

# Abstract #587.docx

## Clinical Characteristics and Surgical Outcome of Revision Surgery in Patients with Cervical Ossification of the Posterior Longitudinal Ligament

### Abstract

**Object.** Achieving the decompression of spinal cord is the major goal of surgical treatment of cervical ossification of longitudinal ligament (OPLL). After the index surgery, some patients require a revision operation due to failure of appropriate decompression or recurrence of symptom. However, there are few articles investigating the clinical characteristics and surgical outcomes for revision surgery. The goal of this study is to identify the clinical characteristics and surgical outcome of revision surgery after the first surgical decompression of OPLL.

**Methods:** The authors performed retrospective analysis of a total of 913 patients (from 1998 to 2012) who underwent surgical decompression of cervical OPLL. Among them, thirty-five patients underwent revision operation. Neurologic and surgical outcomes were evaluated using the Japanese Orthopedic Association (JOA score) and visual analogue scale (VAS). We measured clinical outcomes, radiological findings (C2-7 cervical lordosis, thickness and length of OPLL, type of OPLL), surgical procedures and complications. Preoperative, postoperative, and follow-up questionnaires were obtained to evaluate clinical outcomes. Causes of revision operation were compared between early (within 24months after the first surgery) and delayed (more than 24months after the first surgery) reoperation.

**Results:** Patients with revision operation showed higher prevalence in male (89%) than OPLL patients without revision surgery (71.2%,  $p=0.033$ ). Duration of symptom was significantly longer in revision operation patients (20.9 vs. 34 months,  $p=0.036$ ). However, there were no significant difference in age, preoperative symptoms, types of OPLL and involved level of cervical spine. In anterior approach, compare to OPLL patients without revision surgery, revision operation patients required higher number of anterior corpectomy procedures (75% vs. 26.4% vs.  $p<0.001$ ). Preoperative JOA score demonstrated significantly lower JOA scores in reoperation patients (12.7 vs. 11.5,  $p<0.01$ ). However, no significant difference in postop 1month JOA scores was found between OPLL without revision and revision surgery (14.0 vs. 14.0). Posterior neck pain was improved both OPLL without revision (from 3.0 to 2.1,  $p<0.001$ ) and revision operation (from 3.0 to 2.2,  $p<0.001$ ) patients. Incidence of CSF leakage (8.6%,  $p=0.02$ ) and instrument failure (2.6%,  $p<0.001$ ) in revision operation patients were significantly elevated. Causes of revision operation in early reoperation group ( $n=15$ ) were higher number of symptomatic residual stenosis than delayed reoperation (75% vs. 25%,  $p<0.001$ ). In delayed reoperation group, growth of OPLL (50%) was the primary cause of revision operation.

**Conclusions:** Clinical outcomes (JOA and neck VAS) of revision operation is as close to the outcome of patients who did not require revision surgery. Inadequate decompression and residual stenosis after the index surgery is the most common cause of early revision surgery. Therefore, in order to prevent unwanted early revision operation, surgeons should carefully consider achieving appropriate decompression of spinal canal during the index surgery.