Purpose: Loss of "physiological" sagittal alignment following craniocervical fusion (CCF) for degenerative disease may be associated with loss of horizontal gaze, dysphagia and poor HRQOL. This study reports on sagittal craniocervical roentgenographic predictors of HRQOL (SF-36) in patients following uncomplicated CCF for fresh upper cervical traumatic (UCT) injuries.

Methods:

Twenty-two consecutive adult patients (Group P)aged 50±16 years, who had undergone CCF for fresh unstable C1& C2AO/Type UCT injuries, were evaluated 39±12 months postoperatively with upright lateral cervical roentgenograms and SF-36as HRQOL measure. Physiological data for cervical sagittal alignment and SF-36 were taken from an age-matched control group (C) of 30 individuals aged 52±12 years. Several commonly used sagittal cervical roentgenographic parameters were tested as potential predictors of the SF-36 domains in both groups. Roentgenographic predictors for each of the nine SF-domains were calculated using stepwise Multilinear Regression Analysis (MLRA).

Results:

The roentgenographic predictors in patientsincluded1)theangle created by McGregor's line and the inferior surface of the axis(OC2a) for Physical Function(PF,P=0.049), role limitations due to physical health(RLPH, P=0.004),role limitation due to emotional problems(RLEP,P=0.004), emotional functioning (EF) (P=0.012),Social functioning (SF) (P=0.028) and general health (GH,P=0.041). 2) The angle formed between a horizontal line and the superior endplate of T1-vertebra (T1-slope)was predictor for SF (P=0.017) and Pain (P=0.021)and 3)the angle between McGregor's line and the line that links the center of the C1 anterior arch and the apex of cervical sagittal curvature (PIA)was predictor for health change (HC, P=0.002). Conclusions: This study showed that postoperative OC2a, PIA and T1-slope safely predict HRQOL outcomes (SF-36) following CCF for fresh trauma. It seems theoretically that the adequate restoration of the upper cervical alignment including C1-C2 upper cervical lordosis (OC2a) and PIA, in interaction with T1-slope are important for postoperative HRQOL scores close to physiological values. The authors speculate that C0-C4 fusion restores horizontal gaze and allows for painful regain of pre-trauma quality of life. Spine surgeons should realign and stabilize the craniocervical junction taking in consideration these roentgenographic predictors