Prospective Multicenter Assessment of Complication Rates Associated with Adult Cervical Deformity Surgery in 133 Patients with Minimum 1-Year Follow-Up

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Introduction

• Adult cervical deformity (ACD) can be associated with substantial pain and disability

• In contrast to thoracolumbar deformities, there is less research for ACD with regards to classification, treatment, and complications

• Few reports have focused on ACD surgery complications


Methods

• Prospective multicenter ISSG database of consecutive ACD patients was reviewed
  • Database enrollment required at least 1 of the following: cervical kyphosis >10°, cervical scoliosis >10°, C2-7 sagittal vertical axis >4cm, or chin-brow vertical angle >25°

• Operatively treated patients with minimum 1-year follow-up were included

• Perioperative (<30 days), early (30-90 days), and delayed (>90 days) complications were analyzed
Demographics and Surgical Data

• Of 167 patients, 133 (80%) had minimum 1-year follow-up (mean f/u duration=1.8 years)

• Most common diagnoses were degenerative (45%) and iatrogenic (17%) kyphosis

• Study Cohort
  • Mean age 62 years
  • Almost 40% were active/past smokers
  • 17% had osteoporosis
  • 84% had at least 1 comorbidity
  • Baseline NDI=47 and mJOA=13.6

• Surgical approach was anterior-only (18%), posterior-only (47%), and combined (35%)
Associated Surgical Complications

- A total of 133 complications were reported (54 minor/79 major)

- 74 (56%) patients had at least one complication

- Most common complications included dysphagia (12%), distal junctional kyphosis (9%), respiratory failure (6%), deep wound infection (6%), new nerve root motor deficit (6%), and new sensory nerve root deficit (5%)

- Two deaths (3%) occurred related to surgery (both cardiopulmonary)
Associated Surgical Complications

• 23 reoperations were performed in 20 (17%) patients

• Most common reop indications were deep wound infection (n=8), distal junctional kyphosis (n=7), and neurological deficit (n=6)

• Although anterior-only procedures had trends toward lower overall (42%) and major complications (21%), these rates were not significantly different from posterior-only (57%/33%) or combined (61%/37%) approaches (p=0.29/p=0.38)
Conclusions

• This study was a retrospective review of a prospective multicenter ISSG registry of consecutive ACD surgical cases (min 1-yr f/u).

• The marked health and functional impact of ACD, the frail population it affects, and the high rates of surgical complications necessitate a careful risk-benefit assessment when contemplating surgery.

• This study provides benchmark findings may prove useful for treatment planning, patient counseling, and ongoing efforts to improve safety of care.