Adult Spinal Deformity treated with minimally invasive techniques: 2-year multicenter clinical and radiographic outcomes study comparing circumferential MIS and hybrid surgery.

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Introduction

Adult spinal deformity (ASD) surgery has been shown to lead to improved clinical and radiographic outcomes. Despite historic good results, there is significant morbidity associated with the open approaches. The aim of this study is to evaluate 2 year outcomes of ASD patients treated with minimally invasive surgery (MIS) techniques.

Methods

Multicenter, retrospective review of prospectively collected data was performed. Radiographic, clinical and health related quality of life (HRQOL) measures were collected and analyzed for significance. Patients were categorized by approach: complete MIS (cMIS- posterior MIS screw placement and MIS lateral or MIS posterior with MIS TLIF), and Hybrid (MIS lateral with open posterior). All unpaired comparative analyses were done using the Mann Whitney U, and Wilcoxon Signed Rank for paired tests. Correlations were determined by Chi-squared test.

Results

118 pts identified with 2 year follow up. 53 were MIS and 65 HYB. Baseline and 2 year radiographic parameters were similar between groups and only the change in Cobb was greater among HYB (11.9° vs 18.8°; p=0.013) Table 1. Improvements in HRQoL were significant though equal , in both groups at 2 years after surgery. 53 (44.9%) patients had a total of 79 complications. 40 (33.9%) had a major complication and 18 (15.3%) had a minor. HYB had statistically higher minor complications (14/65) than MIS (4/53), (p=0.04). Reoperation was 23.7% (28/118) at 2 years [9/53 MIS (17%), 19/65 HYB (29.2%); p>0.05]. Neither the occurrence of a complication or reoperation had negative effect on HRQOL.

Conclusions

Minimally invasive surgery can be applied effectively to augment an open operation (HYB) or be utilized circumferentially to treat ASD. We have demonstrated the sustainability of these results at 2 year follow up with satisfactory improvement in HRQOL and radiographic parameters. Complications and reoperation rates are comparable with traditional techniques with no significant impact on HRQOL.

Learning Objectives

To access the amount of correction in treating adult spinal deformity using minimally invasive and hybrid techniques.