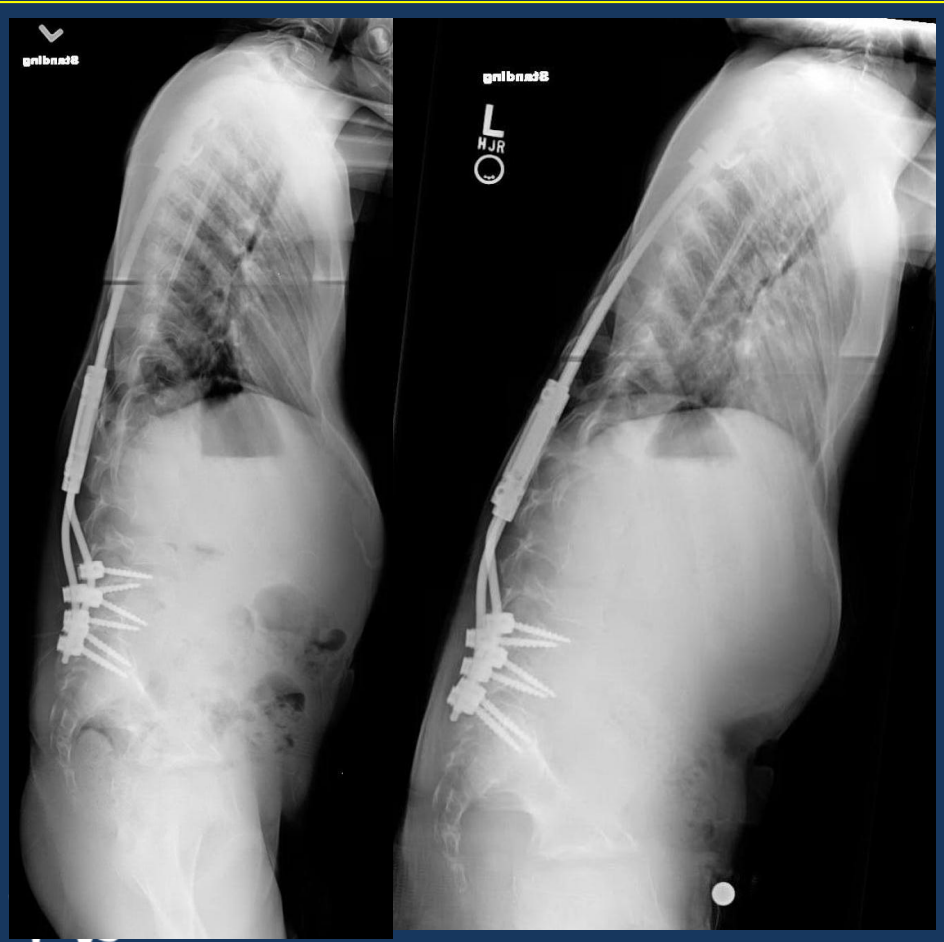
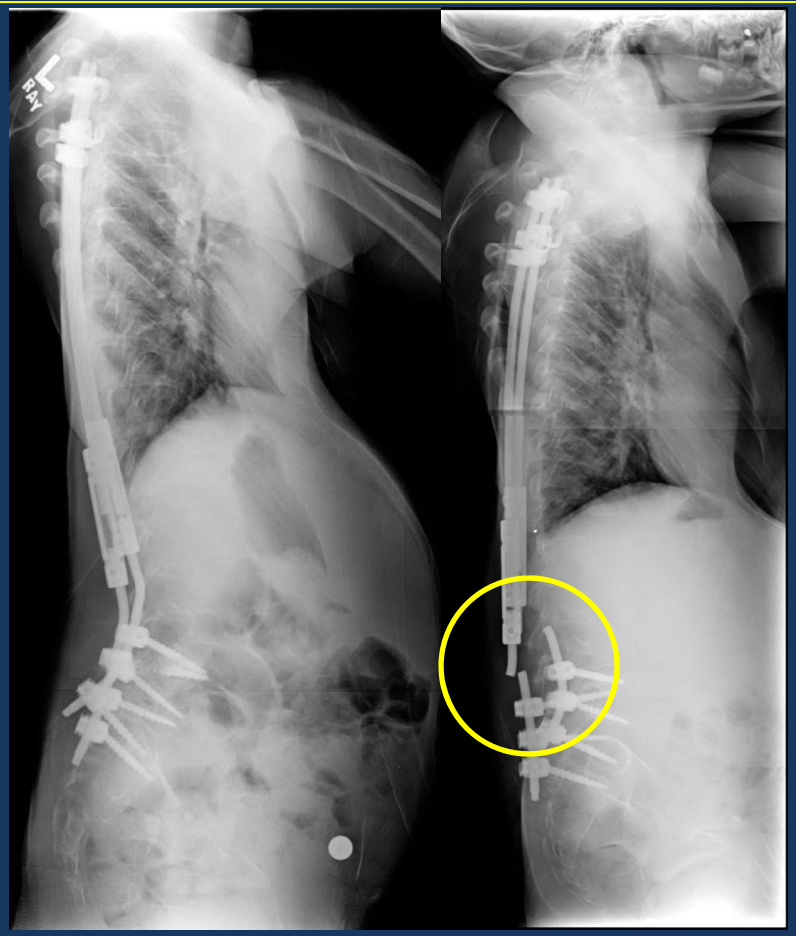
POST INITIAL SURGERY PATIENT IS SAGITALLY AND CORONALLY DECOMPENSATED



09-08-2009

BILATERAL DISTAL ROD FRACTURES; ROD AND ANCHOR REVISIONS



12-21-2009

03-02-2010

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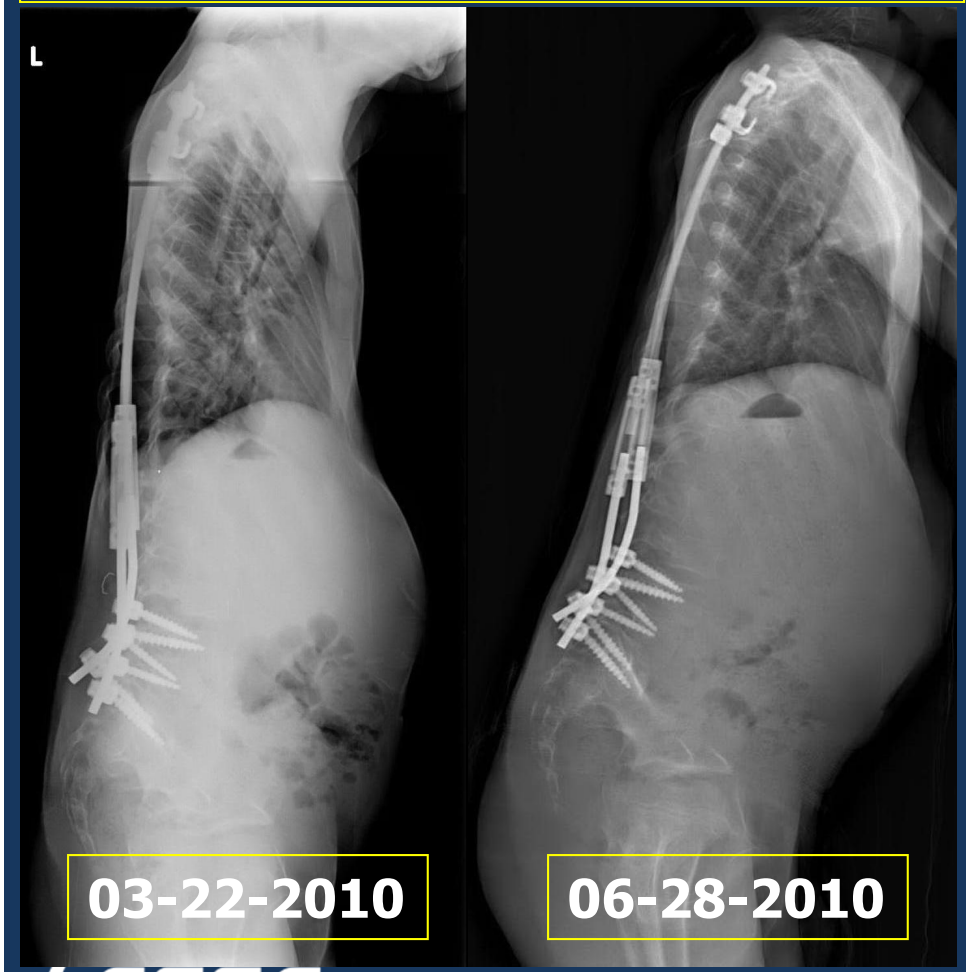
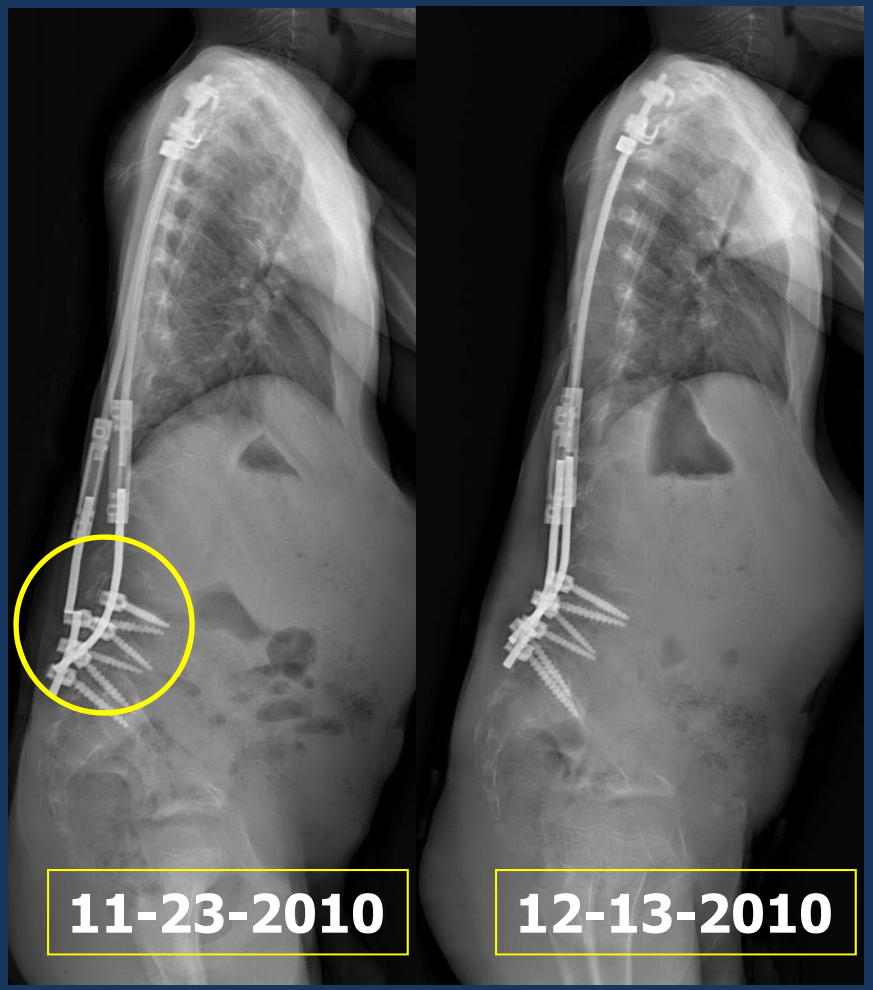
EOS in Beals Syndrome

ABNORMAL POSITIVE SAGITTAL IMBALANCE WHICH WAS NOT CLEARLY EXPLAINED.
MRI = NORMAL



ROD FRACTURE; ROD EXCHANGE THROUGH REVISION SURGERY



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Conclusion

- Instrumentation to the pelvis should be carefully considered in ambulatory EOS patients.
- Complications, especially implant failure, are frequent likely due to increased stress on the instrumentation that span the mobile lumbar spine in ambulatory patients.

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Conclusion

- Extra attention should also be paid to sagittal and coronal alignment as these patients do not have mobile levels to compensate for their imbalance.

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