Master’s Technique: Pelvic Screws in Why, When, and How?

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When:
Indications for fusing to pelvis

- Low lumbar apex
- *Plus*
- Poor balance (NM)
  - CP
  - SMA
  - Myelomeningocele
- Structural Deficits
  - Connective tissue disorder
Why:
Pelvic Fixation

- Best deformity control
- Sparing levels = adding on later!!
Example:
Previous Treatments

- Bracing
- Moe Rods
- Luque trolley (non-pelvic)
How:
Technique of pelvic fixation

- Need dual rods to control pelvis
S-hooks

- Pure distraction
- Forward lean progresses
Sacral Alar-Iliac (SAI) fixation

- Iliac Fixation
  - Starting on sacral ala
  - Deeper, within muscle envelope
  - In line with spinal anchors
  - Ideal for pelvic obliquity correction mechanics
Technique:
SAI Starting Point

- Fluoro finds major Alar projection
- Angle varies w. pathology!
- Pass just above notch
- Aim for AlIS
Angulation

- Mean Angulation
  - SAI = 40° caudally, laterally
  - PSIS = 21° laterally; 31° caudally
- P<0.05
- More “straight-ahead”
- More backout?
Technique

• Resistance increases at SI joint
• Awl vs. drill
• Continue till lateral cortex
  • -Cannulated options
• Insertional torque is proof of location
Technique

Baclofen pump intact
Technique

- Check “teardrop” if ?
- (Obturator oblique)
  - Start more laterally if “vertical” hemipelvis
  - Seat screw heads at same depth as & in-line with S1 screws
  - Drive partly into bone
Screw size

- Feel walls, measure depth
- Bigger = less loosening, pull-out
- Prefer 7-8mm x 80 mm
- Even in young NM patients
Current preferred construct

- Screws in S1 medially
- Long SAI screws
Infantile Marfan Syndrome

- 2.5 yr old
- 3 heart valves
FAQ / Pitfalls

• Are S1 screws necessary?
  – Yes, if osteoporosis present
  – I prefer polyaxial heads here
  – L5 is a substitute (Skaggs)
Transverse-plane pelvic asymmetry
Tips for lateral abutment

– Get angle more “vertical”
– Starting point more laterally
  • Sometimes PSIS
– Use curved awl
– Stay close to notch
  • Where bone is thickest
Thank you
Dual sacral screws

15° p.o.
FAQ-pitfalls

• Can you use in difficult CP?
  – Pelvis asymmetrical
  – Use teardrop view to line up
  – Navigation?

• Make sure 1cm rod left distally when tight
FAQ/Pitfalls

• “Stuck” / won’t pass far in ilium
  – Usually abuts lateral cortex
  – Suspect this if ilium seen en face
Anatomic trajectory

- 11mm width
- 105mm length
  - 1/3 in ala, 2/3mm in ilium
- 1.5 cm deeper below skin than PSIS
6 y F w. LDS: Spondy + Scoli
Conclusion

- Dual Iliac fixation facilitates correction of pelvic obliquity
SMA 5 yrs

- 5 distractions
- Now age 16
- Risser 4

Age 7

Age 16