

ISSN 1220-8841 (Print)
ISSN 2344-4959 (Online)

ROMANIAN
NEUROSURGERY

Vol. XXXX | No. 1

March 2026

Haemorrhagic lumbar synovial cyst: A
rare and potentially debilitating
condition

Ajit Singh,
Kritesh Goel,
Divya Nijhawan

DOI: 10.33962/roneuro-2026-011



Haemorrhagic lumbar synovial cyst: A rare and potentially debilitating condition

Ajit Singh¹, Kritesh Goel², Divya Nijhawan¹

¹ Paras Hospital, Udaipur, Rajasthan, INDIA

² RNT Medical College, Udaipur, Rajasthan, INDIA

ABSTRACT

Hemorrhagic synovial cysts of the lumbar spine are uncommon but clinically significant due to their potential for rapid symptom progression. Patients often present with severe lower back pain and neurological deficits, which are exacerbated by bleeding within the cyst, leading to an increase in its size. This haemorrhage is typically linked to the rupture of fragile, newly formed blood vessels. MRI is crucial for diagnosis, with these cysts frequently appearing heterogeneously hyperintense on T1-weighted images, although signal characteristics may vary depending on factors such as protein content, blood degradation, and the timing of the haemorrhagic event. While many synovial cysts can be observed without intervention, haemorrhagic transformation often requires surgical excision, and in some cases, emergency surgery is necessary to address severe neurological symptoms. Early diagnosis and treatment are essential to prevent permanent deficits and improve outcomes.

INTRODUCTION

Intraspinal synovial cysts are uncommon cause of back and radicular leg pain¹. Spinal synovial cysts generally arise from a degenerated facet joint although their pathogenesis is still debatable. Bleeding within the cyst creates a mass effect on the nervous structures, which is responsible for painful and/or neurological symptoms that are dramatic and not susceptible to conservative treatment². The haemorrhagic variant is a rare occurrence: very few cases of acute intracystic bleeding have been described in the literature. It is likely that intracystic bleeding leads to severe compression of the nerve roots and/ or the spinal cord, thus justifying the patients' acute symptomatology³. The haemorrhagic nature of the cyst is related to neoangiogenesis due to chronic inflammation⁴. We elaborate a case in which haemorrhage into the left L5/S1 facet synovial cyst causing severe radiculopathy necessitating urgent surgery.

CASE REPORT

A 50-year-old male patient presented to the OPD with low backache on and off since past few months which aggravated in last 2 days with neurological deficits. Routine biochemical and haematological tests

Keywords
lumbar spine,
synovial cyst,
haemorrhage,
surgery,
neurological deficits,
radicular pain,
neoangiogenic vessels



Corresponding author:
Ajit Singh

Paras Hospital, Udaipur,
Rajasthan, India

ajitsinghaiims@gmail.com

Copyright and usage. This is an Open Access article, distributed under the terms of the Creative Commons Attribution Non-Commercial No Derivatives License (<https://creativecommons.org/licenses/by-nc-nd/4.0/>) which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is unaltered and is properly cited.

The written permission of the Romanian Society of Neurosurgery must be obtained for commercial re-use or in order to create a derivative work.

ISSN 2344-4959 (online)
ISSN 1220-8841 (print)

© Romanian Society of
Neurosurgery



First published
March 2026 by
London Academic Publishing
www.london-ap.uk

were within normal limits. On examination, patient was having positive SLR and ankle weakness. All reflexes were normal except left ankle which was diminished. There was sensory loss in L5 distribution. MRI revealed the presence of a well circumscribed cystic lesion in the left L5-S1 facet joint with arthritic changes causing compression of left S1 traversing nerve root and the dural sac. T1W images revealed hyperintense signal and hypointense signal on T2W images to suggest haemorrhage. No connection with the intervertebral disc seen.



Figure 1. Axial T2W sequence shows well defined hypointense lesion in dorsal epidural space on left side. Corresponding T1W sagittal sequence shows T1 hyperintense signal.

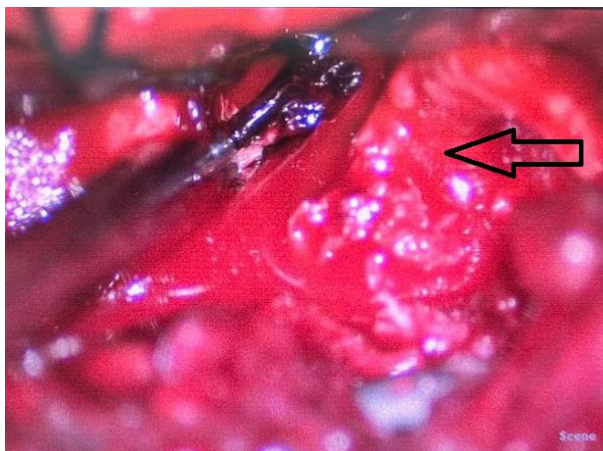


Figure 2. Intraoperative image of haemorrhagic friable synovial cyst under high magnification.

DISCUSSION

Synovial and juxta facet cysts are common lesions are found on limbs but rare on the vertebral spine.(5) Juxtafacet cysts are extradural soft tissue masses along degenerated facet joints.(6)

Acute presentation of neurological abnormalities and symptoms of tenderness after bleed in lumbar juxtafacet cysts have been reported. (7,8) Ramieri *et al.*(9) mentioned that the expansion of the cyst, after bleed is the cause of pain, because this occurs even in rare cases of rapid growth of the cyst without bleeding. But, in fact, the cause of the acute onset of symptoms in the sudden intracyst hemorrhage is still under consideration.(9)

Major factors have been considered as predisposing to bleed, such as anticoagulation therapy trauma, disc protrusion, vascular etiology or still mural neo-angiogenesis, secondary to inflammatory changes.(10) The high vascularization of the cyst in the presence of micro trauma or spinal instability alone are suggested to be sufficient to originate hemorrhage.(11) There have been reports of intracyst bleeding events with no associated trauma or coagulopathy, suggesting that studies should be stimulated, in order to discover new risk factors involved.(12) In our case, it was not due to anticoagulation treatment or trauma. It is attributed to chronicity of the disease that lead to intracystic hemorrhage and further symptoms of acute pain.

The distribution suggests that the lower lumbar spine particularly the L4-L5 level (46.5%) is most frequently affected. followed by L3-L4 (27.9%), L5-S1 (14.0%), and L2-L3 (7.0%).(8)

MRI studies of juxta facetal cysts are beneficial and should be done to rule out other causes such as herniation, metastases, meningioma, neural sheath tumors with cystic degeneration, arachnoid, and perineural and dermoid cysts.(10-12)

In the sub-acute phase, methemoglobin leads to a high signal on all sequences, when compared to non-hemorrhagic cysts.(12)

Surgical excision with decompression is the appropriate treatment for lumbar hemorrhagic synovial cysts.(12) Lyons *et al.*(13) reported 91% good to excellent results in 147 patients treated surgically.

Double extradural hematoma is an uncommon but life-threatening entity often resulting from high-impact trauma. Early recognition through prompt neuroimaging and timely surgical evacuation are crucial for favourable outcomes. Vigilant intraoperative haemostasis and postoperative monitoring remain essential to prevent recurrence and ensure optimal neurological recovery.

CONCLUSION

Lumbar synovial cysts are a rare, but possible cause, of acute radicular compression, mainly, when they present hemorrhagic complication. Magnetic resonance imaging is the imaging test of choice to diagnose them and exclude other causes. Although percutaneous intervention may be tried, the results vary much. The immediate acknowledgement and appropriate surgical treatment provide, in general, excellent results. To the best of the authors' knowledge, this is the among first 50-60 reports of hemorrhagic lumbar synovial cyst at L5-S1 level caused by spinal instability in the absence of a traumatic event or anticoagulant therapy.

REFERENCES

1. Arantes M, Silva RS, Romão H, Resende M, Moniz P, Honavar M, et al. Spontaneous hemorrhage in a lumbar ganglion cyst. *Spine (Phila Pa 1976)* 2008;33:E521-E524. doi: 10.1097/BRS.0b013e31817b6206. [DOI] [PubMed] [Google Scholar]
2. Bandiera S, Campanacci L, De lure F, Bertoni F, Picci P, Boriani S. Hemorrhagic synovial lumbar cyst : a case report and review of the literature. *Chir Organi Mov.* 1999;84:197203. [PubMed] [Google Scholar]
3. Banning CS, Thorell WE, Leibrock LG. Patient outcome after resection of lumbar juxtafacet cysts. *Spine (Phila Pa 1976)* 2001;26:969-972. doi: 10.1097/00007632-200104150-00024. [DOI] [PubMed] [Google Scholar]
4. Cicuendez M, Alen JF, Ramos A, Lobato RD, Lagares A. Spontaneous hemorrhage into a lumbar synovial cyst. *Eur Spine J.* 2010;19(Suppl 2):S190-S192. doi: 10.1007/s00586-010-1332-y. [DOI] [PMC free article] [PubMed] [Google Scholar]
5. Hsu KY, Zucherman JF, Shea WJ, Jeffrey RA. Lumbar intraspinal synovial and ganglion cysts (facet cysts). Ten-year experience in evaluation and treatment. *Spine (Phila Pa 1976)* 1995;20:80-89. doi: 10.1097/00007632-199501000-00015. [DOI] [PubMed] [Google Scholar]
6. Imai K, Nakamura K, Inokuchi K, Oda H. Aspiration of intraspinal synovial cyst : recurrence after temporal improvement. *Arch Orthop Trauma Surg.* 1998;118:103-105. doi: 10.1007/s004020050323. [DOI] [PubMed] [Google Scholar]
7. Kaneko K, Inoue Y. Haemorrhagic lumbar synovial cyst. A cause of acute radiculopathy. *J Bone Joint Surg Br.* 2000;82:583-584. doi: 10.1302/0301-620x.82b4.10444. [DOI] [PubMed] [Google Scholar]
8. Cannarsa G, Clark SW, Chalouhi N, Zanaty M, Heller J. Hemorrhagic lumbar synovial cyst: case report and literature review. *Nagoya J Med Sci.* 2015 Aug;77(3):481-92. PMID: 26412895; PMCID: PMC4574336.
9. Ramieri A, Domenicucci M, Seferi A, Paolini S, Petrozza V, Delfini R. Lumbar hemorrhagic synovial cysts : diagnosis, pathogenesis, and treatment. Report of 3 cases. *Surg Neurol.* 2006;65:385-390. doi: 10.1016/j.surneu.2005.07.073. discussion 390. [DOI] [PubMed] [Google Scholar]
10. Onofrio BM, Mih AD. Synovial cysts of the spine. *Neurosurgery.* 1988;22:642-647. doi: 10.1227/00006123-198804000-00004. [DOI] [PubMed] [Google Scholar]
11. Pendleton B, Carl B, Pollay M. Spinal extradural benign synovial or ganglion cyst : casereport and review of the literature. *Neurosurgery.* 1983;13:322-326. doi: 10.1227/00006123-198309000-00021. [DOI] [PubMed] [Google Scholar]
12. Park HS, Sim HB, Kwon SC, Park JB. Hemorrhagic lumbar synovial cyst. *J Korean Neurosurg Soc.* 2012 Dec;52(6):567-9. doi: 10.3340/jkns.2012.52.6.567. Epub 2012 Dec 31. PMID: 23346333; PMCID: PMC3550429.
13. Lyons MK, Atkinson JL, Wharen RE, Deen HG, Zimmerman RS, Lemens SM. Surgical evaluation and management of lumbar synovial cysts: the Mayo Clinic experience. *J Neurosurg.* 2000 Jul;93(1 Suppl):53-7. doi: 10.3171/spi.2000.93.1.0053. PMID: 10879758.