

# Retroodontoid synovial cyst

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Retro-odontoid [cervical synovial cysts](#) are rare diseases located posteriorly to a dense [axis](#).

## Pathophysiology

Attributable to degenerative changes in the [atlantoaxial joints](#) and [atlantoaxial instability](#) <sup>1)</sup>.

Because the atlanto-dens joint is a synovial joint, its degeneration can lead to subchondral cyst formation and synovitis and predispose affected individuals to fracture <sup>2)</sup>.

Association with [Forestier's disease](#) has been reported in only one previous study. Cyst probably develop as a result of enhanced mechanical stress on the only remaining mobile joint. In the literature treatment of retro-odontoid mass associated with Forestier has usually involved occipito-cervical fusion with transoral decompression <sup>3)</sup>.

## Epidemiology

Although retro-odontoid synovial cysts remain rare, an increasing number have been reported in the literature. Affecting adults in the sixth decade of life.

## Clinical Features

Retro-odontoid synovial cysts produce slowly progressive upper spinal cord symptoms.

## Diagnosis

Can be achieved by means of magnetic resonance imaging (MRI).



## Treatment

An anterolateral approach facilitates access to lesions located anterior to the craniocervical junction without harming the atlantoaxial joints, and can also treat small lesions in the ventral mid-portion of the craniocervical junction without compression of spinal cord <sup>4)</sup>.

Most reports have focused on surgical treatment, only a few have examined nonsurgical treatment. However, several months are required after nonsurgical treatment until cyst regression.

## Case reports

### 2008

A 92-year-old woman with a retro-odontoid synovial cyst producing spinal cord compression that was treated by percutaneous aspiration of the cyst under CT guidance. To the knowledge of Velán et al. this is the first reported case of an atlantoaxial synovial cyst successfully treated with a minimally invasive procedure <sup>5)</sup>.

### 2015

Ikegami et al. report on a case with a retro-odontoid [synovial cyst](#), and the immediate reduction of the cyst was confirmed following lateral [atlantoaxial joint](#) puncture and arthrography.

A 52-year-old woman presented with [atlantoaxial instability](#). She complained of neck pain and numbness in her hands. Magnetic resonance imaging (MRI) revealed a retro-odontoid synovial cyst. Lateral atlantoaxial joint puncture and arthrography were performed.

Two days after treatment, the patient showed significant improvement in the numbness of her hands, and a follow-up MRI revealed an immediate reduction in the cyst. Over a 4.5-year follow-up period, no recurrence of the clinical symptoms occurred.

Lateral atlantoaxial joint puncture may immediately reduce retro-odontoid synovial cysts, and the lateral atlantoaxial joint has a communication channel with the retro-odontoid synovial cyst via the atlantodental joint. Once disappearance of the cyst is confirmed, an acceptable long-term outcome can be achieved with nonsurgical treatment even in cases with atlantoaxial instability <sup>6)</sup>.

1)

Takeuchi M, Yasuda M, Takahashi E, Funai M, Joko M, Takayasu M. A large retro-odontoid cystic mass caused by transverse ligament degeneration with atlantoaxial subluxation leading to granuloma formation and chronic recurrent microbleeding case report. *Spine J.* 2011 Dec;11(12):1152-6. doi: 10.1016/j.spinee.2011.11.007. Epub 2011 Dec 16. PubMed PMID: 22177924.

2)

Shinseki MS, Zusman NL, Hiratzka J, Marshall LM, Yoo JU. Association between advanced degenerative changes of the atlanto-dens joint and presence of dens fracture. *J Bone Joint Surg Am.* 2014 May 7;96(9):712-7. doi: 10.2106/JBJS.M.00814. PubMed PMID: 24806007.

3)

Fuentes S, Métellus P, Dufour H, Do L, Grisoli F. [Retro-odontoid synovial cyst with Forestier's disease]. *Neurochirurgie.* 2004 Nov;50(5):521-5. Review. French. PubMed PMID: 15654305.

4)

Ohnishi YI, Iwatsuki K, Taketsuna S, Ninomiya K, Yoshimine T. Retro-odontoid synovial cyst resected via an anterolateral approach without fusion. *Eur Spine J.* 2014 Sep 12. [Epub ahead of print] PubMed PMID: 25212453.

5)

Velán O, Rabadán A, Paganini L, Langhi L. Atlantoaxial joint synovial cyst: diagnosis and percutaneous treatment. *Cardiovasc Intervent Radiol.* 2008 Nov-Dec;31(6):1219-21. doi: 10.1007/s00270-008-9347-z. Epub 2008 Apr 24. PubMed PMID: 18437457.

6)

Ikegami D, Matsuoka T, Aoki Y. Immediate reduction of a retro-odontoid synovial cyst following lateral atlantoaxial joint puncture and arthrography: A Case Report. *Spine (Phila Pa 1976).* 2015 Feb 24.

[Epub ahead of print] PubMed PMID: 25714849.

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