

Table 1. Demographic and surgical information

	Complications (n=16 patients)	No Complications (n=33 patients)	p- value
Gender (M/F)	6/10	16/17	0.48
Average Follow Up (years)	5.31 ± 2.32	5.41 ± 2.23	0.89
Average Age at VEPTR Implant (years)	2.74 ± 3.26	2.08 ± 0.96	0.51
Etiology			
<i>Neuromuscular</i>	4	10	0.62
<i>Syndromic</i>	3	3	
<i>Congenital</i>	9	20	
Average BMI (kg/m ²)	18.59 ± 2.26	17.96 ± 3.91	0.52
Average Anesthesia Time of Multiple Procedure Surgery (hours)	4.12 ± 1.56	3.63 ± 1.30	0.35
Average Total Surgical Time of Multiple Procedure Surgery (hours)	2.03 ± 1.06	2.08 ± 1.03	0.88
Average Number of Rib-based Implant Procedures	8.38 ± 4.29	9.12 ± 4.57	0.58
Number of Times Patient had Two Procedures Under the Same Anesthetic	2.31 ± 1.21	1.91 ± 1.67	0.34
	Surgeries Resulting in Complications (n=16 surgeries)	Surgeries Resulting in No Complications (n=84 surgeries)	p- value
Surgical Department			
<i>Otolaryngology</i>	9	56	0.139
<i>Non-spine Orthopaedics</i>	3	10	
<i>General Surgery</i>	4	8	
<i>Other</i>	1	19	
Type or Rib-based Implant Procedure			
<i>Expansion</i>	14	72	0.737
<i>Revision</i>	1	10	
<i>Insertion</i>	1	9	

Orthopaedics and General Surgery. Microlaryngoscopy and bronchoscopy was performed most often (24 surgeries), followed by cerumen removal under anesthesia (22 surgeries) and ear tube insertion (19 surgeries). 16 patients developed a post-op complication including an infection, wound drainage, and device breakage. 8 patients required surgical debridement, 2 required implant revisions, and 6 were treated with antibiotics. Between patients with and without complications, demographic and surgical information including anesthesia, surgical department, surgical time of only the insertion/revision/expansion procedure and surgical time of only non-growing instrumentation procedure were not associated with risk of complication (Table 1).

Conclusion: Having other surgical services operate in conjunction with rib-based implant surgery does not increase the chances of complication.

Author Affiliations and Disclosures: Carina Lott, The Childrens Hospital of Philadelphia; Catherine Qiu The Childrens Hospital of Philadelphia, Patrick Cahill, The Childrens Hospital of Philadelphia, AAOS (Advisory Board or Panel), Journal of Bone and Joint Surgery (Advisory Board or Panel), Pediatric Orthopaedic Society of North America (Advisory Board or Panel), Scoliosis Research Society (Advisory Board or Panel), Spine Deformity (Advisory Board or Panel), Biogen, Inc. (Consultant), NuVasive, Inc. (Consultant), Setting Scoliosis Straight Foundation (Grants/Research

Support), Childrens Spine Study Group (Grants/Research Support); Jason Anari, The Childrens Hospital of Philadelphia

Paper #19

Evolving Trends in the Inpatient Care of Early Onset Scoliosis

Robert Murphy, William Barfield, Corinne Corrigan, Jason Anari, Jeffery Sawyer, Pediatric Spine Study Group



Summary: Despite an increase in the number of early onset scoliosis patients receiving inpatient care over the past 10 years, there has not been any substantial improvement in patient length of stay or rates of medical complications or infection.

Hypothesis: We hypothesized that the number of patients undergoing treatment and the associated hospital charges would demonstrate an increase over the past 10 years, while the average length of stay and rate of complications would decrease.

Introduction: The treatment of patients with early onset scoliosis is a rapidly advancing and evolving field. We sought to describe changes in patient, hospital and financial metrics for this unique population over the past 10 years.

Methods: The Pediatric Health Information System (PHIS), a national inpatient-only database, was queried for cases of patients aged 0-10 with an associated diagnosis of scoliosis from 2009-2018. Number of cases, average length of stay, rate of complications and hospital based charges were queried for all participating facilities with available information. Data analysis was conducted with IBM SPSS Statistics-Verison 24 (Armonk, NY). Independent t-tests were used to compare groups.

Results: For available data from 50 participating childrens hospitals, there was an increase in the mean number of patients treated at each hospital each year (2009: 58, 2018: 75; p=0.012). Average length of stay was similar across all years (2009: 7.9 days, 2018: 8.1 days; p=0.83). While surgical complication rates were unchanged over the study period (2009: 17%, 2018: 17%; p=0.95), there was a significant increase in the rates of medical complications (2009: 0.36%, 2018: 1.4%; p=0.004) and infection (2009: 39%, 2018: 47%; p=0.007). There was no change in rates of mortality (2009:1.5%, 2018: 1.2%; p=0.60). Hospital based charges almost doubled during the study period (2009: \$80,753, 2018: \$145,311, p=0.001).

Conclusion: The number of early onset scoliosis patients receiving inpatient care is increasing significantly over the past 10 years. However, there is room to improve the value and cost of care provided, as hospital based charges have increased over two-fold, without any substantial improvement in patient length of stay or rates of medical complications or infection.

Author Affiliations and Disclosures: Robert Murphy, Medical University of South Carolina; William Barfield, Corinne Corrigan, Medical University of South Carolina; Jason Anari, The Childrens Hospital of Philadelphia; Jeffery Sawyer, Campbell Clinic Orthopaedic, AAOS (Advisory Board or Panel), Campbell Foundation (Advisory Board or Panel), Pediatric Orthopaedic Society of North America (Advisory Board or Panel), Pediatric Orthopaedic Society of North America (Advisory Board or Panel), Pediatric Orthopedic Society of North America (Advisory Board or Panel), Medicea (Grants/Research Support), Medicea Spine (Grants/Research Support), Mosby (Other Financial or Material Support (royalties, patents, etc), Wolters Kluwer Health (Other Financial or Material Support (royalties, patents, etc), Wolters Kluwer Health - Lippincott Williams & Wilkins (Other Financial or Material Support (royalties, patents, etc), DePuy (Speaker), DePuy, A Johnson & Johnson Company (Speaker), Nuvasive (Speaker); Pediatric Spine Study Group, Growing Spine Foundation (Grants/Research Support), Childrens Spine Foundation (Grants/Research Support), POSNA (Grants/Research Support), FDA (Grants/Research Support), NuVasive (Grants/Research Support), DePuy Synthes Spine (Grants/Research Support)