

Adult Spondylolisthesis

High grade spondylolisthesis

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Meyerdings grades

Low Grade

High Grade

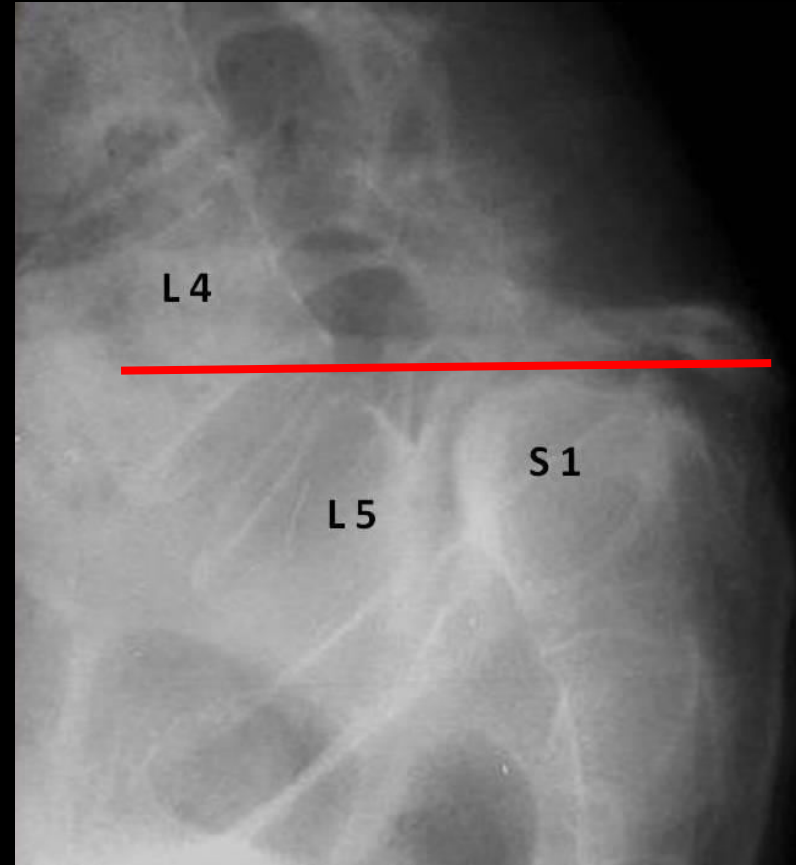
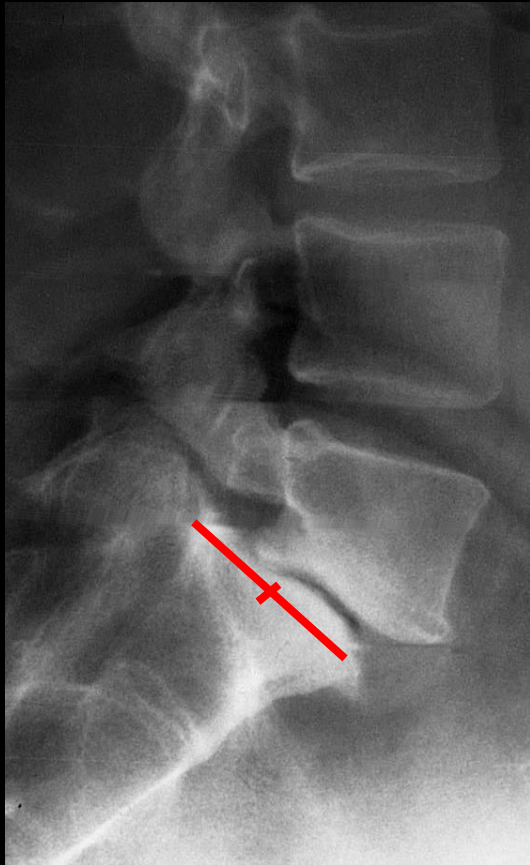
I

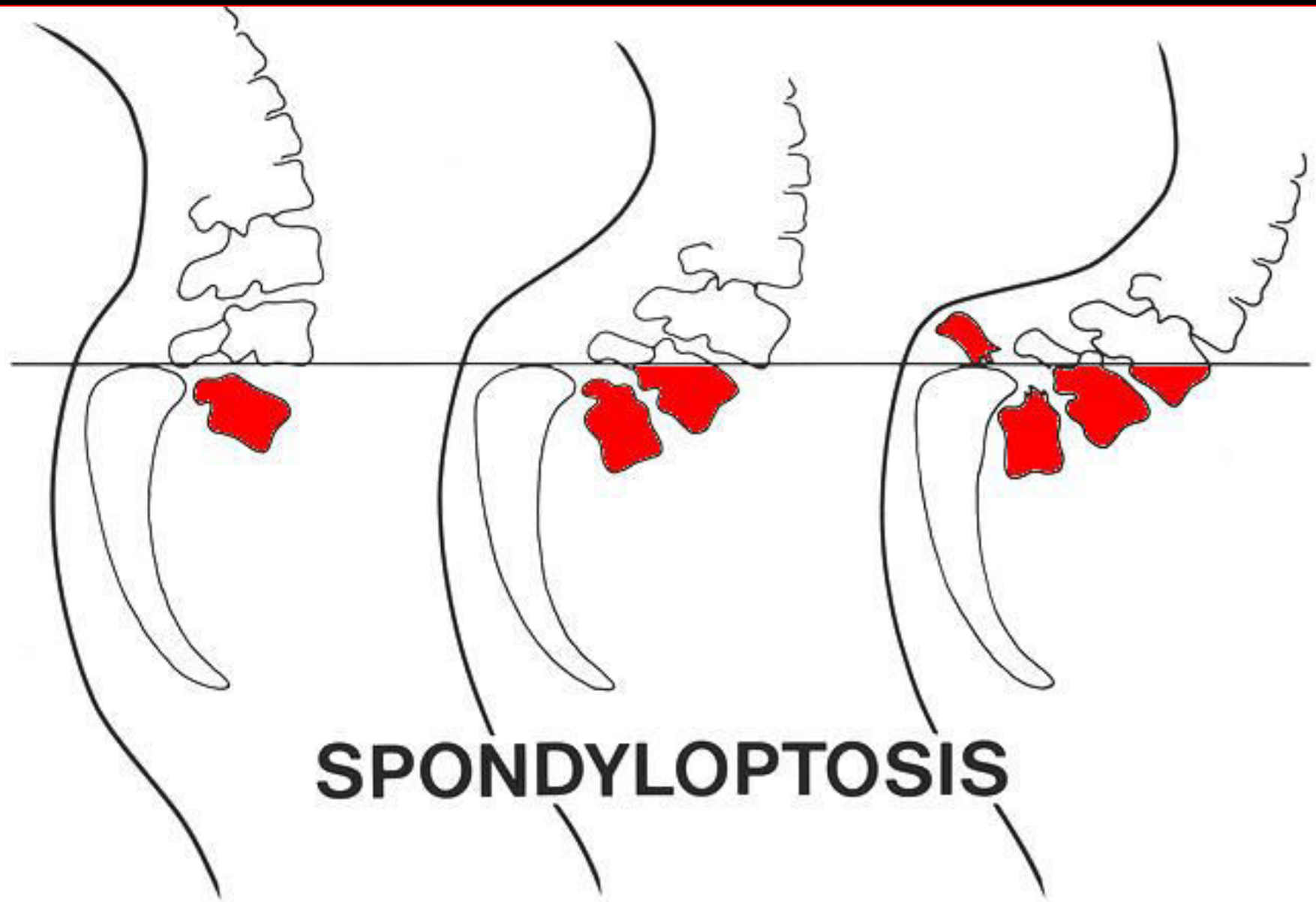
II

III

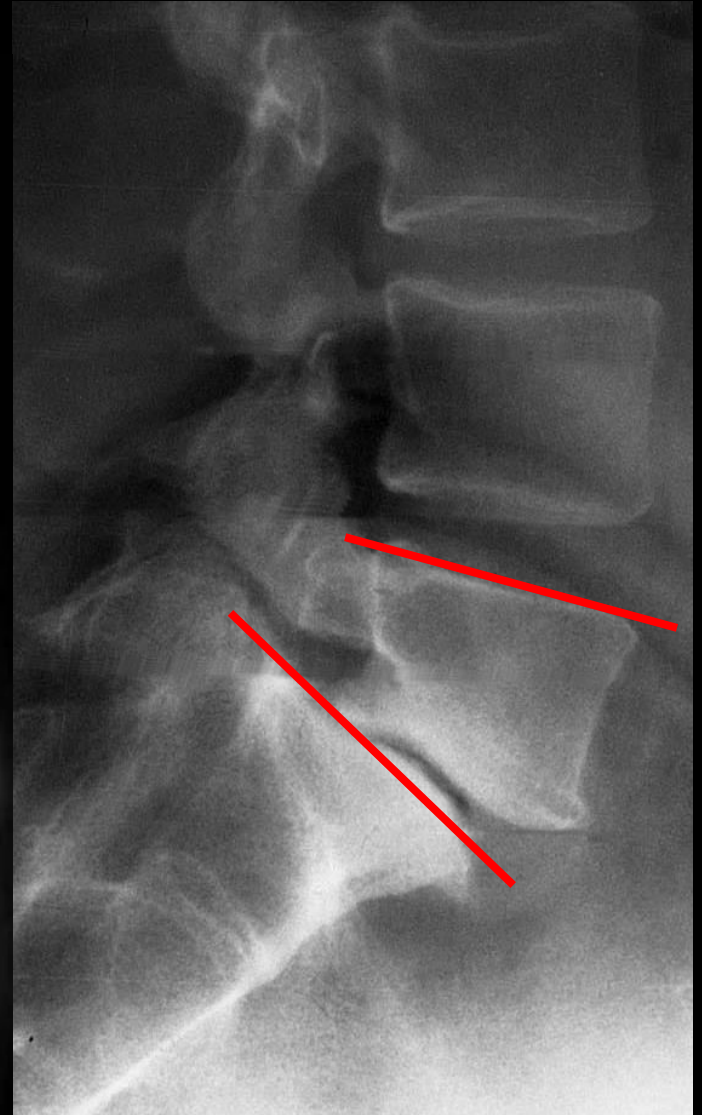
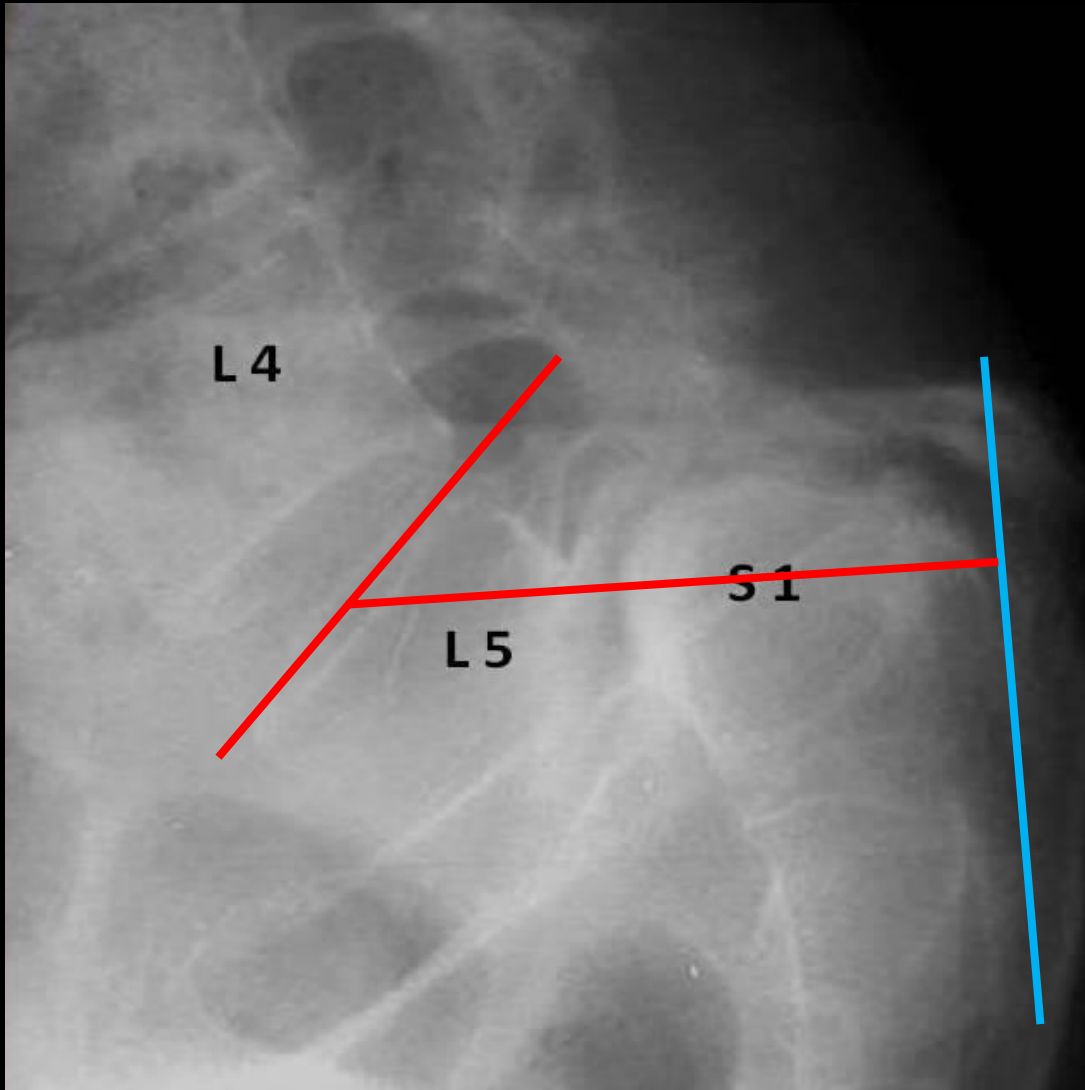
IV

V





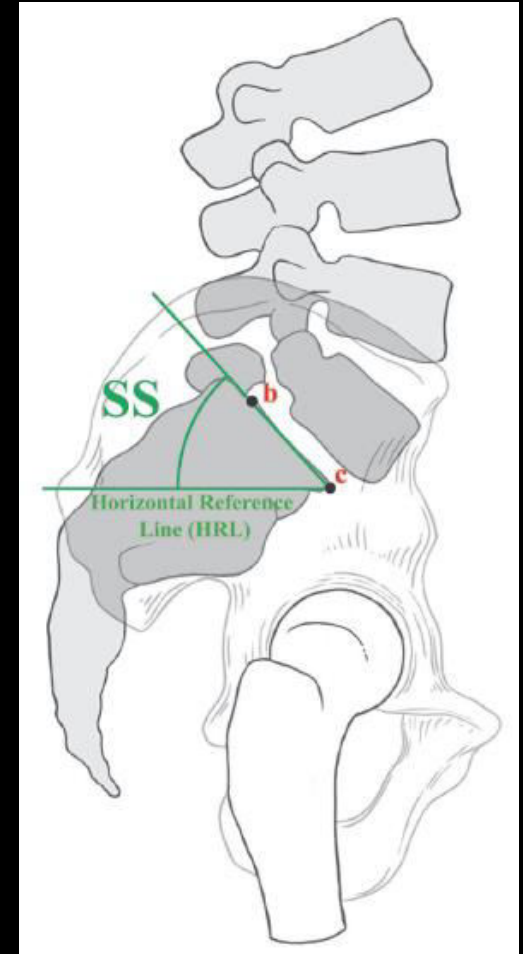
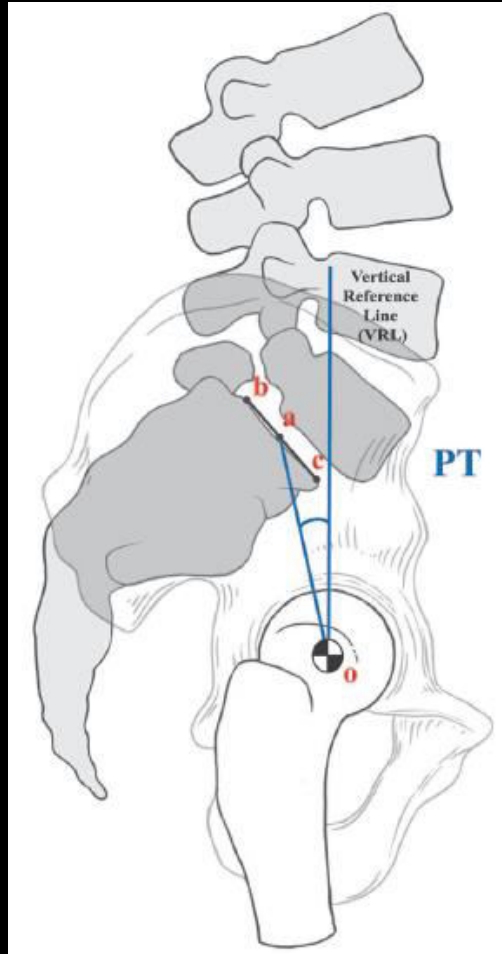
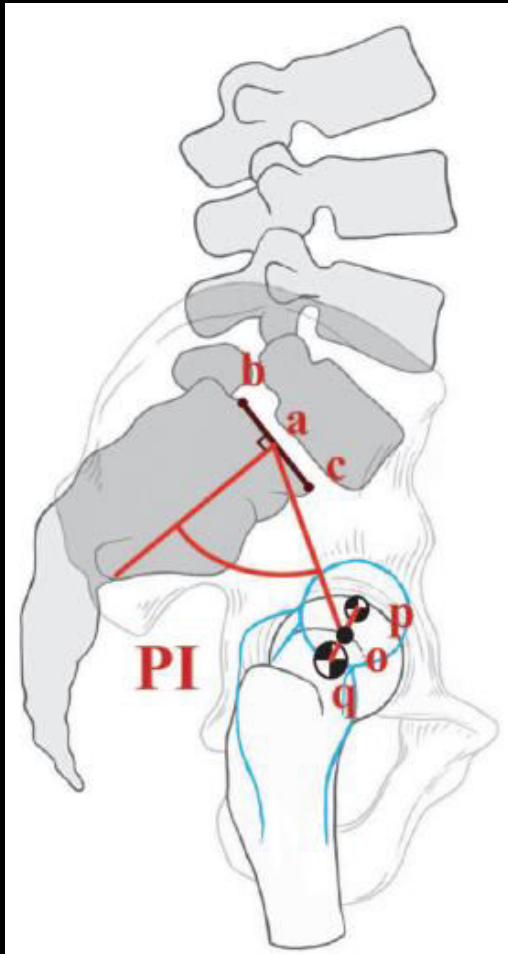
Slip angle



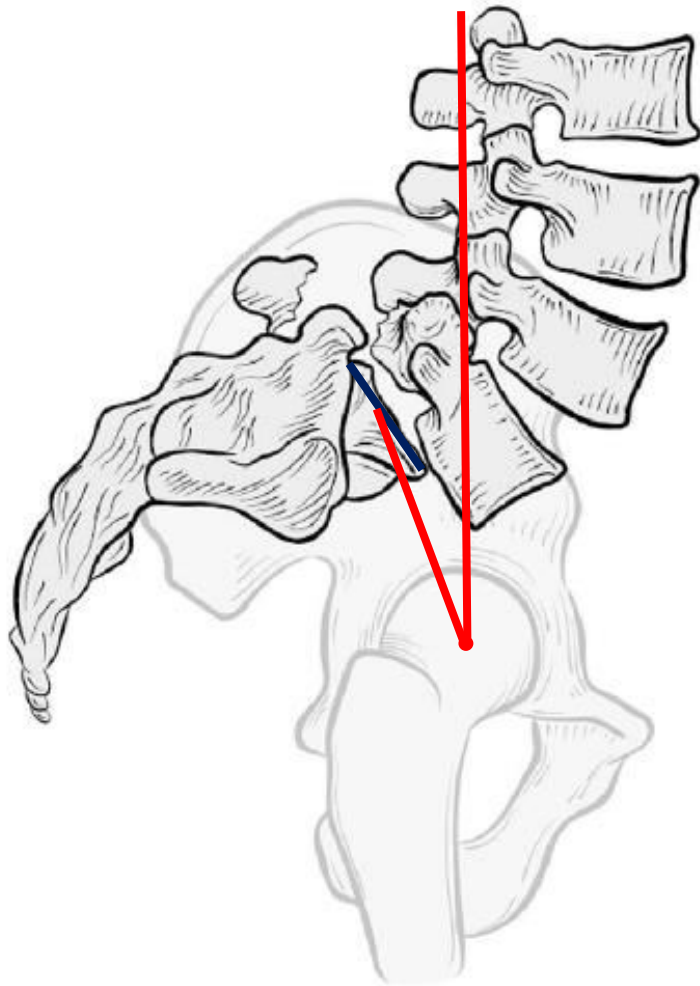
Pelvic incidence

Pelvic tilt

Sacral slope



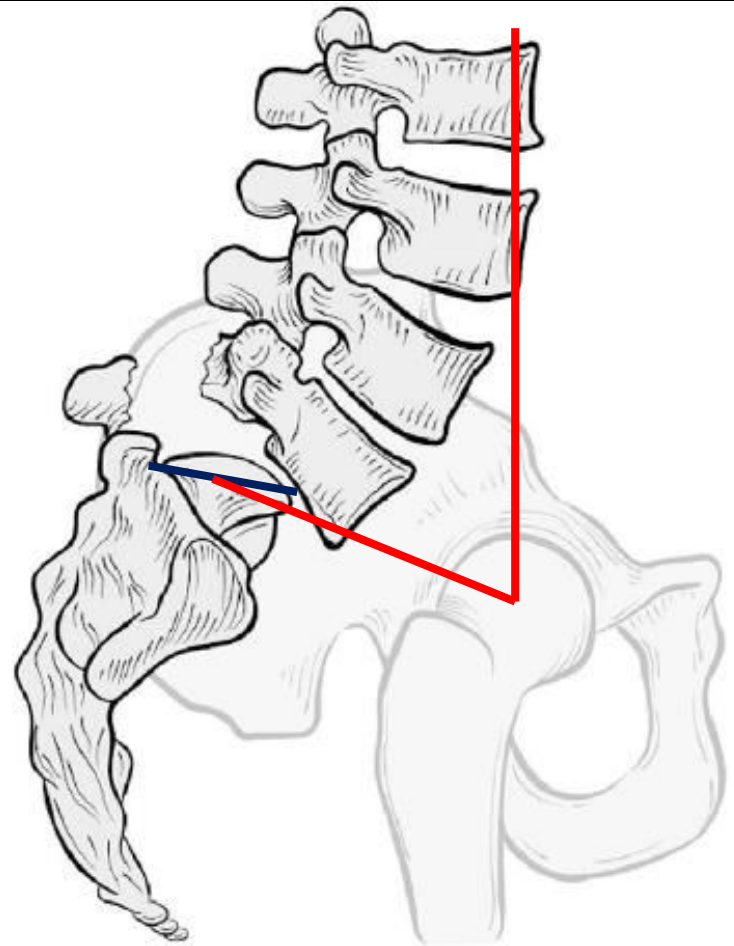
$$PI = PT + SS$$



Balanced Pelvis

Low PT

High SS



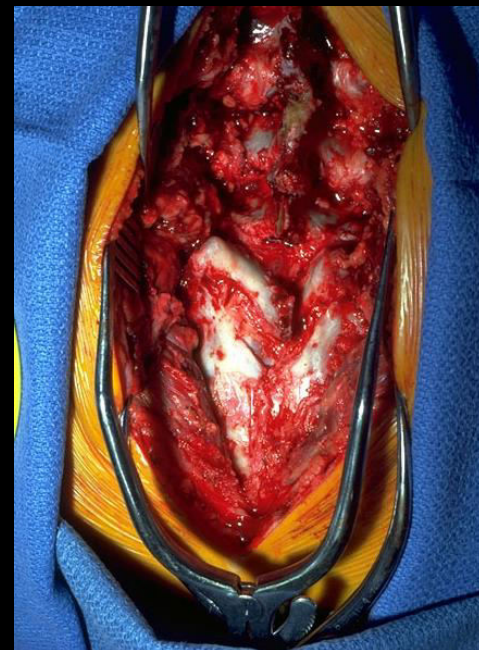
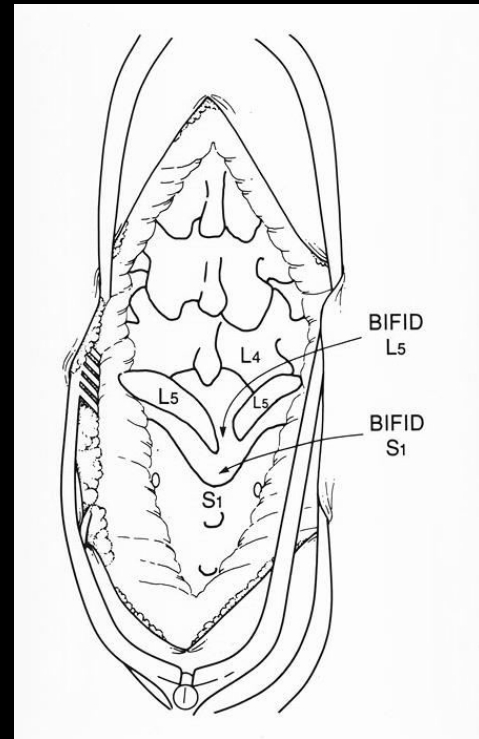
Unbalanced Pelvis

High PT

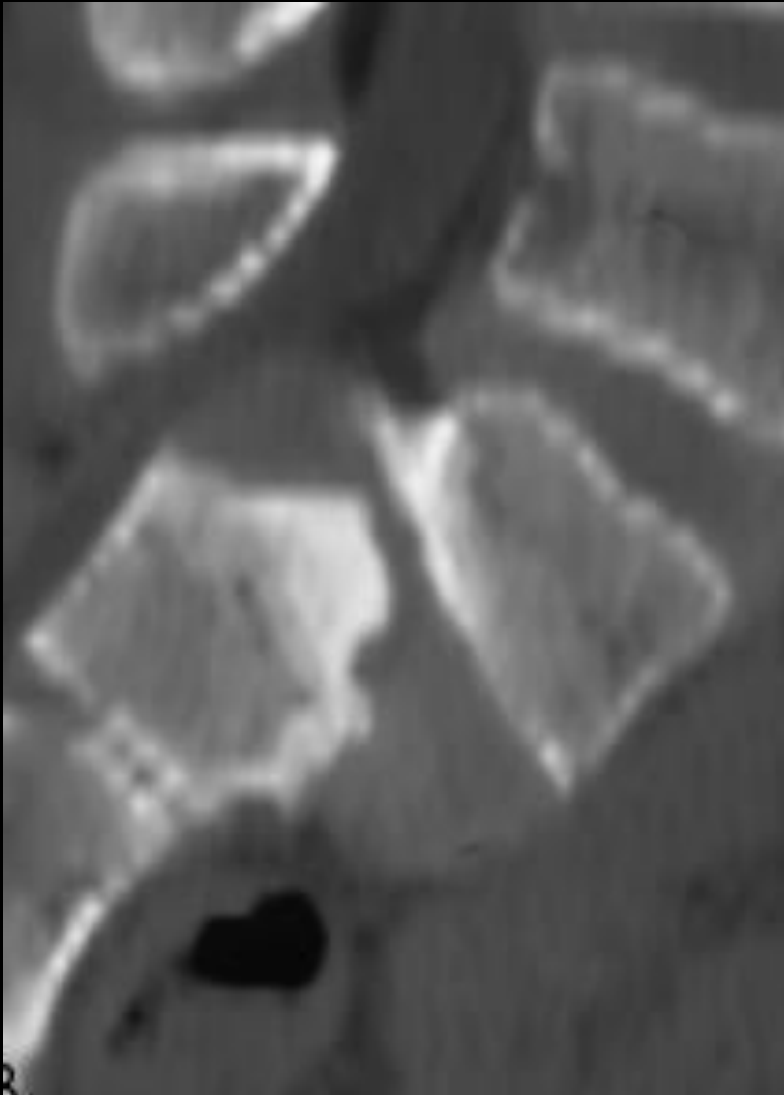
Low SS

Patho anatomy of HGS

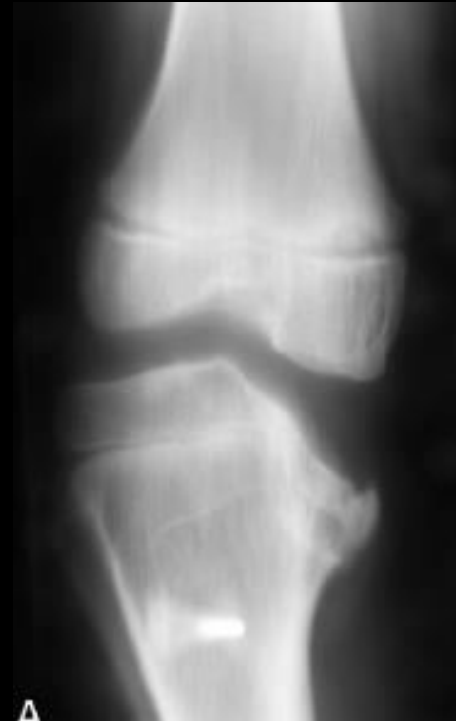
- ***DYSPLASTIC FACETS***
- ***BIFID L5/S1***
- ***TRAPEZOIDAL L5***
- ***ROUNDING OF S1***



proximal sacral rounding



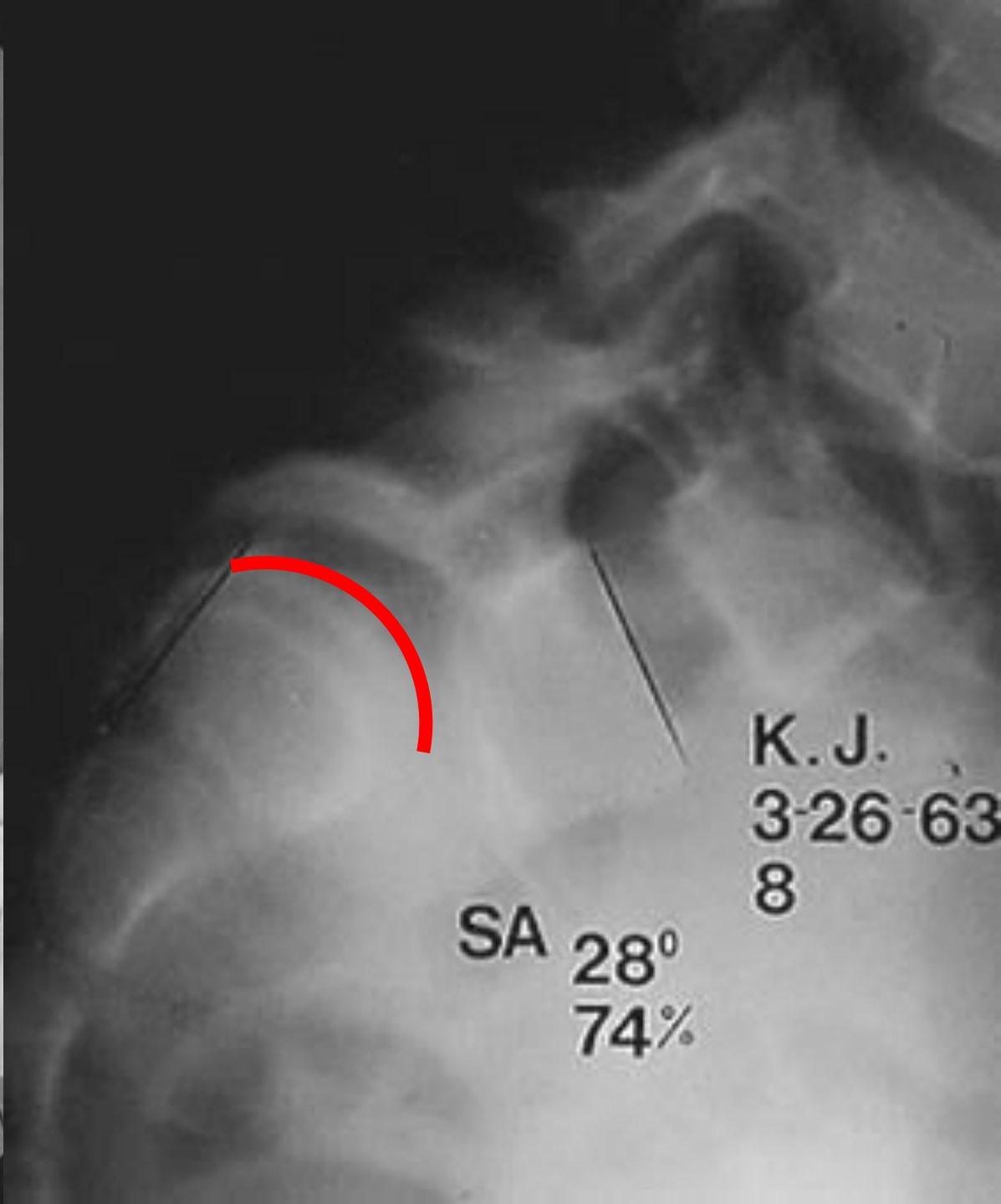
Yue Spine 2005



Sagittal alignment

- Stance
- Gait
- Head over pelvis
- Hips and knees





Treatment options

- ✧ Regular clinical review
- ✧ Surgery:
 - ✧ In-situ
 - ✧ Reduce
 - ✧ Resect



Indications for surgery

- ⌚ Incapacitating back pain
- ⌚ Severe radicular leg pain
- ⌚ Increasing deformity



Infra-structural requirements

- Cell salvage
- Surgeon experience
- Vascular expertise
- Spinal cord monitoring:
 - SSEP
 - MEP
 - Free run EMG's
 - Sphincter monitoring

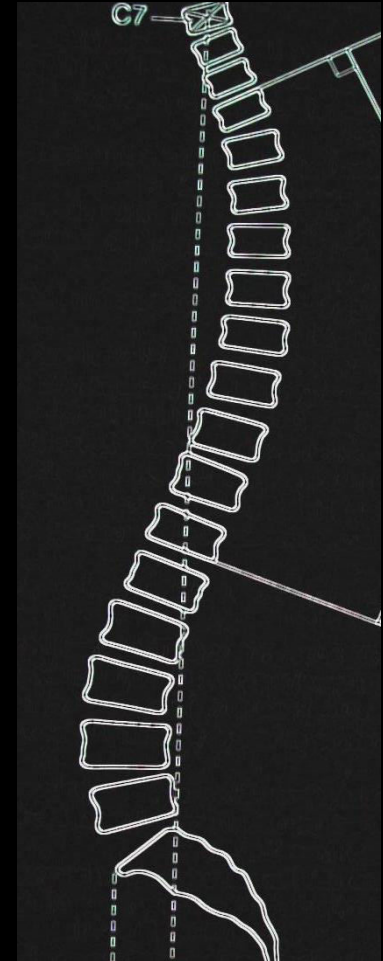


In-situ fusion



Why reduce?

- ✧ **Restore the sagittal balance**
- ✧ **Better bio-mechanics for fusion**
- ✧ **Surgeon's experience**



Reduction strategies

- ⌘ Gradual with prolonged skeletal traction
- ⌘ Surgery
- ⌘ Correction of kyphosis v translation

Reduction of Severe Lumbosacral Spondylolisthesis

A Report of 22 Cases With a Ten-Year Follow-Up Period

JOHN P. O'BRIEN, PH.D., F.R.C.S.(ED.), F.A.C.S., F.R.A.C.S., HOSSEIN MEHDIAN, M.D.,
AND DAVID JAFFRAY, F.R.C.S.(ED.)

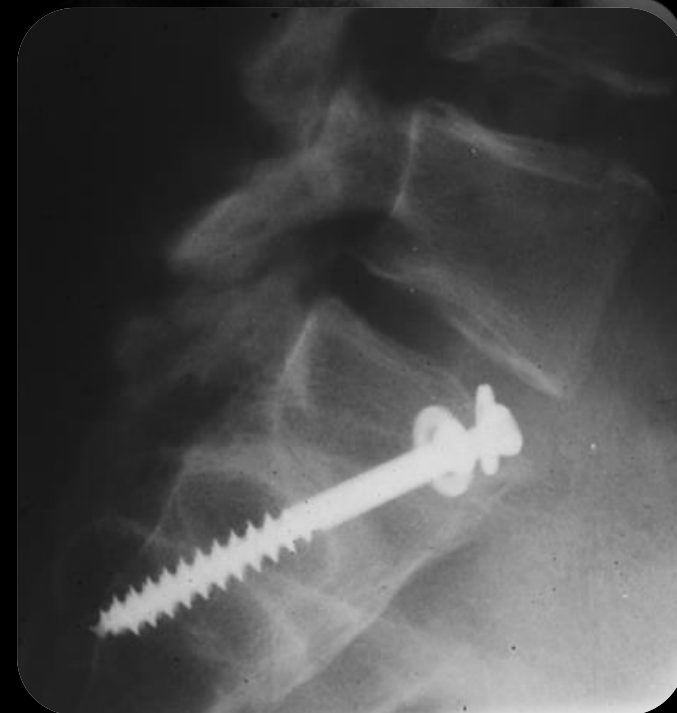
- ① Posterior decomp & grafting
- ① Slow reduction in extension
- ① Anterior fusion locks the reduction
- ① 20 / 22 good outcome



Reduction of Severe Lumbosacral Spondylolisthesis

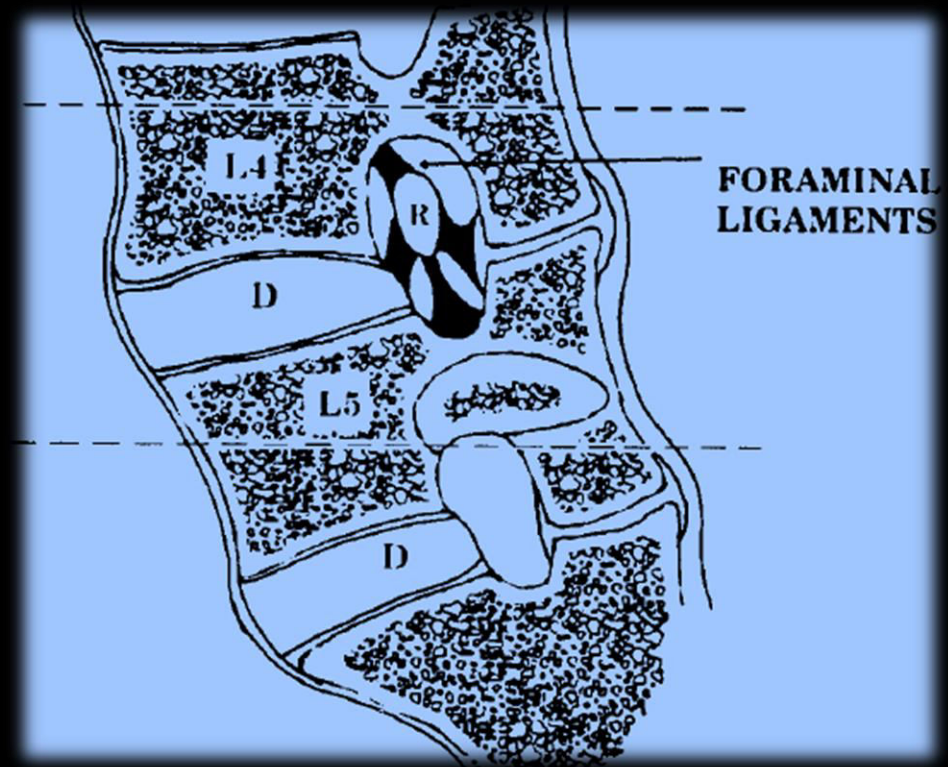
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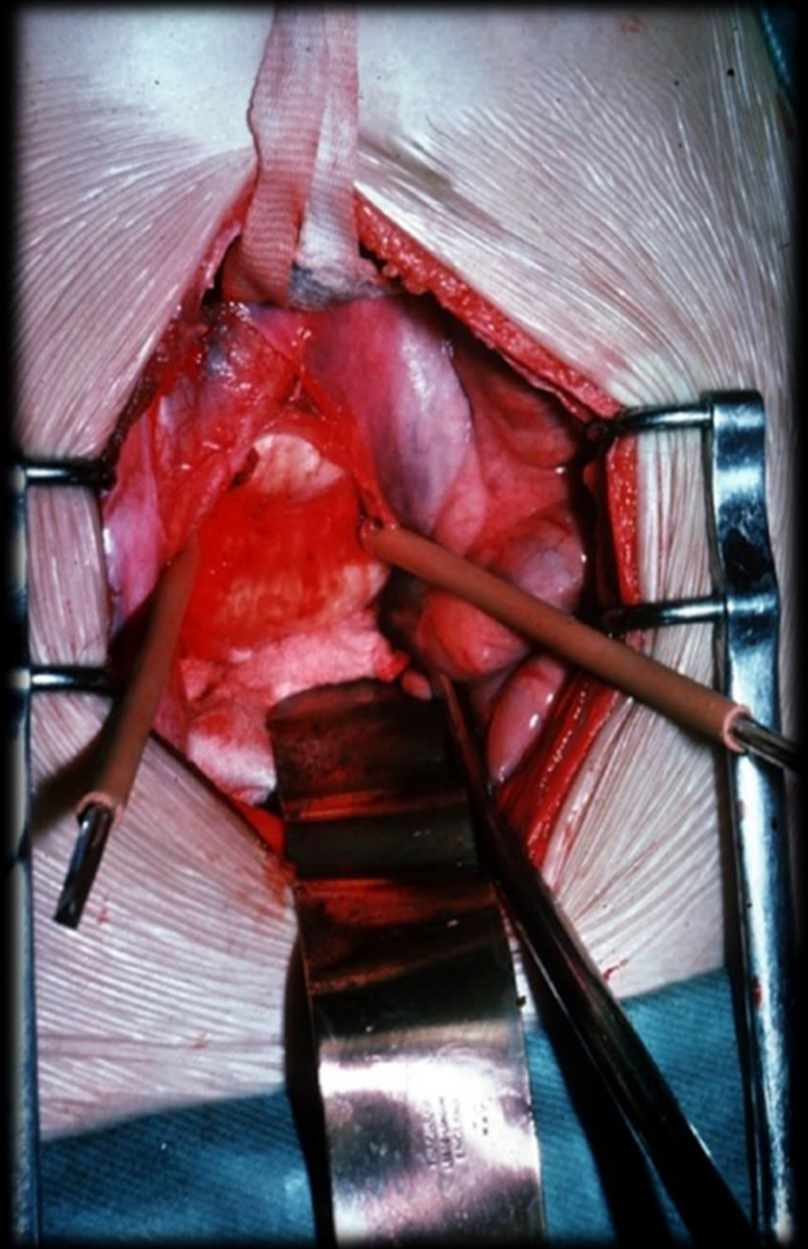
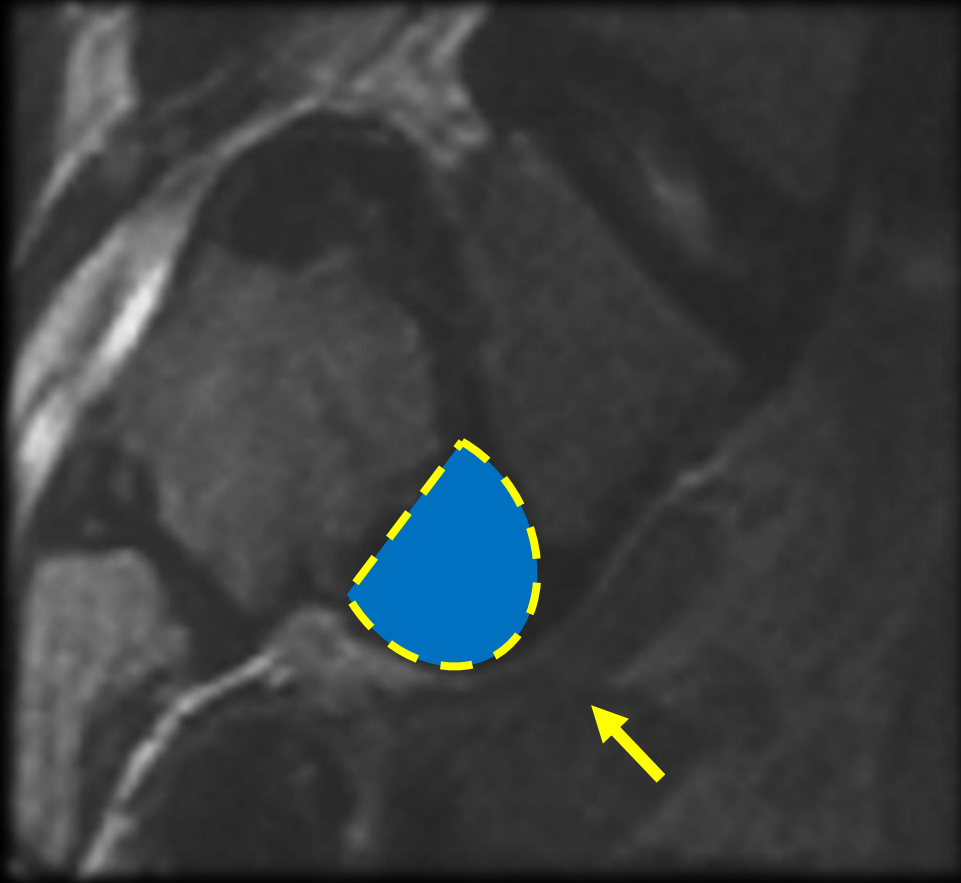


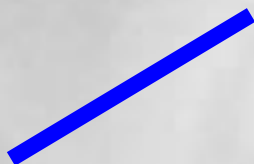
Constraints for reduction

- L5 & S1 nerve roots
- Foraminal ligaments:
 - ✧ Hoffman's ligaments
 - ✧ Spencer's ligaments

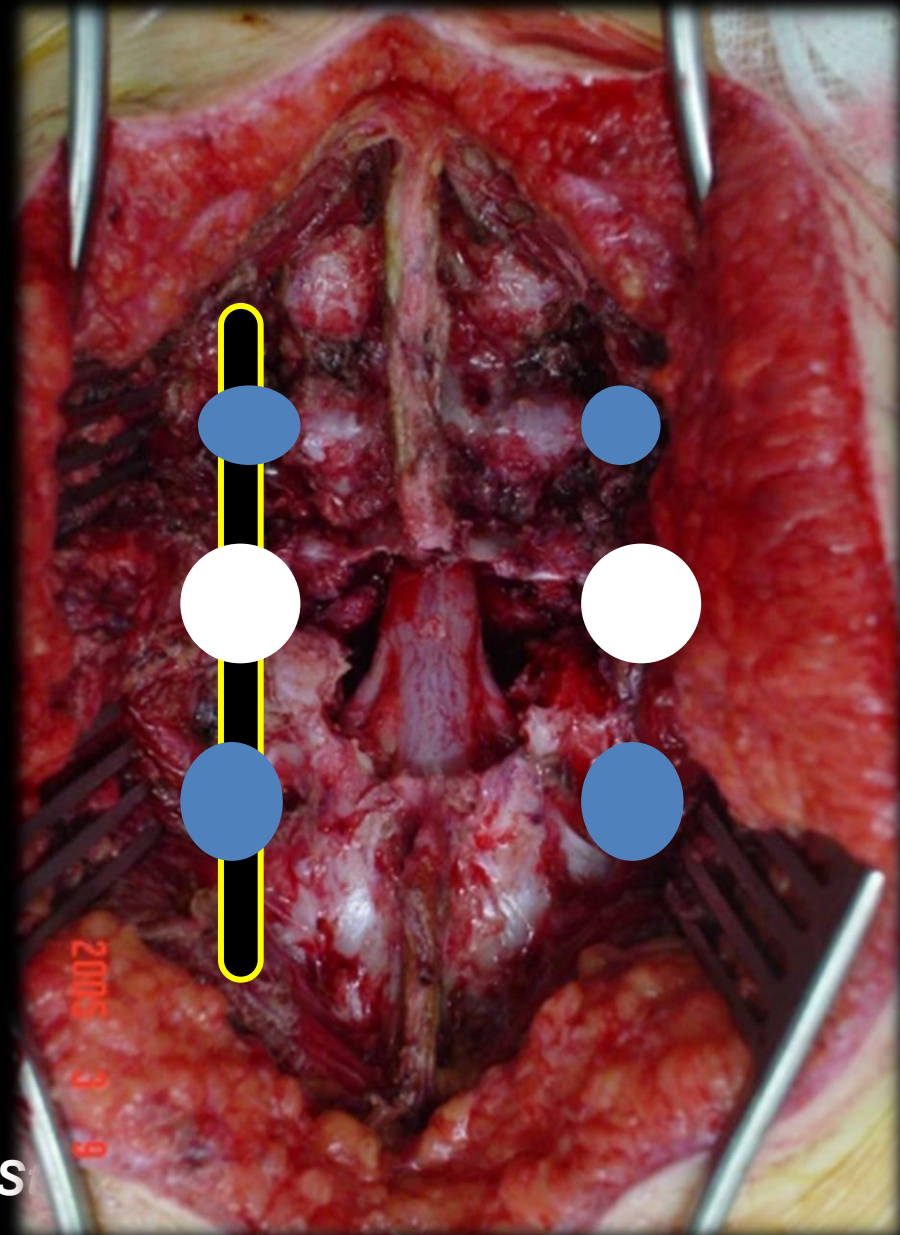
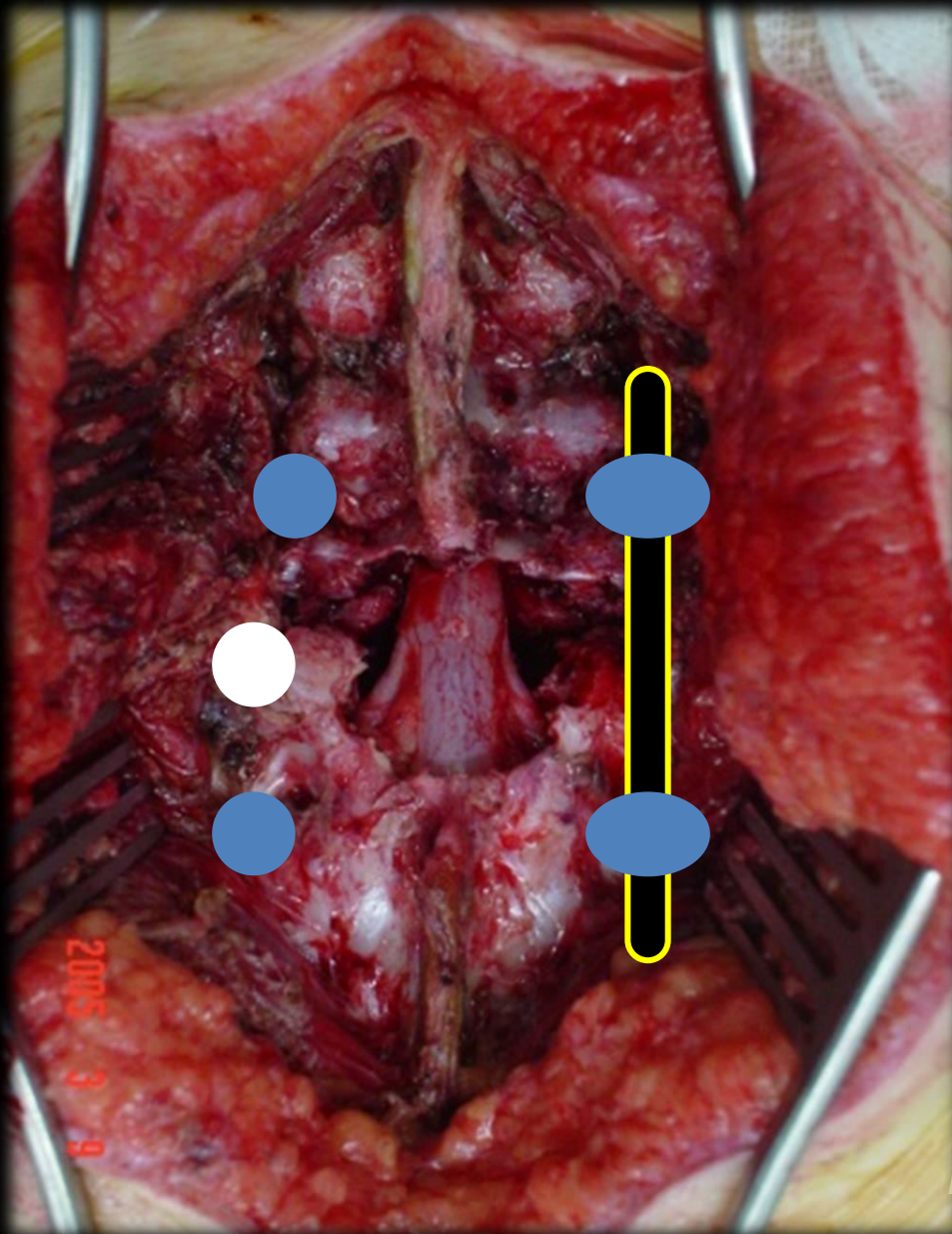


ANTERIOR

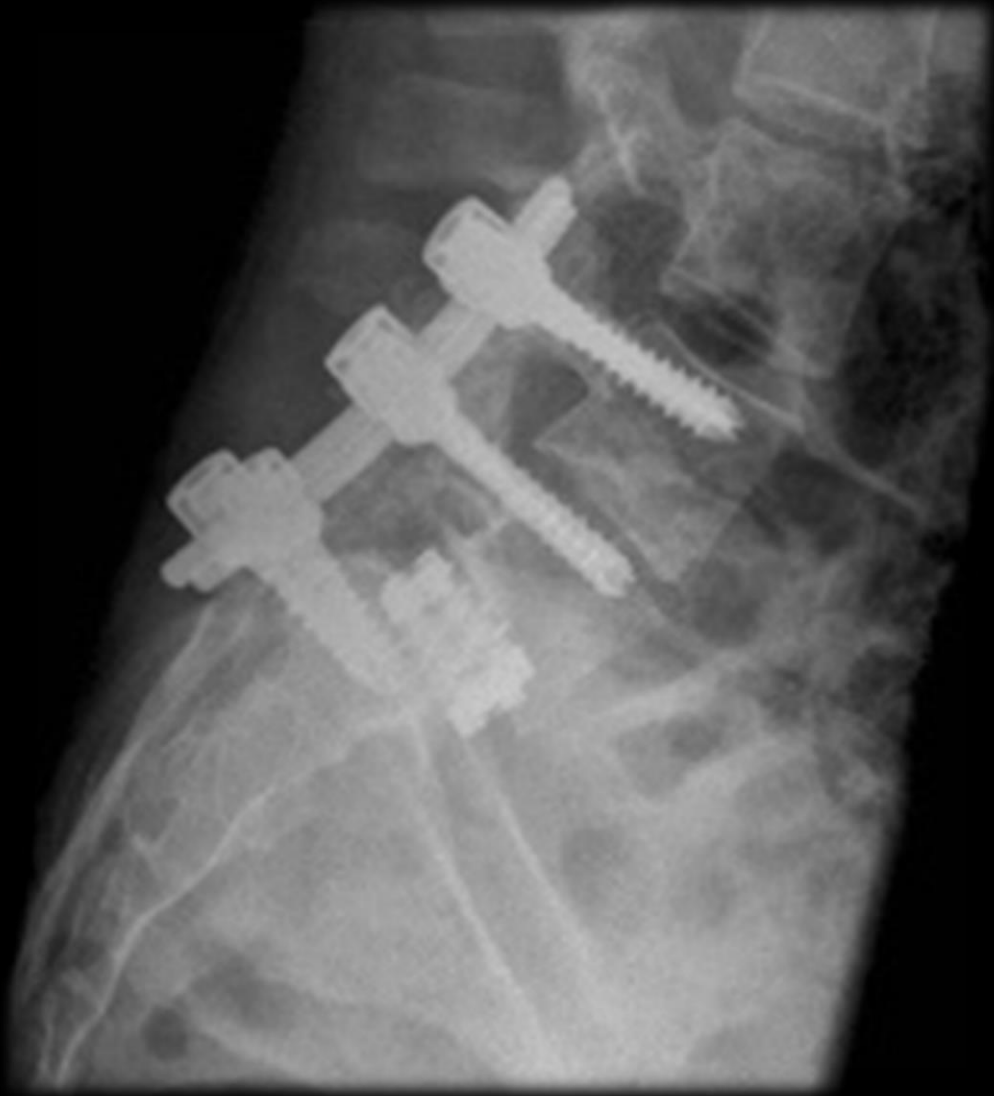
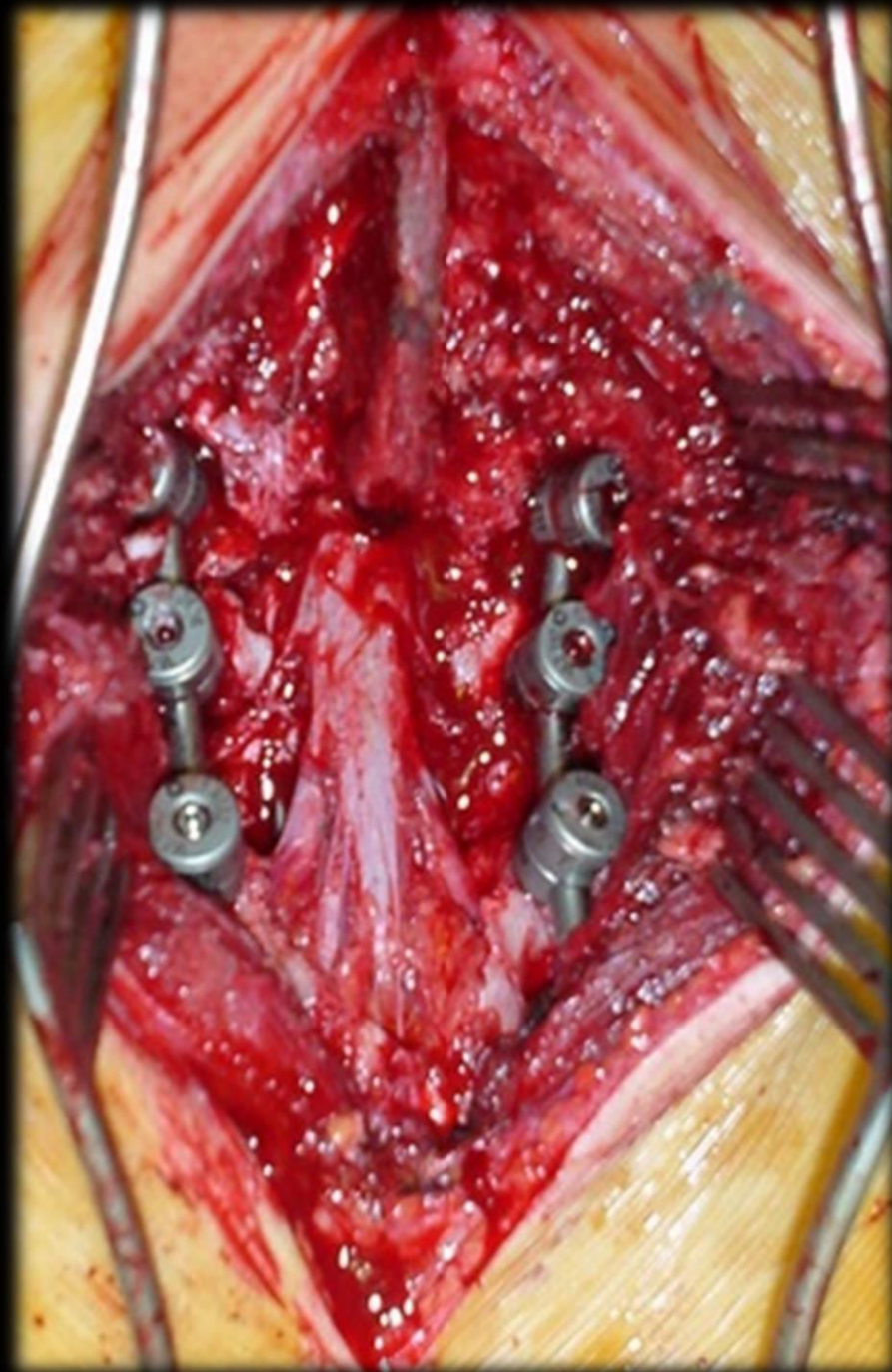




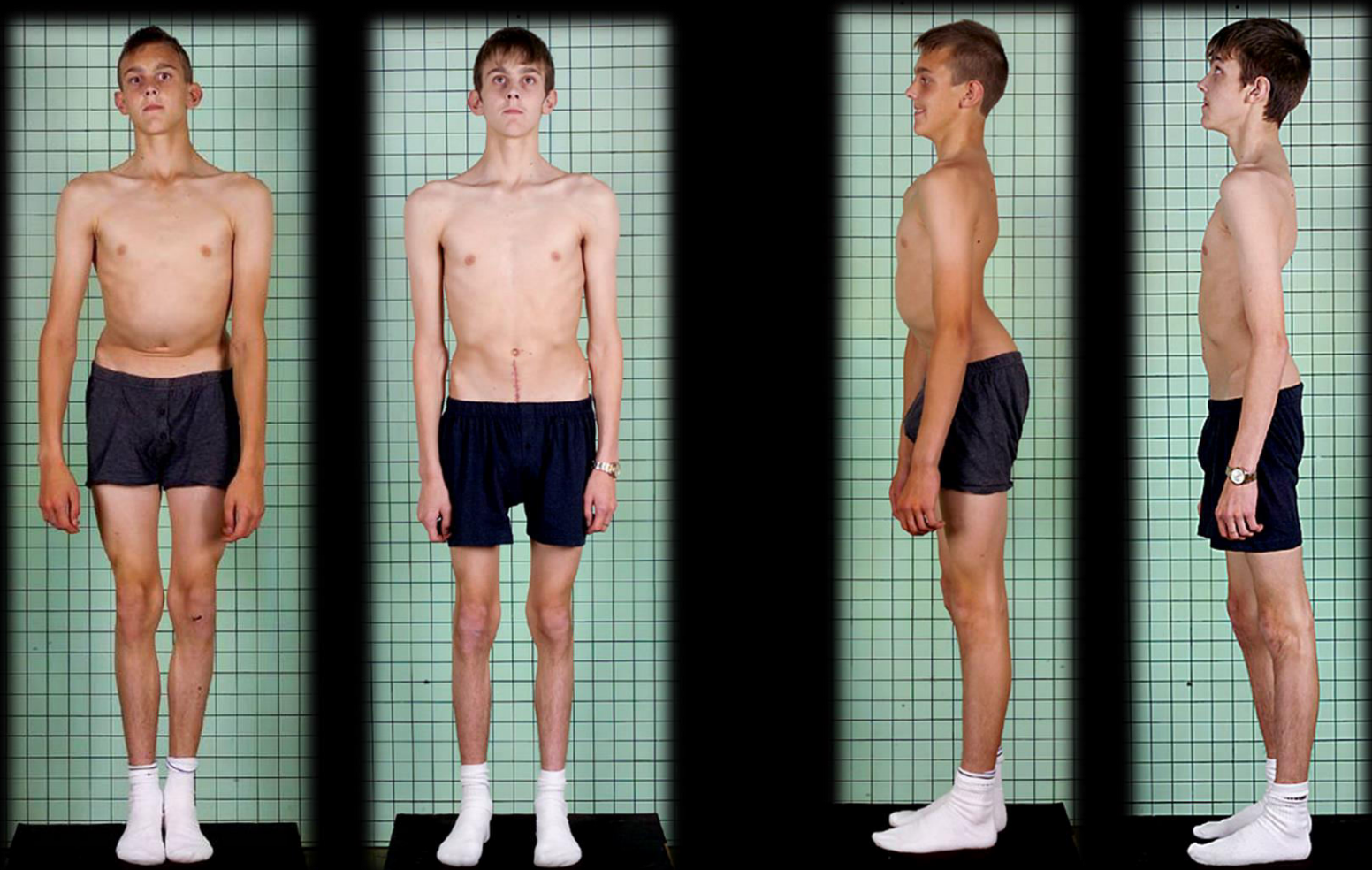
POSTERIOR L5 PEDICLE SCREWS



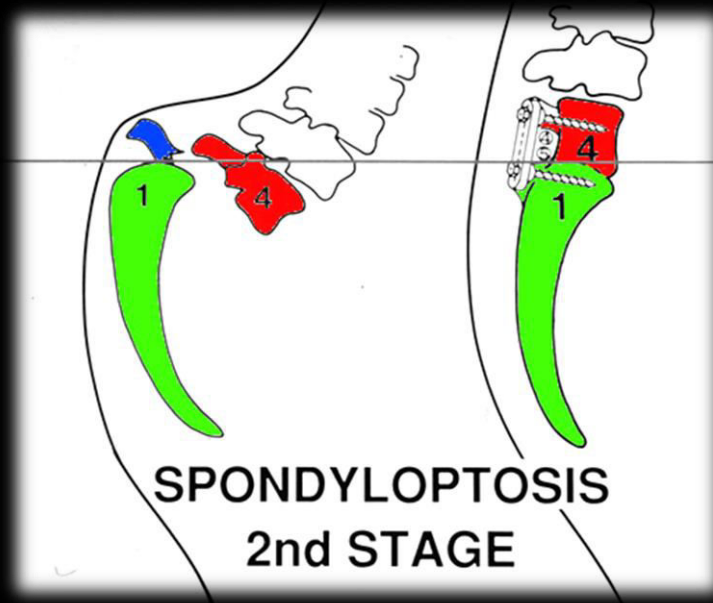
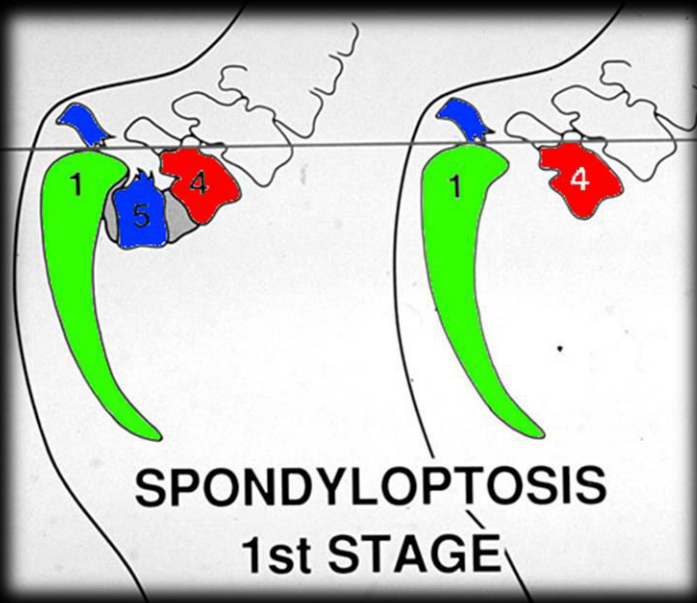
Wide
decompression



Complete resolution



Resection: Gaines procedure





Take home message

- HGS is one of the most difficult pathologies to treat surgically
- Ensure adequacy of infra-structure and experience
- High rate of complications (L5 palsy)
- Partial reduction: kyphosis more important than translation
- Gaines procedure: 'High end' of spinal surgery
- Good outcome if successful

