SHILLA: Techniques, Tips and Tricks

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Disclosures

• Speaker’s bureau for:
  – Medtronic Sofamor Danek
  – Stryker Spine

• Consultant for:
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  – 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

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

5.5 SS
Shilla growing rods in a caprine animal model: a pilot study
McCarthy RE, Sucato D, Turner JL, et al
CORR 2010

- No implant failure
- Minor wear at rod/screw

5.5 SS

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

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.

SHILLA: Rod Breakage

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
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

6 y/o male
6 wks postop

3 y postop
4 1/2 y postop
s/p revision 11+5 yrs

Implant Prominence

5.5 SHILLA
4.5 SHILLA
5.5 CMAS

17mm
16mm
15mm
12mm
12mm
10mm
Thank you