

The Utility of VEPTR in the Older Child with Complex Spine and Chest Deformity

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Disclosures

- RM Campbell
 - Grant Support
 - NORD, FDA Office of Orphan Product Development
 - Royalities
 - Synthes Spine Co

Background

- Main indication for titanium rib surgery: to increase lung volume in patients < age 8
- What options exist to correct the complex congenital spine and chest wall deformity in older children?

Significance

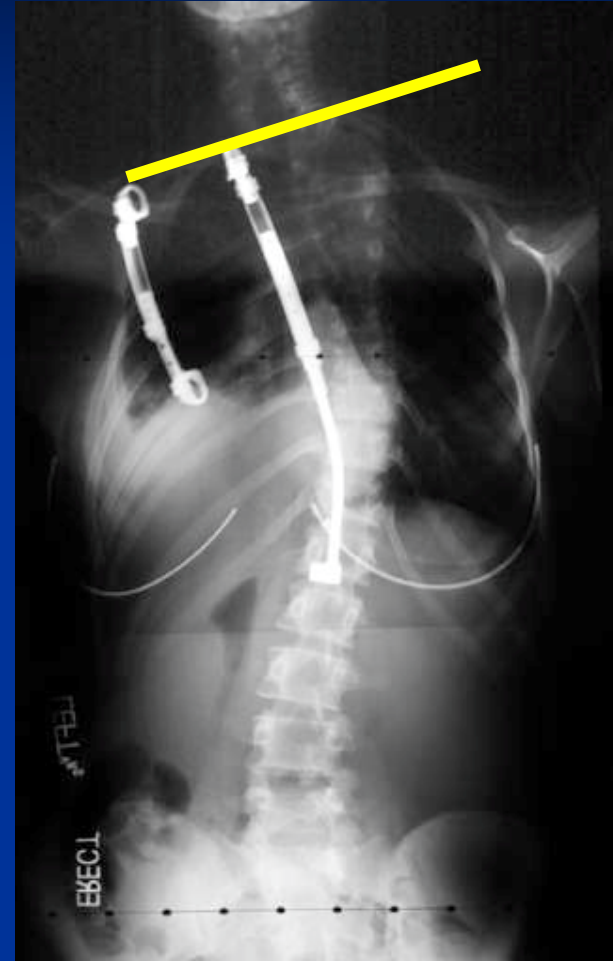
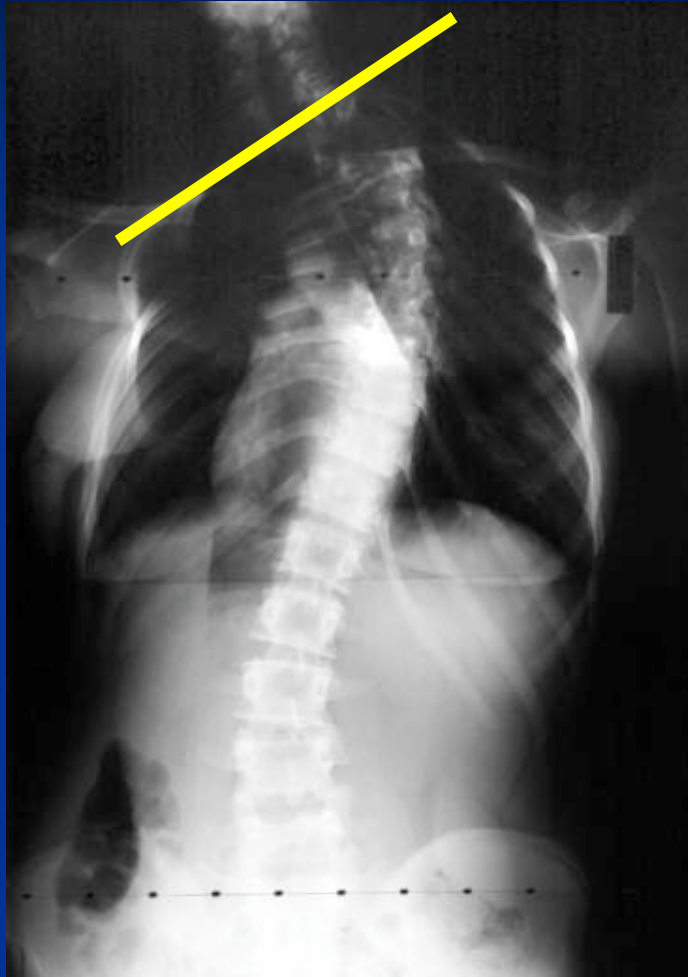
- Correction of congenital spine deformity in patients over 10 remains a challenge.
- Vertebral column resection is an option but has a high neurological risk and is technically demanding.

Wedge Osteotomies





16 yo old with complex cervical thoracic congenital scoliosis



Purpose

- To analyze the radiographic spine deformity correction following treatment with VEPTR implants in a group of older children (> age 10) at time of first surgery

Methods

- Retrospective study of patients who participated in FDA IDE study who:
 - have had VEPTR surgery
 - were over 10 yrs of age at initial surgery
 - have minimum 2 yr follow-up

Methods

- Of 214 total patients in database, 10 met the inclusion criteria
- Mean age at surgery: 12.4 years
- Diagnoses:
 - Congenital scoliosis = 6
 - Hypoplastic thorax = 3
 - Myelomeningocele = 1
- 4 had prior limited spine fusion

Methods

- Radiographic measurements
 - Maximum Cobb angle
 - Hemithoracic height and width
 - Thoracic height
 - Head shift
 - T1 tilt angle

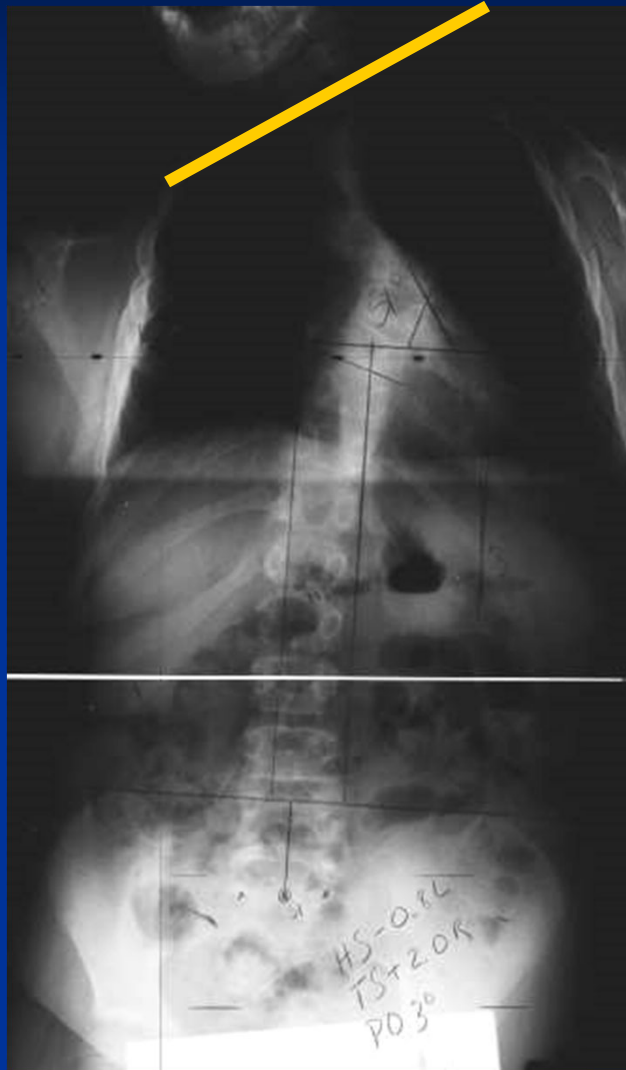
Results

Diagnosis	N	Pre/Post Cobb Correction	2 yr Cobb Correction	Pre/Post Head Shift (cm)	Definitive Procedure
Congenital Scoliosis with or without Fused Ribs	6	36.4%	32.1%	4.3	Posterior spinal fusion (n=2); planned for fusion (n=2); no fusion planned (n=2)
Hypoplastic Thorax	3	15.9%	-4.7%	1.8	Posterior spinal fusion (n=1); planned for fusion (n=2)
Myelomeningocele	1	12.7%	-16.4%	7.9	Posterior spinal fusion (n=1)

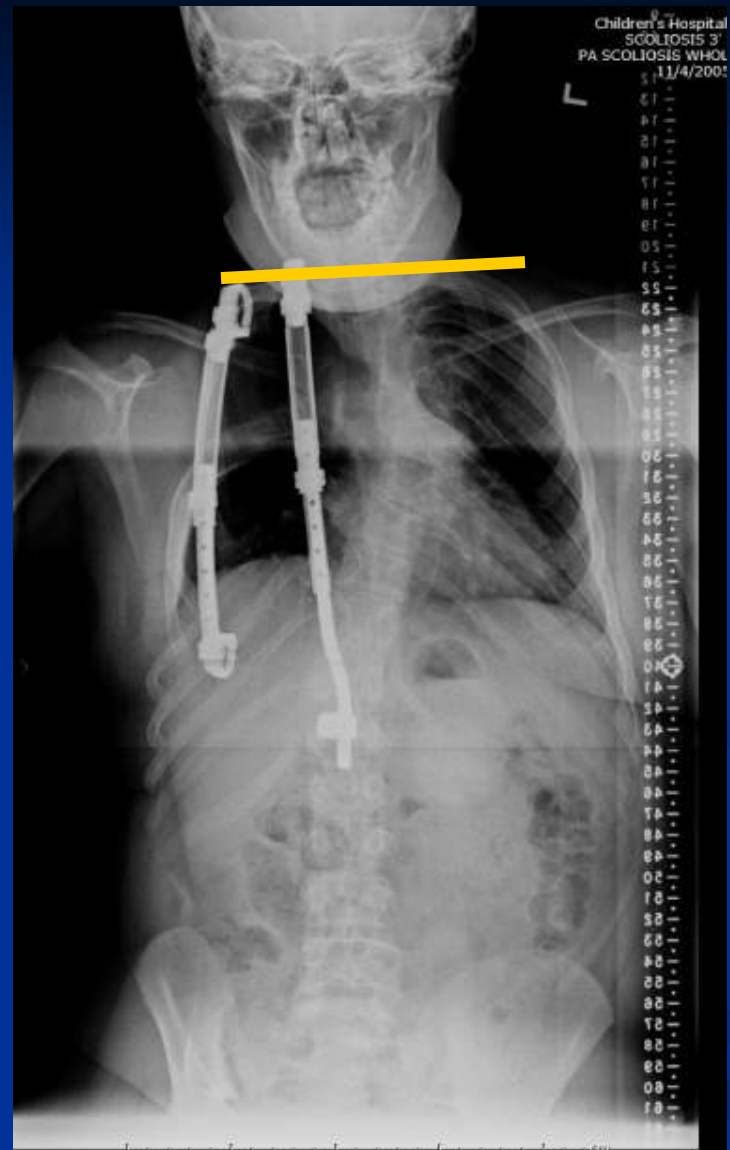
Complications

- No patient sustained a neurologic injury
- One patient with device fracture and migration
- One patient with pain in the upper lumbar spine
- Two patients with pneumonia

Age 10, congenital scoliosis

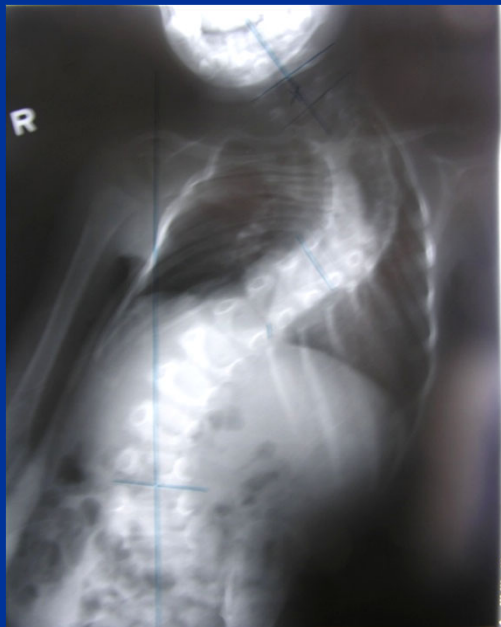


July 2002



March 2005

The Effect of Mid-Thoracic VEPTR Opening Wedge Thoracostomy on Cervical Tilt associated with Congenital Scoliosis SPINE 2007



Avg Age 4.4 yrs

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Summary

- This study demonstrated the safety and utility of VEPTR in carefully selected older patients with complex spine and chest wall deformities.
- VEPTR may be a viable option for these children when vertebral column resection is deemed too risky.

Thank You

