

Case for transoral decompression of craniovertebral junction and C1 and odontoid for fixed atlanto axial dislocation and basilar invagination

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ABSTRACT

Transoral decompression of the craniovertebral junction is an established and safe method. Lateral atlanto-axial joints may be distracted and then fused posteriorly in some cases. The decision should be individualized based on the imaging and clinical picture.

Key words: Basilar invagination, fixed atlanto axial dislocation, transoral decompression

INTRODUCTION

Transoral decompression of anterior arch of C1 and odontoid is a safe and established method for ventral compression of this region.^[1] In some instances of partially reducible atlanto axial dislocation (AAD), an acceptable degree of reduction and decompression may be possible with lateral joint distraction and stabilization. The decision to decompress transoral or reduce and fix posteriorly should be individualized and decided after studying the radiology and anatomy. In select cases, anterior decompression has a huge role in management of patients with CVJ anomaly.

Presence of Klippel feil C2 C3, os odontoideum, long dolicho and peg like odontoid and hypoplastic dens with C2 body translation (causing ventral compression) may prevent complete reduction and may result in continued ventral compression. Children also pose multiple challenges in posterior reduction.

CASE REPORTS

Case 1

This 8-year-old boy with dysmorphic facies presented

with frequent falls and hence he had been reluctant to participate in sports. On examination he was spastic quadriparetic with a power of 4+/5 in all groups. Computed tomography (CT) Showed C2 C3 Klippel-feil with ventral and dorsal compression due to AAD and cranial settling of odontoid. Magnetic resonance imaging (MRI) showed cord compression at C1-C2 due to cranially settled odontoid [Figures 1-3].

He underwent skull traction followed by posterior approach, reduction and C1 lateral mass and C2 pedicle fusion with rod and rib graft. Post-operatively there was deterioration in power. CT of craniovertebral junction showed continued compression ventrally. He underwent transoral



Figure 1: Computed tomography sagittal section showing Klippel feil of C2 C3, cranial settling of odontoid with atlanto axial dislocation with ventral compression

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decompression of C1 arch and odontoid following which he gradually improved.

Case 2

This 7-year-old child with short neck, neck tilt and difficulty in walking was investigated with CT and MRI. The findings on CT were C2-C3 Klippel feil and AAD with severe compromise of the canal at C1. MRI of craniovertebral junction showed cord changes at cervicomedullary junction [Figures 4-6]. The patient underwent posterior approach. Opening of C1 C2 joints and excision of posterior arch of C1 and occiput C1 C2 fusion with rods and screws post-operative imaging showed in complete reduction [Figure 7].

effective in removing ventral compression. Majority of these patients subsequently require posterior fusion. The possibility of single surgical approach to reduce and fuse and stabilize the joint is attractive. During transoral decompression it is often noticed that there is significant pannus or granulation tissue in long standing dislocation. In fact the degree and thickness of this tissue will dictate if the AAD is reducible or not. One would be correct in assuming that the degree reduction of AAD by opening and reducing the lateral joints would also be dictated by this pannus between posterior surface of anterior arch of C1 and anterior surface of odontoid. We hypothesize that altered biomechanics of a joint either proximal or distal to a Kleippel feil segment resulting in accelerated degeneration is expected in neglected atlantaxial dislocations. The lateral atlanto axial joints may not be well-developed either congenitally or by stresses due to dislocation. Hence the incomplete reduction.

DISCUSSION

Transoral decompression of odontoid is safe, simple and

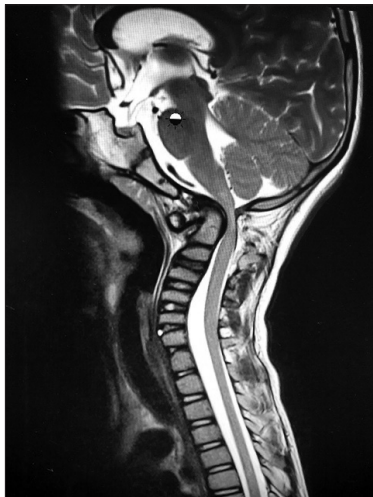


Figure 2: Magnetic resonance imaging showing ventral compression of cervicomedullary junction

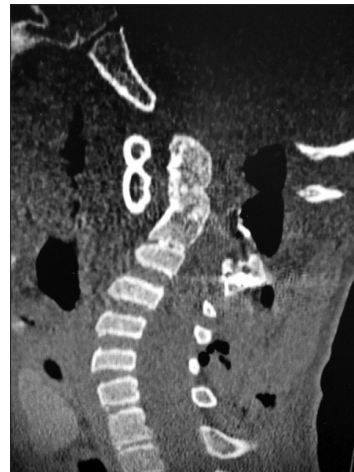


Figure 3: Post-operative computed tomography showing persistent ventral compression from incompletely reduced atlanto axial dislocation and artefacts due to the implants



Figure 4: Pre-operative computed tomography sagittal section showing Klippel feil of C2 C3, cranial settling of odontoid with atlanto axial dislocation with ventral compression



Figure 5: Magnetic resonance imaging showing ventral compression of cervicomedullary junction



Figure 6: Post-operative computed tomography showing persistent ventral compression from incompletely reduced atlanto axial dislocation and artifacts due to the implants

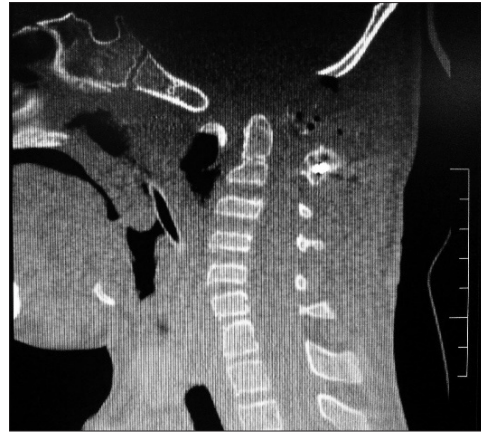


Figure 7: Post-operative computed tomography showing ventral decompression following transoral decompression

CONCLUSION

Selection of case is very important for single stage posterior reduction fusion. Hence, transoral decompression will continue to be the mainstay of ventral compression from odontoid. Microsurgical transoral decompression or endoscope assisted adenoidectomy are here to stay and continue to be in practice.

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