


Lateral Suboccipital Craniotomy With C1-C2 Hemilaminectomies and C1-C3 Fusion for the Treatment of a C1-C2 Synovial Cyst Causing Spinal Cord Compression: 2-Dimensional Operative Video



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Atlantoaxial synovial cysts are a rare cause of cervical myelopathy. Here we describe a case of a 26-yr-old woman who presented with progressively decreasing right arm and leg strength and associated gait imbalance. On examination, she had diffuse weakness in the right upper and lower extremities, a positive right-sided Hoffman sign, and clonus in the right lower extremity. Computed tomography demonstrated an os odontoideum and a retro-odontoid cyst. Magnetic resonance imaging demonstrated a T1 hypointense, T2 hyperintense, slightly rim-enhancing retro-odontoid cyst causing a marked narrowing of the spinal canal, with resultant flattening and leftward deviation of the spinal cord. The patient consented to undergo cyst fenestration via a right suboccipital craniotomy and right C1-C2 hemilaminectomies, along with a C1-C3 instrumented posterior spinal

fusion. This approach was chosen because it allows for cyst fenestration and instrumentation of the hypermobile cervical spine within the same incision. After the dura was opened and the arachnoid was dissected, the cyst was visualized compressing the spinal cord. The cyst was fenestrated just inferior to the C1 nerve rootlets, resulting in immediate egress of a gelatinous content; thereafter, all accessible cyst wall portions were removed. Fusion was performed with lateral mass screws at C1 and C3 and pars screws at C2. Pathological analysis described the cyst content as reactive fibrovascular tissue with cholesterol deposition. There were no complications associated with the procedure, and the patient's right-sided weakness had nearly resolved by postoperative day 1. Patient consent was granted for publication.

KEY WORDS: Cervical fusion, Cervical myelopathy, Craniocervical junction, Far lateral craniotomy, Synovial cyst

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COMMENT

In the year 2004, we suggested, for the first time in literature, that retro-odontoid pseudotumors^{1,2}/pannus^{3,4}/cysts^{3,4} (RPC) is by itself an evidence of atlantoaxial instability and atlantoaxial stabilization is the treatment. Retro-C2 body cysts are ‘quite’ frequently observed in cases of os-odontoideum.⁵ In rheumatoid arthritis, retroodontoid ‘pannus’ is related to buckling of the posterior longitudinal ligament as consequence of ‘vertical’ instability or vertical ‘collapse’ of the atlantoaxial joint related to destruction of either or both the facets of atlas and axis.^{4,6,7} Direct resection of the RPC or any kind of decompression by removal of bones around the foramen magnum is unnecessary, or may even be counter-effective.³ RPC can disappear after atlantoaxial fixation as soon as in the immediate postoperative period.²⁻⁴

Like RPC indicates atlantoaxial instability, osteophyte in the subaxial spine indicates segmental spinal instability.^{8,9} On the basis of this concept we reported that segmental spinal stabilization is the treatment and direct resection of the osteophytes or any kind of decompression of the region may not be necessary in the treatment of spinal degenerative radiculopathy and/or myelopathy.^{8,9} On similar lines, it was observed that cervical myelopathy related to ossified posterior longitudinal ligament is a consequence of spinal instability and spinal stabilization is the treatment.¹⁰

Our recent article identified erosion of bones (either odontoid process or C2 body) adjoining the RPC.³ We observed that RPC in the atlantoaxial region and osteophytes and ossification of posterior longitudinal ligament in the subaxial spine are consequence of instability and may have a protective role rather than being pathological.

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