

Long-term results of anterior cervical corpectomy and arthrodesis for cervical degenerative diseases with more than ten years of follow-up

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Purpose

- The purpose of this study was to elucidate the long-term results after anterior cervical corpectomy and arthrodesis and the detrimental factors affecting the results.

Disclosure information:

None of the authors has any potential conflict of interest.

Clinical Materials

- 25 cases with more than 10 years follow-up (ave. 13y 7m)
- Multilevel anterior cervical corpectomy and arthrodesis
2 corpectomies: 10 cases, 3 corpectomies: 15 cases
- Age 16-64 y/o (ave. 51 y/o)
- 19 Males, 6 Females
- Cervical Spondylotic Myelopathy (CSM): 11 cases
Cervical Ossification of Posterior Longitudinal Ligament (OPLL) : 11 cases
Cervical Spondylotic Amyotrophy (CSA): 3 cases

Anterior cervical corpectomy and arthrodesis

Goto, et al. SPINE 1993



Emery, et al. JBJS Am 1998



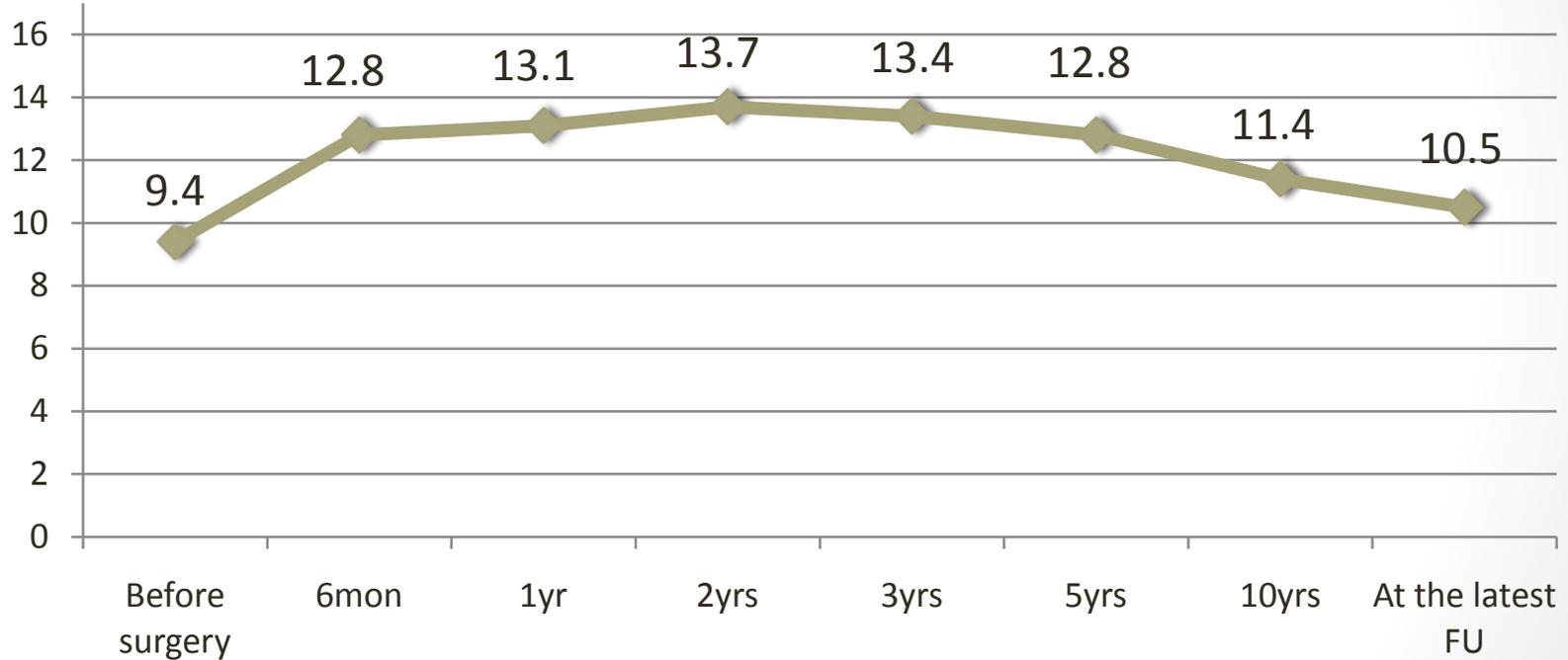
Autogenous fibula strut or iliac bone was grafted
External fixation with Halo Vest

Methods

- JOA score
- Early and late complications
- Rate of bony union
- Adjacent Segment Diseases
- Detrimental factors affecting JOA score

Results: JOA score

JOA score



Complications

- **Early Complications**

Graft dislodgement or fracture: 3 cases

C5 palsy: 3 cases

Meningitis: 2 cases

Recurrent laryngeal nerve palsy 1 case

- **Late Complications**

Lumbar spinal stenosis: 5 cases

Thoracic myelopathy: 3 cases

Alzheimer's disease: 1 case

Cerebral infarction: 1 case

Carpal tunnel syndrome: 1 case

Cubital tunnel syndrome: 1 case

Bony union and adjacent segment diseases

- Bony Union: 88% (22/25 cases)
- 2 of 3 pseudarthrosis cases had additional posterior fusion surgery
- No recurrence of myelopathy due to adjacent segment diseases

Discussion: Reports of long-term results

In cervical laminoplasty cases after 10 years

- 24% of the patients had neurologic deterioration.

Kawaguchi Y, et al. Clin Orthop 2003

- The average JOA score and recovery rates improved significantly until 3 years after surgery and were maintained at an acceptable level, with a slight deterioration after 5 years, especially in the OPLL patients.

Chiba K, et al. Spine 2006

In anterior cervical surgery cases after 10 years

- 10% had a 1-point decrease of the JOA score 5 years after surgery

Ikenaga M, et al. Spine 2006

Adjacent segment diseases after anterior cervical surgery

- 25.6% of the patients who had an anterior cervical arthrodesis would have new disease at an adjacent level **within 10 years**.
- Symptomatic adjacent-segment disease is the result of progressive cervical spondylosis at adjacent levels and is not caused by the arthrodesis itself.

Hilibrand AS, et al. JBJS Am 1999

- ACDF (anterior cervical decompression and fusion) accelerates disc degeneration at the adjacent segments.

Matsumoto M, et al. Spine 2009

Adjacent segment diseases after multilevel corpectomy and arthrodesis

- The risk of symptomatic adjacent-segment disease following multi-level arthrodesis was significantly lower than that following single-level arthrodesis.

Hilibrand AS, et al. JBJS Am 1999

- Adjacent disc degeneration has minimal effects on the long-term clinical results after anterior long fusion.

Ikenaga M, et al. Spine 2006

In our study

- **No recurrence of myelopathy** due to adjacent segment disease.
- The fact that the C3/4 and/or C4/5 disc levels were included in the fusion levels could have helped lower the risk of adjacent segment diseases.

Conclusions

- The long-term results after anterior cervical corpectomy and arthrodesis were favorable.
- The damaged spinal cord in cervical myelopathy cases appeared to deteriorate, even after surgery, which might have affected the long-term results.
- Factors related to aging, not adjacent segment diseases, appeared to be the determinants of deterioration.