Efficacy of VEPTR after convex hemiepiphysiodesis in congenital scoliosis- Three cases

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Abstract:

Many non-fusion instrumentation techniques were shown to be effective in controlling the progression of spinal deformity in young children, and maintaining the growth potential of the immature spine. Of these, the Vertical Expandable Prosthetic Titanium Rib (VEPTR) has been approved by the FDA in the treatment of Thoracic Insufficincy Syndrome (TIS) in skeletally immature patients. The aim of this presentation is to demonstrate the effect of expansion thoracoplasty and implantation of a VEPTR in three children with progressive spinal deformity despite previous convex- sided hemiepiphysiodesis. Three patients with progressive congenital thoracic scoliosis, who had previously undergone anterior and posterior convex hemiepiphysiodesis of the thoracic spine at the age of 17 to 36 months, were treated with expansion thoracoplasty of the concavity using the VEPTR device at the age of 5 to 9 years. They were evaluated after a minimum of two years in order to assess the effect of the procedure on the spinal deformity, spinal growth, and chest wall expansion. At the latest follow-up, the Cobb angle of the fused segments, the length of the thoracic spine from T1 o T12, and the Space Available for the Lungs (SAL) improved in all three patients. Detailed results are listed in the next table. Thoracic spinal height increased from 11.25 to 15.68 cm in patient 1, from 15.40 to 17.15 cm in patient 2, and from 16.35 to 18.25 cm in patient 3. Sagittal Balance improved from +4.5 cm to neutral in patient 1, and from +6 cm to +1 cm in patient 2, but deteriorated from -0.5 cm to -1.5 cm in patient 3. Expansion Thoracoplasty and VEPTR implantation seem to be effective in rigid congenital scoliosis even after prior convex- sided hemiepiphysiodesis.

Keywords:

Congenital Scoliosis, Convex Hemiepiphysiodesis, Expansion Thoracoplasty

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