

### Abstract

**Objective:** Investigate effect of using 2 attending surgeons on operative and anesthesia times and estimated blood loss in patients with neuromuscular scoliosis undergoing posterior spinal fusion surgery

**Methods:** Retrospective chart review of pediatric patients with neuromuscular scoliosis who underwent posterior spinal fusion

**Results from 70 patients:**

- Significantly shorter anesthesia and operative times for 2 vs. 1 surgeon group
- No significant difference in estimated blood loss between groups

**Significance:**

Patients with neuromuscular scoliosis may benefit from a 2 attending surgeon approach to posterior spinal fusion.

### Introduction

- Patients with neuromuscular scoliosis often need posterior spinal fusion surgery.
- Unfortunately, complication rates are high, and are exacerbated by prolonged operative/anesthesia time and blood loss.
- This study investigated the effect of using a 2 surgeon approach on blood loss and operative/anesthesia time in children with neuromuscular scoliosis undergoing posterior spinal fusion surgery.

### Methods

- Retrospective chart review of 70 children with neuromuscular scoliosis who underwent posterior spinal fusion at Phoenix Children's Hospital 2011- 2012
- Two-tailed t-tests assuming unequal variances examined differences in total operative/anesthesia time and estimated blood loss for 2 vs. 1 surgeon groups
- Subgroup analyses were performed for patients based on severity of presentation.

### Results

- Significantly shorter operative and anesthesia times for the 2 vs. 1 surgeon groups
- No significant difference in estimated blood loss between groups
- Same pattern of results for subgroup analyses comparing 2 vs. 1 surgeon groups with similar pre-operative severity
- See Table 1 for detailed results.

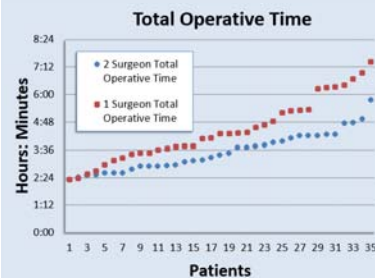


Figure 1: Total Operative Time. Total operative time for all patients in the 1 and 2 surgeon groups (hrs:mins). The 1 surgeon group (red) had consistently longer operative times than the 2 surgeon group (blue).

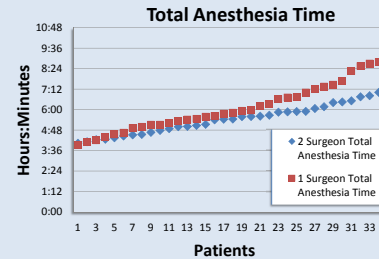


Figure 2: Total Anesthesia Time. Total anesthesia time for all patients in the 1 and 2 surgeon groups in hours and minutes. The 1 surgeon group (red) had consistently longer total anesthesia times than the 2 surgeon group (blue).

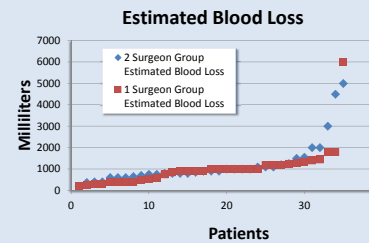


Figure 3: Estimated Blood Loss. Estimated blood loss for all patients in the 1 and 2 surgeon groups in milliliters. There was no significant difference in blood loss between the 1 surgeon group (red) and the 2 surgeon group (blue).

### Discussion and Conclusions

- The 2 surgeon approach significantly reduced operative and anesthesia times.
- The 2 surgeon approach had no significant effect on estimated blood loss.
- The pattern of results held for subgroup analyses of groups with similar severity of presentation.
- Additional studies are needed to determine modifiable risk factors for excessive blood loss in neuromuscular scoliosis patients and to investigate the effect of using a 2 surgeon approach on specific complications.
- Using a 2 attending surgeon approach for patients with neuromuscular scoliosis undergoing posterior spinal fusion may be a valuable strategy to improve patient outcomes.

### Acknowledgements

I wish to thank Drs. Wade Shrader and Lee Segal for their guidance and mentorship.

	2 Surgeon				1 Surgeon				Two tailed t-tests		
	M	SD	n	Range	M	SD	n	Range	t	df	p
Total Operative Time (hrs:mins)	3:30	0:49	35	2:19-5:45	4:26	1:22	35	2:18-7:25	-3.44	56	.001**
Total Anesthesia Time (hrs:mins)	5:28	0:55	35	4:02-7:50	6:09	1:28	35	3:56-9:44	-2.34	57	.02'
Estimated Blood Loss (mls)	1201	1033	35	200-5000	1042	959	35	225-6000	.671	68	.46

Table 1: Operative Time, Anesthesia Time, and Estimated Blood Loss for Patients in the 2 Surgeon and 1 Surgeon Groups. M = mean, SD = standard deviation, \* = p < .05, \*\* = p < .01