SPINE

VS.

CHEST

REALLY?

WAS THIS SUPPOSED TO BE A DEBATE?

WHO IS THIS GUY?

I HAVE EXPERIENCED BOTH SIDES

VEPTR- OKLAHOMA

Dr. Puffinbarger

Trained by David Roye

GR- SAN DIEGO

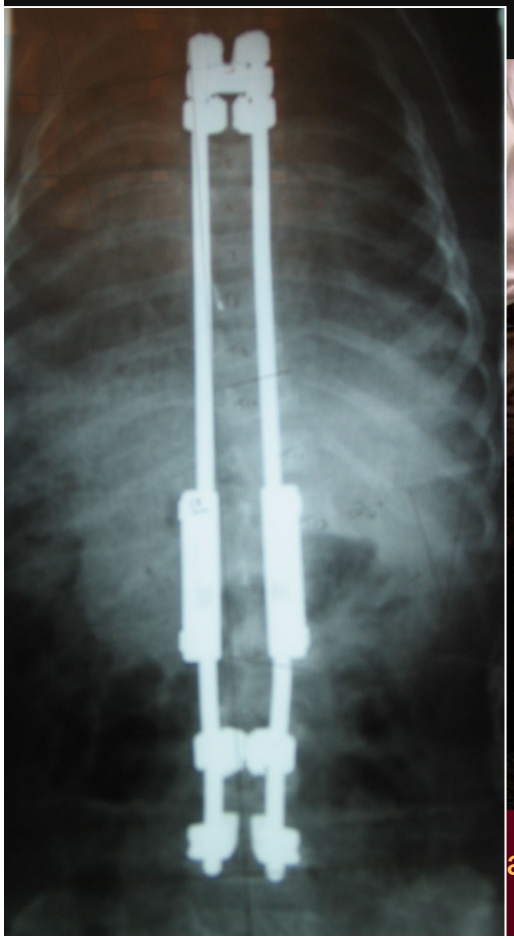
Dr. Akbarnia

GR MASTER EXTRAORDINAIRE

EASING MY WAY INTO ACADEMIA

San Diego Center for LEGITIMATE Spine Surgery

ING MY W
D ACADE



vs.

PC

an Diego Center for LEGITIMATE Spine S

So what about the "debate"?

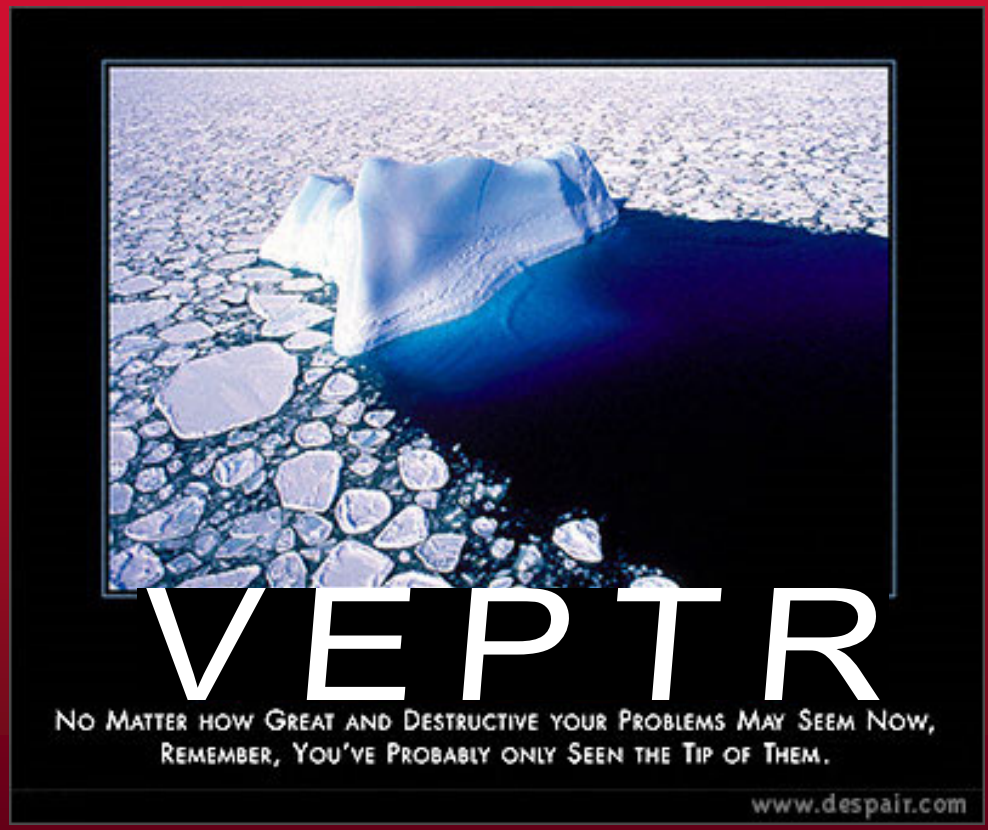
The Problem:

1. **Symptomatic Decreased Lung Volume**
2. **Progressive Spinal Deformity**

CHEST WALL PROBLEM?

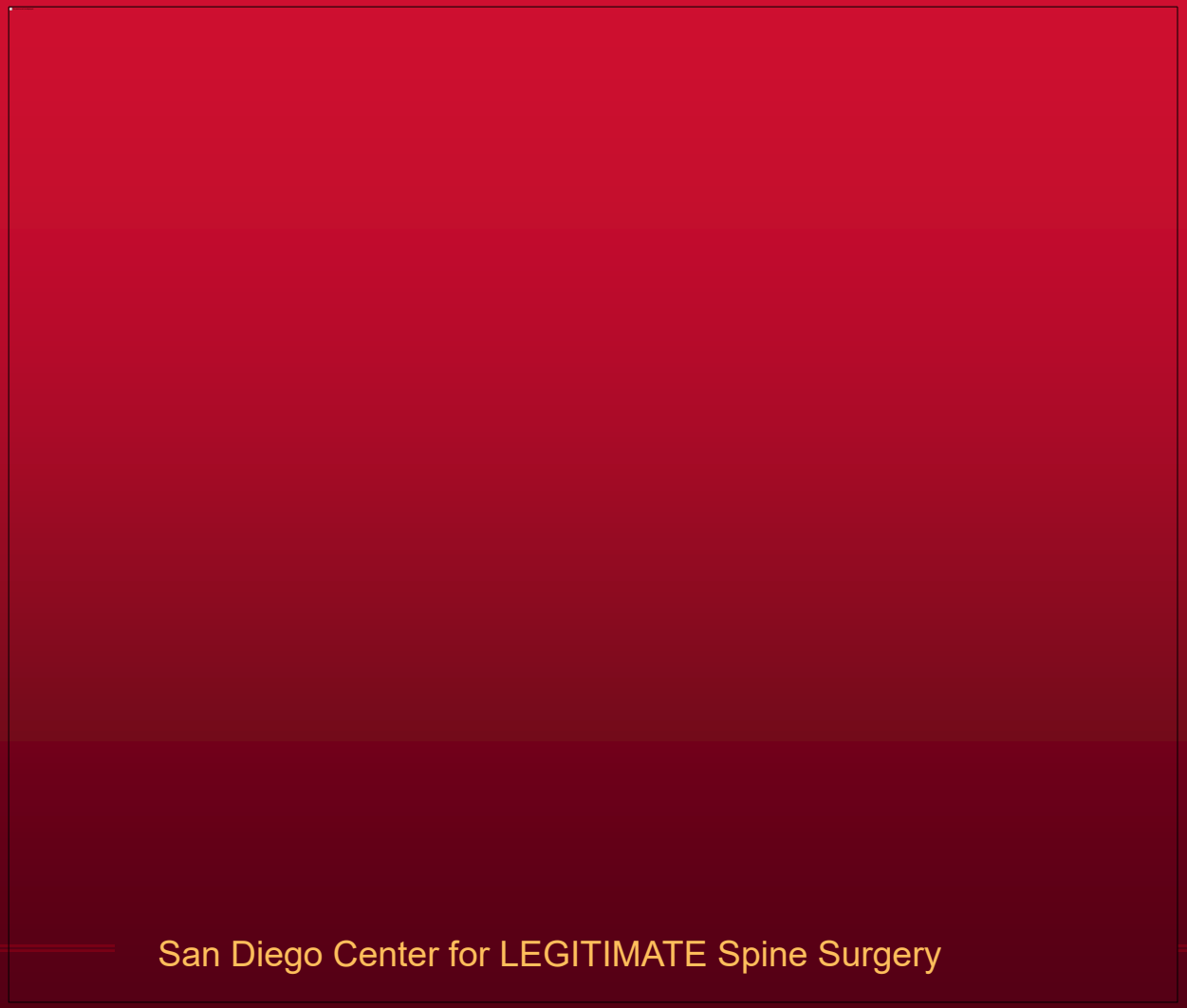
NO!

THIS IS A SPINE DEFORMITY PROBLEM LEADING TO PULMONARY COMPROMISE



NOT ARGUING ABOUT THIS PATIENT

The case for the GROWING ROD



Redding ICEOS 2009

Low lung volume

+

Asymmetric lung function

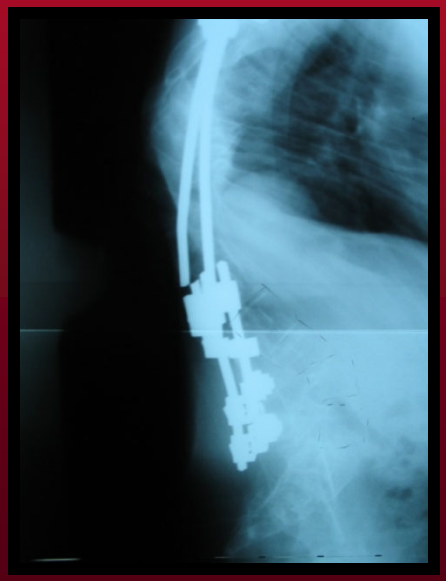
+

Diapragm inefficiency

Diaphragm dysfunction in light of lock box. SO now you have taken away the compensatory mechanism of these children

COMPLICATIONS

- High in both VEPTR and Growing rods
- Well established in literature



- Wound related
- Implant related
- Alignment
- Learning curve issues
- Medical complications

COMPLICATIONS

Growing Rod

- **Neuro deficits**
  - Distraction problem
    - Intraoperative recognition
    - Shorten
    - Remotely?
  - Pedicle screw problem
    - Don't use them
    - Use 4 hooks and cross connector

VEPTR

SERIOUS WOUND PROBLEMS

-VEPTR II

Brachial plexopathy is MAJOR problem

Cambell et al SPINE 2007

Brachial Plexopathy

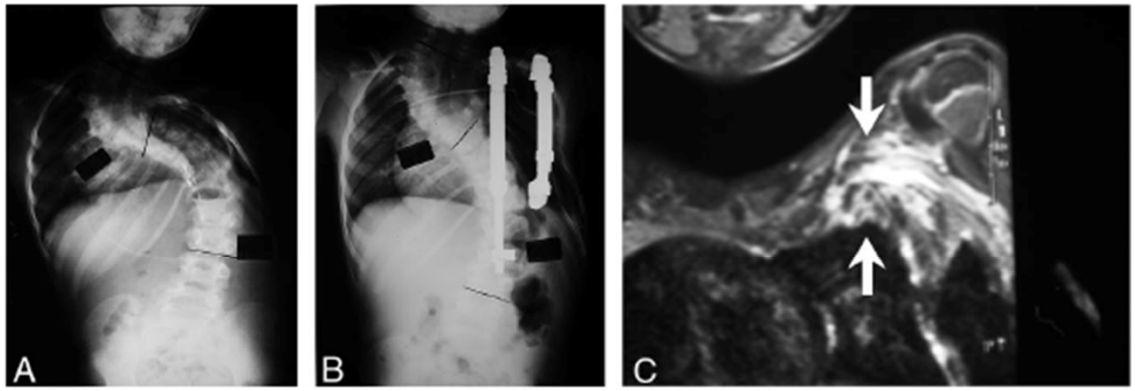
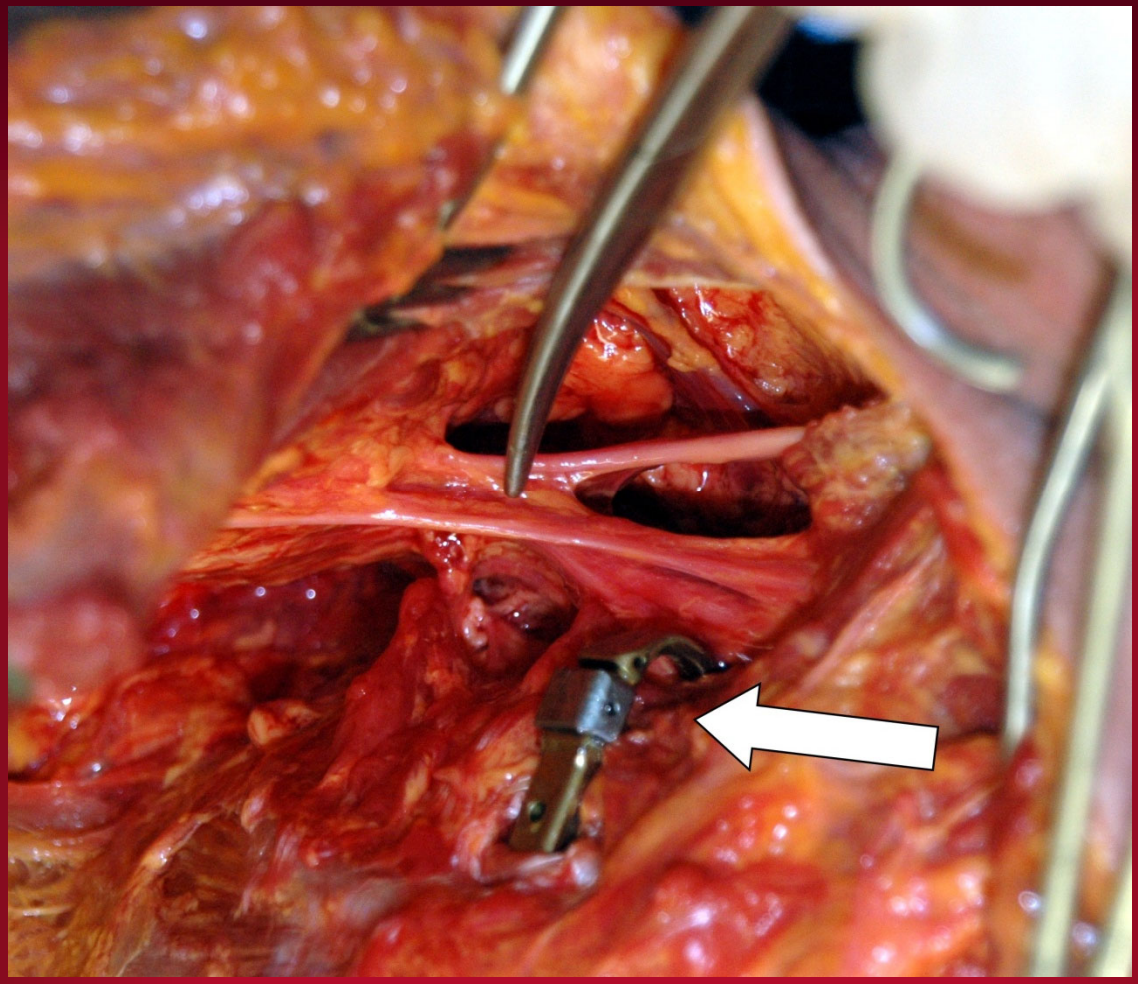


Figure 4. **A**, A 4-year-old girl with fused ribs and scoliosis. **B**, Immediate post-VEPTR opening wedge thoracostomy complicated by brachioplexopathy. **C**, A MRI with contrast showed tenting up of the brachial plexus by the fused, stenotic first/second ribs lifted proximally by the opening wedge thoracostomy. The clavicle does not seem to be compressing the plexus. The plexus was decompressed by cutting a channel through an axillary approach in the first and second ribs just beneath the plexus so there was clearance. The child went on to recover.



Cadeveric dissection demonstrates the brachial plexus draping over the first rib. White arrow shows a VEPTR cradle on the first rib – rib anchors on the first rib alone should be avoided. (reproduced with permission of Children's Orthopaedic Center, Los Angeles

WHY RISK THE OCCURRENCE OF THIS???

Iatrogenic Thoracic Outlet Syndrome Secondary to Vertical Expandable Prosthetic Titanium Rib Expansion Thoracoplasty

Pathogenesis and Strategies for Prevention/Treatment

Ahmad Nassr, MD, Annalise Noelle Larson, MD,* Benjamin Crane, MD,† Kim W. Hammerberg, MD,‡§ Peter F. Sturm, MD,‡ and Steven M. Mardjetko, MD‡*

(*J Pediatr Orthop* 2009;29:31–34)

Background: An innovative treatment for thoracic insufficiency

DEFORMITY CORRECTION

GROWING RODS

SPINE Volume 33, Number 9, pp 984–990
©2008, Lippincott Williams & Wilkins

Dual Growing Rod Technique Followed for Three to Eleven Years Until Final Fusion

SPINE Volume 30, Number 17S, pp S46–S57
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Dual Growing Rod Technique for the Treatment of Progressive Early-Onset Scoliosis

A Multicenter Study

Behrooz A. Akbarnia, MD,* David S. Marks, FRCS,† Ohenaba Boachie-Adjei, MD,‡ Alistair G. Thompson, FRCS,† and Marc A. Asher, MD§

53%

this issue, pp 1–2.

J Neurosurg Spine 11:3–8, 2009

The role of bracing, casting, and vertical expandable prosthetic titanium rib for the treatment of infantile idiopathic scoliosis: a single-institution experience with 31 consecutive patients

Clinical article

JASON R. SMITH, P.A.-C., AMER F. SAMDANI, M.D., JOSHUA PAHYS, M.D., ASHISH RANADE, M.D., JAHANGIR ASGHAR, M.D., PATRICK CAHILL, M.D., AND RANDAL R. BETZ, M.D.

Shriners Hospital for Children, Philadelphia, Pennsylvania

Correction of deformity???

TABLE 2: Curve correction in patients with IIS

		Mean Cobb Angle in Degrees (range)					
Tx Group	RVAD (°)	Pre-Tx	Post-Tx	Recent	% Flexibility	Initial % Correction	Overall % Correction
all	26.4	54.8 (20–113)	38.0 (12–78)	31.0 (5–77)	48.6	32.0	47.8
cast	33.0	50.4 (31–73)	28.5 (12–44)	21.3 (5–35)	50.4	43.3	59.0
brace	18.0	35.3 (20–45)	29.9 (19–41)	16.3 (11–25)	74.6		51.2
VEPTR	31.6	90.0 (50–113)	51.9 (29–78)	52.5 (14–77)	45.1	33.7	33.8

Bilateral use of the vertical expandable prosthetic titanium rib attached to the pelvis: a novel treatment for scoliosis in the growing spine.

Samdani AF, Ranade A, Dolch HJ, Williams R, St Hilaire T, Cahill P, Betz RR.

Shriners Hospital for Children, Philadelphia, Pennsylvania
1914 .com

28%

8

58°

See the corresponding article in this issue, pp 3–8.

Editorial

Infantile idiopathic scoliosis

MARK F. ABEL, M.D.

J Neurosurg Spine 10:287–292, 2009

Bilateral use of the vertical expandable prosthetic titanium rib attached to the pelvis: a novel treatment for scoliosis in the growing spine

Clinical article

AMER F. SAMDANI, M.D., ASHISH RANADE, M.D., HENRY J. DOLCH, D.O., REED WILLIAMS, B.A., TRICIA ST. HILAIRE, B.A., PATRICK CAHILL, M.D., AND RANDAL R. BETZ, M.D.

Shriners Hospital for Children, Philadelphia, Pennsylvania

And I quote…

Like so many other uncontrolled retrospective studies, this rep… ment of this… patients), th… so that char… similar, and… mean age at…

rods for IIS. However, given the 33% complication rate with the VEPTR seen in this study, the inferior correction compared with growth rods, and other methodological deficiencies, I am not convinced that this technique offers much advantage over the growth rod procedure of Akbarnia et al.[1,2]

SAGITTAL PLANE PROBLEMS

KYPHOSIS

- This is a spine problem not CHEST
- Go to where the money is…the SPINE

SPINE Volume 30, Number 17S, pp S46–S57
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Dual Growing Rod Technique for the Treatment of Progressive Early-Onset Scoliosis

A Multicenter Study

50°→35°→45°

Behrooz A. Akbarnia, MD,* David S. Marks, FRCS,† Ohaneba Boachie-Adjei, MD,‡
Alistair G. Thompson, FRCS,† and Marc A. Asher, MD§

SPINE Volume 30, Number 18, pp 2039–2044
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Comparison of Single and Dual Growing Rod Techniques Followed Through Definitive Surgery

A Preliminary Study

George H. Thompson, MD,* Behrooz A. Akbarnia, MD,† Patricia Kostial, RN, BSN,†
Connie Poe-Kochert, CNP,* Douglas G. Armstrong, MD,* Jeffrey Roh, MD,‡
Robert Lowe, MD,‡ Marc A. Asher, FRCS,§ and David S. Marks, MD‖

Kyphosis (°)			
Preoperative initial	42 ± 21	33 ± 18	49 ± 26
Postoperative initial	28 ± 15	32 ± 9	26 ± 10
Preoperative final	52 ± 25	41 ± 18	38 ± 10
Postoperative final	55 ± 20	33 ± 17	42 ± 9

Bilateral use of the vertical expandable prosthetic titanium rib attached to the pelvis: a novel treatment for scoliosis in the growing spine.

Samdani AF, Ranade A, Dolch HJ, Williams R, St Hilaire T, Cahill P, Betz RR.

Shriners Hospital for Children, Philadelphia, Pennsylvania 19140, USA. amersamdani@yahoo.com

VEPTR= kyphosis generator

23˚ post op→ 37˚ (25 mo later)

Growth of the Thoracic Spine in Congenital Scoliosis After Expansion Thoracoplasty

Robert M. Campbell, Jr. and Anna K. Hell-Vocke
J Bone Joint Surg Am. 2003;85:409-420.

Without fusion group:

Overall Kyphosis-

decrease in the Cobb angle of 9°. The mean thoracic kyphosis in the group without fusion increased from 21° to 39°. There

Journal of Pediatric Orthopaedics B:
July 2009 - Volume 18 - Issue 4 - pp 197-203
doi: 10.1097/BPB.0b013e32832bf5e0
Spine

The Vertical Expandab… …nium Rib in the …

ICEOS 2009- CWSG (Vitale)

Hyperkyphosis pts

-avg start 70°

-reduced to mid 50° s

-final 75°

NOT FINAL FOLLOW UP JUST

42 mo

KYPHOSIS

In a pole by Dr. Sponseller on 11/20/2009 this very audience showed a "preponderance" for GROWING RODS

I HAVE ACTED CRAZY AT TIMES

BUT…

…THIS IS NOT ONE OF THEM

But VEPTR improves QOL…

Right?

WRONG

Health-Related Quality of Life in Children With Thoracic Insufficiency Syndrome

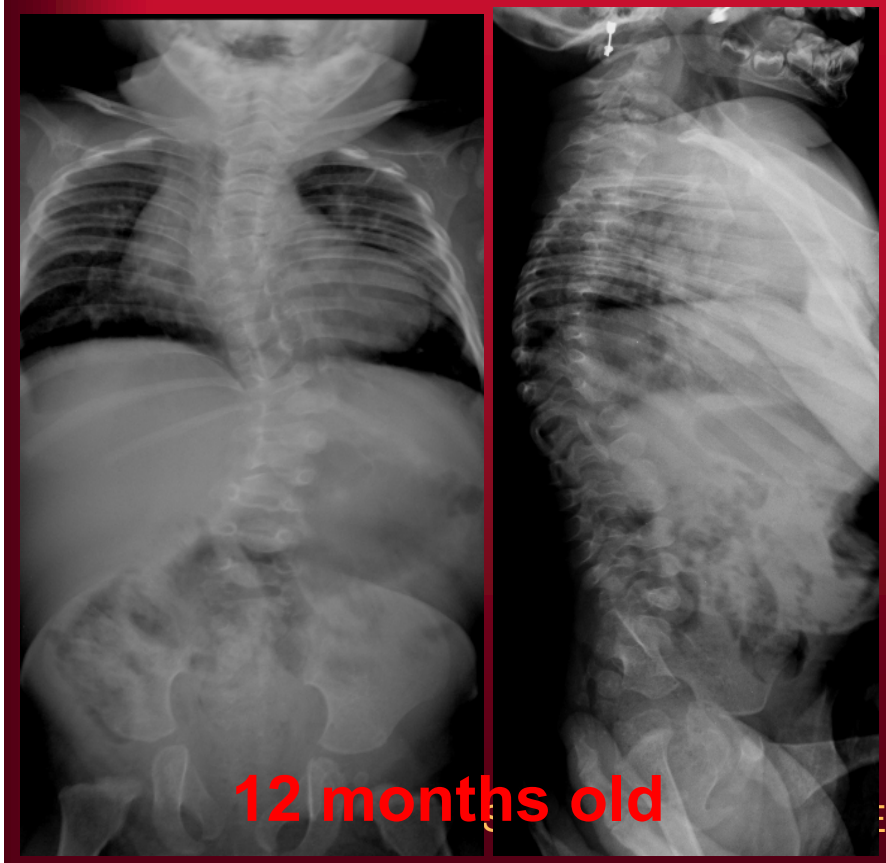
Michael G. Vitale, MD, MPH,†‡ Hiroko Matsumoto, MA,*†‡ David P. Roye Jr, MD,*† Jaime A. Gomez, MD,*† Randal R. Betz, MD,§ John B. Emans, MD,|| David L. Skaggs, MD,¶ John T. Smith, MD,# Kit M. Song, MD,** and Robert M. Campbell Jr, MD††*

(*J Pediatr Orthop* 2008;28:239–243)

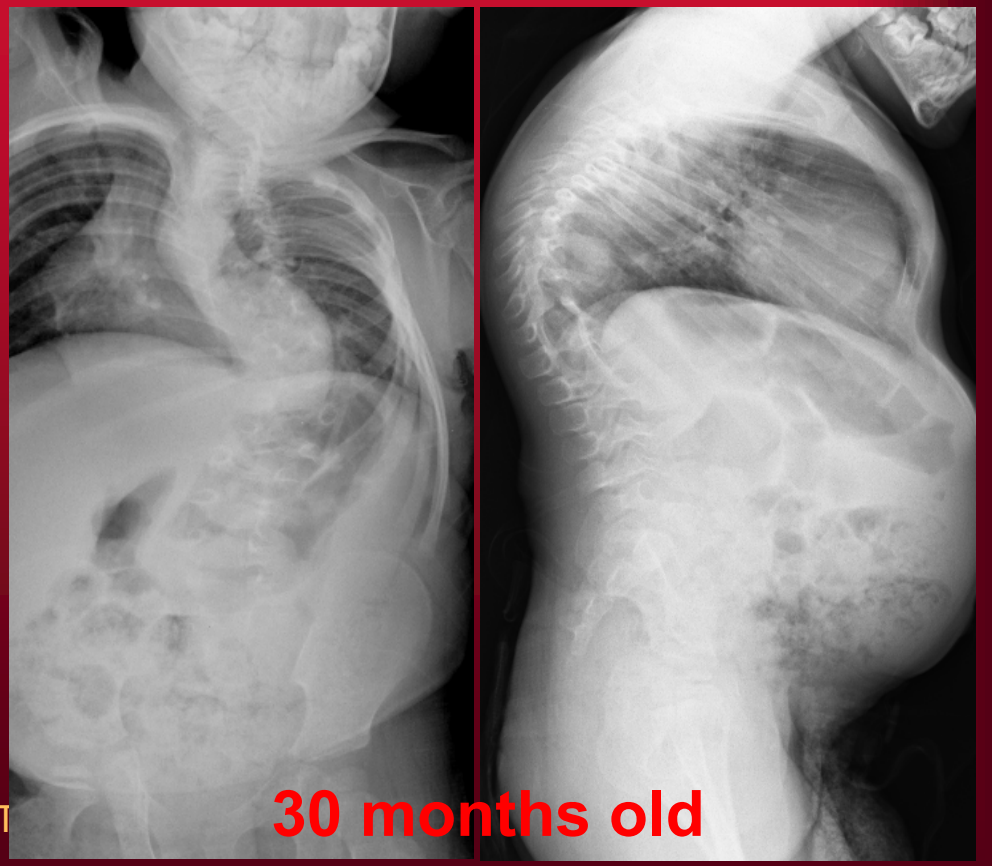
Conclusions: The children with TIS had lower physical scores and higher caregiver burden scores than healthy children. However, the scores in psychosocial domains were similar to those in healthy children. Our study demonstrated that QOL of children and burden of care in their parents remained the same after VEPTR instrumentation. Children's QOL seemed to be not affected by whether they had VEPTR-related complications or not.

History

Deformity progression at 12 and 30 months age

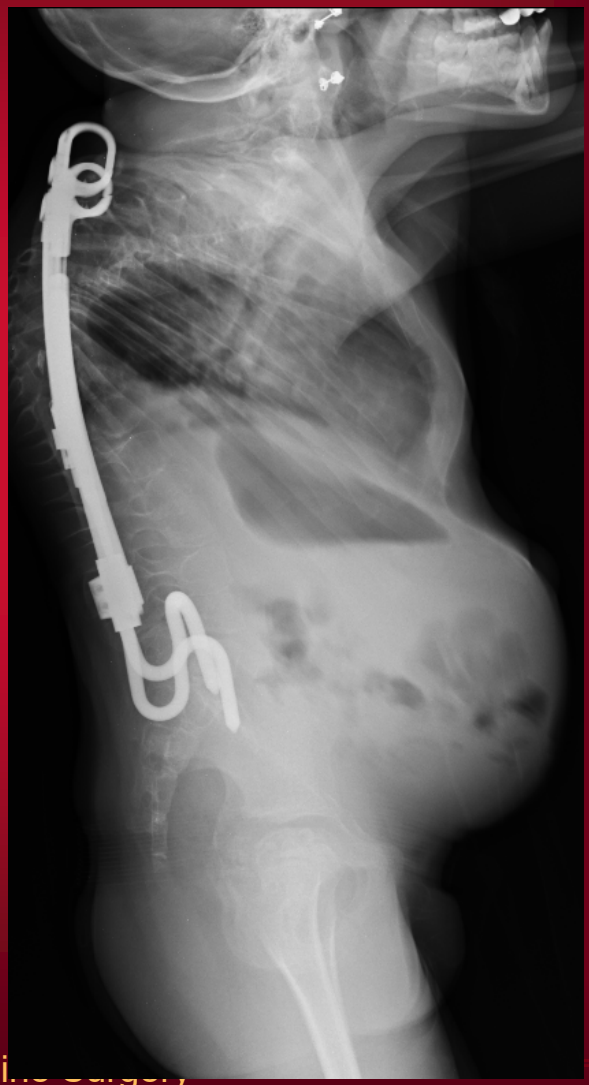


12 months old



30 months old

22 months post-op



Can’t Wait to show this one to Bob!!!

For the love of everything Lincoln, Uncle Bob wants to "give" you a VEPTR!

HOLY…DON'T do this to me!!!

apa Behrooz
s you with
G RODS!!!

MAC's RULE

Think different.