



Do demographics and controllable risk factors effect
radiographic and clinical outcomes in patients undergoing
long multilevel cervical or cervical-thoracic fusions?
-multi-center analysis

Cervical Spine Research Society - Europe

Disclosures



- Eeric Truumees, MD: Medtronic, Seikagaku Corporation (research support); Stryker (Royalty); NASS (Board members)
- Devender Singh, PhD : None
- William Lavelle, MD: Depuy, Empirical Spine, K2M, Medtronic, Spinal Kinetics, Vertebral Tech (Research Support); 4-Web, Prosydian, Cardan Robotics (Stock); Prosydian, Innovasis (Board member), SAS , 4-Web (Consulting, Stock)
- Ron Riesenburger, MD :None
- Matthew Geck, MD: Difusion (Stock); SpineHope (Board member)
- Swammy Kurra, MD: None
- Anthony Yu, MS :None
- Daniel Grits, MS: None
- Richard Dowd, MS: None
- Robert Winkleman, BS: None
- Thomas Mroz, MD: Stryker (Royalty)
- John Stokes, MD: Difusion(Stock), Summit Medventures(Stock), Genesys Spine(Royalty)

Introduction & Background

When surgery is indicated, multiple level cervical spondylosis with stenosis is frequently treated with a posterior approach, especially in the context of spondylolisthesis.

The acute onset and severity of these conditions often do not lend ample time for preoperative optimization.

We investigated the effects of demographics (age, sex, gender) and controllable risk factors (obesity, smoking status) on the radiographic and clinical outcomes in patients who underwent multi-level cervical or cervicothoracic fusions.

Materials and Methods

Analysis of multicenter radiographic and clinical databases of patients that had undergone a three or more-level posterior cervical fusion for degenerative disease from January 2013 to May 2015, with at least two years of post-operative (post-op) data.

All radiographic measurements were performed by an experienced clinical researcher.

- Two age groups were defined, ≤ 65 years and > 65 years.
- Obesity was defined as body mass index (BMI) > 30 , and non-obese as $\text{BMI} \leq 30$.
- Smoking status was divided as current, past > 6 months, non-smokers.

Multiple regression analyses with interaction effect were conducted to investigate the research question.

Level of significance was set at $\alpha=0.05$.

Results

Total n=264

Group I

Fusion terminating at C6
(n=80)

- Most common fused levels:
C3-C6 (74%)
- Return to work: 11.4%
- Disability rate: 28.1%

Group II

Fusion terminating at C7
(n=88)

- Most common fused levels:
C3-C7 (64%)
- Return to work: 14.7%
- Disability rate: 27.8%

Group II

Fusion extending into the thoracic spine
(n=96)

- Most common fused levels:
C3-T2 (25%)
- Return to work: 12.5%
- Disability rate: 31.6%

Results

- Mean age, percentage of non-smokers and anterior support were significantly greater in Group III than in Groups I and II ($p < 0.05$).
- Obesity: patients were uniformly distributed across obesity delineations
- Return to work and disability rates were similar across all groups
- For the three groups, the four-way interaction model (age x BMI x sex x smoking status) did not have any significant effects on change (2 wk vs. 2 year post-op) in mean cervical lordosis, C2-C7 sagittal plumbline and T1 slope ($p > 0.05$).
- The model did not reveal any significant four-way interaction (age x BMI x sex x smoking status) effect on patient reported outcomes (i.e. visual analog scale [VAS] and oswestry disability index [ODI]) at two years post-operative in three groups ($p > 0.05$).

Conclusion/discussion

Our analyses indicate that the **interaction of age, obesity, sex and smoking status did not have any significant effects on radiographic and clinical outcomes** in patients undergoing multilevel cervical or cervical-thoracic fusions.

While prospective studies with greater statistical power would be useful, this study, and other recent analyses, suggests that ending long cervical fusions at C7 is safe and does not confer significant risk of subjacent degeneration or instability.

36th ANNUAL MEETING

CERVICAL SPINE RESEARCH SOCIETY – EUROPE

