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C1-2 Transarticular Screw Fixation as a Revision Surgery for Failed C1-2 Fusion – Case Report –

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– Abstract –

Odontoid process fracture, nonunion or atlantoaxial instability are generally treated with posterior fusion using sublaminar wiring technique. And occiput to C2 fusion is performed in cases with posterior arch defect of atlas. However, occiput to C2 fusion can not stabilize unstable C1-2 segment before accomplishment of fusion. Therefore, postoperative external support is necessary.

A 48-year old male patient visited our hospital due to weakness and spasticity of four extremities. 6 months ago, he got C1-2 fusion in other university hospital due to odontoid process fracture. 6 months after surgery, sublaminar cable was pulled out and grafted bone was absorbed. The neurological deficits were worsened (spasticity of four extremities with severe myelopathy, bed ridden state). JOA score was 4. Diagnosis of the patient was C1-2 instability with cervical myelopathy due to odontoid process fracture nonunion and posterior arch defect of atlas. C1-2 transarticular screw fixation and occiput to C2 fusion were performed.

Key Words : Atlantoaxial instability, C1-2 transarticular screw fixation, Revision surgery

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Fig. 1. Preoperative lateral radiography of the cervical spine shows odontoid process fracture of the axis with anterior subluxation of the atlas (A). Postoperative lateral radiography of the cervical spine shows Brooks wiring and fusion of C1-2 and good reduction of atlas (B).

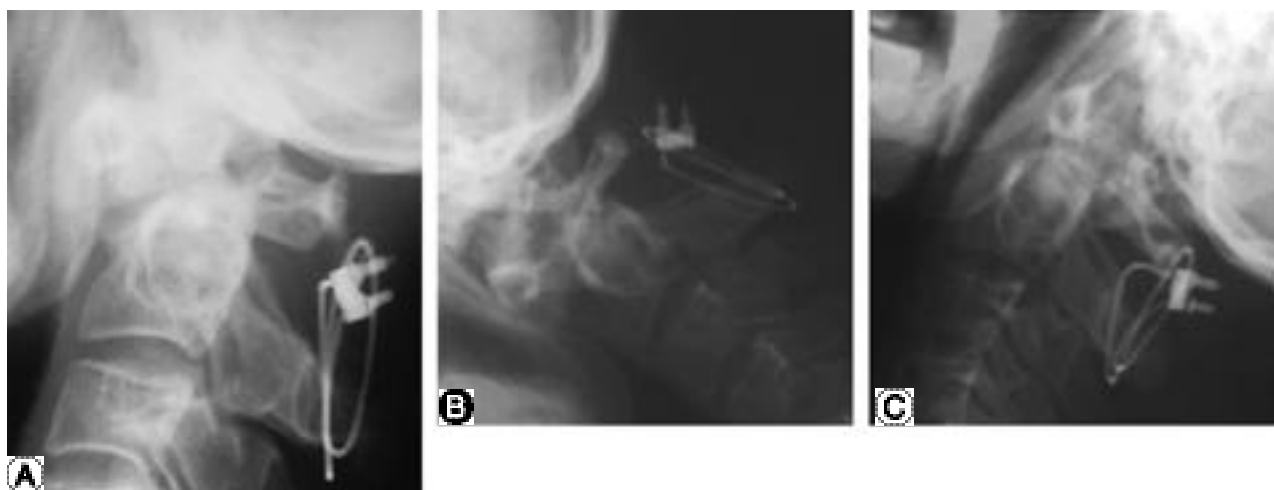


Fig. 2. Lateral radiography of cervical spine at six months after surgery shows pulled-out sublaminar wire, loss of reduction, absorption of grafted bone (A). Flexion and extension lateral radiography of cervical spine shows instability of the C1-2 segment (B, C).

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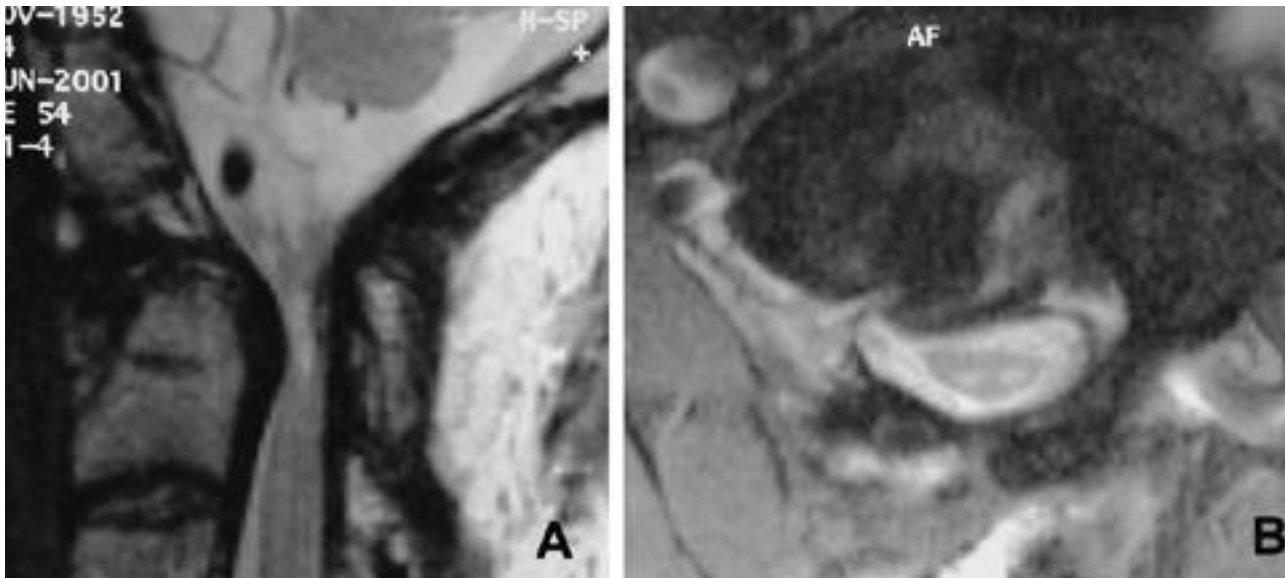


Fig. 3. T2-weighted sagittal magnetic resonance (MR) image of cervical spine shows compression of the spinal cord with high signal intensity in the cord (A). T2-weighted axial MR image of cervical spine shows marked compression of the spinal cord with defect in the posterior arch of the atlas (B).

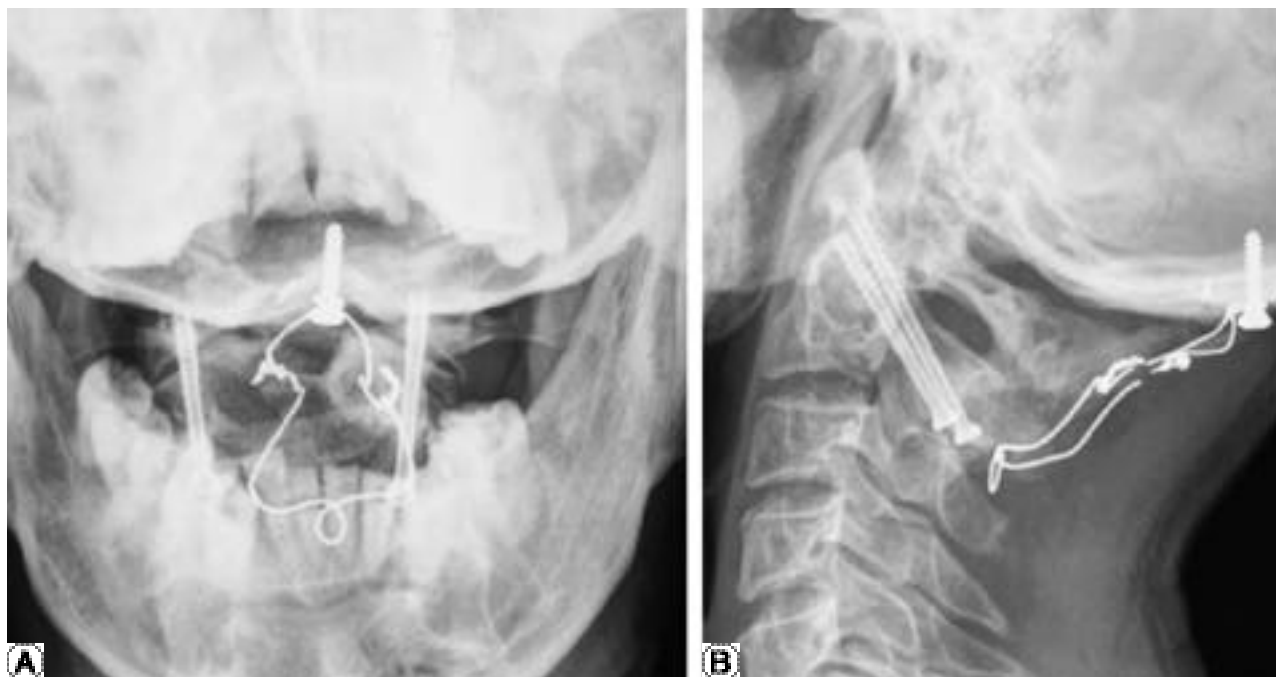


Fig. 4. Postoperative (revision C1-2 transarticular screw fixation) one-year follow-up radiography of the cervical spine. Open mouth view shows good reduction of the C1-2 segment and good purchase of C1-2 articulation with screws (A). Lateral radiography of the cervical spine shows good reduction of odontoid process and good bony fusion between the C1-2 segment (B).

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