Sublaminar Wires in Growing Constructs for EOS with Severe Deformity Effective in Diminishing Proximal Anchor Pullout

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Disclosures

- Anna McClung — None
- Charles E Johnston — A: SRS, OREF; F: Medtronic
- Brandon A Ramo — None
- Daniel J Sucato — None

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Introduction

- Implant failure anticipated complication with growth friendly surgery
- Kyphoscoliotic deformity more challenging to maintain proximal anchors (Schoerlucke et al 2012)
- Limited literature comparing common anchor choices of hooks or screws (Skaggs et al 2010)
- No literature comparing use of sublaminar wires as adjunct or most proximal anchor

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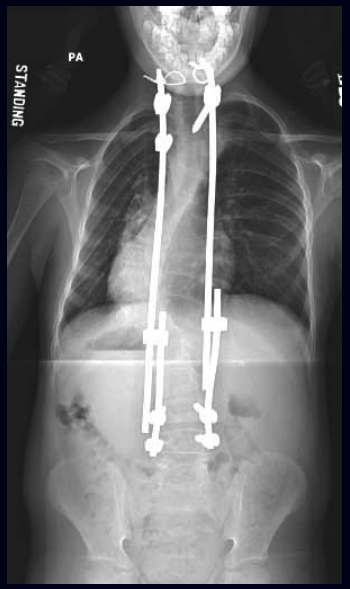
Objectives

Examine use of sublaminar wires as most proximal anchor or adjunct anchor in comparison to use of hooks or screws in diminishing proximal anchor pullout



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Methods

- Single Institution IRB approved retrospective review prospective consecutive series in comparison to a multi-center study group database
- Any patient treated with a spine based growth friendly construct where the proximal anchor could be a hook, screw (H&S) and/or sublaminar wire (SW) and 2 years of follow-up
- Medical record review
  - Number of lengthenings
  - Length of follow-up
  - Incidence of Proximal inplant pullout (PIP)
- Radiographic review
  - Major Cobb
  - Major Kyphosis
  - Thoracic Height

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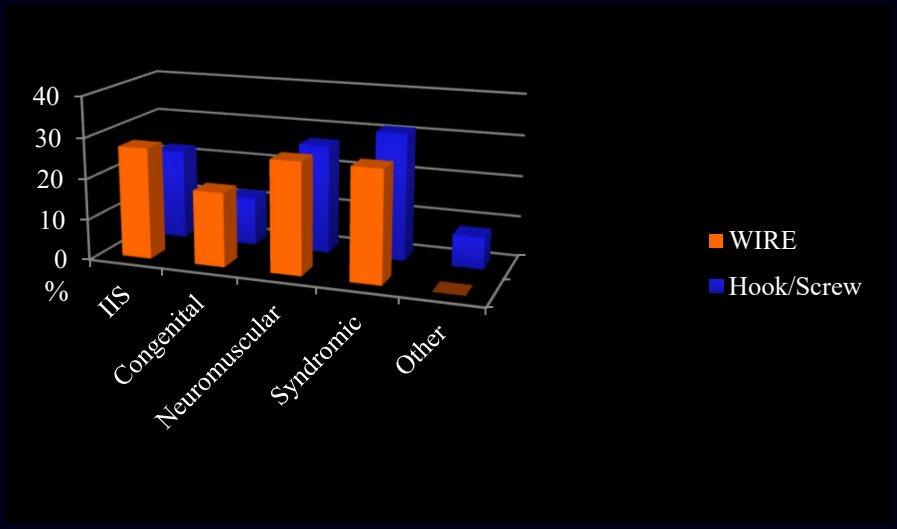
Demographic Results

- Patients: 11 SW (6.1±2.5yrs), 202 H&S (6.4±2.5yrs)
- SW specifics
  - Adjunct to hook or screw 6 (54.5%)
  - Upper anchor claw construct 5 (45.4%)
  - Salvage after failed hook or screw 6 (54.5%)
  - Index anchor 5 (45.4%)



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Preoperative Radiographic

	H&S	SW	p-Value
Pre Major Cobb	76.7±21.2°	95.5±20.0°	.0115
Pre Major Kyphosis	57.0±28.9°	75.5±23.9°	.0334
Pre Thoracic Height	157.2±36.6mm	135.3±26.5mm	.0262
Major Cobb % Correction	46.8±17.0%	34.5±13.6%	.0145
Major Kyphosis % Correction	31.3±46.7%	14.8±41.0%	.2421

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Surgical Data

	H&S	SW	p-Value
Number of Lengthenings	4.5±2.7	4.8±2.7	.7682
Years of Follow-up	4.5±2.4	5.0±1.6	.3849

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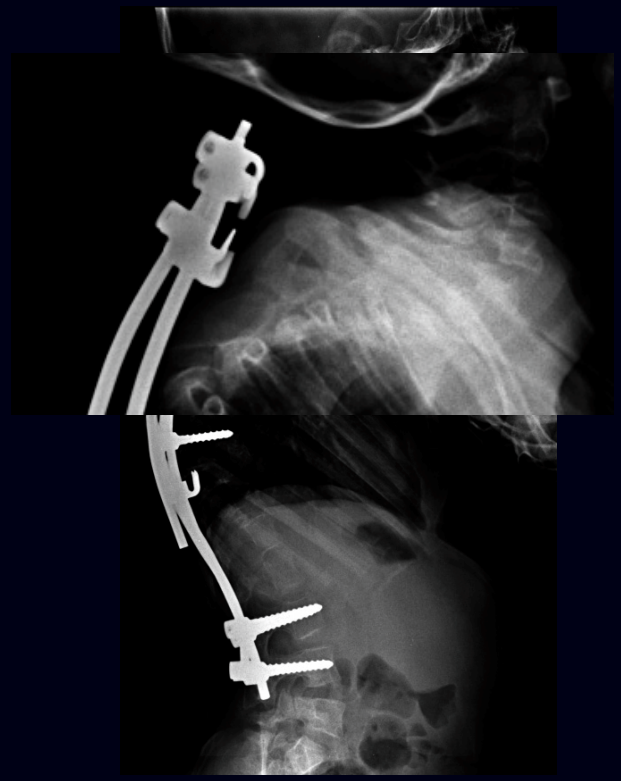
Proximal Anchor Pullout

- H&S constructs 11.9% (24/202)
  - Hook 60.9%
  - Screw 34.83%
  - BOTH 4.3%



- SW construct 9.1% (1/11)

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Preoperative Radiographic

	H&S Fail	SW	p-Value
Pre Major Cobb	79.5±14.7°	95.5±20.0°	.0315
Pre Thoracic Height	155.1±17.1mm	135.3±26.5mm	.0524
Major Cobb % Correction	42.8±11.10%	34.5±13.6%	.0955
Major Kyphosis % Correction	13.4±35.4%	14.8±41.0%	.932

HS Failures 24/202 vs. All SW 11/11

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Surgical Data

HS Failures 24/202 vs. All SW 11/11

Age in years at Index Surgery	[illegible]	[illegible]	[illegible]
Number of Lengthenings	4.7±2.8	4.8±2.7	.8706
Years of Follow-up	4.8±2.4	5.0±1.6	.7845

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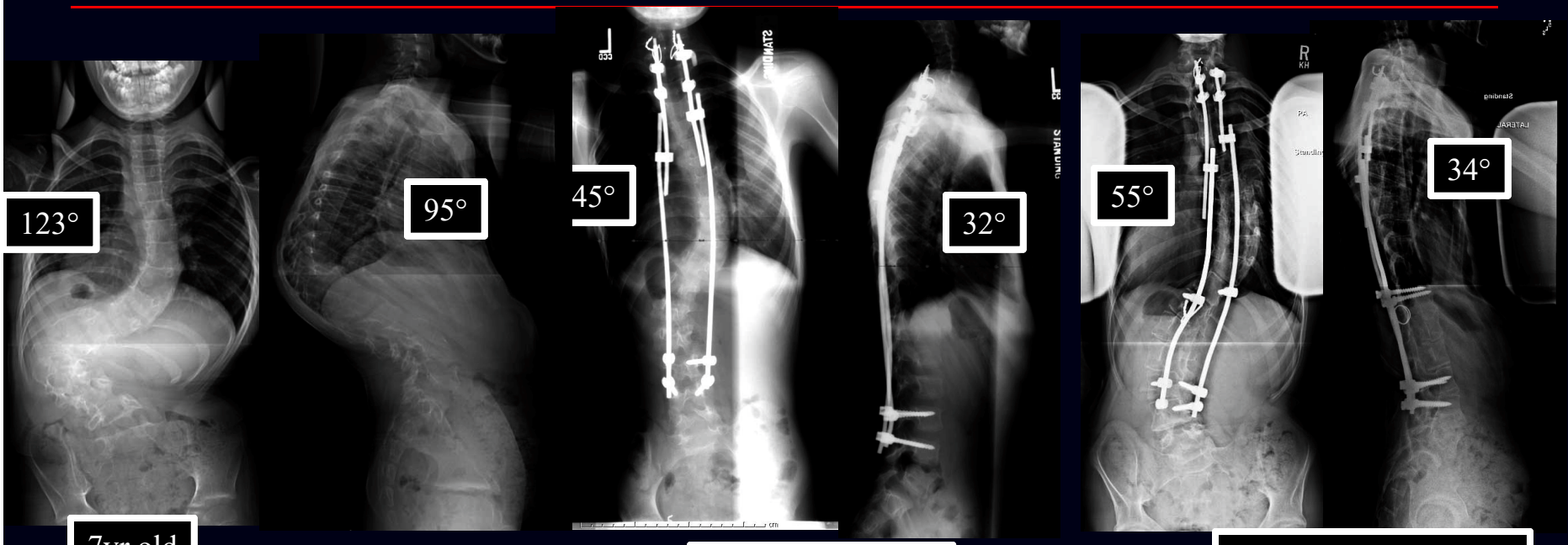
Case Example



7yr old Male

Immediate Postop

8 Years Postop
6 Lengthens/4.8 Years

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Limitations

Limitations

- Small series
- Retrospective nature

Conclusions

- Sublaminar wires had a similar rate of proximal implant failure compared to hooks or screws alone, despite greater kyphoscoliotic deformity

- In patients with severe kyphoscolitic deformity surgeons should consider use of wires as an adjunct or most proximal implant

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Thank You

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