

Younger Surgeons Have Higher Complication Rates in Spinal Deformity. How Can they Optimize the Outcomes?

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INTRODUCTION:

Adult spinal deformity surgery is a field that requires significant experience to be able to master. Even after fellowship, surgeons without independent experience may have difficulty with long fusions that require meticulous planning and execution. This study explores differences in cases between those with significant independent practice experience versus those new to it.

METHODS:

There were a total of 611 patients who underwent thoracolumbar fusion with 5+ levels fused. Patients were reviewed for primary surgeon, demographics, operative characteristics, and postoperative course. Experience after fellowship was quantified by the difference between year of surgery and year the surgeon graduated fellowship. Surgeons within the bottom 25th percentile for overall experience were grouped (less than 9-years) and compared to surgeons with more experience(9+ years). Independent-samples T-test and Chi-square analysis were performed for the cohort, significance set to $p < 0.05$.

RESULTS:

Average surgeon experience was 16 ± 9 years. Surgeons with 9+ years experience ($n=460$) were more likely to operate on older patients (60.8 ± 16.3 years vs. 57.1 ± 18.1 years, $p=0.02$) compared to younger surgeons ($n=151$). Operatively, younger surgeons were more likely to have higher estimated blood loss (EBL, 2082 ± 1669 ml vs. 1628 ± 1458 ml, $p=0.002$), overall intraoperative complications (25.8% vs. 12.8%, $p=0.001$), and delayed extubation (11.9% vs. 6.1%, $p=0.02$) compared to older surgeons. Patients with younger surgeons were also more likely to suffer a postoperative complication (45.7% vs. 34.6%, $p=0.014$), postoperative ileus (6.6% vs. 3.0%, $p=0.05$), and have a longer length of stay (LOS, 8.5 ± 6.5 vs. 7.6 ± 4.2 days, $p=0.04$) compared to older surgeons.

DISCUSSION AND CONCLUSION:

Primary surgeons with 9+ years post-fellowship experience demonstrate improved rates of blood loss and complications after spine deformity surgery. The topic of independent practice experience in spinal deformity should be looked at in detail as to close this experience gap.

	Primary surgeon years exp	less than 9years	9+ years	
	N= 611	n=151	n=460	
Demographics	Gender (%female)	63.60%	66.50%	0.51
	Age	57.1 ± 18.1	60.8 ± 16.3	0.02
	BMI	27.8 ± 6.5	28.8 ± 6.5	0.74
Operative characteristics	levels fused	10.5 ± 3.2	10.8 ± 3.4	0.29
	Operative time	459.2 ± 150.9	446.1 ± 152.5	0.7
	EBL	2082 ± 1669	1628 ± 1458	0.002
	overall Intraoperative complication	25.80%	12.80%	0.001
	Neuromonitoring changes	4.00%	3.00%	0.58
	Incidental Durotomy	11%	7.40%	0.14
	Delayed extubation	11.90%	6.10%	0.02
Post-operative course	LOS	8.5 ± 6.5	7.6 ± 4.2	0.038
	overall post-operative complications	45.70%	34.60%	0.014
	Cardiac complication	12.60%	12.60%	0.99
	post-operative ileus	6.60%	3.00%	0.049
	Neurologic complication	6.60%	7.20%	0.82
	DVT/PE	4.00%	1.50%	0.07
	Urinary complication	7.30%	7.40%	0.97
	Pulmonary complication	8.60%	5.90%	0.24
	RTO 90 days	4.60%	5.70%	0.63