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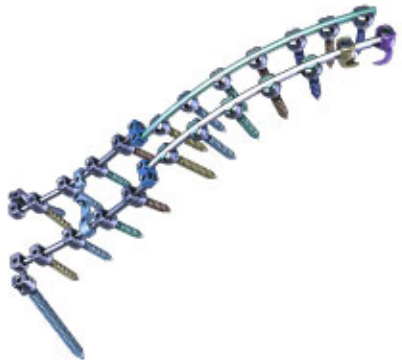
range



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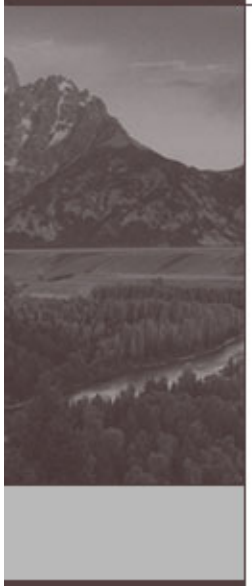


COMPLEX SPINE INNOVATIONS™

Multi-axial Translation: Dual Rod Correction Technique

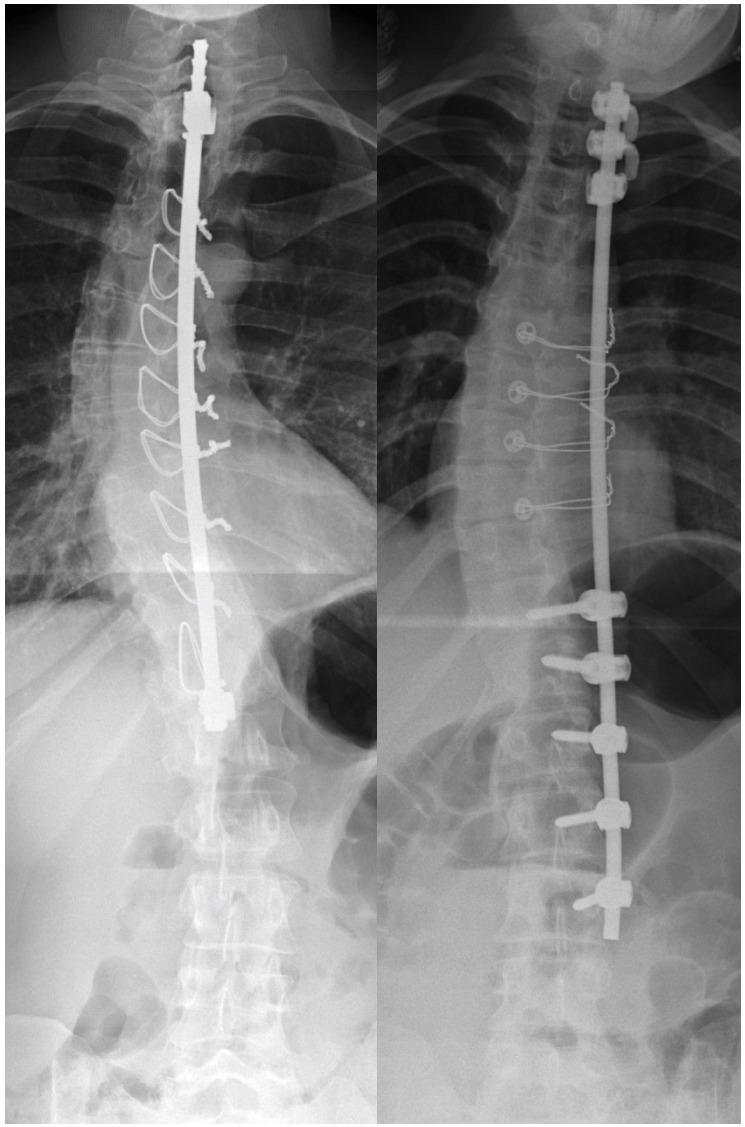
K2M RANGE® Spinal System

INTRODUCTION

Historic Correction

- Harrington rods
- Sublaminar wires
- Drummond buttons

- Rely on indirect de-rotation
- Translation by distraction
- Direct Translation without significant de-rotation of spine or chest wall
- Wire tightening was often counter productive to de-rotation



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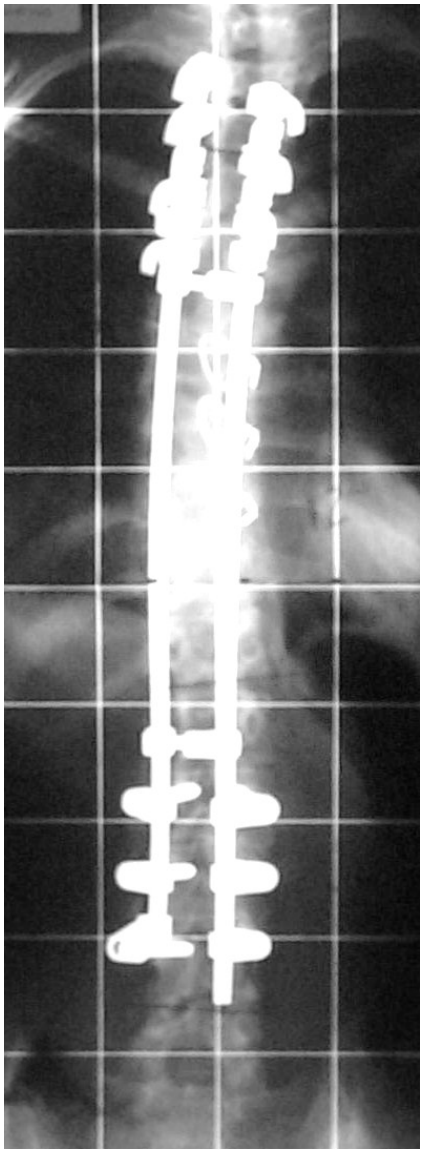
Introduction

- Sub-pars cables
- Laminar / Pedicle / Transverse process hooks gave marginally better rotational control
- Combining these techniques gave ‘best available’ prior to pedicle screws and VCM



The RANGE System

- The Mesa Screw
- The Deformity Cricket – Translation, Reduction, and Vertebral Body De-rotation
- Dual Rod Correction Technique

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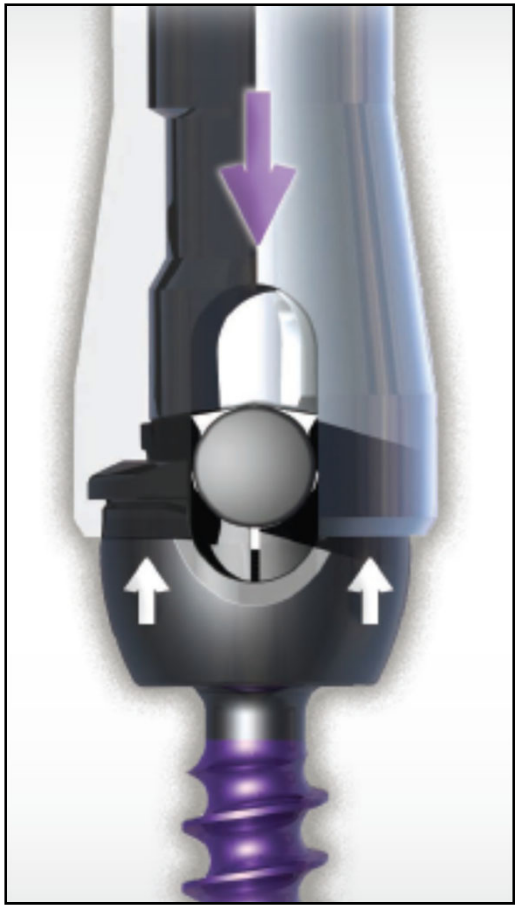
MESA Screw



Highlights

- No locking cap
- Low-Profile
- Zero-Torque mechanism – unlock / relock
- Partial locking feature
- Variety of screws to accomplish correction manouevers (Polyaxial, Uniplanar, Monoaxial)

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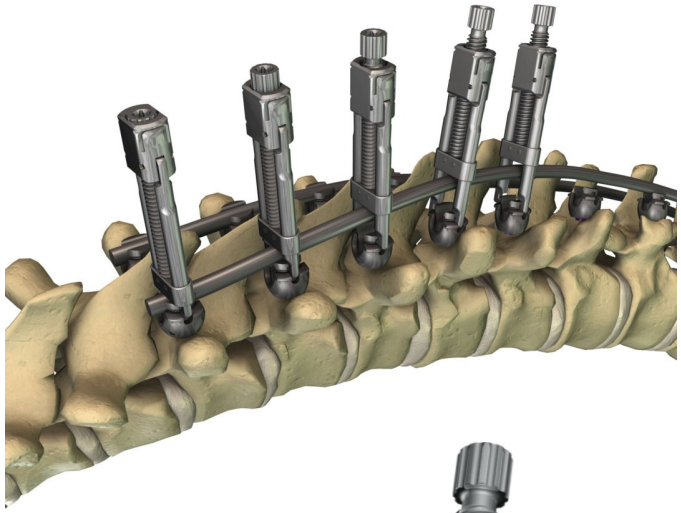
Deformity Reduction Jack (“Cricket”)



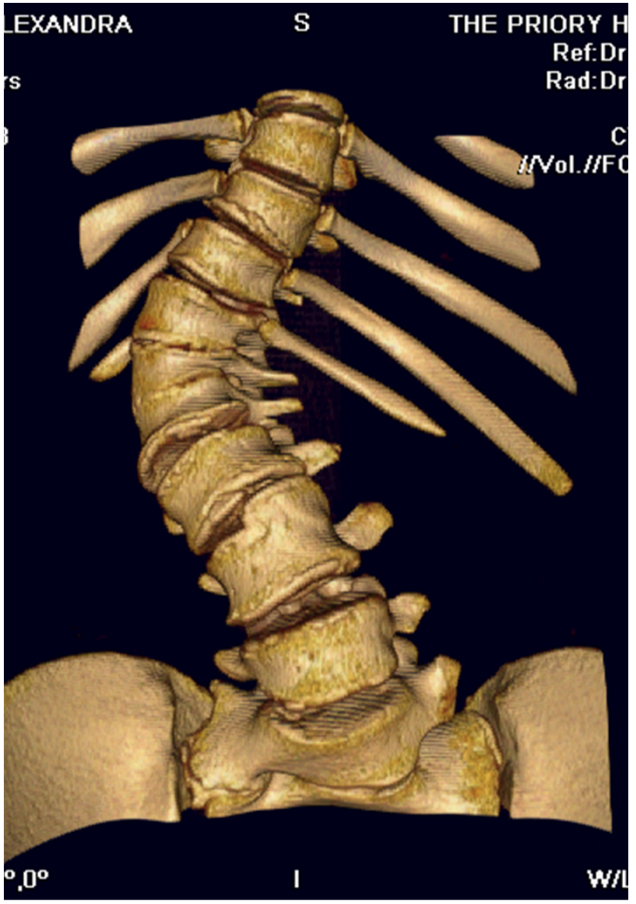
Highlights

- Provides 27 mm of reduction
- Allows for simultaneous three dimensional correction of the spine
- Controlled progressive compression, distraction, and de-rotation maneuvers
- Ability to distribute forces across entire construct
- Eliminates the need for reduction screws
- Does not obstruct visualization during correction maneuvers

COMPLEX SPINE INNOVATIONS℠

The Case for Multiaxial Translation and Derotation

- obtain 3 column manipulation with use of pedicle screws
- Primary aim of 3D rotation is to address the rib / loin hump
- Need to use a system that provides the ability to not only safely **translate** the spine but also **de-rotate** it



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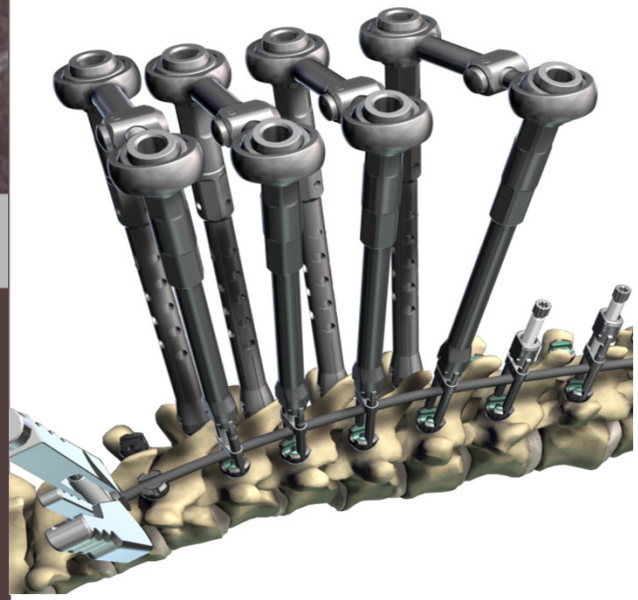
Multi-axial Translation – Dual Rod Technique



Advantages

- Distributes the forces along the entire construct, sharing the load on bone-screw interface
- Load share in stiff curves
- Ability to naturally de-rotate the spine with the rod free from the screw saddle
- Potentially reduces the incidence of the ‘rod flattening’ – differential rod bends
- Accomplish simultaneous axial de-rotation*, translation and reduction
- Ability to perform segmental correction or correction of multiple vertebral bodies at once
- ‘Pause’ for SCM

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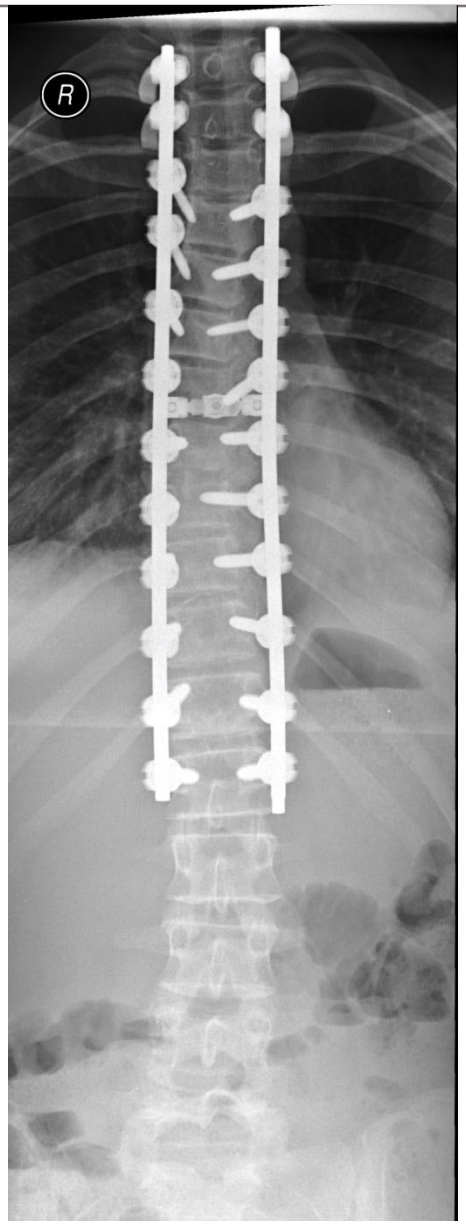
Multi-axial Translation – Dual Rod Tecnique



Disadvantages

- More reduction tools required
- Need to resect Lumbar spinous processes early
- Must cut and bend both rods together
- Ti V CoCr
- 5.5 V 6.35

} Behave differently

- *Subsequent derotation more difficult but start from better position

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Dual Rod Correction - Technique

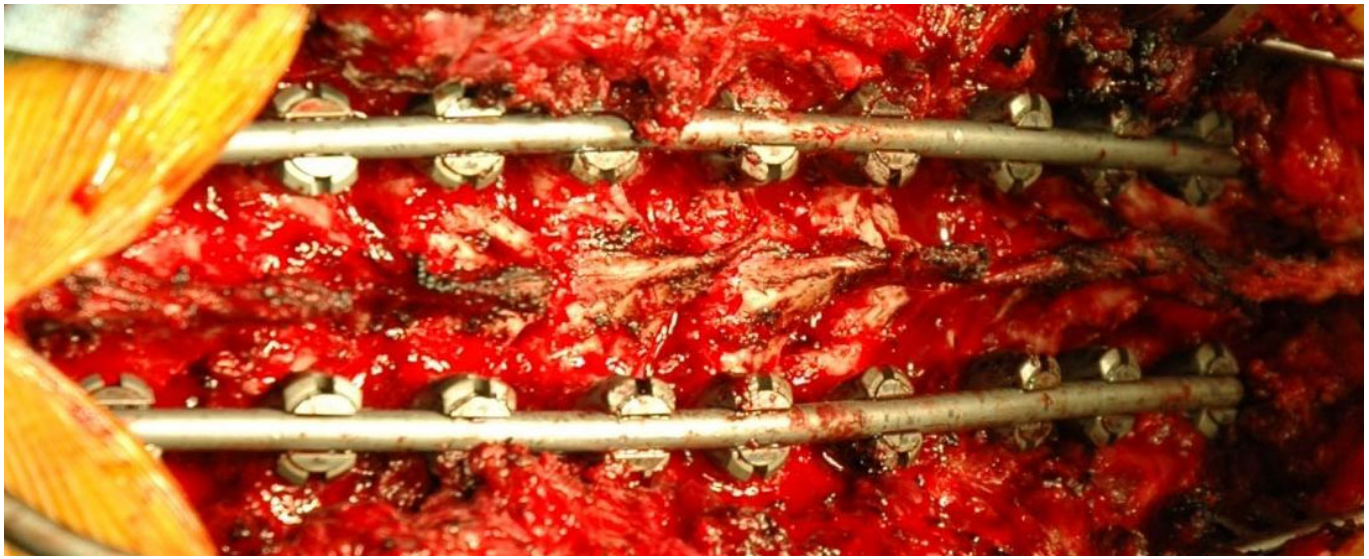
Place anchors (Hooks / screws as per usual protocol)

Contour both rods simultaneously –

↓ Kyphosis for Thoracic convex deformity compared to concave

↑ Lordosis for Lumbar convex deformity compared to Concave

Commence reduction Cranial → Caudal



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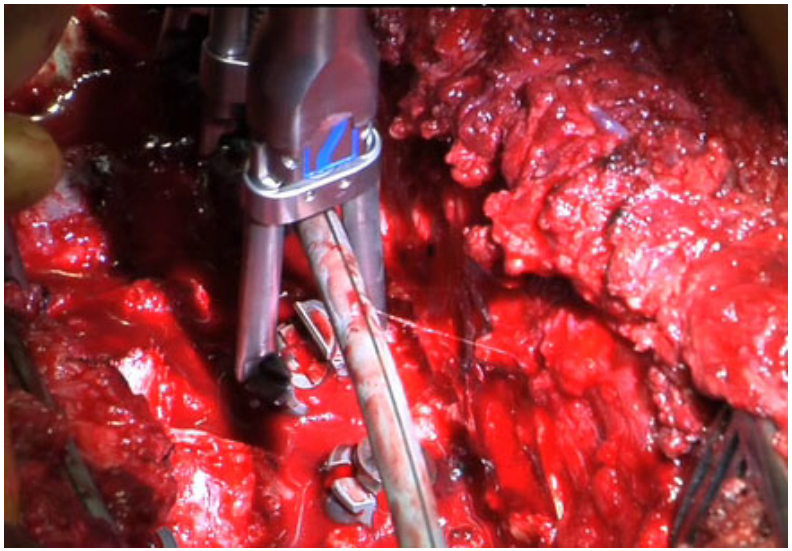
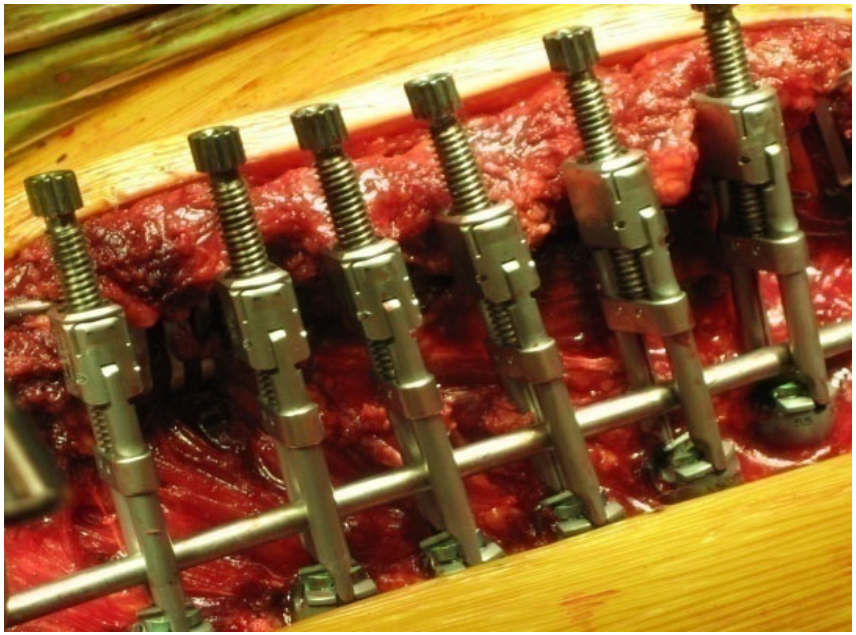
Dual Rod Correction - Technique





- Deformity Crickets at every level (bilaterally)
- Correction maneuvers are accomplished with rods sitting free from screw saddle
- Use rod holder or hex wrench to prevent rotation during sequential connection
- When reach lower thoracic / thoracolumbar region ‘swing’ both rods across midline in Lumbar region to connect crickets

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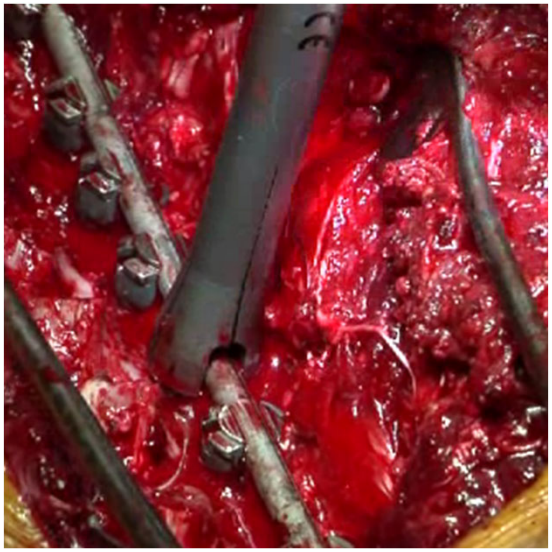
Dual Rod Correction Technique

Direct Vertebral Body De-rotation (with ability to block rotation transmission into lumbar spine)

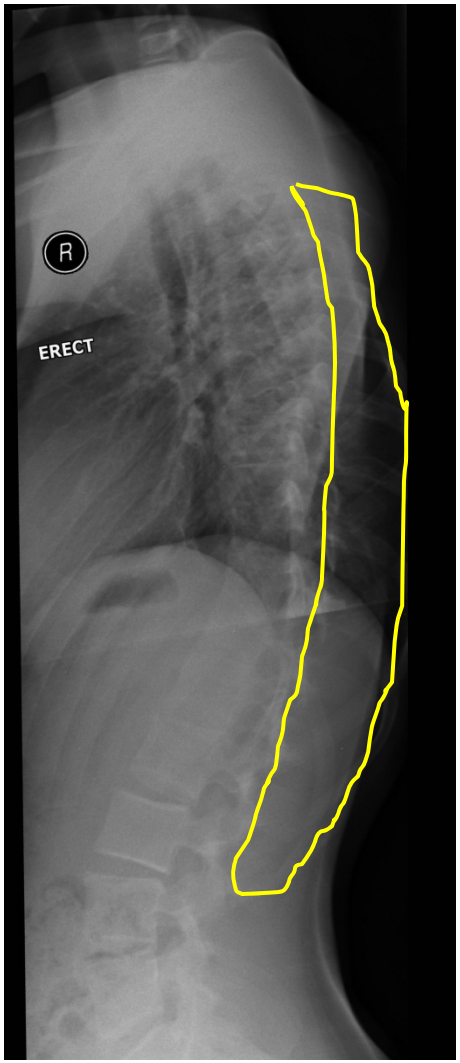
Temporary lock
Check X-rays (?adjustments)
Final Lock

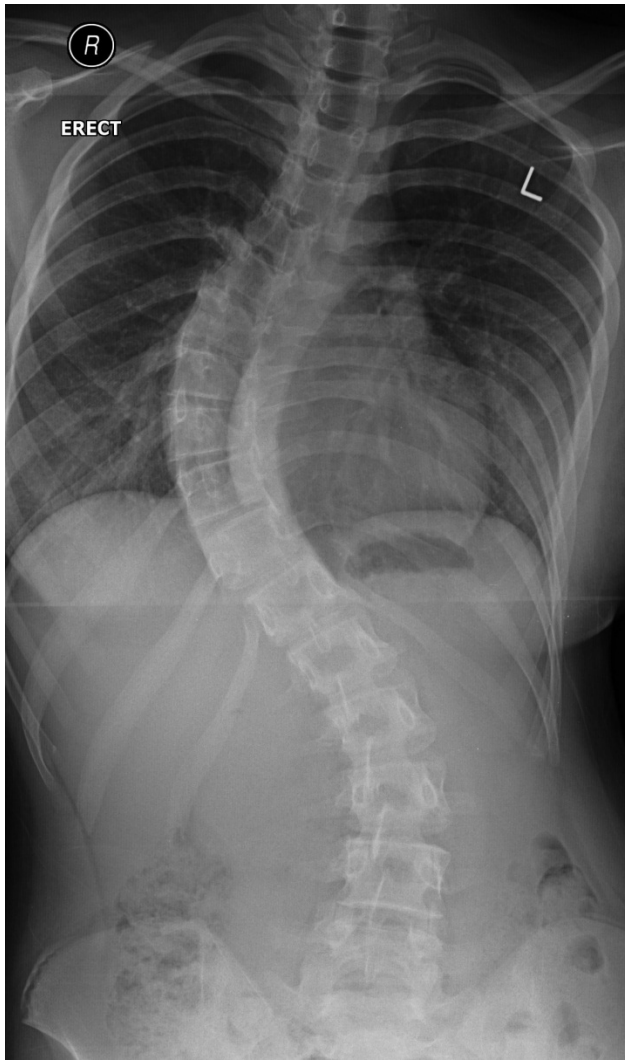


COMPLEX SPINE INNOVATIONS™

Case Example 1

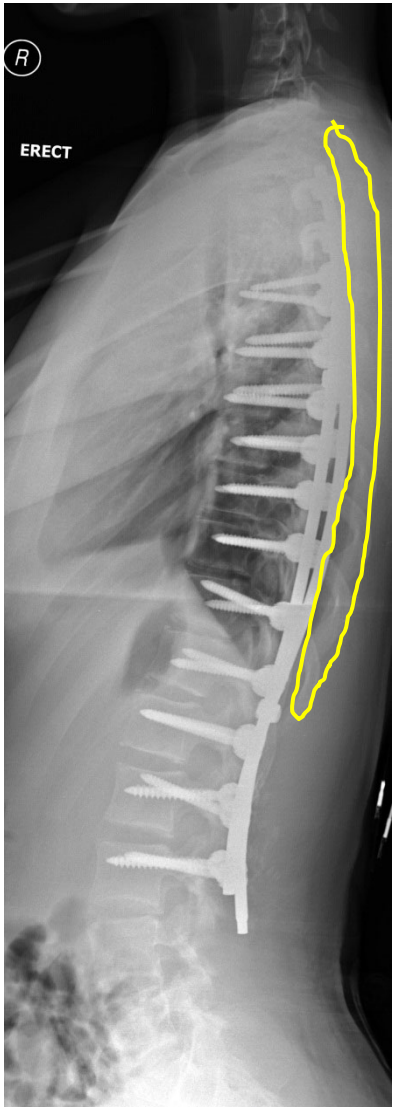
15yr old ♀
AIS
MRI normal
Significant rib hump

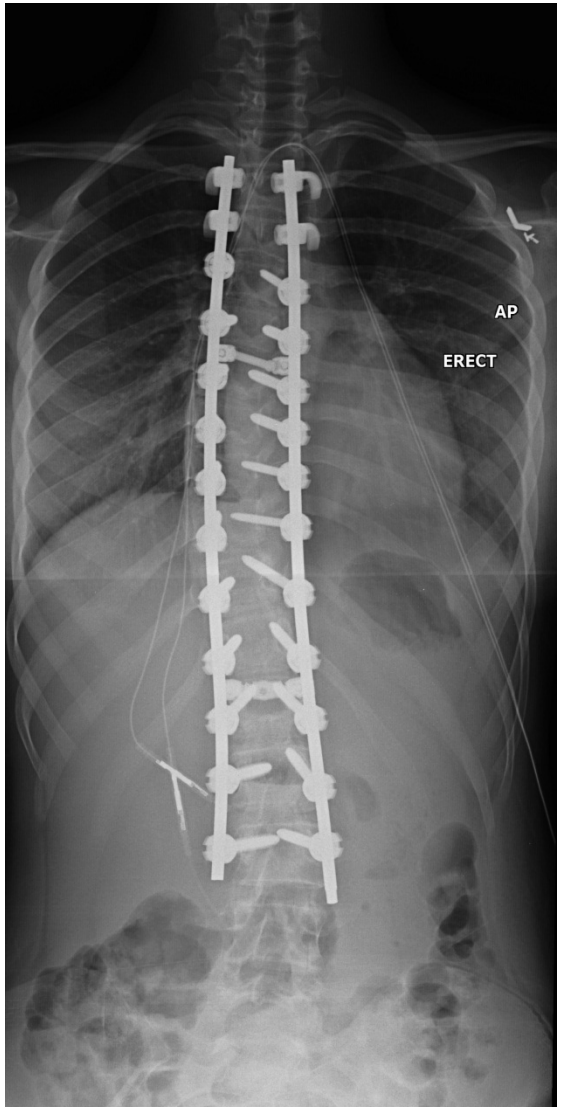




Case Example 1

Significant rib hump correction without VCM instrumentation





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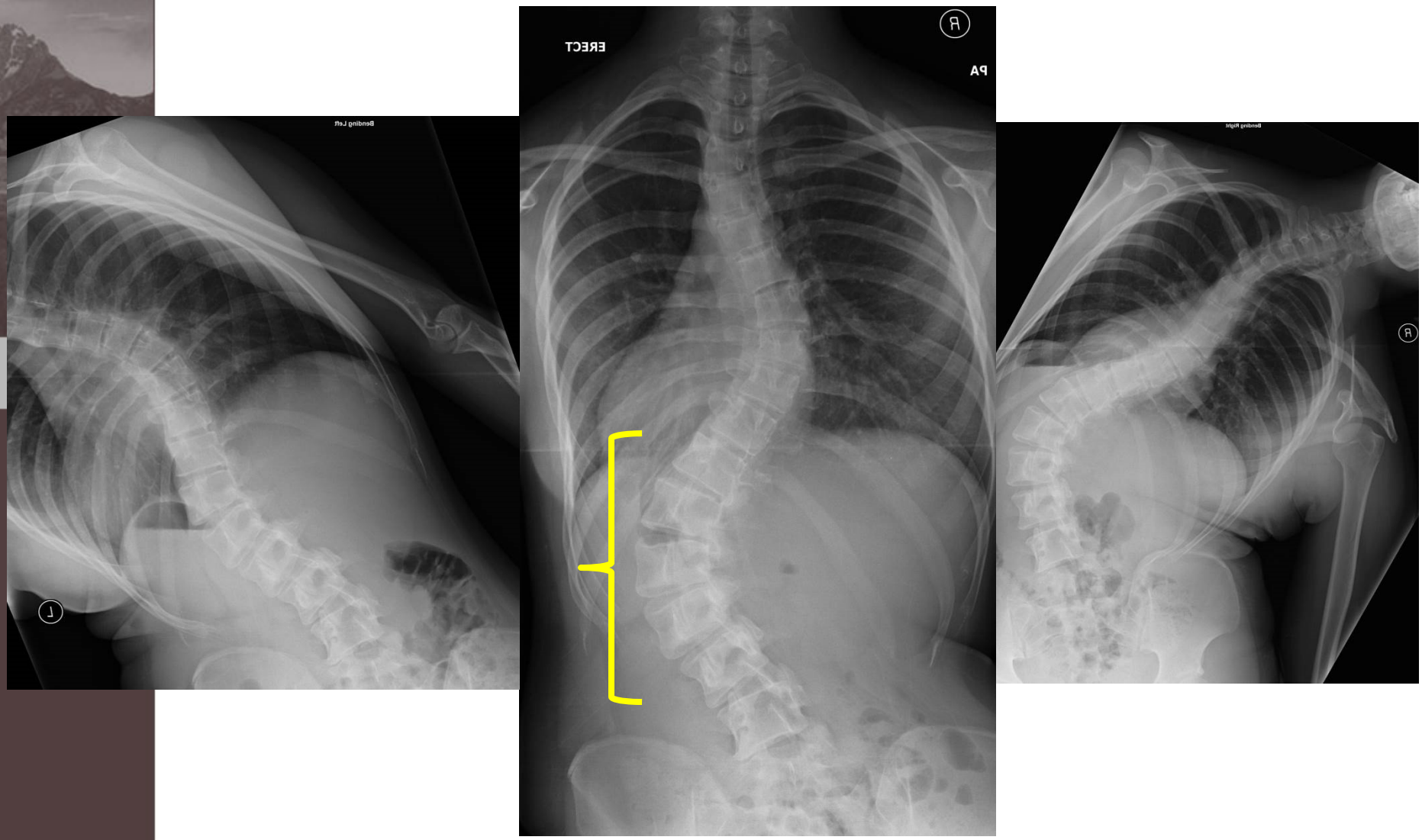
Case Example 2



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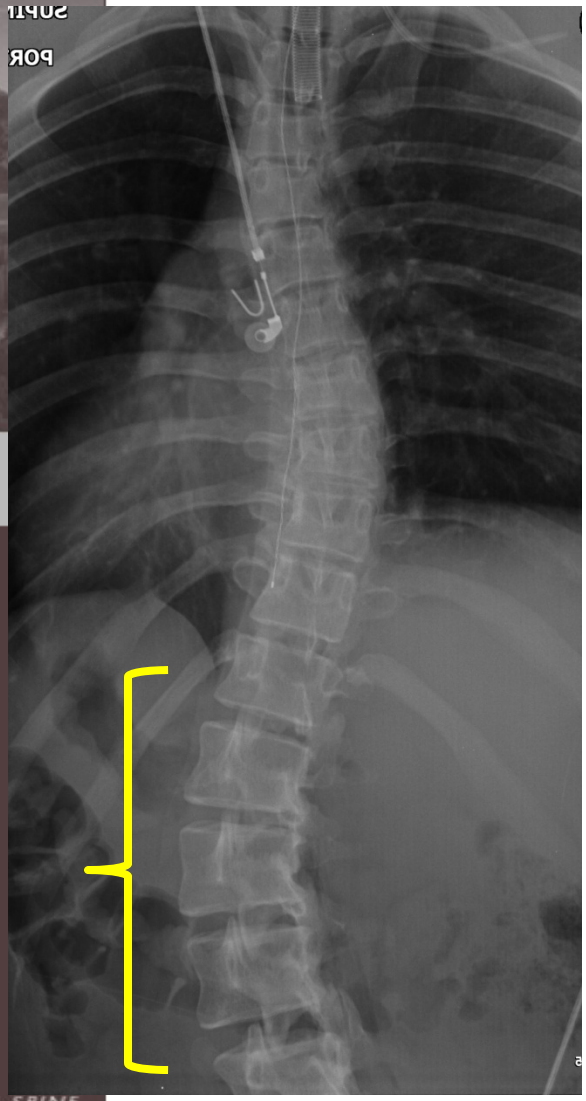
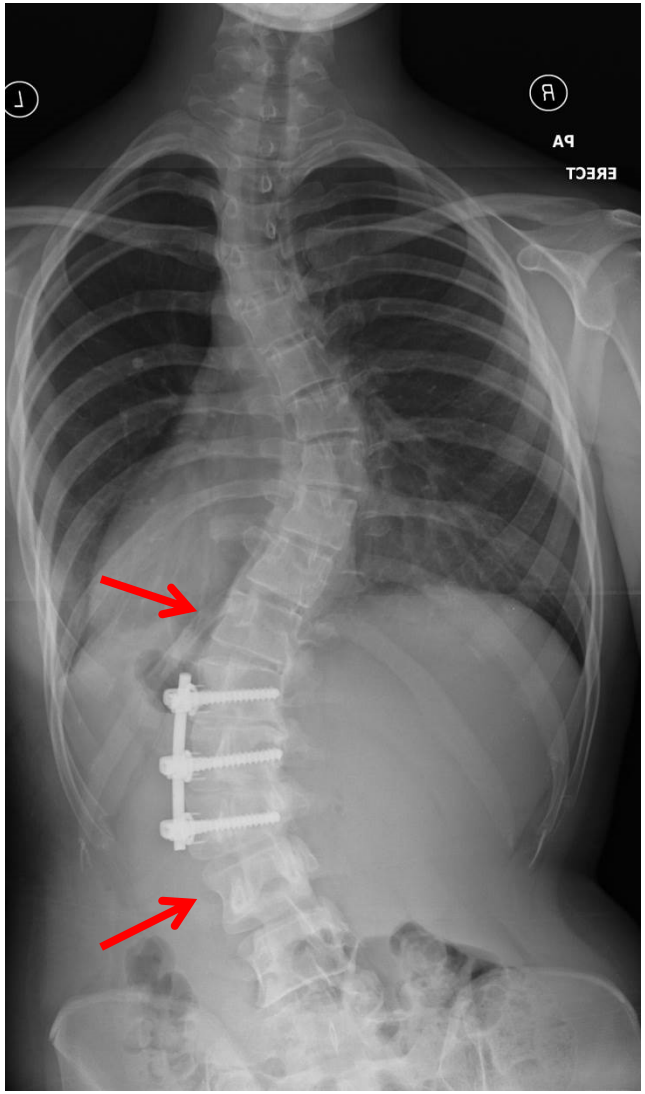
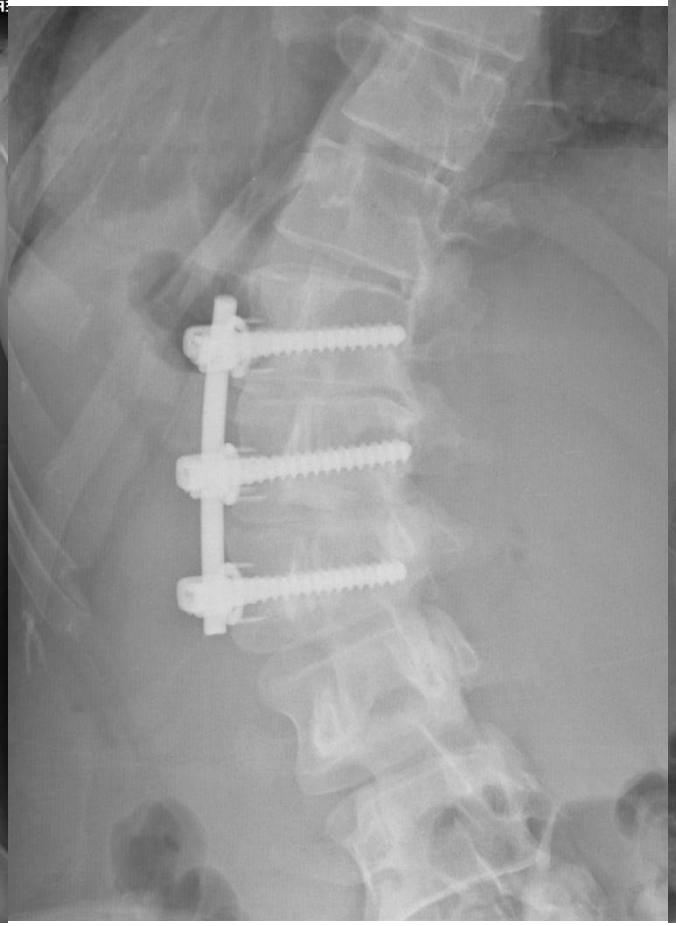
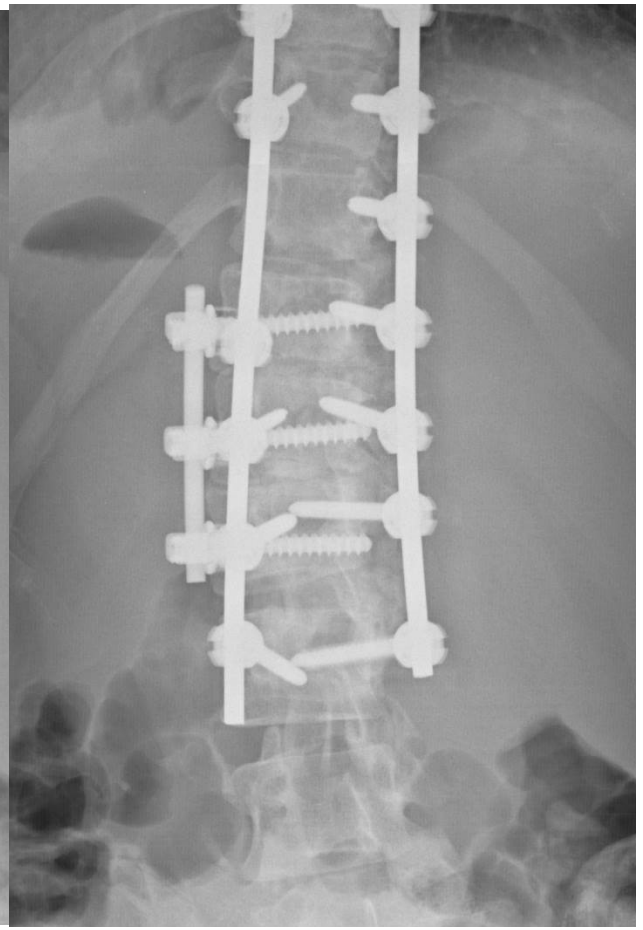
Case Example 2





Case Example 2





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