Use of VEPTR for Treatment of Congenital Scoliosis without Fused Ribs

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Disclosures

Murphy	AAOS
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Sawyer	Elsevier, AAOS, POSNA

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Introduction

Congenital scoliosis (CS) variable

morphology

spectrum

severe cases - thoracic insufficiency

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Introduction

Congenital scoliosis treatment:

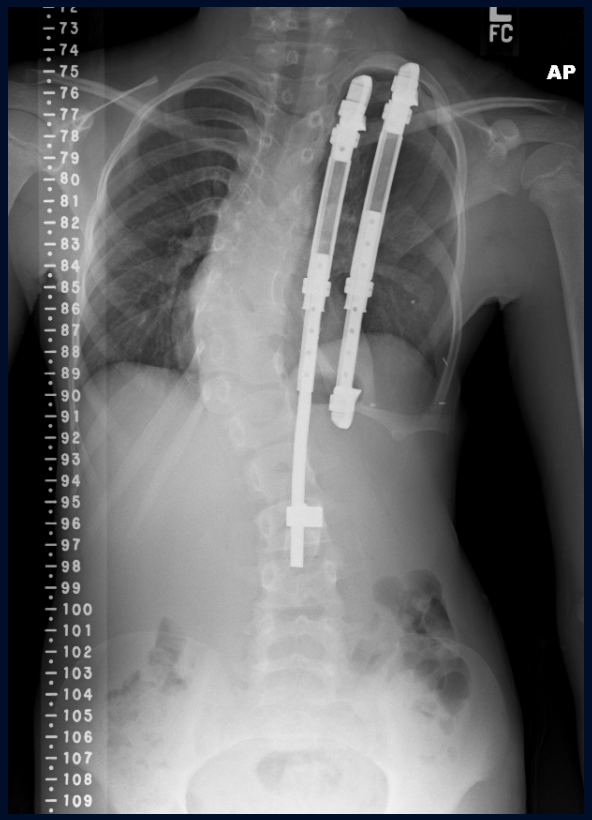
observation

casting

growing rods

Shilla

VEPTR



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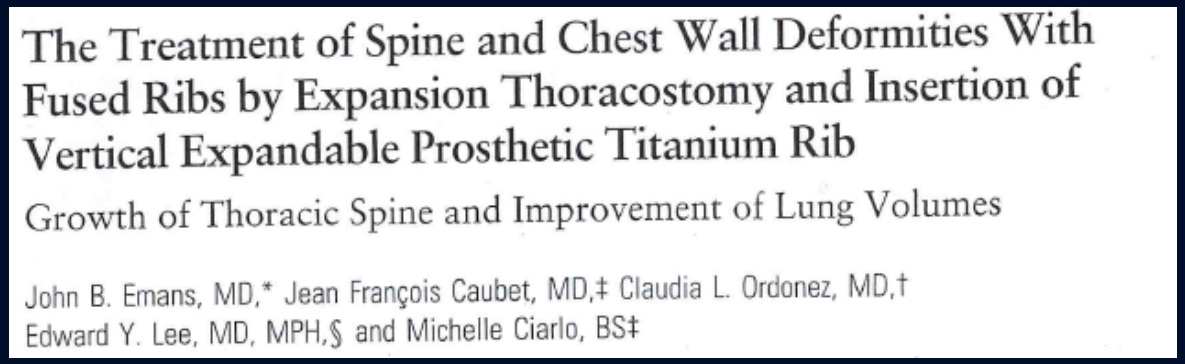
Introduction

VEPTR effective:

wide variety of conditions/deformities

congenital scoliosis with fused ribs



The Treatment of Spine and Chest Wall Deformities With Fused Ribs by Expansion Thoracostomy and Insertion of Vertical Expandable Prosthetic Titanium Rib

Growth of Thoracic Spine and Improvement of Lung Volumes

John B. Emans, MD,* Jean François Caubet, MD,‡ Claudia L. Ordonez, MD,†
Edward Y. Lee, MD, MPH,§ and Michelle Ciarlo, BS‡

No studies to date specifically evaluated VEPTR in CS patients w/o fused ribs.

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Purpose

Characterize the use of VEPTR in patients with CS without fused ribs.

Methods

CWSD database – CS w/o fused ribs

Demographic information

Expansions/lengthenings

Complications – stratified

- disease *vs* device
- treatment plan alteration

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Demographics

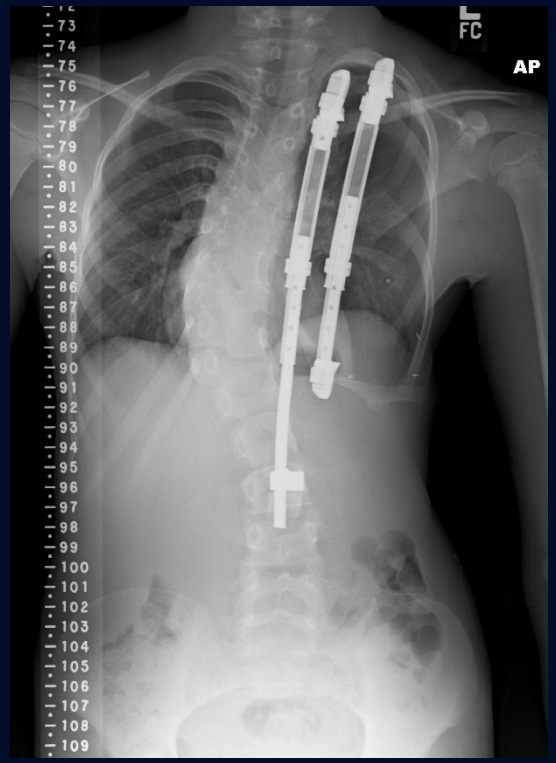
24 patients (12M, 12F)

Implantation age: 5.6 ± 3.4 years

mean follow-up: 4.2 years

mean # procedures: 9.3 ± 6.0

mean # expansions: 6.6 ± 4.6



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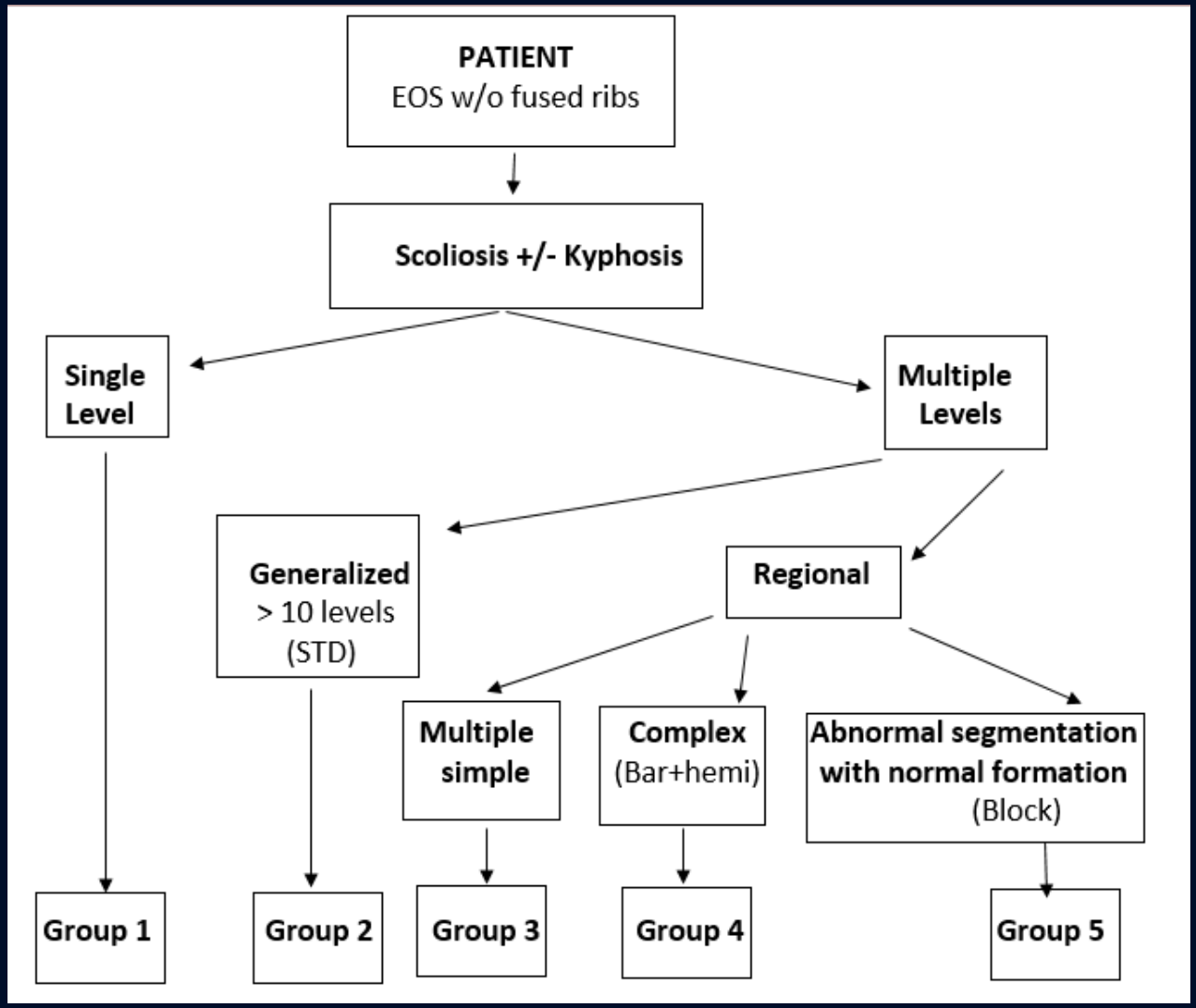
Classification



Offiah *et al* (2010) Am. J. Genetics

Kawakami *et al* (2009) Spine

Deformity

Multiple Complex (bar + hemi): 17 (71%)

Single: 3

Generalized: 1

Multiple simple: 1

Abnormal segmentation: 1

Radiographic Parameters

Scoliosis
Kyphosis

AP/Lat Spine height (T1-S1)

Expected T1-T12 spine height

Preoperative
↓
Post-implant
↓
Final Follow-Up

*All measurements performed by single observer

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Coronal Cobb Angle

Preoperative	70°
↓	↓
Postoperative	55° ($p = 0.0001$)
↓	↓
Final Follow-Up	54° ($p < 0.0001$)

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Sagittal Cobb Angle (Kyphosis)

Preoperative	37°
↓	↓
Postoperative	41° (p = 0.31)
↓	↓
Final Follow-Up	47° (p = 0.6)

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Lateral Thoracic Height (T1-T12)

Preoperative	15.3cm
↓	↓
Postoperative	15.8cm (p = 0.026)
↓	↓
Final Follow-Up	17.4cm (p =0.04)

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Complications

15/24 patients (63%)

Total of 41 complications

Average 2.8, range 1-12

Most common:

infection (8)

wound dehiscence (8)

device migration (8)

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Disease Related Complications

Grade I: can be treated as an outpatient.

Grade II: requires hospitalization.

Grade III: alters the treatment plan.

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Disease Related Complications

Disease Related (n=13, 31%)		
Grade I (outpatient)	5	33%
Grade II (hospital)	6	50%
Grade III (Δ plan)	2	27%

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Device Related Complications

Grade I: does not require return to OR.

Grade II: unplanned return to OR.

A: single trip to OR
IB: multiple trips to OR

Grade III: alters the treatment plan.

Device Related Complications

Device Related (n=28, 69%)		
Grade I (no OR)	13	46%
Grade IIA (1 OR)	8	29%
Grade IIB (> 1 OR)	3	11%
Grade III (Δ plan)	4	14%

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Expected Height

Eur Spine J (2012) 21:64–70
DOI 10.1007/s00586-011-1983-3

REVIEW ARTICLE

The growing spine: how spinal deformities influence normal spine and thoracic cage growth

Alain Dimeglio · Federico Canavese

Mean height gain: 2.4 cm

Expected height gain: 4.3 cm

% height gain: 79

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Conclusions

VEPTR is effective in correcting and maintaining scoliosis with improved thoracic height.

Post- implantation kyphosis a concern.

Complications are similar to other studies.

New classification systems are helpful.

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Thank You

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