

How to Avoid Junctional Problems in EOS

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Disclosures

- Consultant: DePuySynthes, Globus, Biomet, Spineguard
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What is PJK?

- Proximal junction sagittal angle >10 degrees
- PJA > 10 degrees from preoperative
- Distal Junction failures can occur as well



How common is PJK with growth friendly surgery?

- Range in literature: 18-60%
- Varies with different procedures
- No difference when comparing rib-based and spine based constructs



Who gets PJK?

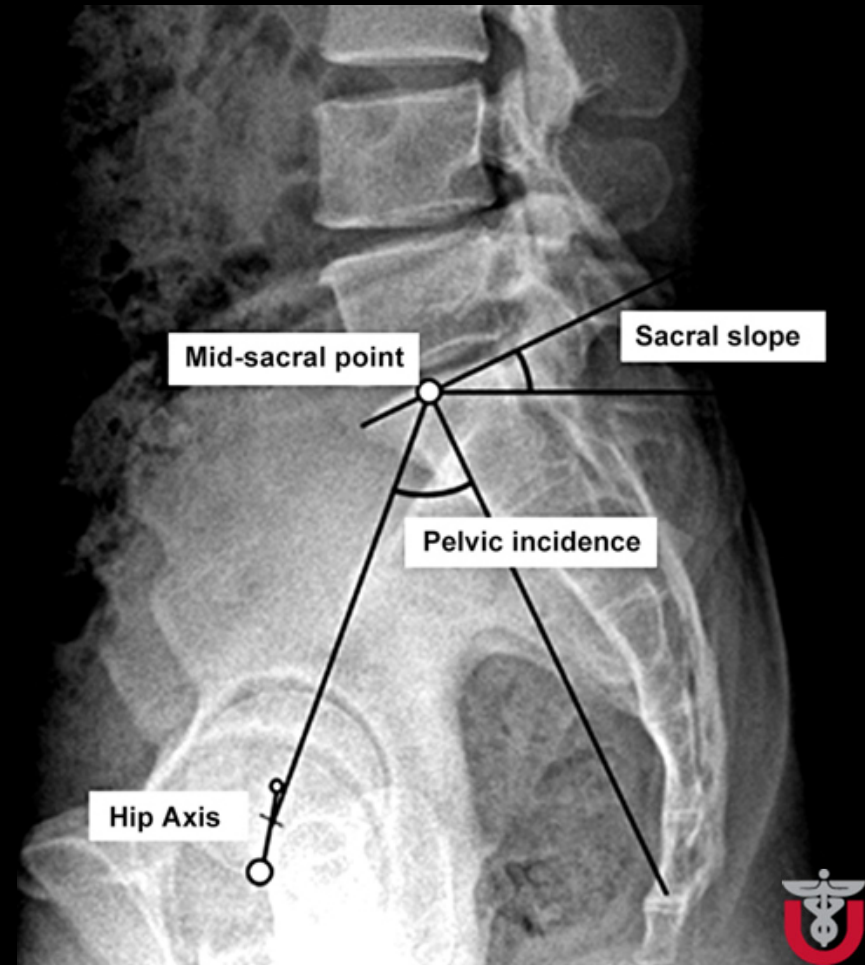
Risk Factors

Preoperative thoracic hyperkyphosis (risk ratio 2.8)

High preop pelvic incidence >30 deg (RR 3.1)

Pedicle screws > hooks as proximal anchors

Spine based > rib based anchors



Consequences of PJK

- Proximal anchor failure
- Wound issues
- Infection
- Cosmetic issues



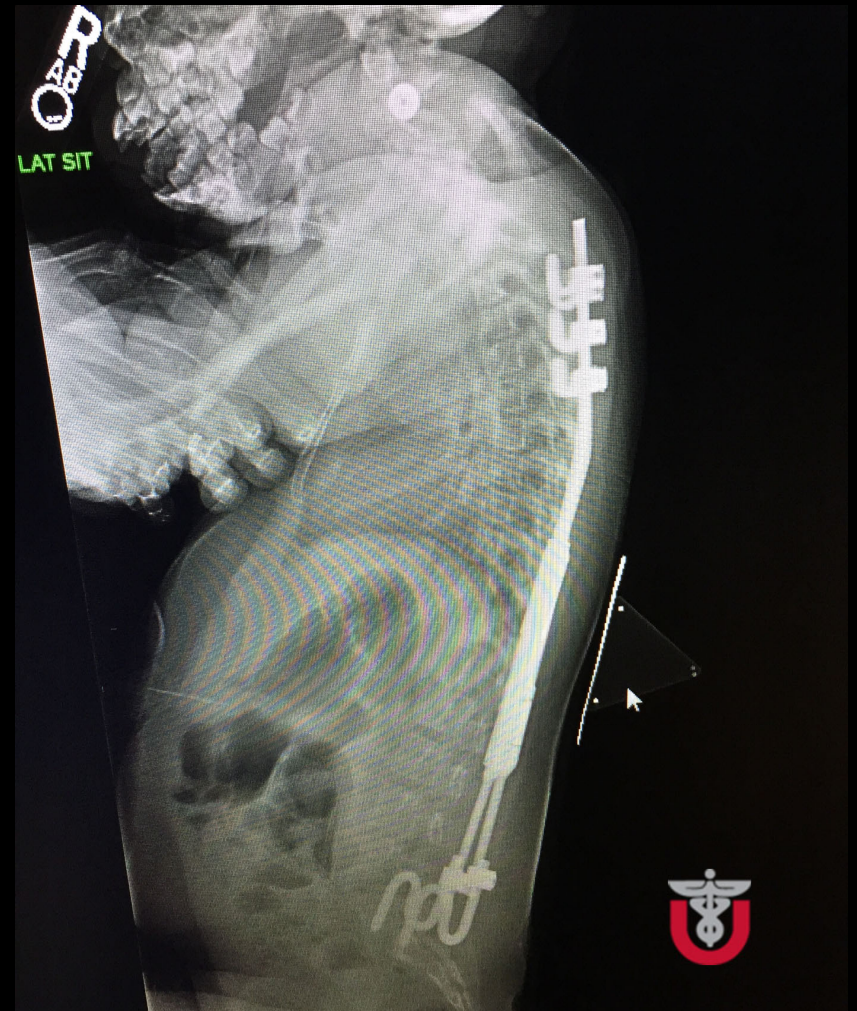
How to avoid PJK?

- Many papers on risk factors...
- Very few on prevention!
- If you do this kind of surgery, you will experience PJK



Possible solutions

- “match” hyperkyphosis with rod contouring at the time of first implantation
- When using rib fixation, use at least 3 points of fixation
- Don't try to overcorrect kyphosis at time of initial surgery

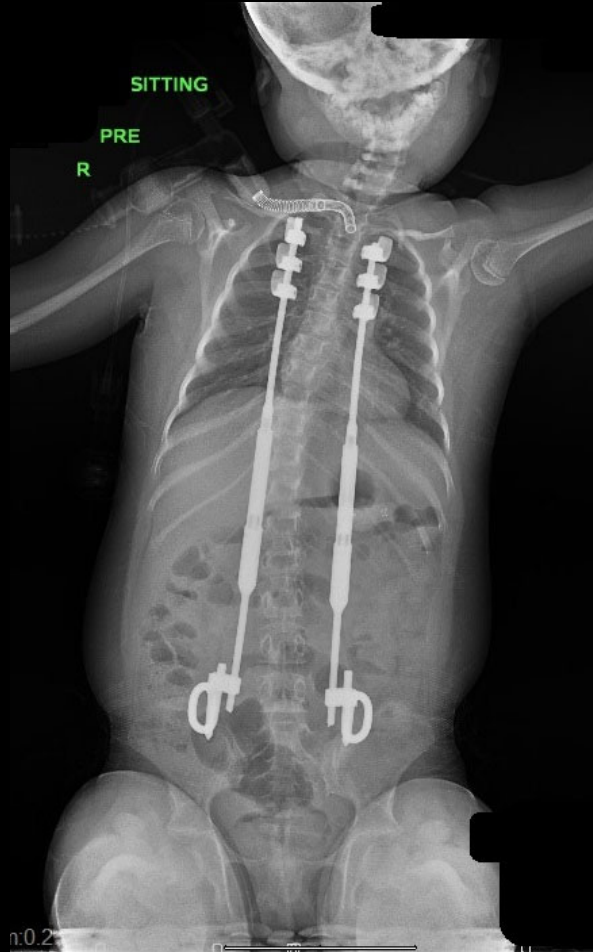


Possible solutions

- Extend distal instrumentation to at least L3
- Think global spinal balance, especially with a high pelvic incidence

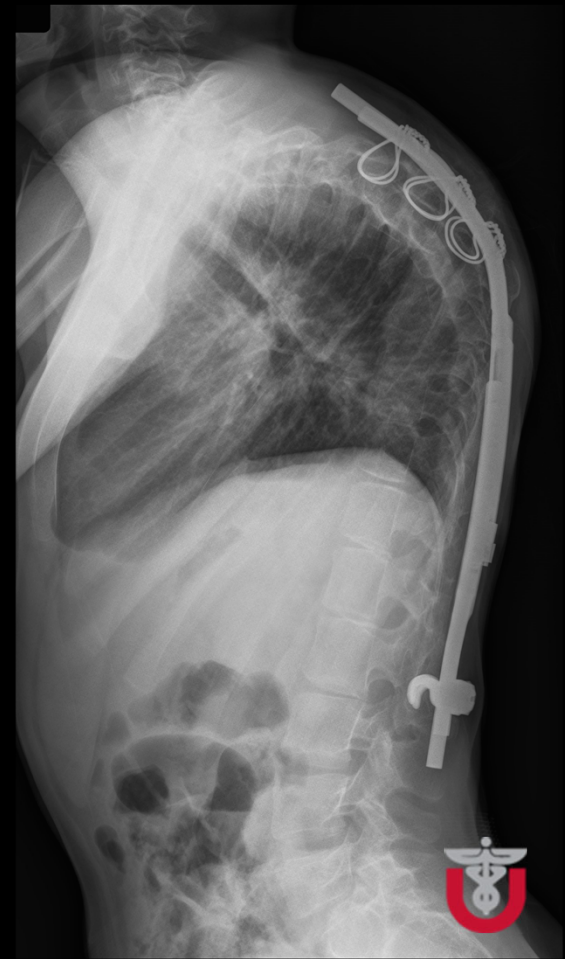


Dual constructs when possible



Salvage of PJK

Conversion to a Luque trolley like construct



Luque Trolley's

- Potentially allow for continued growth
- Very low profile
- Reduce need for repetitive surgery
- Early fusion a potential outcome...



Technique

- Remove upper rib hooks
- Contour rod to match or improve existing kyphosis
- Pass a minimum of 2 sub-laminar wires at proximal end
- Leave adequate length for growth

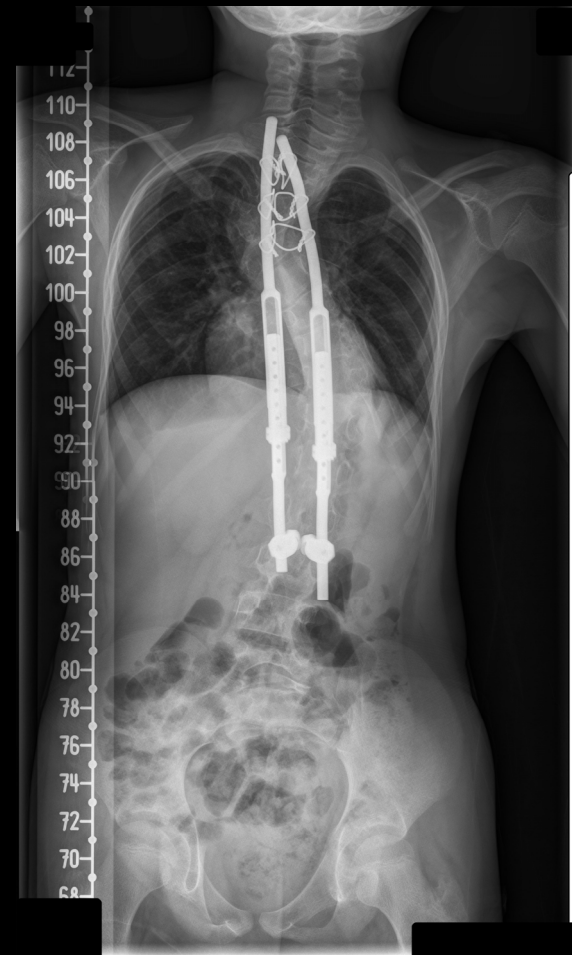
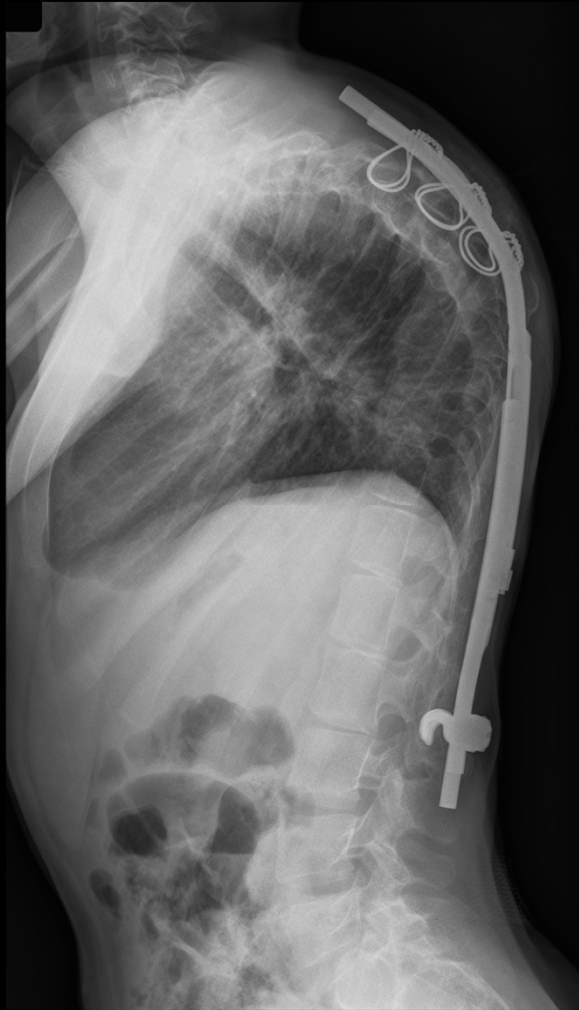


Case Example

- 8 y/o male with scoliosis and NF1
- Significant PJK and prominent instrumentation
- Converted to a Luque Trolley



Conversion to Luque Trolley



Luque Trolley Salvage



Results

- 4 Patients
- Diagnosis varied:
- Age Initial implantation: 3.3 years
- Age at conversion to LT: 9.1 years
- Length of follow-up:
- 1.8 years



Results

- Pre conversion kyphosis: 84 degrees
- Post conversion kyphosis: 77 degrees
- 3 of 4 patients had wound problems prior to conversion
- All patients showed continued spinal growth after LT conversion



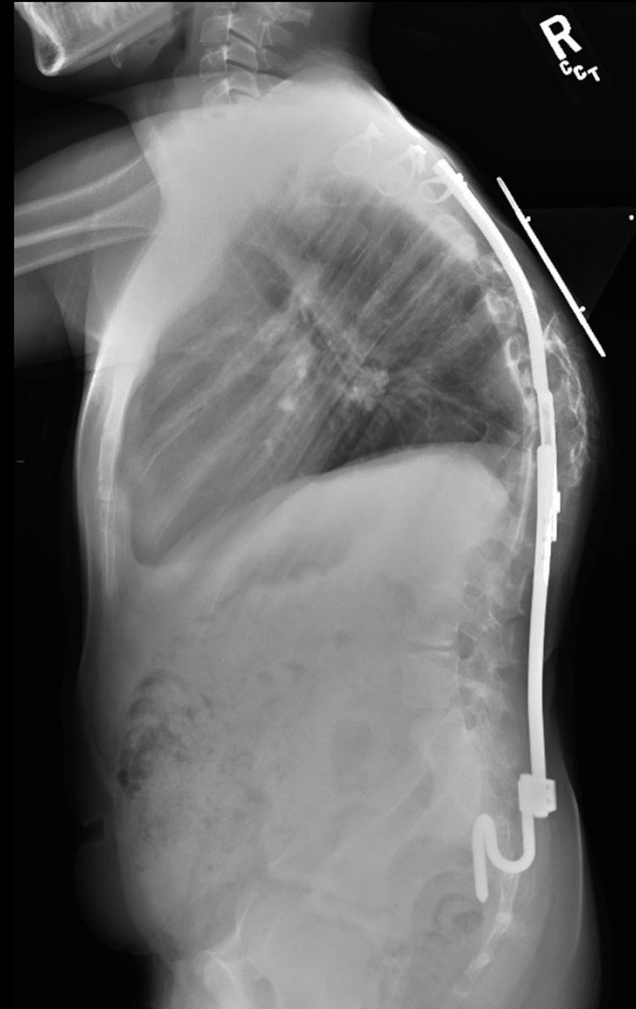
Case Example

- 10 y/o male with congenital kyphosis managed with rib-based distraction since age 3
- Multiple wound dehiscences, prominent instrumentation and PJK



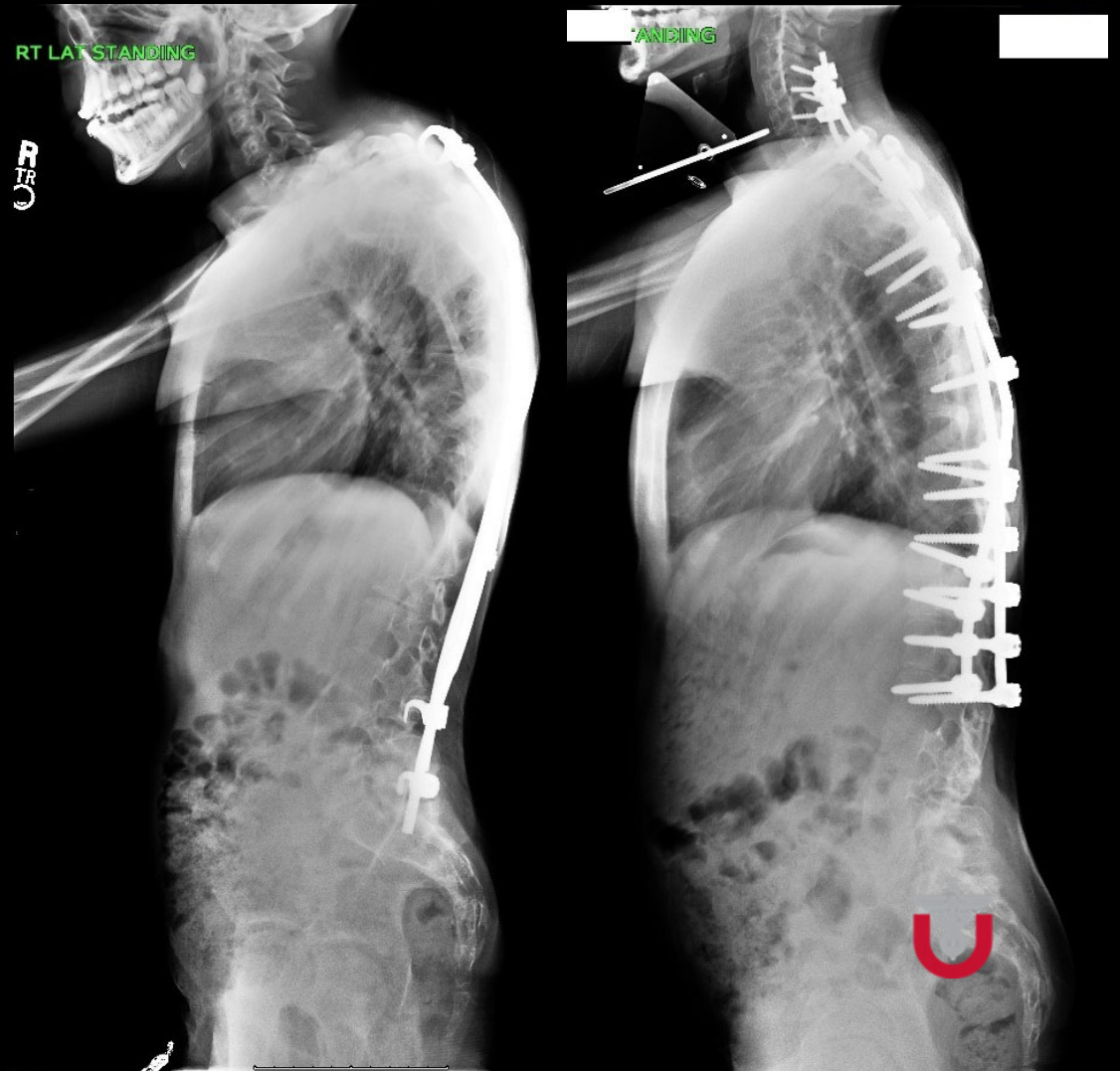
Discussion

- Luque Trolley's offer an option for salvage of growth-friendly distraction constructs where PJK occurs and implants are prominent
- Longer follow-up is needed to determine if continued growth will occur



Salvage of PJK at Maturity

HGT and
extension of
instrumentation
into the cervical
spine at the time
of graduate
surgery



Thank You

