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OUTCOME OF POSTERIOR DECOMPRESSION WITH INSTRUMENTED FUSION FOR K-LINE (-) CERVICAL OSSIFICATION OF THE LONGITUDINAL LIGAMENT

Aim

Expansive laminoplasty (LMP) is the most prevalent surgical procedure for cervical ossification of the posterior longitudinal ligament (OPLL) in Japan. LMP often results in poor outcome in patients with thick ossification foci and/or kyphotic alignment. The K-line, connecting the midpoints of the anteroposterior diameter of the spinal canal at C2 and C7 in a plain lateral radiogram, was previously reported as a useful preoperative predictive indicator for sufficient decompression by LMP. When the peak of ossification foci exceeds the K-line, the K-line is defined as (-), which indicates thick ossification foci and/or kyphotic alignment, sufficient decompression cannot be obtained by LMP.

Posterior decompression with instrumented fusion (PDF) was recently indicated for K-line (-) OPLL and showed a favorable outcome, offering PDF as an alternative for K-line (-) OPLL.

The aim of the present study was to elucidate the outcome of PDF surgery for K-line (-) cervical OPLL.

Materials and Methods

The present study included 26 patients who underwent PDF surgery for K-line (-) OPLL and were followed-up for at least 1 year after surgery. Mean age at surgery was 66.9 years old and the mean follow-up period was 63.8 months. We performed double-door laminoplasty followed by *in situ* posterior instrumented fusion. We assessed Japanese Orthopedic Association (JOA) score for cervical myelopathy, and the recovery rate of JOA score, postoperative K-line, pre- and postoperative C2–C7 angle, and postoperative MRI.

Results and Discussion

Preoperative average JOA score was 8.1 points and postoperative average JOA score was 11.9 points; the average recovery rate was 42.7%. The average C2–C7 angle was 2.5° preoperatively and 3.6° postoperatively. Multiple regression analysis revealed postoperative conversion of K-line from minus to plus ($p = 0.02$) as an independent factor that has positive impact on the better recovery of JOA score.

Conclusion

PDF surgery for K-line (-) OPLL cases showed moderate neurological recovery. Therefore, PDF surgery is a possible option for such cases of OPLL.