

Adult deformity: 360 Approach to Spinal Reconstruction

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Topics

- Spinal Parameters and incorporating them into daily practice
- Minimal vs Maximal Approach: Patient dependent decision making for the Upper and Lower Instrumented Vertebra
- Utilizing cages vs Osteotomies to achieve sagittal balance



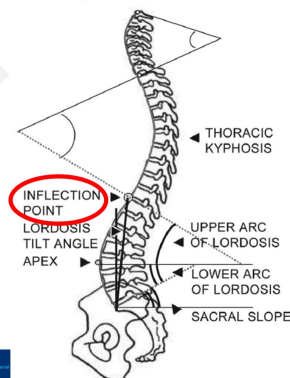
Spinal Parameters and Daily Practice



- Pelvic Incidence
- Pelvic Tilt
- Sacral Slope
- Lumbar Lordosis
- Thoracic Kyphosis



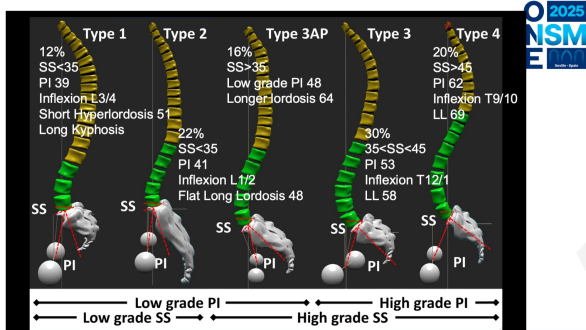
- Centre of Gravity
- C7 Plumb Line
- Sagittal Vertical Axis
- Chin Brow Vertical Angle
- Kyphosis Tilt Angle
- Sacro Femoral Distance
- T9 Tilt (body centre mass level)
- T1 Spino Pelvic Inclination
- T1 Pelvic Angle
- T1 Sagittal Angle
- Global Tilt
- GAP Score
- Etc etc...



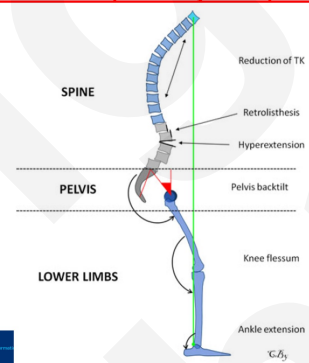
Upper arc = inf arc TK

Lower arc = SS





Reduced PI = poor ability to compensate



Case 1

Minimal vs Maximal Approach

- Minimal vs Maximal Approach: Patient dependent decision making for the Upper and Lower Instrumented Vertebra

Case 1



Cages vs Osteotomies



Is an interbody fusion required?

- Restore foraminal height (up / down)
- Improve fusion
- Revision of failed posterolateral fusion
- Restore lordosis / correct deformity
- Biomechanics – shear / large

- ALL release + Cage
 - Indirect canal decompression
 - Indirect foraminal decompression
 - “Lengthening” procedure
 - Fusion through a cage
 - Requires additional posterior procedure
 - Correction = per level
 - Depends on cage lordosis and facets at back

- Osteotomy – PSO
 - Direct canal decompression
 - Direct foramina decompression height restoration
 - Shortening procedure
 - “Bone on bone” performed correctly
 - Correction = per level
 - Typically up to

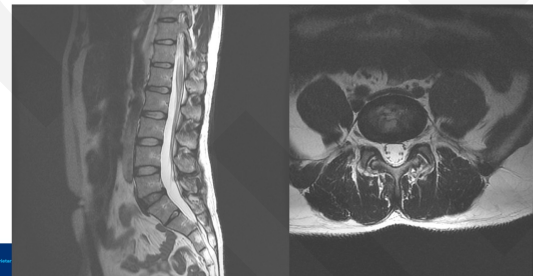


Type	Description	Diagram	Reference
1	Resection of posterior elements from mid pars above to pedicle below with realignment of the spine through hinging through a mobile disc		Ponte
2	Resection of posterior elements from mid pars above to pedicle below with realignment of the spine through hinging of the disc posteriorly and opening of the disc anteriorly		Smith-Peterson
3	Posterior-based transpedicular decancellation of the vertebral body with realignment through controlled fracture of the anterior column		Heinig
4	Posterior-based intraosseous wedge resection of the vertebral body with realignment through osteoclasis of the proximal third of the anterior vertebral body		Thomassen (PSO)
5	Posterior-based wedge resection with extension of the osteotomy into the supra-adjacent disc and realignment hinging on the anterior column at the intervertebral space		Mod Thomassen (Ext PSO)
6	Posterior-based vertebral column resection including one or more vertebra with adjacent discs		Suk (VCR)



ALIF Limitations

- VESSELS / OBESITY / ELDERLY

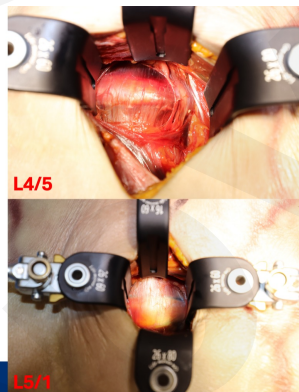
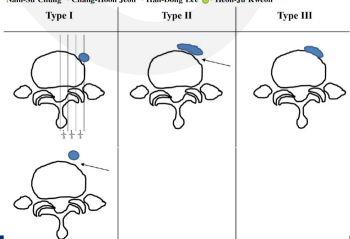


Eur Spine J (2017) 26:2797–2803
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ORIGINAL ARTICLE

Preoperative evaluation of left common iliac vein in oblique lateral interbody fusion at L5–S1

Nam-Su Chung¹ · Chang-Hoon Jeon¹ · Han-Dong Lee² · Heon-Ju Kwon³



Spine ANATOMY

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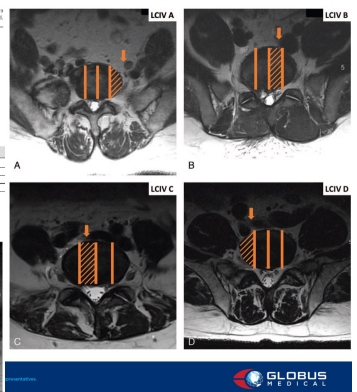
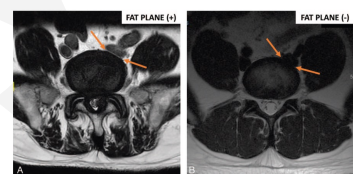
The Feasibility of Anterior Spinal Access

The Vascular Corridor at the L5–S1 Level for Anterior Lumbar Interbody Fusion

Julia Puh-Hoeng Ng, MRCGS¹, Matthew Scott-Young, FRACS, MSc², Daniel Nino-Chu Chao, FRCS³, and Jacob Young-Living, FRCS⁴

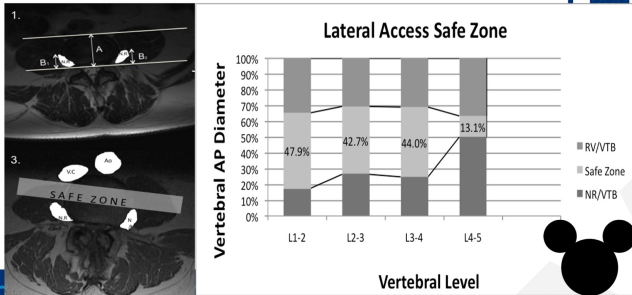
	Easy	Advanced	Difficult
Vascular corridor	Wide	Fails all criteria for easy OR	Narrow
LDZ position	A	Difficult	C or D
Safe plane	Yes	No	No
Number (%)	181 (37.30%)	231 (46.70%)	17 (3.40%)

LDZ, left common iliac vein.



LLIF Limitations

2025
NSM
E

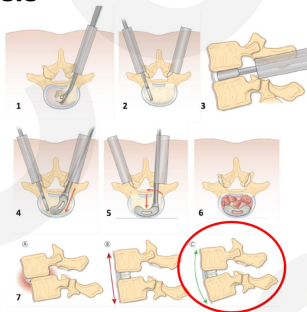


TLIF Limitations



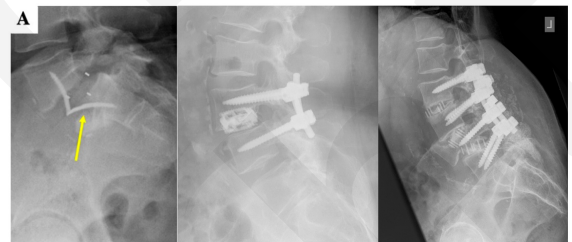
TLIF Lordosis

2025
NSM
E



They can all subside - endplate damage

2025
NSM
E



Osteotomy Limitations

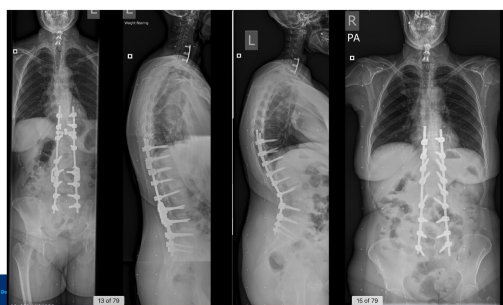
2025
NSM
E

Deformity – ALL release - ALIF

2025
NSM
E



Deformity – Osteotomy - PSO



Case 1



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Dr. Ferran Pellisé Urquiza
Barcelona Spine Institute, Spain



Topics



- Why balance matters? Long term outcomes
- Deformity in the osteoporotic patient
- Anterior vs posterior vs 360 approaches for achieving alignment (procedural selection)



Case 1



Adult deformity: 360 Approach to Spinal Reconstruction

Case Discussion- All



Case 1- Mr. Mike McCarthy



Case 2- Dr. Ferran Pellisé

