

# Return to Surgery Does Not Worsen Health Related Quality of Life (HRQOL) or Patient Satisfaction at 2 Year: An Analysis of Incidence and Risk Factors for Secondary Surgery in Adult Spinal Deformity (ASD)

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2.7

1.8

## **Learning Objectives**

By the conclusion of this session, participants should be able to: (1) Understand that surgery for adult spinal deformity (ASD) is associated with high complication rates, with some requiring additional surgery; (2) Appreciate that wound infection, implant failure and PJK are high risk complications for needing additional surgery

### Introduction

Surgery for ASD is associated with high complications, some requiring secondary surgery (SS). Complications resulting in SS may be due to unalterable patient risk factors. The purpose of this study was to compare profiles and 2-year outcomes for ASD patients undergoing SS versus patients that did not have SS (NOSS), and to identify high risk complications associated with SS.

## **Methods**

This was a multi-center, prospective analysis of consecutive ASD patients (age=18 years and scoliosis =20°, sagittal vertical axis =5cm, pelvic tilt =25°, or thoracic kyphosis >60°). Inclusion criteria were:

- Spinal fusion of at least 4 levels for ASD
- Complete data
- Minimum two-year follow-up.

Patients were devided into SS and NOSS. Risk factors for SS, complications, and timing of SS were evaluated. Baseline and 2-year postop HRQOL (SRS-22r, SF-36, ODI) were analyzed.

#### Results

141 of 189 patients (75%) met inclusion criteria. Mean follow up=35.8 months (range=24.1-47.9). Two year SS incidence was 21% (n=29). SS had similar mean age, BMI, smoking status, ASA grade, Charlson comorbidity index, deformity, deformity correction, EBL, OR time, posterior fusion levels and length of hospital stay as NOSS (n=112; p>0.05). Of 18 complications, wound infection (relative risk=8.7), implant failure (relative risk=4.2) and proximal junctional kyphosis (PJK; relative risk=2.6) were associated with SS vs. NOSS (p<0.05). Timing of SS following index surgery was greatest at less than 3 months (37.4%) and 12 to 24 months (37.4%; p<0.05). Two year HRQOL values were similar for SS when compared to NOSS, including improvement in ODI (13.3 vs. 15.3), SRS-22r total (0.7 vs. 0.9), SF-36 PCS (5.8 vs. 9.1) and final SRS-22r satisfaction scores (4.1 vs. 4.3), respectively (p>0.05).

#### **Conclusions**

Comparison of SS versus NOSS in consecutive ASD patients demonstrated no single patient variable predictive for SS. Wound infection, implant failure and PJK are high risk complications for SS. SS did not have a detrimental impact on 2-year HRQOL or satisfaction versus NOSS. Future research should evaluate high risk complications for SS and prevention techniques.

Incidence an  Complication Requiring Revision Surgery (high risk complication)	Occurrence requiring SS (n; % of Total)(Total=36)	Occurrence NOSS	Total Occurrences (n; % of Total) (Total=78)	P value	Relative Risk of Complication requiring Reoperation
Adjacent Segment Degeneration	1 (2.8%)	1	2 (2.6%)	N/S	2.7
Coronal Imbalance	2 (5.6%)	2	4 (5.1%)	N/S	2.7
Dehiscence	2 (5.6%)	1	3 (3.8%)	0.0350	3.6
Distal Junctional Kyphosis	1 (2.8%)	0	1 (1.3%)	0.0394	7.2
Deep Wound Infection	7 (19.4%)	0	7 (9.0%)	< 0.0001	8.7
Vascular Tear	1 (2.8%)	0	1 (1.3%)	0.0394	7.2
Hook Dislodgement	1 (2.8%)	0	1 (1.3%)	0.0394	5.3
Hematoma	1 (2.8%)	1	2 (2.6%)	N/S	2.7
Nerve Root Injury	1 (2.8%)	3	4 (5.1%)	N/S	1.3
Painful Implant	2 (5.6%)	3	5 (6.4%)	N/S	2.2
Proximal Junctional Kyphosis	5 (14.7%)	6	11 (14.1%)	0.0223	2.6
Pleural Effusion	1 (2.8%)	8	9 (11.5%)	N/S	0.6
Nonunion/Pseudoarthrosis	2 (5.6%)	2	4 (5.1%)	N/S	2.7
Radiculopathy	2 (5.6%)	10	12 (15.4%)	N/S	0.9
Rod Breakage	3 (8 8%)	1	4 (5.1%)	0.0041	4.2

Incidence and relative risk for complications requiring second surgery.

1 (2.8%)

crew/Bone Interface Loosening