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Occurrence of dysphasia after correction surgery in the cervical spine for dropped head syndrome

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Background: Occurrence of postoperative dysphagia is well-known as a complication after anterior procedure of the cervical spine and occipito-cervical fusion (OCF). The postoperative decrease of pharyngeal airway space (PAS) is reported as a pivotal parameter inducing dysphagia. The exact mechanism of postoperative dysphagia occurred in DHS patients which requires massive kyphosis correction at the middle/lower cervical spine is unknown.

Research question: To explore the possible risk factors relating to postoperative dysphagia in DHS surgery.

Design: Retrospective cohort

Methods: Forty DHS patients (male 6, female 34, a mean of 71.2 years old) were enrolled. All patients complained difficulty of horizontal gaze. Nineteen posterior procedures and 21 combined procedures were performed. No OCF was involved. We investigated the correlation between the postoperative PAS and postoperative several factors (correction angle of kyphosis, OC-1 angle, C1-2 angle), and the possible risk factors to cause difficulty of swallowing due to airway obstruction in DHS surgery were investigated.

Results: Postoperative PAS was correlated with OC-1 angle ($r=0.55$, $p<0.05$). On the other hand, there found no correlation between postoperative PAS and C1-2 angle ($r=0.24$), and correction angle of cervical alignment ($r=-0.12$). C1-2 seemed to be contractural in hyperlordosis (32.6 ± 5.8 degrees) even after correction surgery.

Discussion: In the present study, the decrease of OC-1 angle as reciprocal change after kyphotic correction at the middle/lower cervical spine for DHS may be a key factor to cause postoperative dysphagia due to airway obstruction. In such extremely serious situation in which the patients are not be able to gaze horizontally in DHS, the angle of C1-2 may not change even after surgery because of contracture in hyperlordosis, therefore, we have to take into account that the preoperative situation around the cranio-vertebral junction even when not fixing the site.