Masters Techniques: S-Hooks to the pelvis; Why, When, and How?

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Disclosures

- Consultant: Depuy-Synthes Spine, Spineguard, Ellipse Technologies (wife)
- Royalties: VEPTR 2 Device
- Board Member: Children’s Spine Foundation
“S” Hooks to the pelvis

- Simple
- Fast
- Versatile
- Address pelvic obliquity
- Avoid the midline skin
Technique

- Separate oblique incisions
- Seat hook on ileum just lateral to the erector spinae
- “Reversing” hook moves sagittal balance forward (but hard to revise...)
Surgical Technique: Distraction against the pelvic fixation
When do I use pelvic “S” hooks?
Myelodysplasia

- Sagittal and coronal deformities
- Avoids poor midline skin
- Avoids spine anchors
18 month old child with kyphosis of Myelodysplasia

Smith et al; JBJS, October 2010
Intra operative

Prior to VEPTR insertion
Skin expanders in place

Post VEPTR insertion
No vertebral resection
1 Month Post-op
2 years after initial implant and expansions
4 Year follow-up after exchange to VEPTR 2 Devices
Spastic Quadriplegia
1 month after bilateral rib to pelvis VEPTR 2 with 3 stacked rib hooks
Congenital Myopathy
Salvage Situations: 2 y/o male with severe congenital scoliosis
Initial Rib-Spine VEPTR
Trunk imbalance after multiple expansions
Revision to rib-pelvis construct
When do I not use pelvic hooks?

- Ambulators
- Forward shift in sagittal balance over time in at least 44%

Smith, JT; CORR, 2010
What is the end point using “S” hooks at maturity?

- Usually buried in pelvic bone
- Generally not prominent
- Often leave in place at the time of graduate surgery.
- May not always require fusion to the pelvis at maturity
Multiple expansions to age 15
Final Fusion Age 15
What are the potential problems with “S” hooks?

- Prominence in thin children
- Wound dehiscence/infection
- Migration over time
Concerns about Iliiac screws

- Midline exposure at the LS junction
- Requires fusion to the pelvis at maturity?
- Bulky? (S2AI less prominent...)
Conclusions

- “S” hooks are one option for distal fixation using distraction based implants
- Useful in non-ambulatory children
- “S” hooks do not require midline exposure which may be beneficial over time
- New pelvic saddles may be better
Thank You

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