Complications and Radiographic Outcomes of Posterior Spinal Fusion and Observation in Patients Who Have Undergone Distraction-Based Treatment for Early Onset Scoliosis

JEFFREY R. SAWYER MD

PROFESSOR OF ORTHOPAEDIC SURGERY

UNIVERSITY OF TENNESSEE-CAMPBELL CLINIC

Co Authors

Mendonça RM, Samdani A, El-Hawary R, Kishta W, Smith JT, Emans JB, St. Hilare TA, Flynn TS, Soufleris SJ, Murphy RP and Children's Spine Foundation.

Disclosures

I have no relevant financial disclosures.

Authors disclosures listed in program.

Introduction

- Common EOS treatment strategy:
  - Growth friendly treatment → PSF
- Some patients do not undergo PSF at end of distraction
  - patient preference
  - surgeon preference
  - medical conditions

Purpose

- To compare the outcomes of EOS patients who are observed to those who have PSF at the end of distraction.

- Information useful in decision regarding PSF at end of distraction.

Methods

- IRB-approved review of the Children's Spine Foundation(CSF) Database

- Children with EOS undergoing OB or PSF at the end of distraction were included.

  any etiology

  ≥ 2 year from last growing procedure

Methods

- Radiographic parameters: coronal/sagital curve
  T1-T12, T1-S1 height
  spine length
- Treatment outcomes: radiographic correction
  height/length gain
  complications
- Complications stratified by Smith Classification

Results

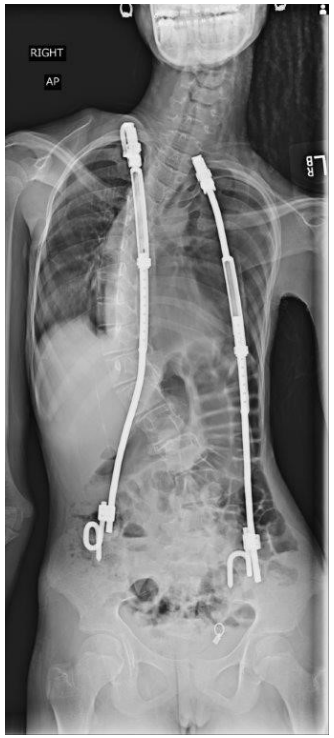
- 37 patients: 25 PSF (67%), 13 Observation (33%)

- Mean follow up from distraction initiation:

  15.6 years PSF

  16.2 years OB

- Mean age initiation: 4.2 years both



Results

- Ambulatory: Observation 12/13 (92%)
  PSF 21/25 (84%)

- Treatment: Observation: 13/13 (100%) VEPTR
  PSF: 21 VEPTR (84%), 3 GR (12%), 1 Hybrid (4%)

Results

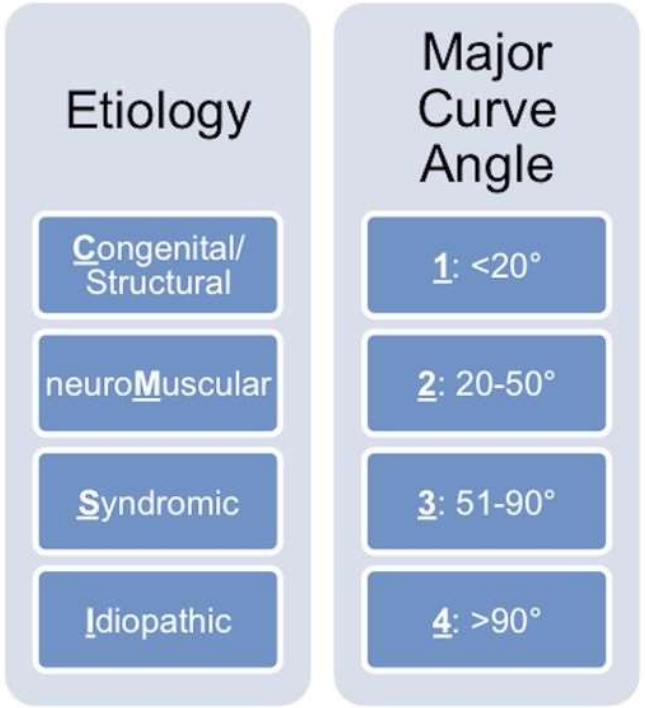
- Most common CEOS (C3)

- Total procedure number:

  PSF mean: 11.3 (range 3-21)

  OB mean: 8.7 (range 2-16)

Mean age PSF: 12.9 years



Results – Radiographic Parameters

		Distraction end	PSF	Final Follow up
Scoliosis	**PSF**	59°	49°	55°
	OBS	51°	n/a	59°
Kyphosis	**PSF**	52°	44°	47°
	OBS	50°	n/a	56°

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Results – Spine Height/Length

		Distraction end	PSF	Final Follow up
T1-T12 height	**PSF**	20.4 cm	22.0 cm	21.5 cm
	OBS	19.8 cm	n/a	19.0 cm
T1-S1 height	**PSF**	32.8 cm	35.3 cm	35.3 cm
	OBS	32.0 cm	n/a	31.4 cm
T1-L1 length	**PSF**	24.7cm	25.7cm	25.2 cm
	OBS	21.4 cm	n/a	22.8 cm

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Results

Complications – PSF

23 complications/13 patients
35% patients with 1 complication (range 1-4)

11 (48%) device-related
12 (52%) disease-related

No complications in OB group

4 Additional procedures (Post PSF)

1 repeat PSF, 2 implant removal, 1 revision PSF

Discussion

Similar findings by Sponseller/GSSG (POSNA 2015) with growing rods.

Need to determine if small additional curve correction, spine length gain are worth the risk of complications.

Limitations

Small group of patients

Reasons for observation *vs* fusion difficult to study retrospectively.

Observation group may represent “survivors” and may not be applicable to all patients.

Conclusions

- Decision to perform a PSF after distraction is complicated and multifactorial.
- Observation at the end of lengthening may be good option for certain patients.
- Further studies are necessary to determine the optimal treatment for EOS patients who completing distraction.

Thank You


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