

Orthopedics Abstracts

Title: USE OF VERTICAL EXPANDABLE PROSTHETIC RIB FOR MANAGEMENT OF SPINAL DEFORMITY IN NON- AMBULATORY SPINA BIFIDA PATIENT

Presenting Author: Randal Betz, Hospitl La Concepcion

Affiliations:

Hospital La Concepcion
Children Hospital of Philadelphia
University of Utah
Shriners Hospital , Philadelphia Unit

Background: Non-ambulatory children with spina bifida are most likely to develop scoliosis. The dysplastic anatomy of the chest wall in a paralytic child secondarily affects other organ systems. Thoracic insufficiency is due to increased sagittal plane deformity as the diaphragm invades the pulmonary cavity. Symptoms of thoracic insufficiency may go unnoticed due to the child's limited physical activities.

The purpose of this report is to evaluate the patients with spina bifida and spinal deformity treated with the Vertical Expandable Prosthetic Titanium Rib (VEPTR) and included in the FDA Request for Approval of Humanitarian Device Exemption for the Vertical Expandable Prosthetic Titanium Rib.

Method: The FDA report includes 247 patients with surgeries performed by members of the Chest Wall Deformity Study Group. Twenty patients were myelodysplastic none ambulatory. Data from remaining 16 patients with adequate follow up was extracted from the FDA report and analyzed.

Results: The average age at the first surgery was 5 years; average follow up was 47.3 months. In nine patients the Cobb angle was decreased an average of 14.4 degrees; in five patients increased 12.6 degrees. Thoracic spinal height was increased in twelve patients an average of 3.2 cm. and lost in two patients 0.8 cm. Twelve patients improved and two patients deteriorated ventilatory function. Implant lengthening was done on the average of every sixth months and device exchange every 30 months. Complications in five patients were due to the severity of the decreased pulmonary capacity. Implant failure and skin breakdown occurred in six patients.

Conclusion: The rate of complications reported in this group of patient's lies within the range reported for spinal fusion using standard approaches. The number of surgical procedures increases due to the need for expanding the implants as the child grows. The advantages of the VEPTR are: surgical incisions are away from the midline avoiding the midline scarred tissue and allowing growth of the spinal column with improved space available for the lung.