

Introduction

Occipitocervical fusion is the gold standard stabilization method for several pathologies involving craniovertebral junctions, including basilar invagination, atlantoaxial trauma, and neoplasm. However, its postoperative clinical course is oftentimes complicated by dysphagia and dyspnea. Here, we aimed to evaluate whether pre- and post-operative radiographical measurements, such as the occipital and external acoustic meatus to axis angle (O-EAa, "the angle formed by the McGregor line and the line connecting the external acoustic meatus and the midpoint of the inferior end plate of C2") and the narrowest oropharyngeal airway space (nPAS), could predict postoperative dysphagia in adult patients who underwent occipitocervical fusion procedures.

Methods

Single-center, retrospective data review from 2010 to 2016 identified 51 patients who underwent spine surgery involving occipitocervical fusion procedures. 16 patients (31.4%, group (A)) were diagnosed with postoperative dysphagia, who were compared with 35 patients without (group (B)) in terms of radiographical findings including perioperative O-EAa and nPAS at patients’ neutral positions. All reported p values are 2-sided and p values <.05 were regarded as statistically significant.

Results

There were no statistically significant differences in terms of baseline characteristics. While preoperative O-EAa and nPAS were similar between the two groups, postoperative O-EAa ((A) 89.3° versus (B) 104.5°, p < 0.01) and nPAS ((A) 9.9 mm versus (B) 13.6 mm, p=0.01) as well as perioperative changes in O-EAa (p=0.01) and nPAS (p = 0.01) were significantly different. The cut-off value of dOEA-a < -2.4° to predict postoperative dysphasia yielded sensitivity of 81.8% and specificity of 100% (AUC=0.939), which was comparable to dnPAS>-1.1 (sensitivity 81.8%, specificity 100%).

Conclusions

Perioperative changes in O-EAa and nPAS were associated with postoperative dysphagia. Intraoperatively, O-EAa measurement on fluoroscopic images could be utilized as a surrogate marker for nPAS, thereby potentially allowing us to decrease the risk of this crucial complication.

Learning Objectives

By the conclusion of this session, participants should be able to:
1) Describe the importance of O-EAa and nPAS to predict postoperative dysphagia in patients who underwent occipitocervical fusion.