INDICATIONS: VCR & GR

- Limited
- Severe Localized Deformity in an EOS pt. where Apical Resection and Concomitant Cephalo-caudad Deformity Control is Needed
- Goal is to AVOID this Combined Treatment if Possible!
- Either VCR alone or GR alone, Delay tactics if possible!
- Prelim. HGTx can be very useful!

DISCLOSURES

Last 36 months

Consultant: DePuy Synthes Spine, K2M, Medtronic (monies donated to charitable foundation)
Royalties: Medtronic (major), Quality Medical Publishing (minor)
Philanthropic Research Funding (WU): Fox Family Foundation (Prospective Pediatric Spinal Deformity study), AOSpine & SRS (Scoli-RISK-1 study)
Fellowship Funding (WU): AOspine North America (funds/fellow year)
Editorial: Associate Editorial Board of Spine, Editorial Board of the Journal of Spinal Disoders & Techniques and Scoliosis, Professional Advisory Board of Backtalk and the Scoliosis Association, Associate Board of the Journal of Neurosurgery: Spine, The Spine Journal, Associate Editor for iscoliosis.com and spineuniverse.com, Deputy Editor of Spine Deformity

Post VCR: 217 CASES/ 42 < AGE 10

8. Predicting kyphosis correction during posterior-only vertebral column resection by the amount of spinal column shortening. *Spine Deform J (under rev 2013)*

CONG. TL SCOLIOSIS: S/P ASF/PSF

SHORT APICAL FUSION WITH PROGRESSION

REVISON PSF/T12 VCR

1 YEAR POSTOP AGE 7
VCR INDICATIONS: Angular Kyphosis (AK)

CONGENITAL KYPHOSCOLIOSIS

THIN POST FUSION MASS- BENDING IN KYPHOSIS!

PSF C6-L4/2 Level PVCR


25 PRIOR SURGERIES!

PRE & POST CLIN PICS
Halo-gravity Traction vs Surgical Release before Implantation of Expandable Spinal Devices: A Comparison of Results and Complications in Early-onset Spinal Deformity

- Between 1997 & 2009, 124 children with severe early-onset spinal deformity were treated with VEPTR or growing rods
- Before implantation of device, 12 underwent halo-gravity traction (HGT) & 13 had a spinal release (SR)
- Postop, SR resulted in better correction of scoliosis (46°) than HGT or no release (37° & 27° respectively) but HGT provided better correction of kyphosis (48°) than SR or no spinal release (27° & 9° respectively)
- Device complications occurred in 54% of participants in the HGT group, 75% in the SR group and 28% in the control group, and had a negative impact on final thoracic spine height

Caubet JF, Emans JB
*J Spinal Disord Tech.* 2011;24(2):99-104

HALO TRACTION
- 45 Pediatric pts. (>200 pts)
- Scoliosis:kyphosis >90°
- Ventura et al ICEOS 2014

STANDARD PROTOCOL
- Includes wheelchair, daily activities and treadmill as well as at night/Typically lasting for 4-6 weeks/or Longer (11 months longest!)

8Kg. HGTx For 6 Weeks
- 55% CORRECTION

END FUSIONS & GR
- 5 YEARS POST GR INSERTION/7 LENGTHENINGS
PRE & 5 Yrs POSTOP

INFANTILE ONSET IDIOPATHIC KPHOSCOLIOSIS

PROXIMAL IMPLANT TENTING

15# PREOP HALO-GRAVITY Tx

PRE & HGT CLINICAL PHOTOS

4 WEEKS OF HGTx AFTER IMPLANT REMOVAL

GR PLACEMENT AND GRL

PRE & POST CLINICAL PHOTOS

1 YEAR POSTOP
HALO-GRAVITY TRACTION IMPROVES KYPHOSIS CORRECTION FOR THOSE EARLY ONSET SCOLIOSIS PATIENTS UNDERGOING GROWING SPINE TECHNIQUES

Cohort Comparison of 15 EOS pts. Treated with Preliminary HGTx vs. 15 EOS pts without HGTx

The 2 groups did not differ in any Preop Xray parameter

Pts. Who underwent Prelim HGTx. Had Statistically improved Total Thoracic Kyphosis (42 deg vs. 55 deg) and T5-T12 Kyphosis (27 deg vs 33 deg) vs. those without Prelim. HGTx. Following application of their Growing device

No Complications attributed to HGTx noted

Sugrue, Lenke et al IMAST 2014

SEVERE CONGENTIAL THORACIC LORDOSCOLIOSIS

"ILIAC-AXILLARY" DEFORMITY

PREOP CLINICAL PHOTOS

7 MOS HALO-GRAVITY Tx

S/P GRL x3

TETHERED CORD RELEASE WITH HALO APPLICATION

PRE & POST CLINICAL PHOTOS
CONGENITAL KS AGE 6

S/P TETHERED CORD RELEASE

6 WKs HALO-GRAVITY Tx

T12 VCR/GR T1-L3

PRE & POSTOP CLINICAL PHOTOS

TAKE HOME MESSAGES

- Use of VCR in EOS is a Viable Option for Severe Angular Deformities +/- Myelopathy, Those Circumferentially Fused, and for Salvage Procedures
- Consider HGTx for Preop Correction of Severe EOS Deformities as a potential means to Avoid a VCR, and in Preperation for a Growth Modulation Technique
- Use of VCR along with Growth Modulation is viable but unusual Technique at our center
THANK YOU!

Washington University Medical Center

St. Louis Children's Hospital
Barnes-Jewish Hospital

www.spinal-deformity-surgeon.com