Do MIS deformity interventions result in similar reductions of disability when compared with traditional open spinal deformity correction at 1 and 2 Years? A Propensity Matched Cohort Analysis

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Introduction

Corrective surgery for adult spinal deformity (ADS) provides long term benefits but often at the cost of significant perioperative morbidity. The use of minimally invasive surgery (MIS) for correction of ADS has been theorized to lower the perioperative morbidity when compared to traditional open surgical approaches. However, there is concern that patients treated with MIS techniques will not achieve the same level of clinical improvement as those treated with traditional open surgery approaches. This study compared patients treated with MIS (MIS lateral or transforaminal interbody fusion (LIF or TLIF) with percutaneous pedicle screw fixation), hybrid techniques (HYB) (MIS LIF or TLIF in combination with open posterior pedicle screw fixation), and open techniques to assess ODI at 1 and 2 years.

Methods

All cases were reviewed retrospectively. Inclusion criteria included: age>18yr, ASD, min 2yr follow-up. Patients treated for adult spinal deformity using either less invasive or open surgical approaches were propensity matched by preop SVA, baseline ODI, and by number of fused levels. Patients' results were compared at 1 and 2 years postop.

Results

40 patients were propensity matched into each group for a total number of 120. Mean number of levels fused and SVA was HYB = 5.9, 37.7mm, MIS = 3.7, 30.7mm, OPEN = 6.0, 47.5 mm. At baseline, ODI was: HYB=69.6, MIS=49.7, Open=49.6. At postop 1 year patients reported significantly improved ODI (P<0.01 when compared to baseline) (HYB=37.3, MIS=26.8, Open=35.6) (between groups P>0.05). At 2 years the patients maintained improvement in disability (HYB=37.5, SVA 43.6, MIS 28.0, SVA 34.5, and Open 30.6, SVA 33.5).

Learning Objectives

By the conclusion participants should be able to discuss the similar reduction in disability whether patients were treated with minimally invasive techniques or traditional open.

Conclusions

Patients treated with MIS techniques can achieve similar reductions in disability to those treated with open deformity surgery. When matched by SVA, number of levels and baseline ODI, there was no statistically significant difference in disability at 1 and 2 years after surgery.