Iliac Fixation in spine deformity

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Fusion to sacrum

- Operative time and complication
- Hardware failure: pseudarthrosis (3 to 83%)
  - Rod fracture
  - Screws fracture
  - Screws pull-out
Fusion to sacrum

- Risk factors for those mechanical failures:
  Kim, Yongjung et al. Spine feb.15 2005 and sept.15 2006

  - Insufficient sacral fixation
  - Postoperative sagittal imbalance
  - Absence of anterior column Support
  - Age at operation
Spinopelvic fixation

- Iliosacral screws (Dubousset 1996 CP)
- Galveston rod (neuromuscular CP)
Spinopelvic fixation

- S1 pedicle screws
- S1 and S2 pedicle screws
- Sacroiliac plate fixation (Colorado fixation): residual motion between plate and iliac and sacral screws
62 year old woman
L4 TPO for sagittal imbalance
Mechanical failure at 12 months PO

Insufficient spinopelvic fixation
Absent anterior column Support
Spinopelvic fixation

- Iliac Internal fixator
- Intra-iliac instrumentation of the entire iliac column

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**Extension of Fusions to the Pelvis in Idiopathic Scoliosis**

Nazir C. Islam, MD, Kirkham B. Wood, MD, Ensor E. Transfeldt, MD, Robert B. Winter, MD, Francis Denis, MD, John E. Lorstein, MD, and James W. Ogilvie, MD

**Instrumentation-Related Complications of Multilevel Fusions for Adult Spinal Deformity Patients Over Age 65**
Surgical Considerations and Treatment Options in Patients With Poor Bone Quality

Christopher J. DeWald, MD, and Thomas Stanley, MD

**The Pylon Concept of Pelvic Anchorage for Spinal Instrumentation in the Human Cadaver**

Richard M. Schwend, MD,* Romuald Slynors, MD,† and Jan Najdzionak, MD, PhD†

**A Novel “Four-Rod Technique” for Lumbo-Pelvic Reconstruction: Theory and Technical Considerations**

Francis H. Shen, MD,* Mark Harper, MD,* William C. Foster, MD,* Ian Marks, PA-C,* and Vincent Arlet, MD*
Complete sacropelvic fixation

- Bicortical S1 fixation
- Iliac fixation
- Circumferential fusion (360°)
Indications
Adult Scoliosis

- First hand adult scoliosis
  - Spondylolisthesis at L5-S1
  - Stenosis at L5-S1 (foraminal)
  - Severe degenerative disc disease at L5S1
  - Prior laminectomy at L5-S1
  - Oblique take-off at L5-S1
First hand

57 year old woman

L5 Left sciatica with a foraminal L5S1 stenosis and L3L4 laterolisthesis

Radiological lumbar curve progression

Correction and fusion
Posterior approach 360° multilevel fusion (L3 to S1)
First hand

51 year old woman
Left L5 sciatica

Correction of L5 oblique take off and L3-L4 laterolisthesis

Good correction for non instrumented lumbar scoliosis
Redo adult scoliosis

65 year old man

1 year after surgery

Distal disc degeneration (L5S1 SPL)

Pseudarthrosis (L3 to L5)

Sagittal imbalance

3 level SPO with 360° fusion
Redo adult scoliosis

67 year old woman

18 months after surgery

Distal disc degeneration (L5S1)

Pseudarthrosis (L3 to L5)

Sagittal imbalance

2 level SPO with 360° fusion
Sagittal Imbalance
68 year old man
Positive Sagittal imbalance after multiple lumbar spine surgery
L5S1 Pseudarthrosis

L3 TPO
SPO

54 year old woman
Degenerative lumbar kyphosis
Anterior Sagittal imbalance

4 SPO
High grade spondylolisthesis

13 year old girl

First surgery for isthmic SPL

L5 on S1
Ptosis 3 years after surgery
Neurological Spinal Column Deformities
Cerebral Palsy

16 year old no walking boy
Post Traumatic Paraplegia

18 year old man
24 year old man
L5 Traumatic isthmus fracture
S1 left pedicle fracture
L3 A22 fracture
L2-L4 fixation without fusion
L5-S1 360° fusion
Tumor

72 year old woman
S1 metastasis of thyroid carcinoma
Our Experience

• Since 3 years: Spinal System Iliac Fixation

• 46 adult spine deformities fused to sacrum

• Posterior approach only (except one patient)

• TLIF
Other Indications

- 3 SPL grade 5 (spondyloptosis)
- 2 traumatic
- 4 pediatric neuromuscular scoliosis
TLIF indications

- Lumbar or Lumbosacral Pseudarthrosis
- Fusion to Sacrum
- Level of SPO (up to 4 cages)
- Over and Below TPO
Unilateral

36 year old woman
Flat back after scoliosis surgery

L4 TPO
Technical difficulties to put left iliac screw
Results

- 1 chronic infection and screws removal
- 2 Pseudarthrosis
- No S1 screws fracture or pull-out
- No iliac screws related complication
Iliac screws removal

- Young patient (SPL)
- Symptomatic patient
Conclusion

Efficacy
Reproducibility and accuracy
Safety
Sacroiliac joint problem??