



The MISDEF2 Algorithm: An Updated Algorithm for Patient Selection in Minimally Invasive Deformity Surgery

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Introduction

Minimally invasive surgery (MIS) can be used as an alternative or adjunct to traditional open techniques for the treatment of patients with adult spinal deformity. Recent advances in MIS techniques including advanced anterior approaches have increased the range of candidates for MIS deformity surgery. The minimally invasive spinal deformity surgery (MISDEF2) algorithm was created to provide an updated framework for decision-making when considering MIS techniques in ASD correction.

Methods

A modified algorithm that incorporates a patient's preoperative radiographic parameters and leads to one of four general plans ranging from basic to advanced MIS techniques to open deformity surgery with osteotomies was developed. The authors surveyed 14 fellowship-trained spine surgeons experienced with spinal deformity surgery to validate the algorithm using a set of 24 cases to establish interobserver reliability. They then resurveyed the same surgeons 2 months later with the same cases presented in a different sequence to establish intraobserver reliability. Responses were collected and analyzed. Correlation values were determined using SPSS software.

Results

Over a 3-month period, 14 fellowship trained deformity surgeons completed the surveys. Responses for MISDEF 2 algorithm case review demonstrated an interobserver kappa of 0.85 for the first round of surveys and an interobserver kappa of 0.82 for the second round of surveys, consistent with substantial agreement. In at least 7 cases there was perfect agreement between the reviewing surgeons. The mean intraobserver kappa for the 2 surveys was 0.8.

Conclusions

The MISDEF2 algorithm was found to have substantial inter- and intraobserver agreement. The MISDEF2 algorithm incorporates recent advances in MIS surgery. The use of the MISDEF2 algorithm provides reliable guidance for surgeons who are considering either an MIS or an open approach for the treatment of patients with adult spinal deformity.

Learning Objectives

By the conclusion of this session participants should have a rational framework for approaching spinal deformity while considering less invasive techniques

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