

Range of motion of the cervical spine and quality of life in patients after surgical and conservative treatment of fractures of the axis

Introduction. Fractures in the cervical spine predominantly occur in the second cervical vertebra and in most cases require operative treatment. Following the injury patients do not present with neurological symptoms, yet in many cases treatment of odontoid fractures involves permanent immobilization of the upper cervical spine. Depending on the employed surgical procedure, range of motion in the cervical spine may be reduced by half or more.

Objective: Assessment of range of motion of the cervical spine and quality of life in patients after axis fracture.

Material and methods. The study group consisted of 80 individuals who underwent operative or conservative treatment at the Department of Neurosurgery and consecutive follow-up at the Neurosurgical Outpatient at the Provincial Hospital in Tarnów. The control group consisted of 80 individuals with no clinical symptoms or complaints of a cervical spine disorder.

Methods:

1. The author's questionnaire containing epidemiologic data and information on the subjects' health status.
2. CROM goniometer and measuring tape for assessment of range of motion of the cervical spine.
3. Visual Analogue Scale (VAS) for pain.
4. Standardized SF-36 questionnaire for assessment of the quality of life.
5. Neck Disability Index (NDI) questionnaire for assessment of quality of life .

Results. The findings showed highly significant differences between the study group and the controls regarding the range of motion. Patients after fractures have reduced in ranges of motions in all planes. The greatest reductions are observed for axial rotation and lateral bending. In the study group the quality of life as measured with SF-36 is limited in the social functioning and mental health.

With regard to the NDI the average results for the entire group suggest minor limitation in the functional capacity.

The largest range of motion was found in patients who were subjected to anterior C2-C3 fusion as well as those who received conservative treatment. The poorest results in neck mobility were obtained by patients who were surgically treated with dens screw fixation as well as those operated via a posterior approach.

Conclusions. Patients after conservative and surgical treatment of axis fractures display statistically significant limitations in the range of motion of the cervical spine. The type of surgery impacts the range of motion of the cervical spine.

Key words: craniovertebral junction, spine fracture, range of movement, quality of life.