

Flexible/Fixed Deformity Principles

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Disclosure

- I have no relevant financial relationships with the manufacturer(s) of any commercial product(s) and/or provider of commercial services discussed in this CME activity.
- I do not intend to discuss an unapproved or investigative use of a commercial product or device in my presentation.

Core Competencies

- Patient Care
 - Evaluation & treatment of adult deformity.
- Medical Knowledge
 - Biomedical and clinical data for evaluation and management of patients with adult deformities.
- Practice-Based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice
 - Costs associated with adult deformity surgeries.



Diagnosing Pathology



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Types of Deformities

- Flexible
 - Idiopathic scoliosis
 - Iatrogenic decompression (acute)
 - Fractional compensatory curve
- Fixed
 - Degenerative
 - Traumatic
 - Iatrogenic decompression (chronic)
 - Iatrogenic fusion
 - Asymmetric disc collapse



A Deformity Is Not A Deformity

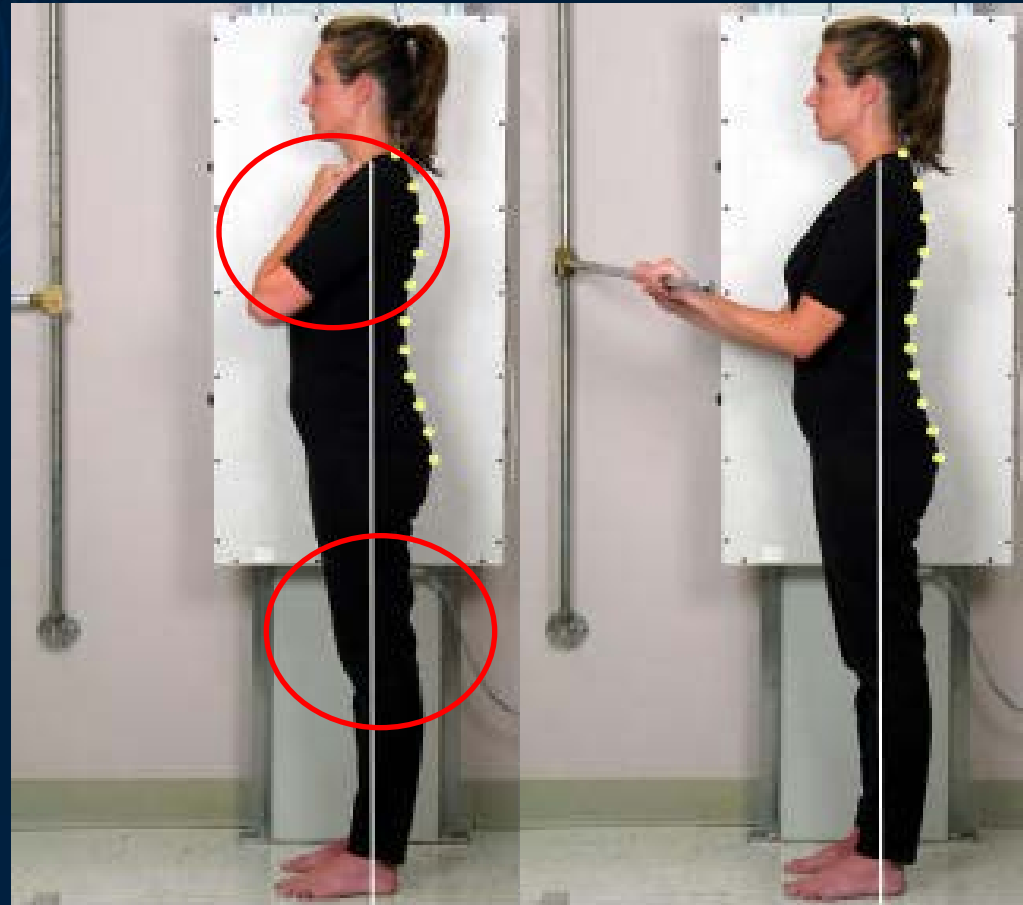


Patient Assessment

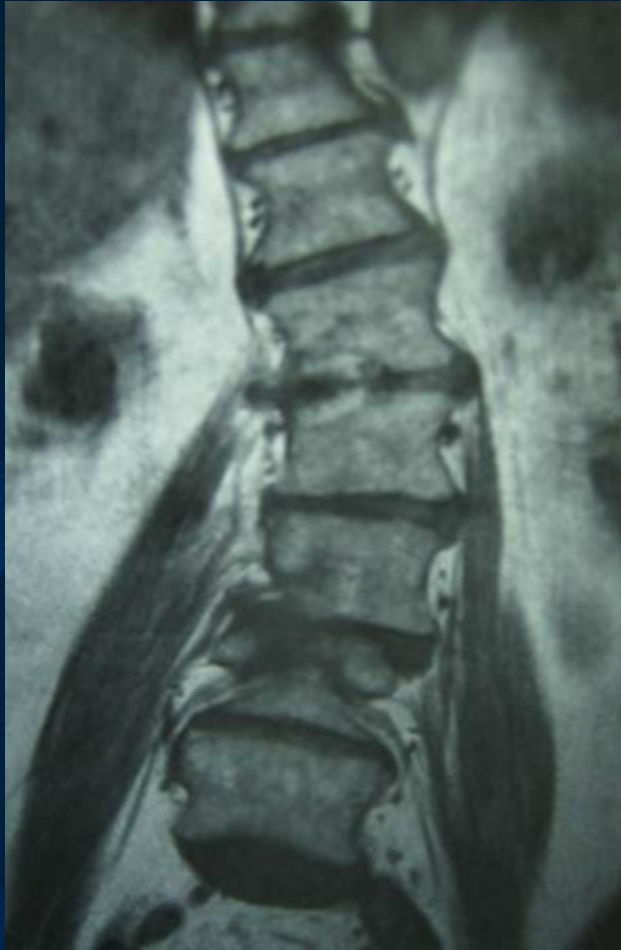


X-Ray Considerations

- Hips and knees extended fully to negate compensatory mechanisms.
- Clavicle position is optimal (Horton 2005)
 - Most accurate measurements

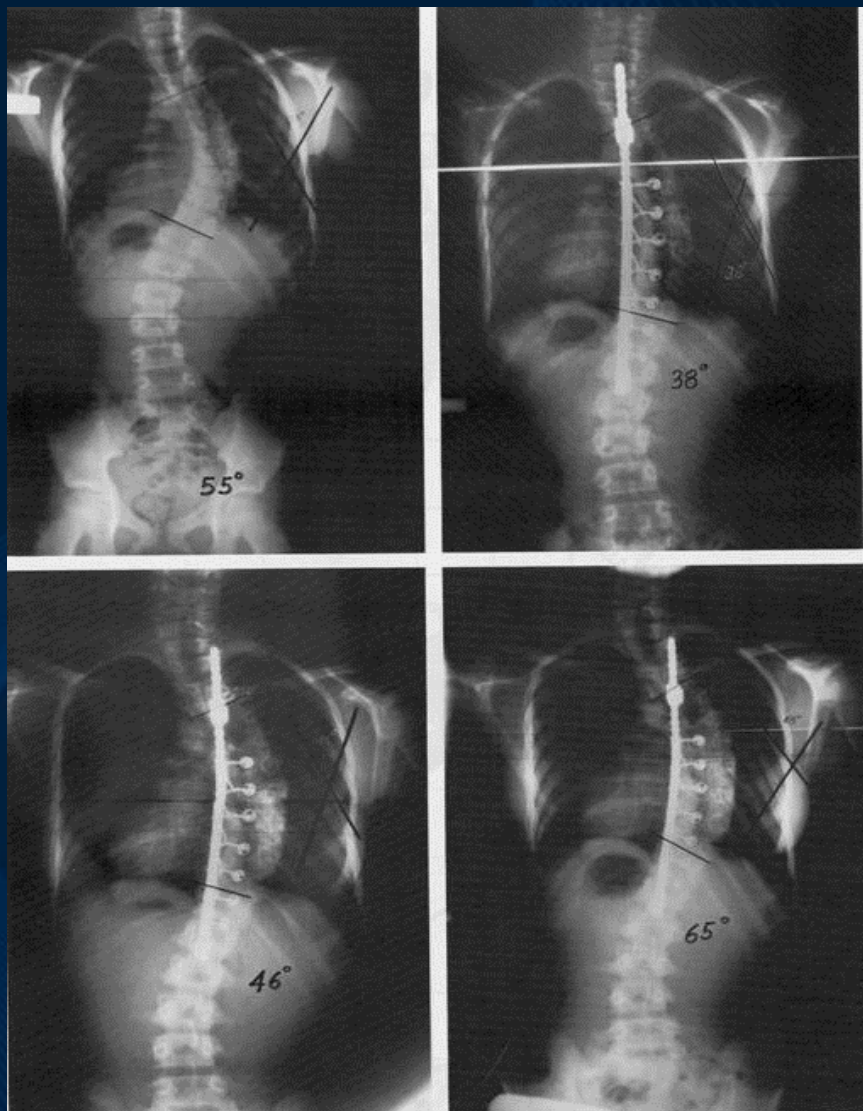


Imaging Studies



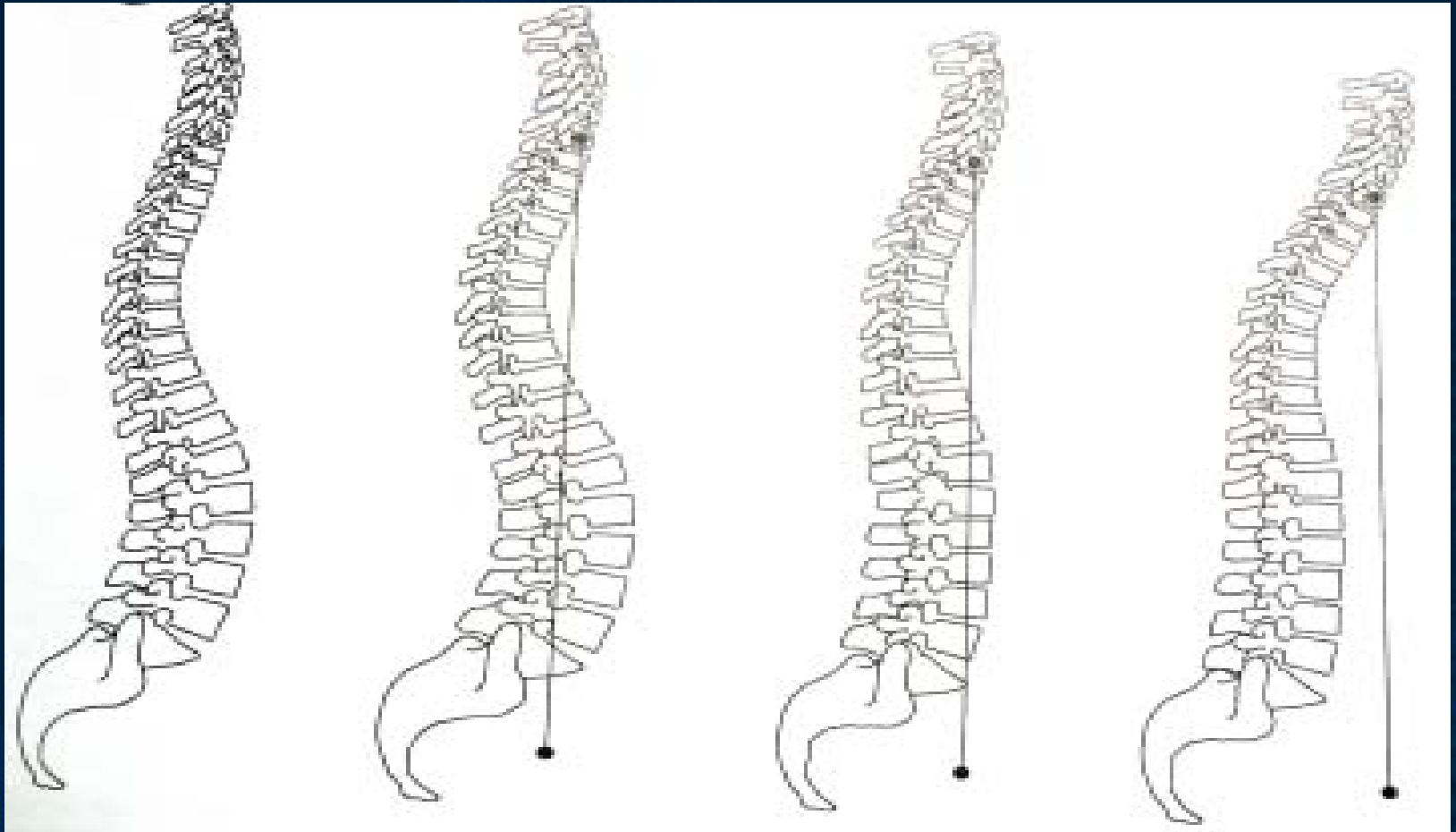
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Flexible Vs. Fixed Fusions

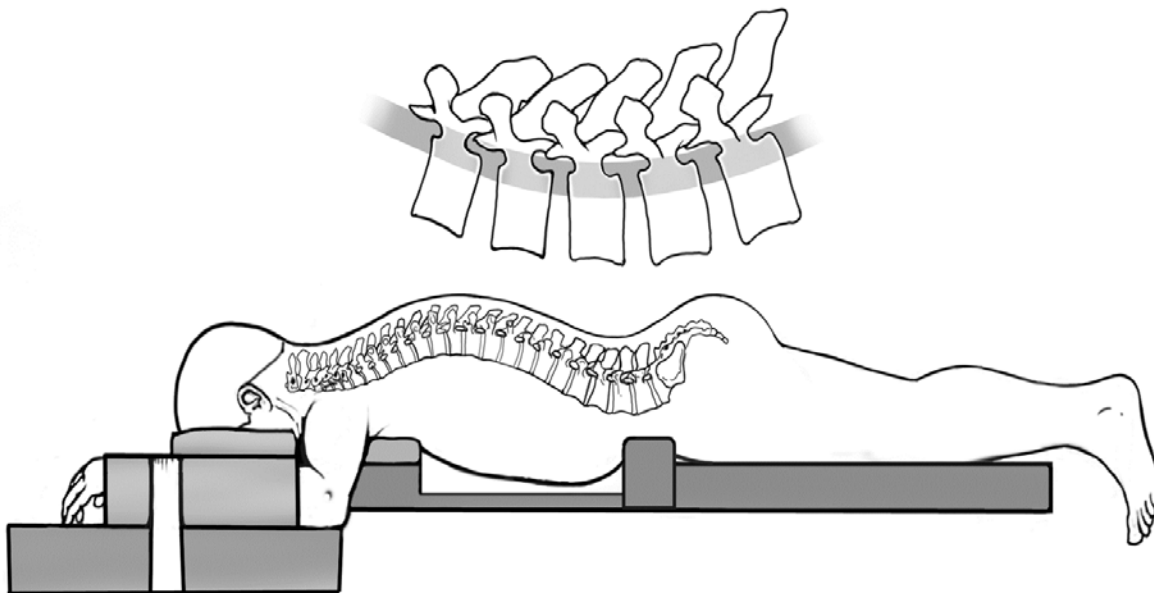
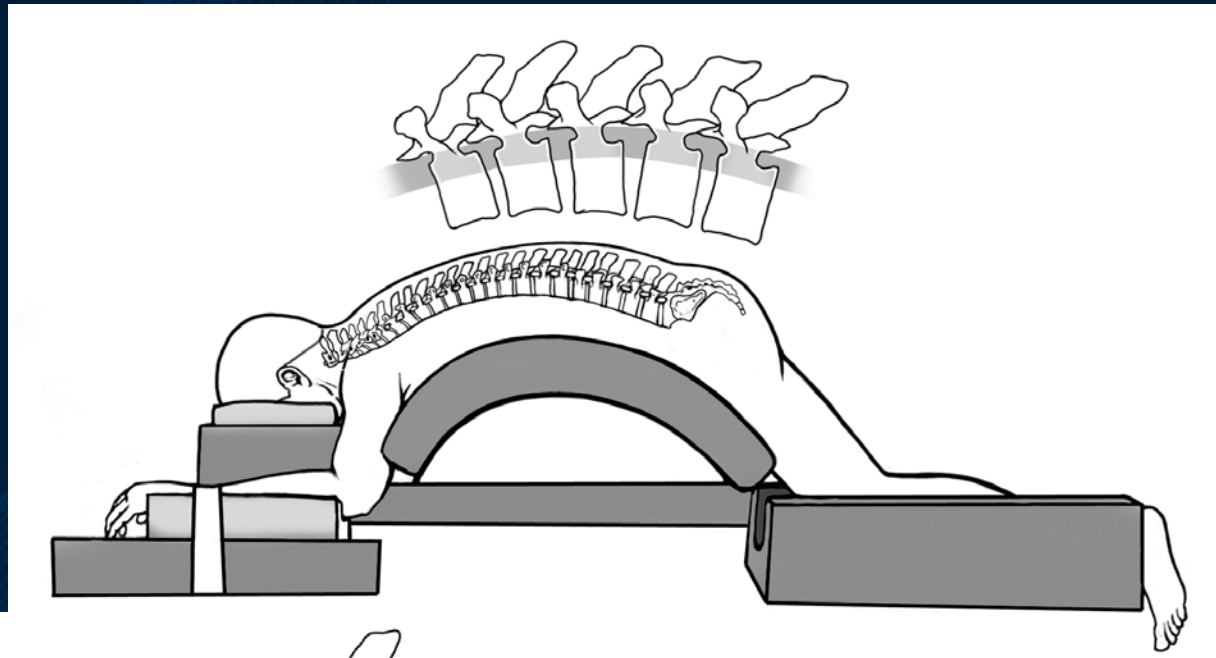


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Patient Positioning

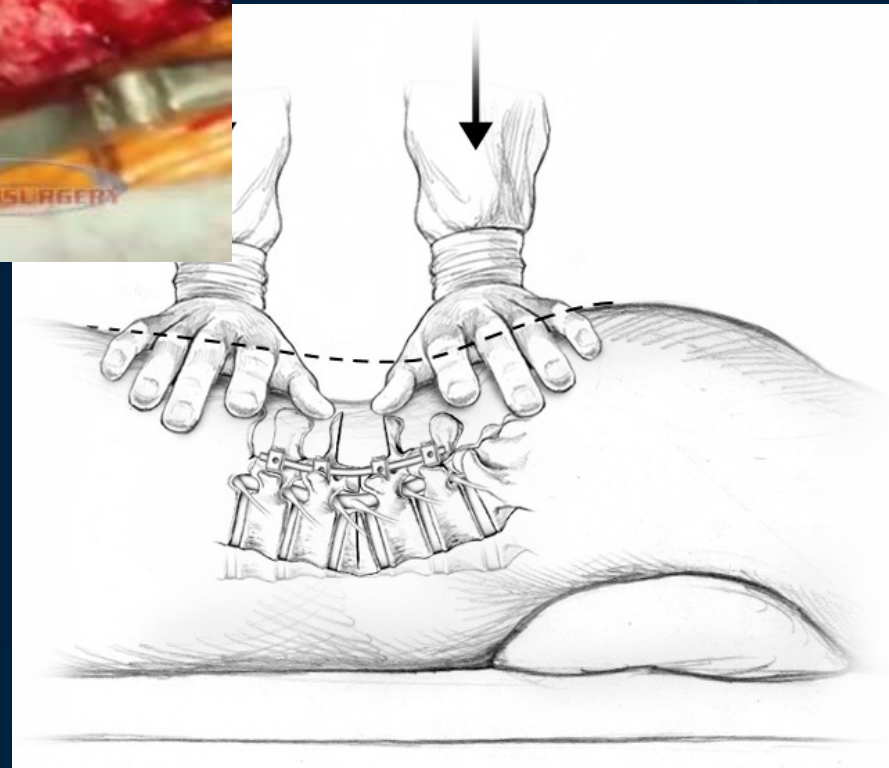


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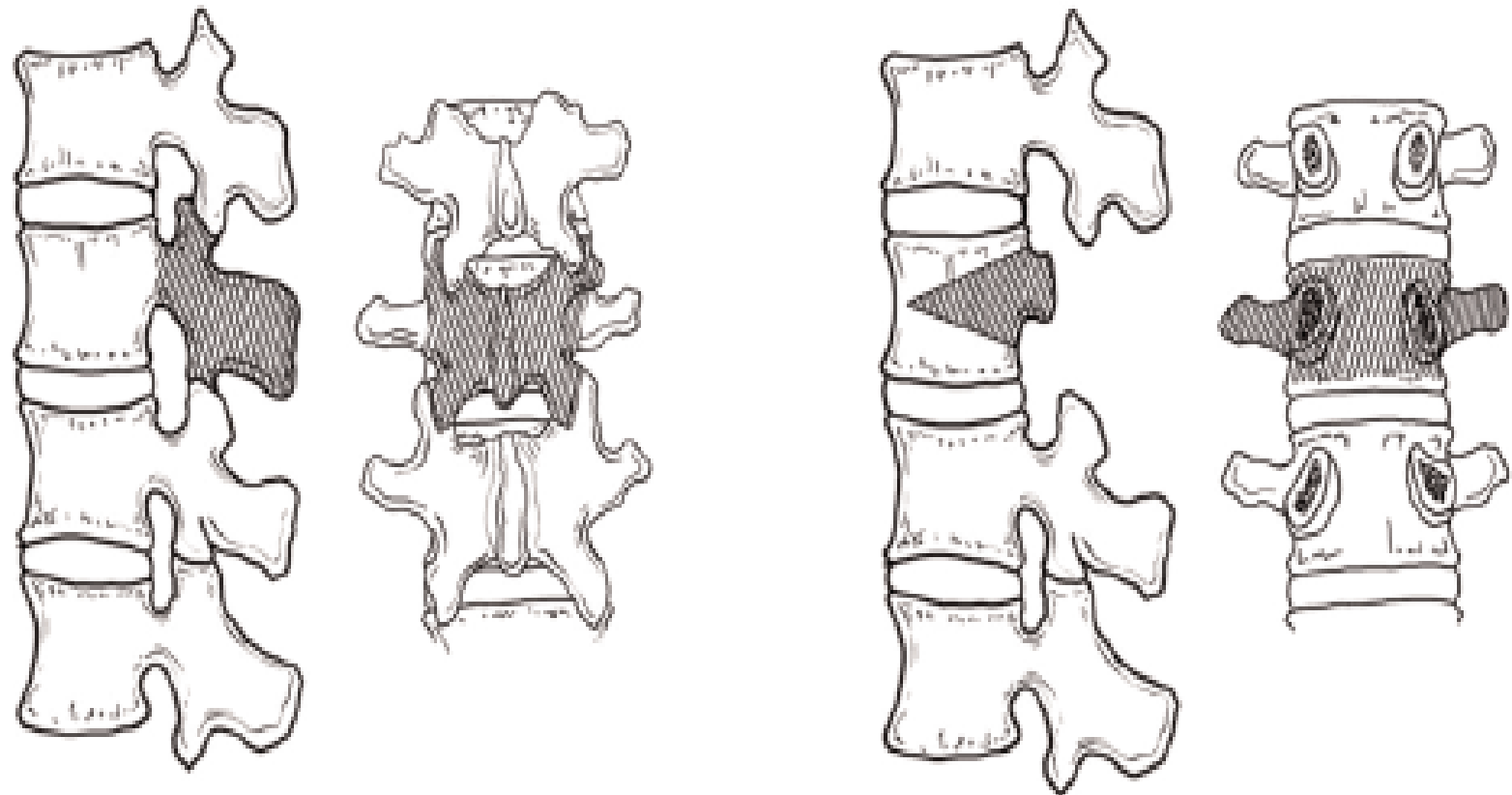




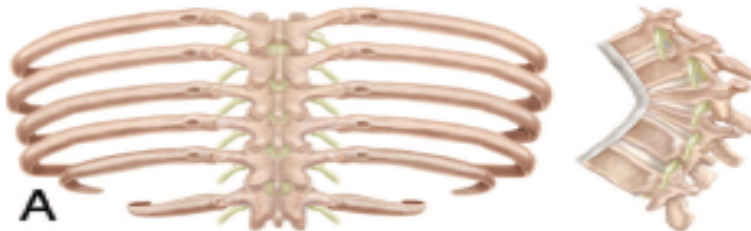
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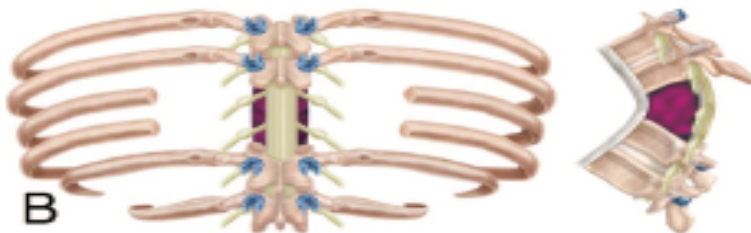
Osteotomies



**Vertebral Column Resection.
Depiction of a Sharp Angular Kyphosis
In the Thoracic Spine**



**Vertebral Column Resection.
Resection of Two Vertebral Segments and
Three Discs, Anteriorly and Posteriorly**



**Vertebral Column Resection.
Closure of the Vertebral Column Resection
With Reconstruction of the anterior Column
With Cage and Posterior Column With Pedicle
Screw Instrumentation**

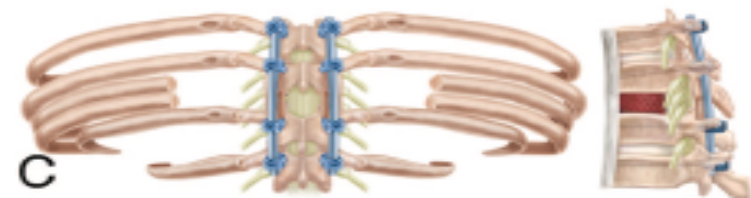
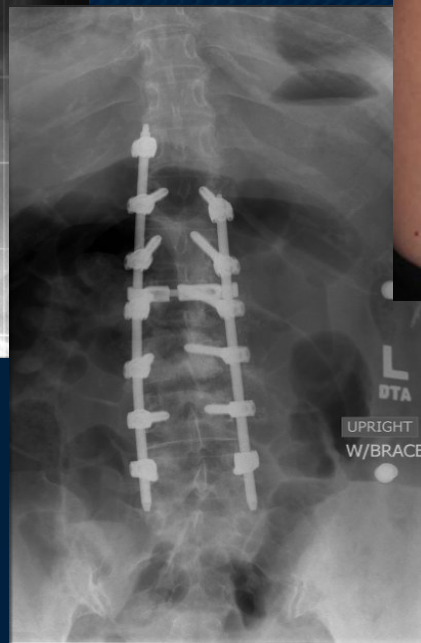


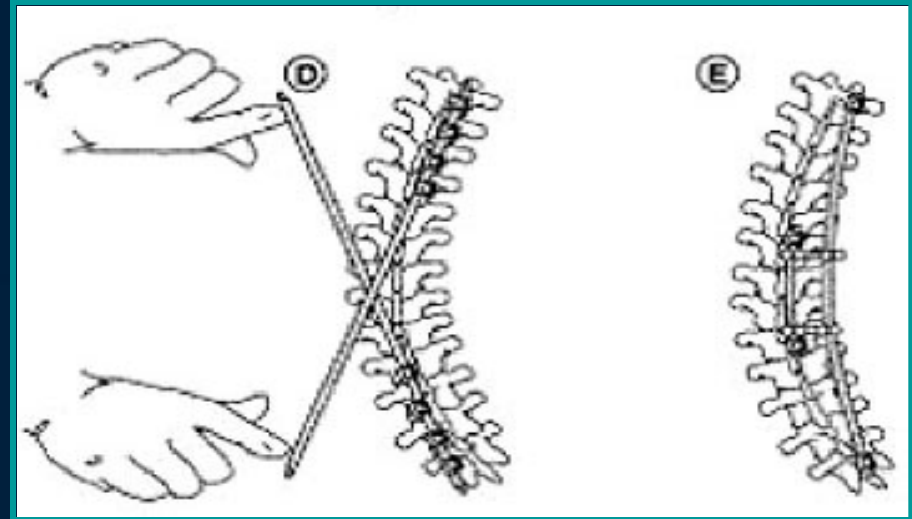
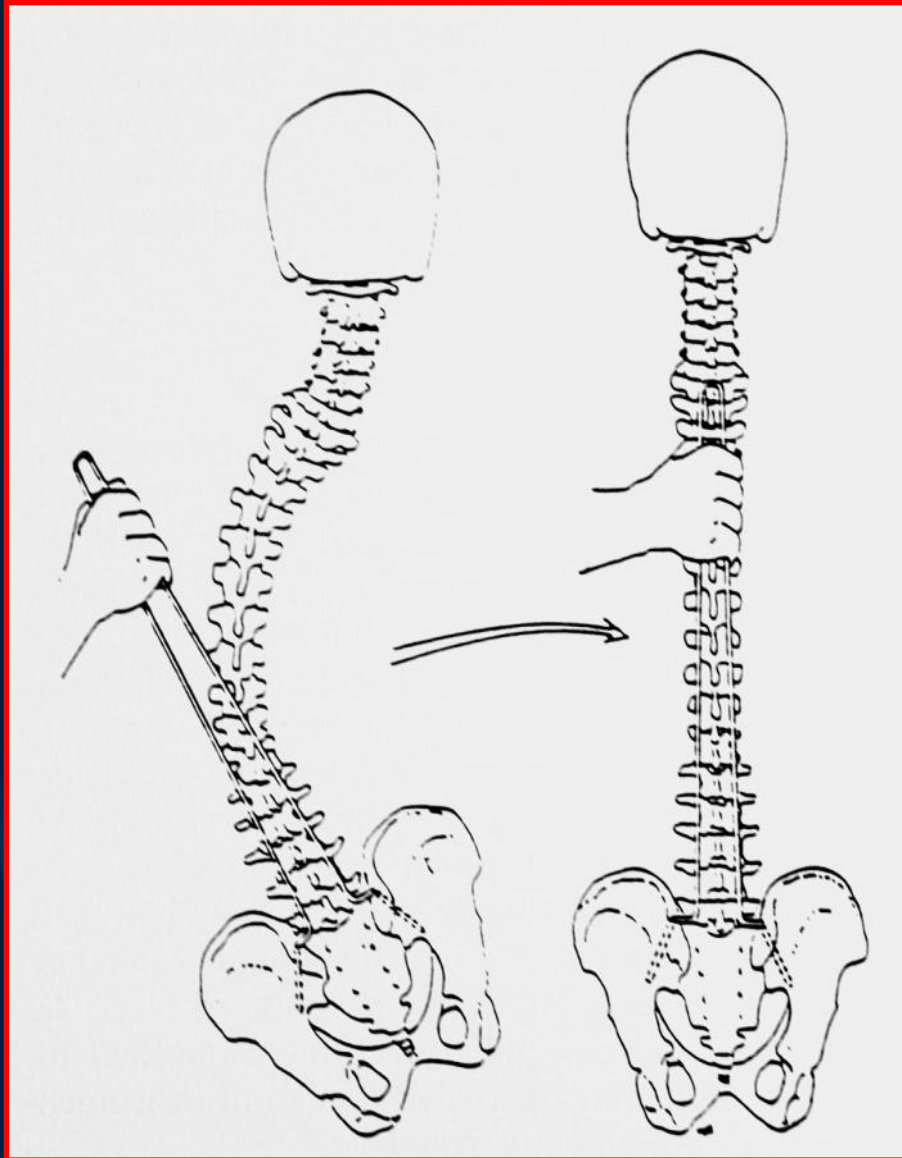
Figure 4. (A) Vertebral column resection. Depiction of a sharp angular kyphosis in the thoracic spine. (B) Vertebral column resection. Resection of two vertebral segments and three discs. (C) Vertebral column resection. Closure of the vertebral column resection. Reconstruction of the anterior column with a cage and the posterior column with pedicle screw instrumentation. Note the anterior and posterior columns are not closed bone-on-bone. A generous posterior central enlargement is maintained to observe the thecal sac. Performance of the vertebral column resection was preceded by resection of the transverse processes and ribs at these levels.

- Remove vertebral body
 - Corpectomy, lamina, pedicles, TP's, rib heads
 - Insert cage and posteriorly close vertebral column
 - Not bone on bone as dura may kink
- Suk et al: Spine 2005
- Bridwell: Spine 2005

Percutaneous Techniques

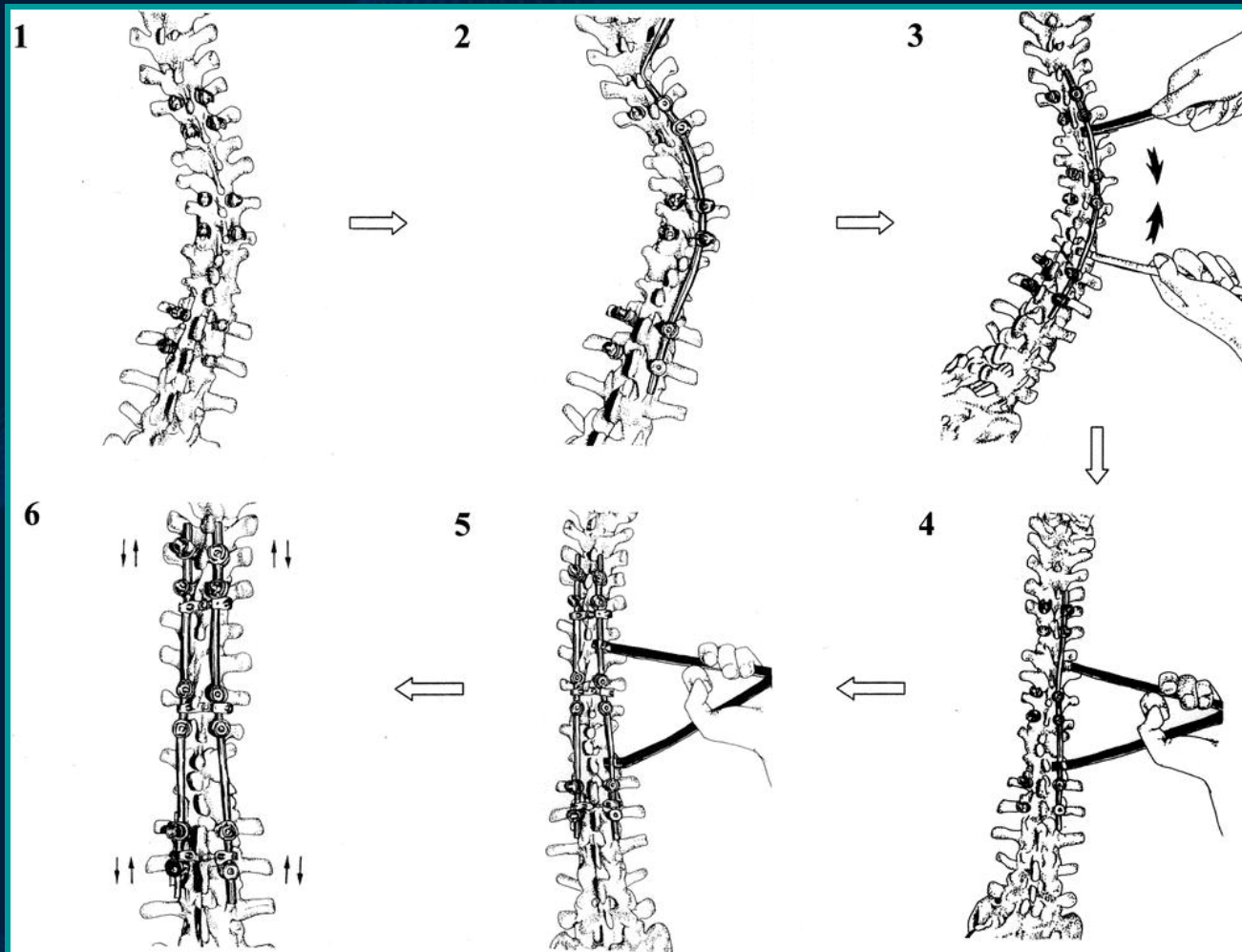


Global Correction Methods



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Global Correction Methods



Regional Correction Methods

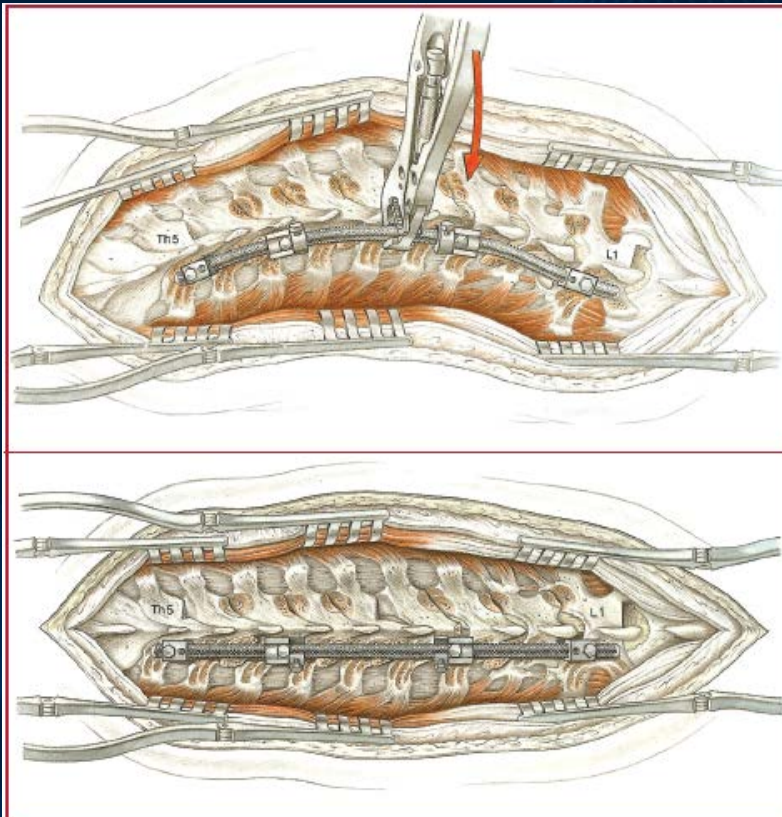
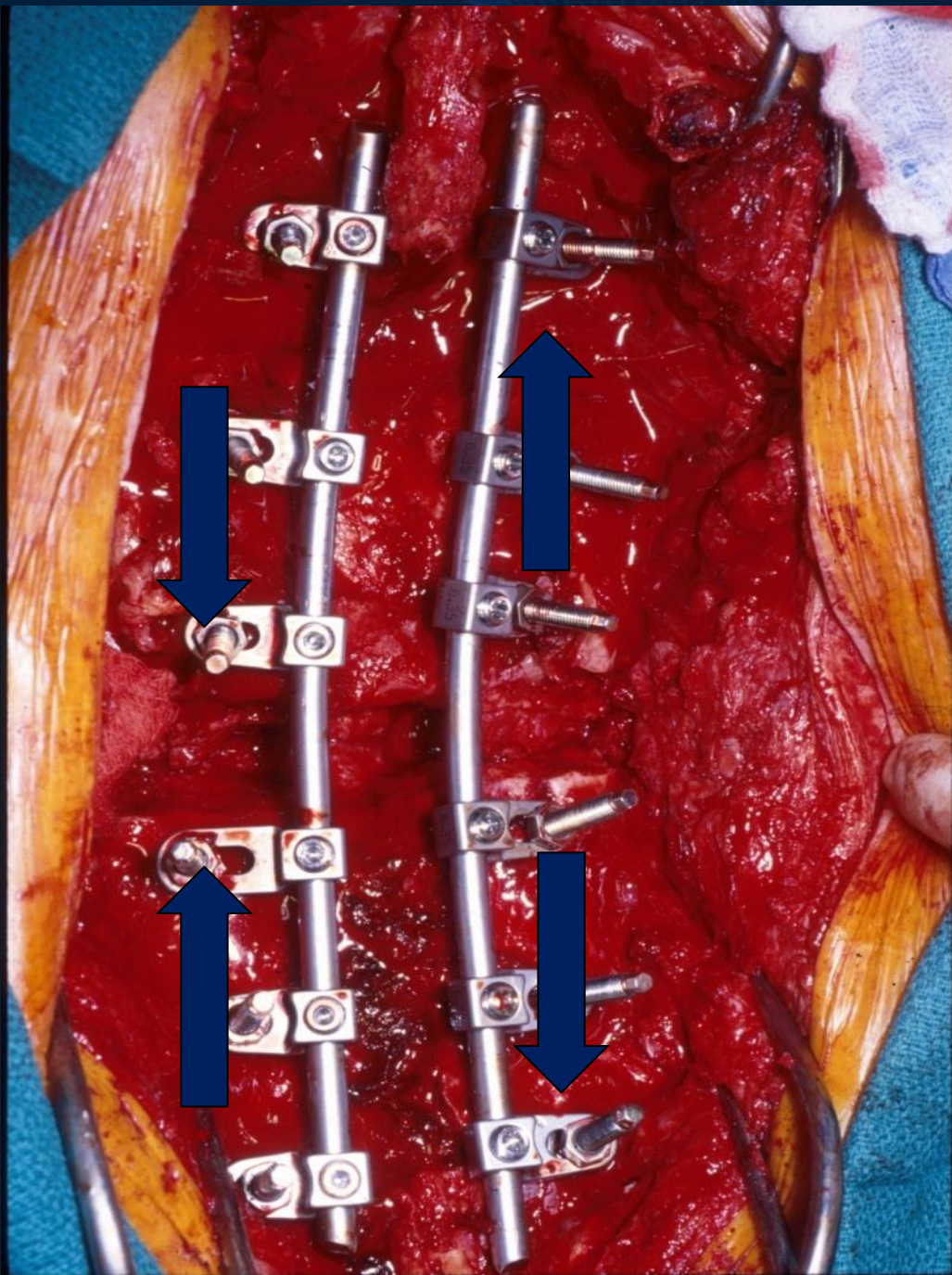


FIGURE 1. Illustrations of the posterior rod derotation technique using the Cotrel-Dubousset system (from, Bauer R, Kerschbaumer F, Porsel S: Atlas of Spinal Operations. New York, Thieme, 1993, pp 140).

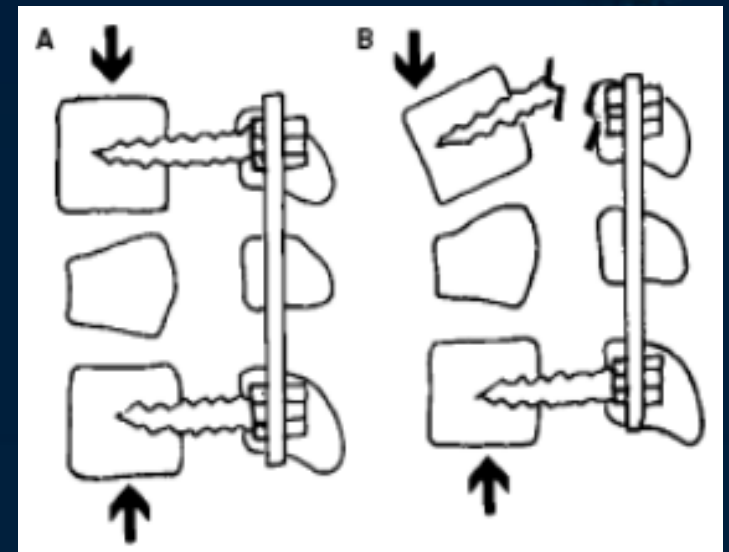
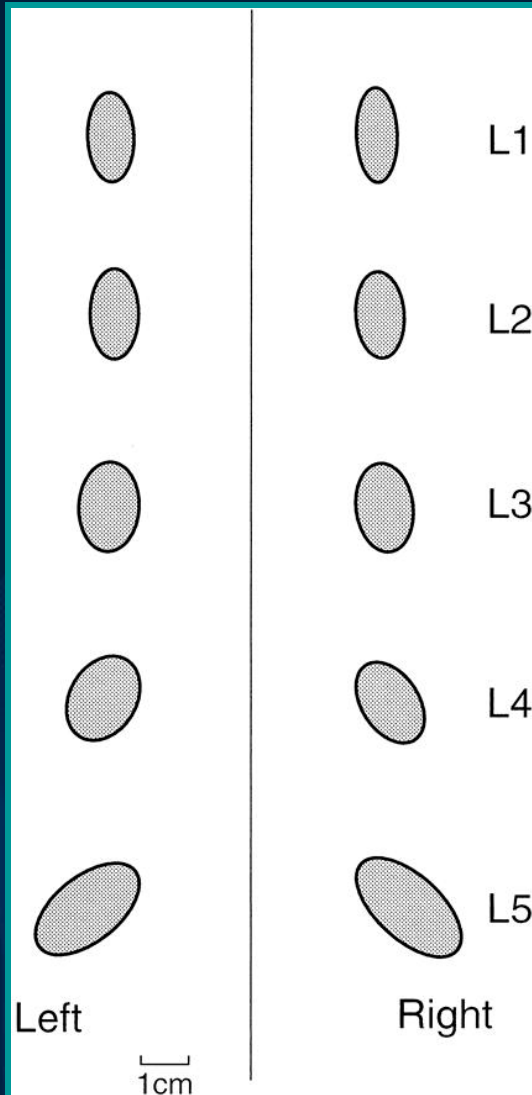


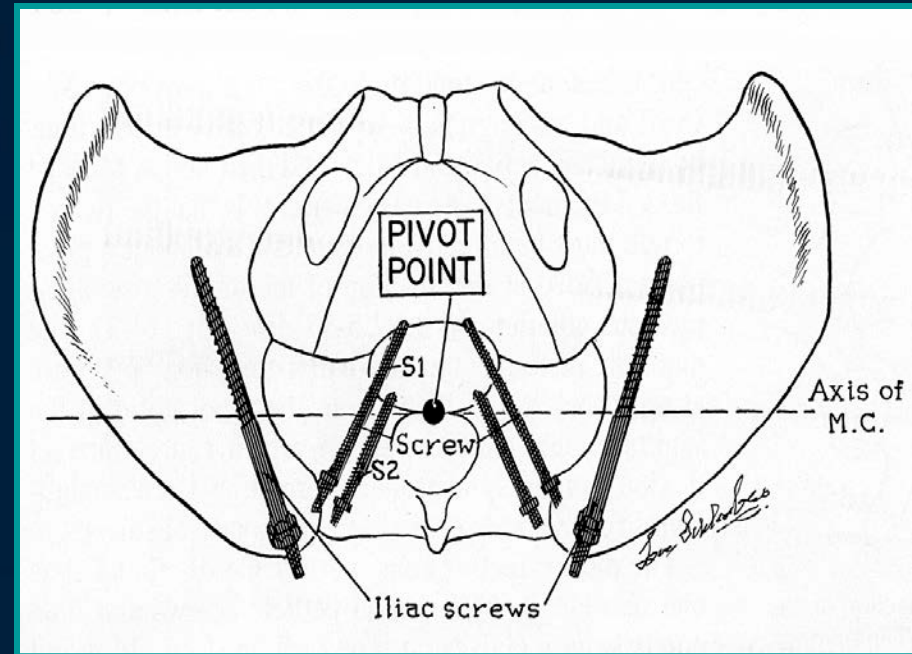
Segmental Correction Methods

“Open the closed spaces and close the open spaces.”



Construct Forces





McCord Spine 17:S235, 1992



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Conclusion

- Clinical and radiographical data is needed to assess if curve is flexible or fixed
- Flexible curves can be reduced on positioning
- Fixed curves require spinal column release with osteotomies and VB resection



SPEEDO

Because showing off your gear with clothes on,
just isn't the same.



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Thank You!

Vanderbilt Spine Fellowship Position Open for 2014



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