Does a dual attending surgeon strategy confer additional benefit for posterior selective thoracic fusion in Lenke 1 and 2 adolescent idiopathic scoliosis (AIS)? A prospective propensity matching score analysis

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Abstract

BACKGROUND CONTEXT: With an increased cost of adolescent idiopathic scoliosis (AIS) surgery over the past 10 years, improvement of patient safety and optimization of the surgical management of AIS has become an important need. A dual attending surgeon strategy resulted in reduction of blood loss and complication rate.

PURPOSE: This study aimed to investigate the perioperative outcome of posterior selective thoracic fusion in Lenke 1 and 2 AIS patients comparing a single versus a dual attending surgeon strategy.

STUDY DESIGN: A prospective cohort study was carried out.

PATIENT SAMPLE: The study sample comprised 60 patients.

OUTCOME MEASURE: Operative duration, blood loss, postoperative hemoglobin, need for transfusion, morphine usage, and duration of hospital stay were the outcome measures.

METHODS: A total of 116 patients who underwent posterior selective thoracic fusion from two centers were prospectively recruited. The patients were grouped into Group 1 (single surgeon) and Group 2 (two surgeons). One-to-one matching analysis using "propensity score-matched cohort patient sampling method" was done for age, gender, height, weight, preoperative Cobb angle, member of fusion level, and Lenke classification. The outcome measured included operative duration, blood loss, postoperative hemoglobin, need for transfusion, morphine usage, and duration of hospital stay. This study was self-funded with no conflict of interest.

RESULTS: From 16 patients who were operated by the two surgeons (Group 2), 30 patients were matched with 30 patients who were operated by a single surgeon (Group 1). Group 1 (164.6±25.7 min) has a significantly shorter operation duration (p<0.001) compared with Group 2 (257.3±51.4 min). The total blood loss was significantly more (p=0.099) in Group 1 (125.7±421.5 mL) compared with Group 2 (039.7±518.4 mL). There were seven patients (23.3%) in Group 1 who received allogenic blood transfusion (p<0.05). The morphine usage and average hospital stay were significantly lower in Group 2, 22.4±21.7 mg and 3.4±0.7 days, respectively (p<0.05). In Group 1, there was one patient who developed a superficial wound infection. No other major complications were noted.

CONCLUSIONS: A dual attending surgeon strategy was superior to a single surgeon strategy in posterior selective thoracic fusion in Lenke 1 and 2 AIS patients and will lead to a faster operation, reduced intraoperative blood loss, reduced risk of allogenic transfusion, reduced morphine requirement, and shorter hospital stay.

Keywords:
Adolescent idiopathic scoliosis, Dual attending surgeon, Posterior spinal fusion, Selective thoracic fusion, Lenke 1, Lenke 2

Introduction

In the latest Scoliosis Research Society morbidity and mortality review, the overall complication rate for corrective surgery for adolescent idiopathic scoliosis (AIS) was 6.3% with 0.5% risk of superficial infection and 0.8% risk of deep wound infection [1]. However, the non-neurologic complication of...