SHILLA: Techniques, Tips and Tricks

Scott J. Luhmann, M.D.

Associate Professor
Department of Orthopaedic Surgery
Washington University School of Medicine
Chief of Spine Surgery, Shriner's Hospital
St. Louis, Missouri

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School of Medicine

Children's Hospital
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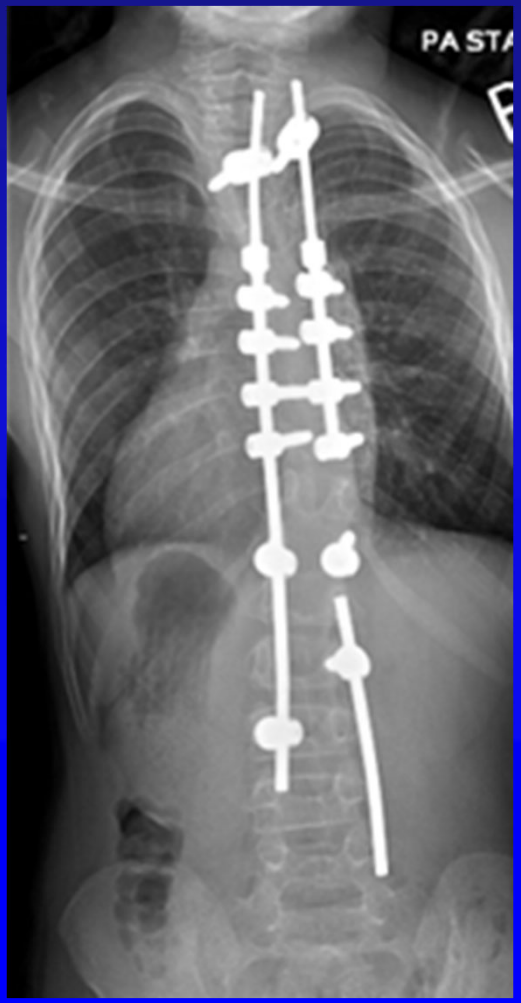
Disclosures

- Speaker's bureau for:
  - Medtronic Sofamor Danek
  - Stryker Spine
- Consultant for:
  - Medtronic Sofamor Danek
  - Stryker Spine
  - Orthofix
  - Depuy Synthes
- Royalties:
  - Globus Medical

SHILLA

- 3 topics
  - Metallosis
  - Rod breakage
  - Implant prominence

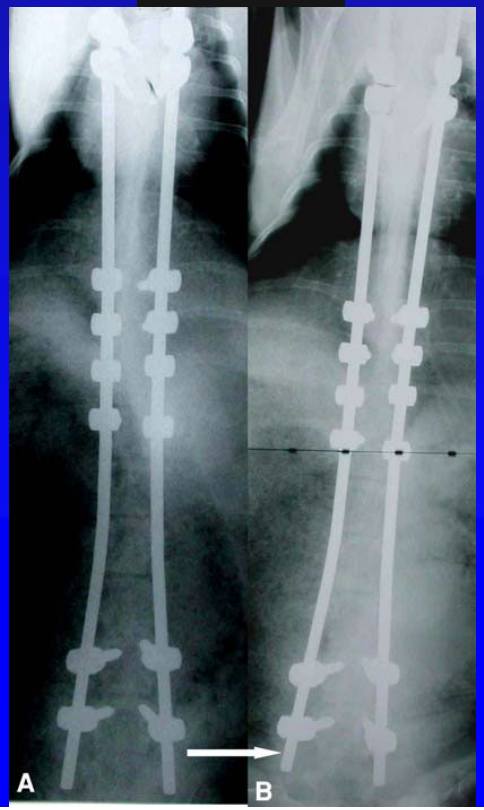
Pictures: Rick McCarthy



Metallosis: Shilla growing rods in a caprine animal model: a pilot study

McCarthy RE, Sucato D, Turner JL , et al
CORR 2010

5.5 SS



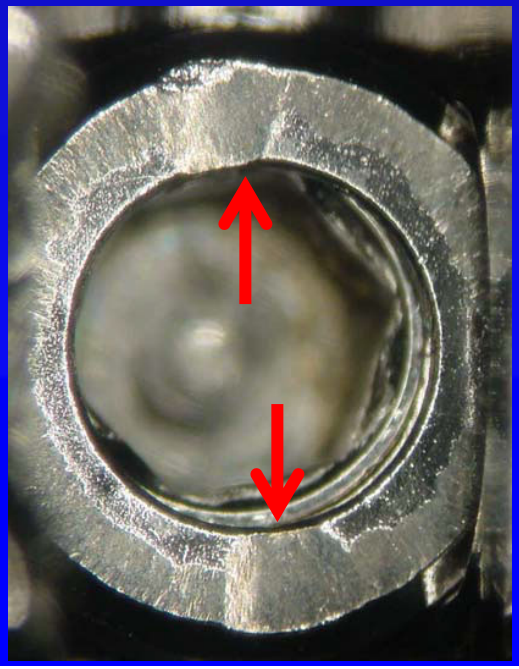
- 11 2 m/o immature goats
- Spines harvested at 6 m p-op
- Mean axial growth over construct: 48mm
- No apical spinal stenosis

Shilla growing rods in a caprine animal model: a pilot study

McCarthy RE, Sucato D, Turner JL , et al
CORR 2010

5.5 SS

- No implant failure
- Minor wear at rod/screw



2+9 years post-implantation

Wear:
Dorsal > Ventral

Wear:
Caudal > Cephalad

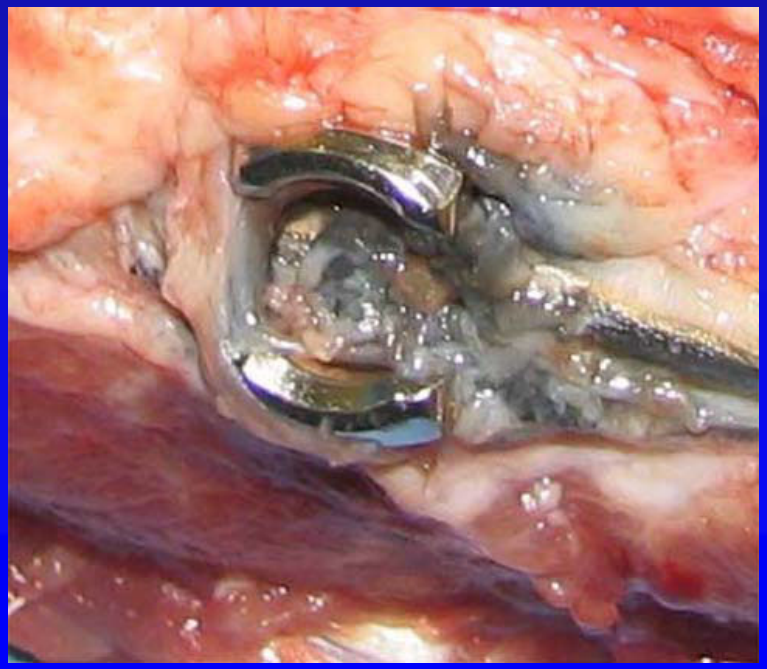
Wear Patterns:
Rods matched set screws

2+9 years post-implantation

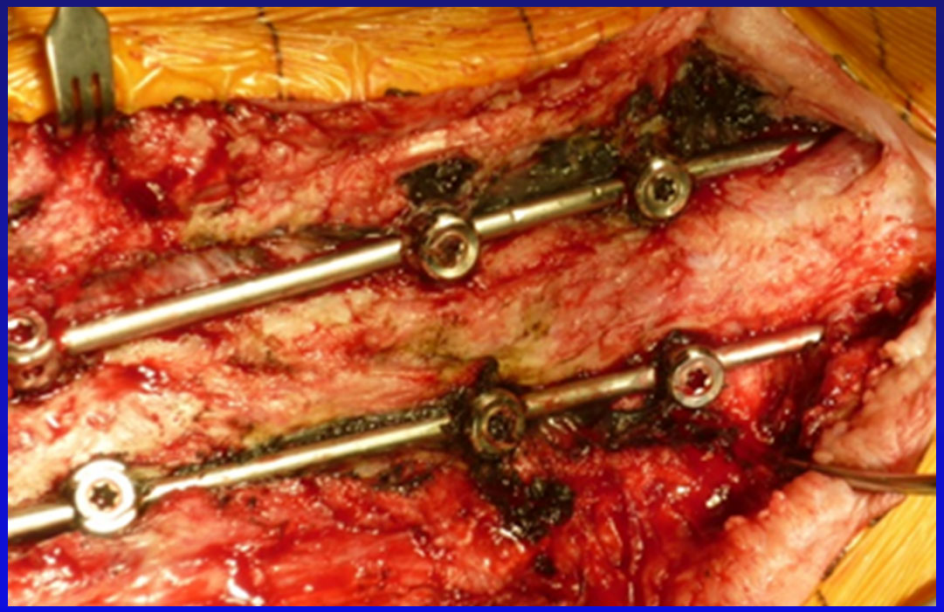
Shilla growing rods in a caprine animal model: a pilot study

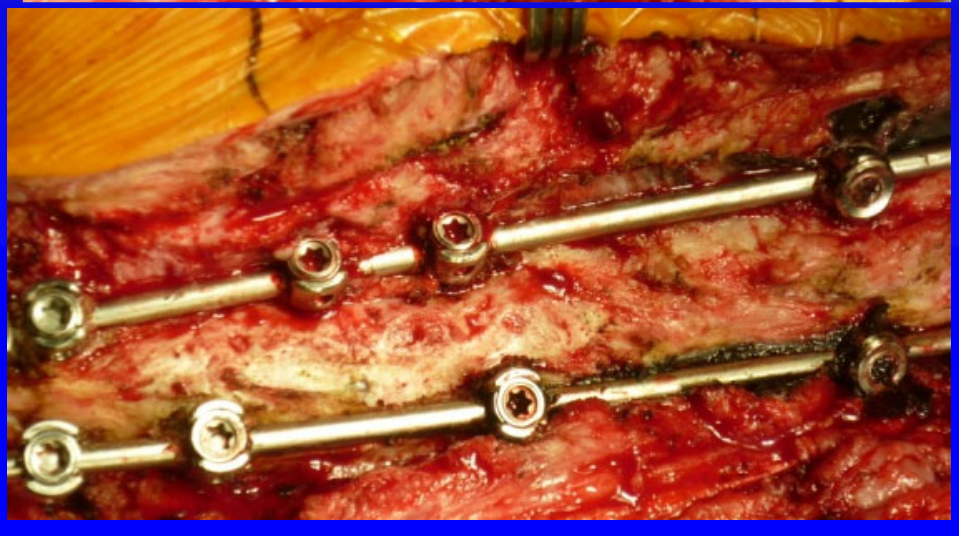
McCarthy RE, Sucato D, Turner JL , et al
CORR 2010

- Posterior
  - SHILLA screws (cephalad and caudal)
    - Metallic debris in soft tissues
    - Moderate to extensive inflammatory reaction
  - Apical (fused) segment: no debris



Intraoperative



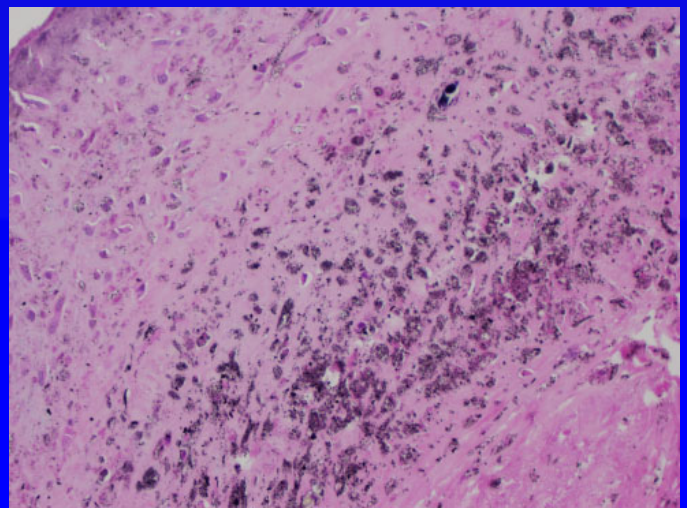


Pictures: Rick McCarthy

Shilla growing rods in a caprine animal model: a pilot study

McCarthy RE, Sucato D, Turner JL , et al
CORR 2010

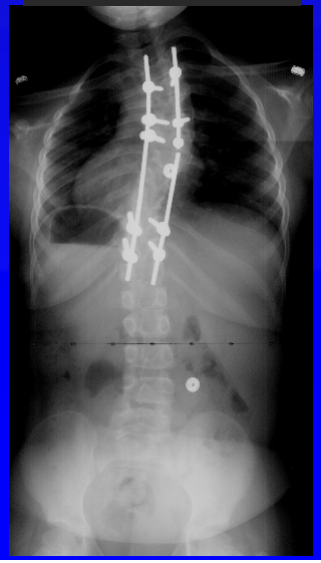
- Anterior lymph nodes
  - SHILLA screws (caudal): Metallic debris
  - Apical (fused) segment: no debris
- Systemic dissemination: unknown
- Not a synovial joint
- Design improvements



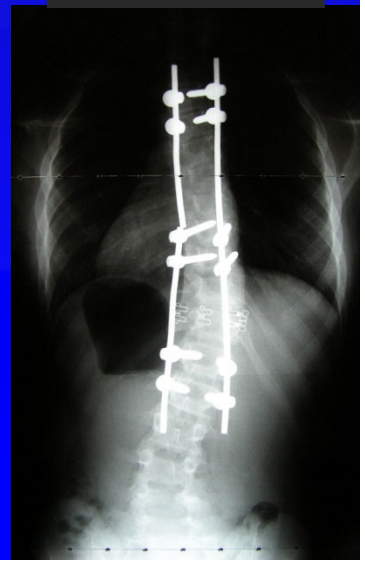
SHILLA: Rod Breakage

- Do Shilla Rods Have Acceptable Complications and Fewer Surgeries?
  McCarthy RE, Luhmann SJ, Lenke LG, McCullough FL; SRS 2009
  - **Rod breakage more common in:**
    - **Active, ambulatory children**
    - **3.5 mm SS rod**
- 4.5 better than 3.5
- Is 5.5 better than 4.5?
- Would rather replace broken rods than failure of bone-screw interface.

7 y/o
3.5 mm

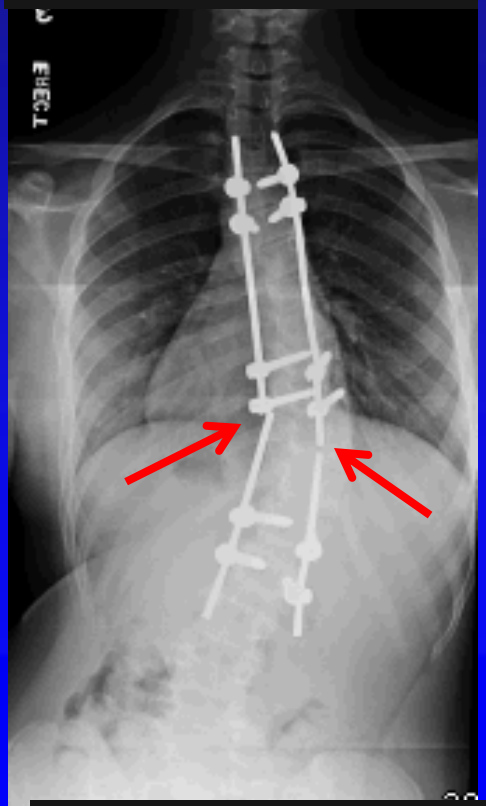


12 y/o
4.5 mm

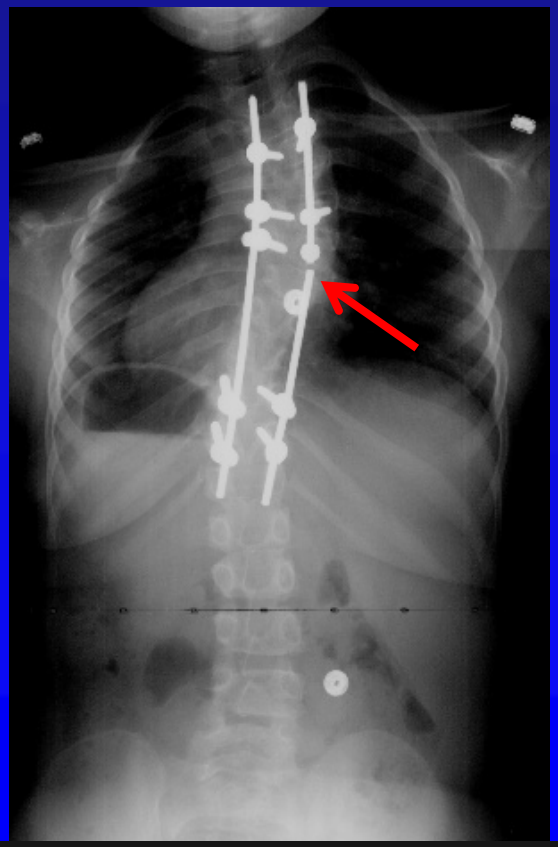


SHILLA: Rod Breakage

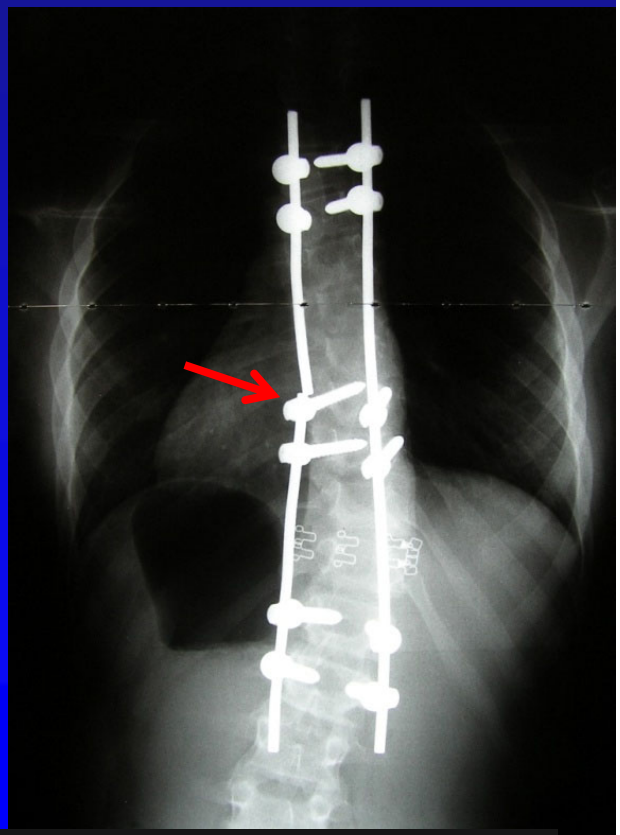
14.5 yrs
4.5 yrs post-SHILLA



7 y/o



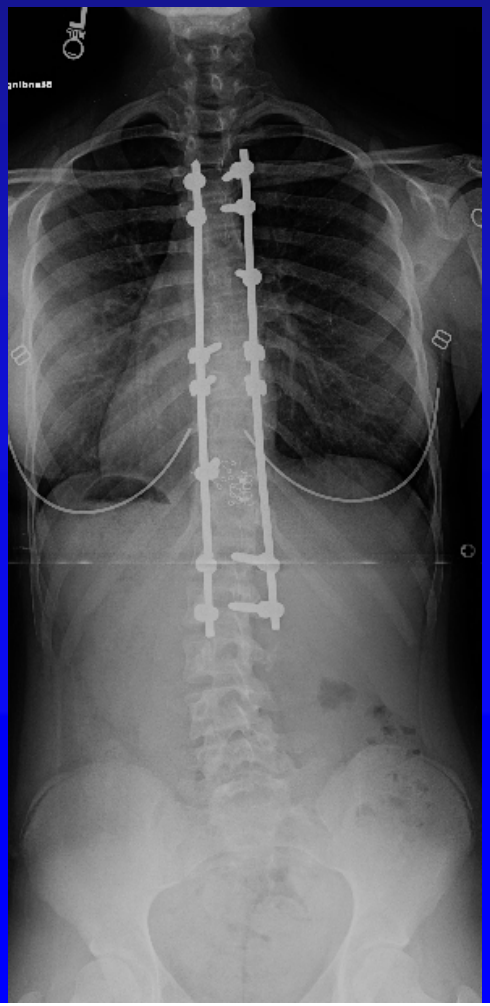
12 y/o



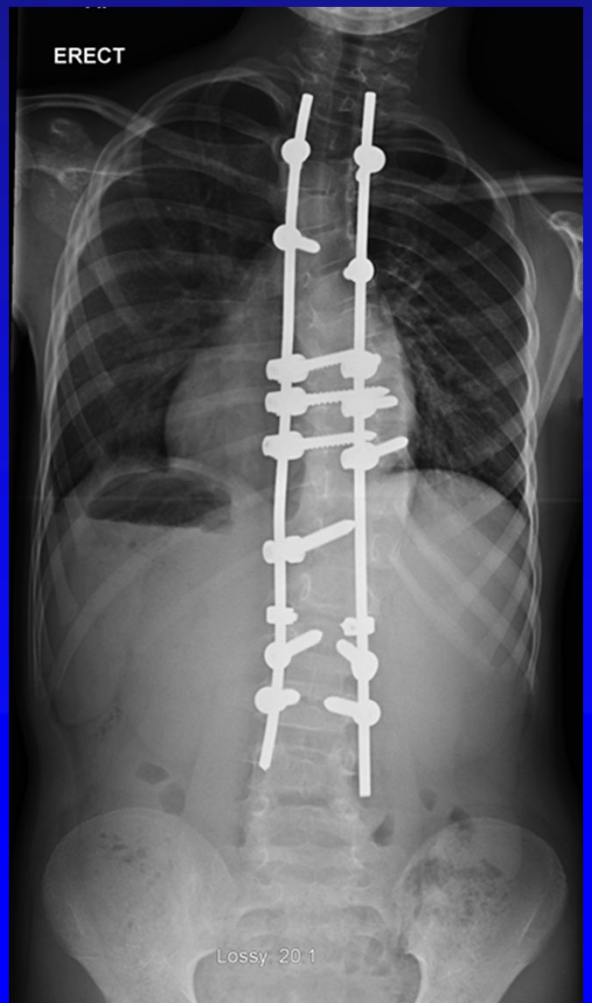
Majority of rods break caudal to apical fusion

Apical Fusion

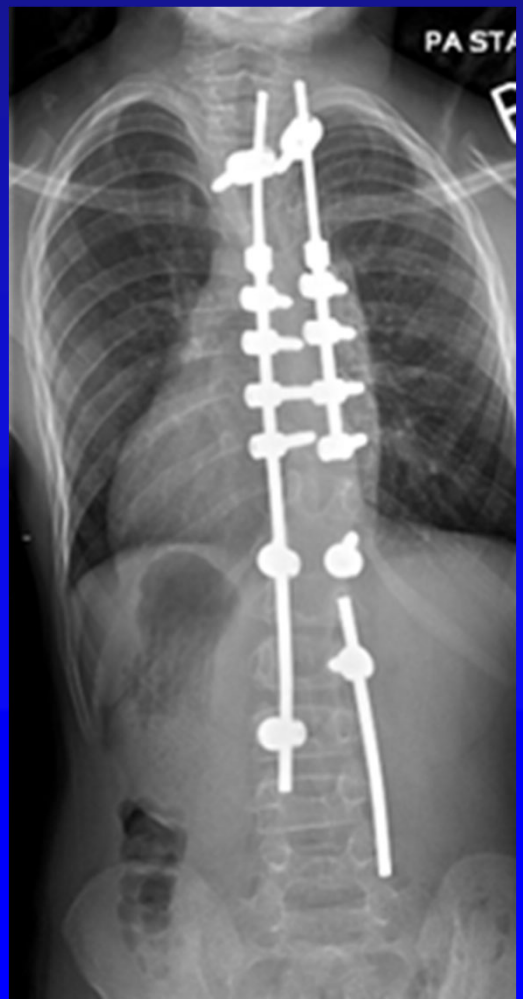
2 level



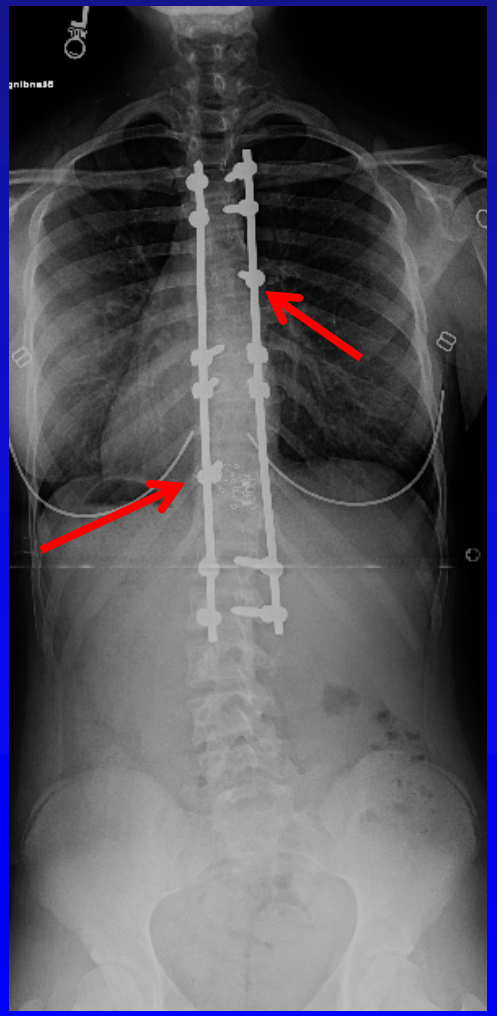
3 levels

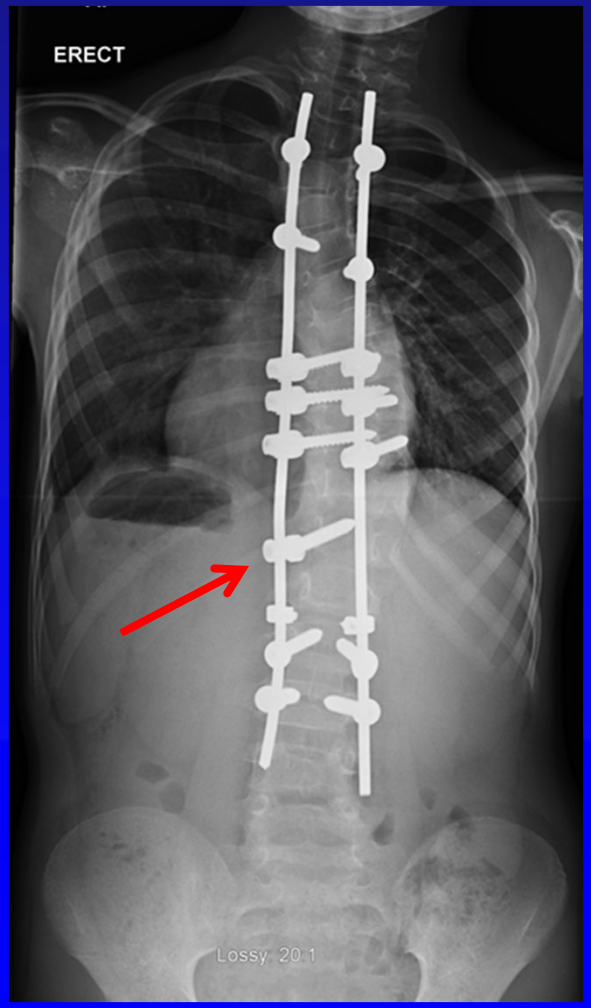


4 levels



Intercalary SHILLA Screws



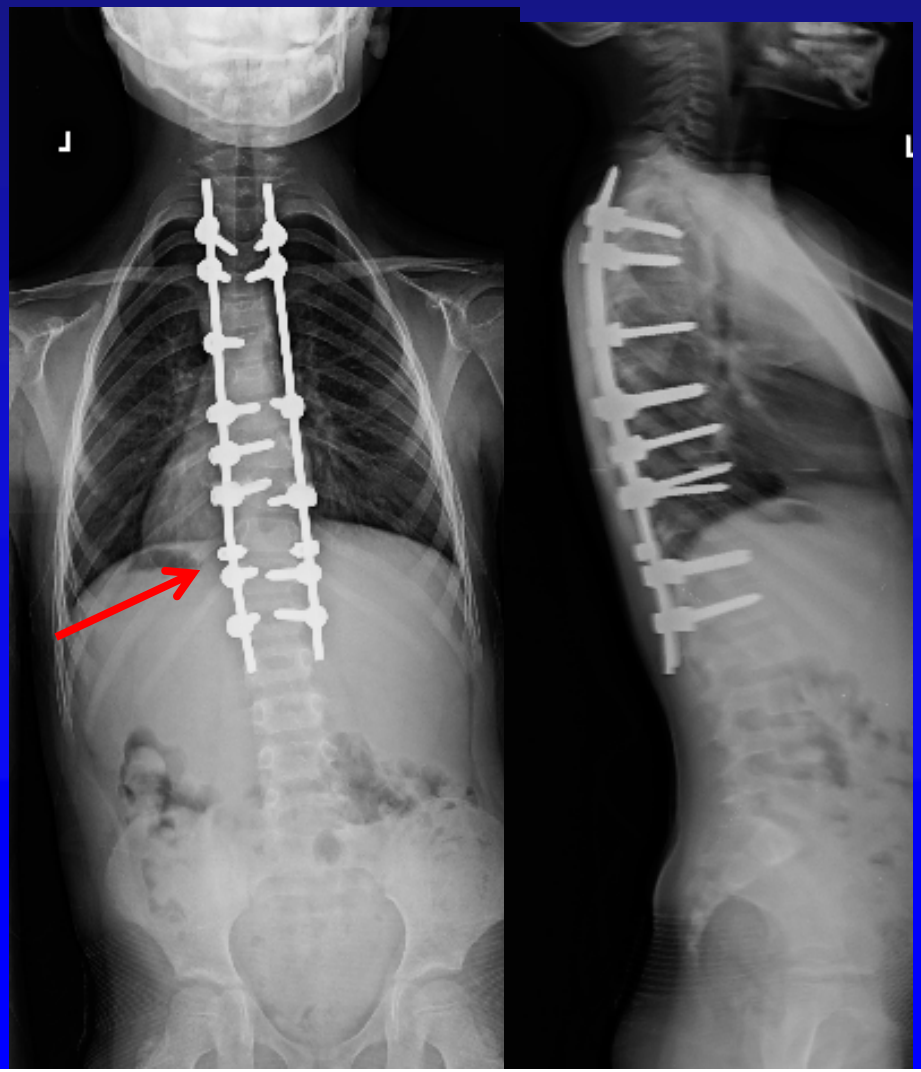


SHILLA: Rod Breakage

7 y/o male
NF

3-level apical fusion

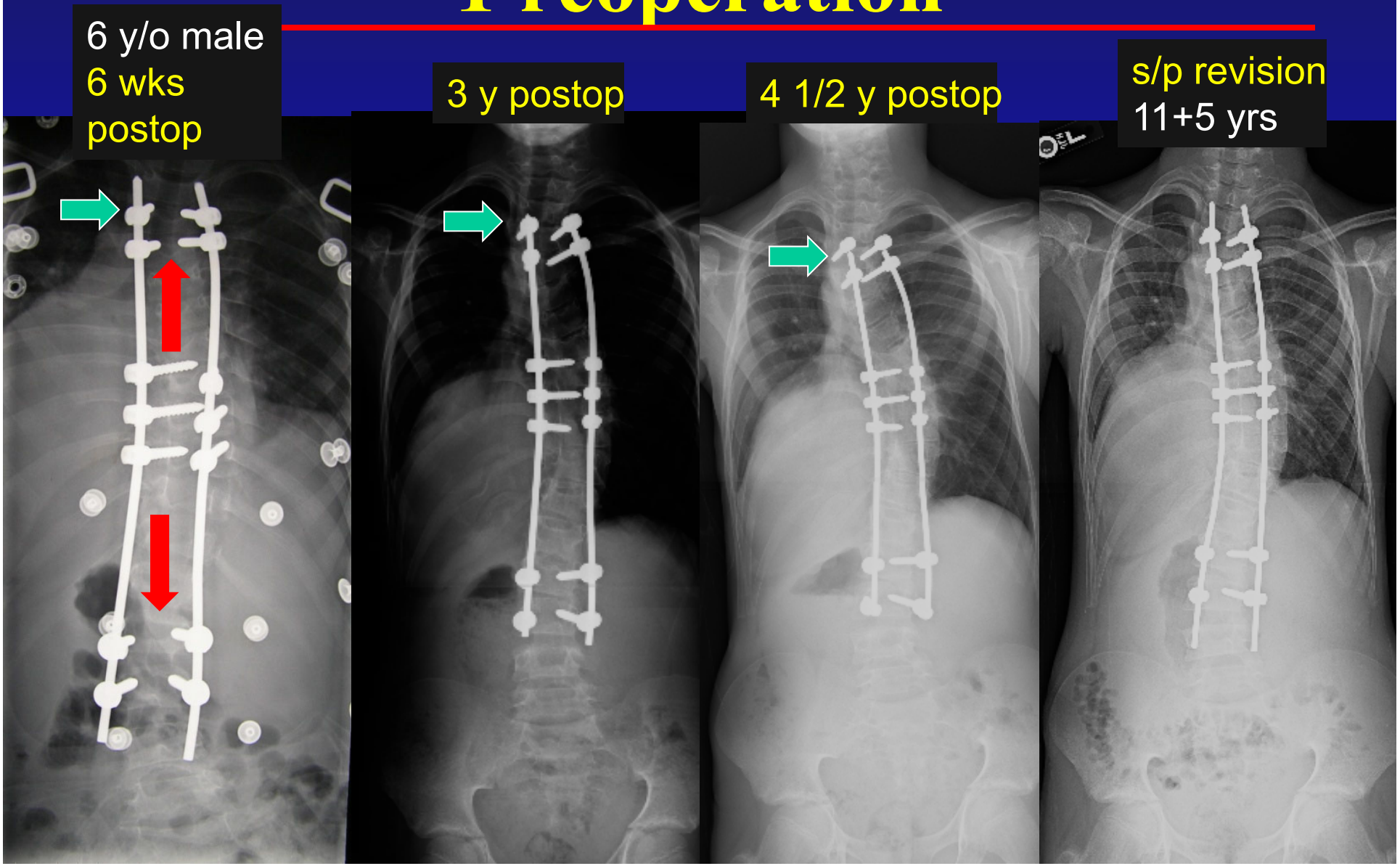
6 months postop



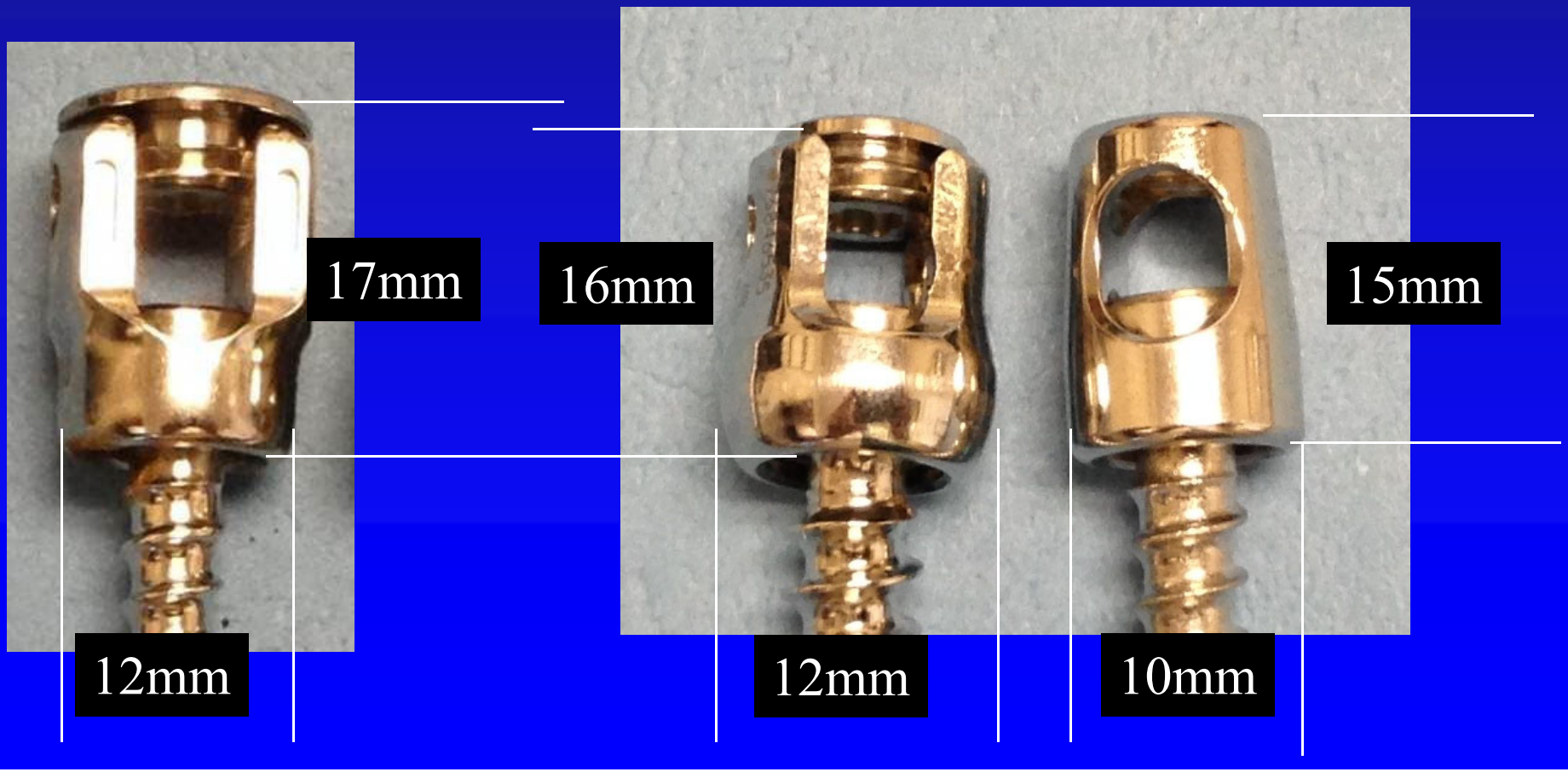
SHILLA: Implant Prominence

- Fully seat all pedicle screws
- Larger rod size means more prominence
- Rod contouring:
  - Cephalad: bend into more kyphosis
  - Caudal: bend into lordosis
- Leave 1 inch of rod at top and bottom of construct.

5 ½ years s/p T3-L3 Shilla: 1 reoperation



Implant Prominence



Thank you