

## Conservative management of a cervical ligamentum flavum hematoma: Case report

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### Abstract

**Background:** Spontaneous epidural hematoma arising from the ligamentum flavum is a rare cause of acute spinal cord compression. There are only four reports in the cervical spine literature, and all were managed with surgery. Here, we describe an acute case of a spontaneous epidural hematoma arising from the ligamentum flavum in the cervical spine successfully managed without surgery.

**Case Description:** A 69-year-old woman with a cervical spine epidural hematoma contained within the ligamentum flavum presented with paroxysmal neck pain and stiffness without a history of trauma. The magnetic resonance imaging (MRI) revealed a posterolateral epidural hematoma contained within the ligamentum flavum. As the patient was intact, she was managed conservatively with cervical orthosis. Three months later, she was symptom-free, and the hematoma resolved on the follow-up MRI study.

**Conclusion:** Spontaneous epidural hematoma arising from ligamentum flavum is a rare cause of spinal cord compression. Previous reports have described success with surgical decompression. However, initial observation and conservative management may be successful as illustrated in this case.

**Key Words:** Cervical spine, epidural hematoma, ligamentum flavum

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## INTRODUCTION

Epidural hematoma in the cervical spine contained within the ligamentum flavum is rare but can be a devastating, life-threatening condition. Patients may present with the new, sudden onset of spontaneous neck pain (e.g., without trauma), along with variable neurological deficits. Hematoma rupture into the ligamentum flavum is classically described in the lumbar spine in cases of stenosis caused by ligamentary hypertrophy. However, it has only been reported in four cases in the cervical region, and all were treated surgically.<sup>[1-4]</sup> Here, we present a patient whose spontaneous cervical epidural hematoma within the ligamentum flavum was successfully managed conservatively.

## CASE REPORT

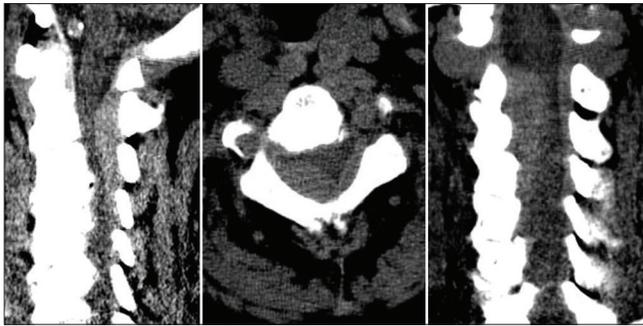
A 69-year-old female presented with the sudden, atraumatic onset, of severe right-sided neck pain without focal symptoms or neurological deficit. Both the computed tomography and magnetic resonance imaging (MRI) of the

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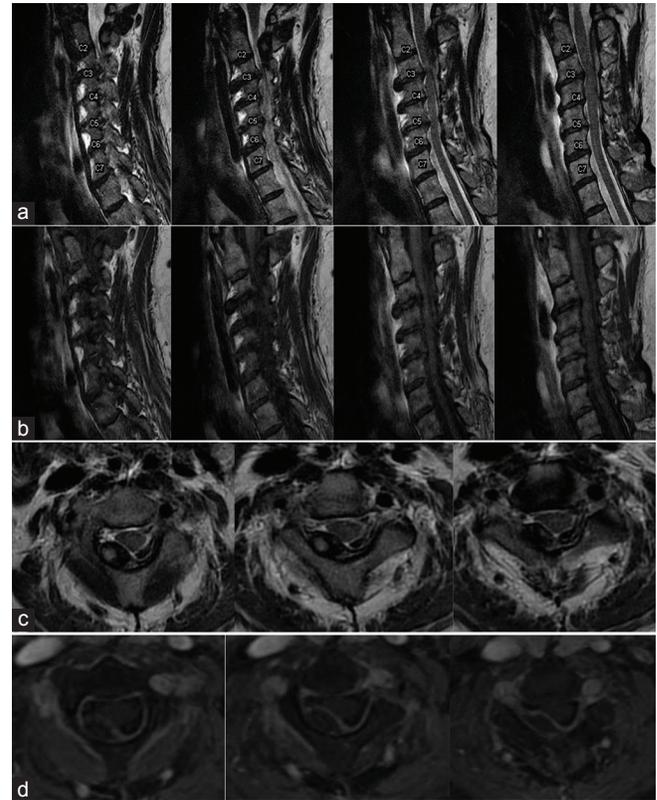
**Figure 1: Computed tomography neck: Sagittal, axial, coronal views: CT neck demonstrating right posterolateral hyperdense mass. Left: Sagittal, Middle: Axial, Right: Coronal**



**Figure 3: Follow-up MRI Cervical Spine with Contrast: Three month follow-up MRI (T<sub>1</sub> and T<sub>2</sub>-weighted) of cervical spine demonstrating complete resolution of hematoma with moderate stenosis from pre-existing osteophyte complexes emanating from the vertebral bodies of C2-C4. (a) Follow-up Sagittal T<sub>2</sub>-Weighted MRI, (b) Follow-up Sagittal T<sub>1</sub>-Weighted MRI**

cervical spine identified an epidural, hyperdense right-sided posterolateral mass compressing the spinal cord between the C2 and C5 vertebrae [Figures 1 and 2]. On T<sub>1</sub>-images, the lesion was homogeneously isointense while T<sub>2</sub>-weighted studies showed it as heterogeneous with both isointense and hyperintense regions. Notably, there was no increased cord signal on the T<sub>2</sub>-weighted study. In addition, the outer border of the ligament enhanced with the administration of gadolinium. Further findings included osteophytes at the C3-C4 and C4-C5 vertebral levels contributing to stenosis.

Since the patient was neurologically intact, she was treated conservatively in a collar and discharged 2 days later. Three months later, the MRI of the cervical spine showed complete resolution of the hematoma [Figure 3].



**Figure 2: MRI Cervical Spine with Contrast: MRI cervical spine revealing right posterolateral epidural mass contained within ligamentum flavum and extending from C2-C5 vertebral levels. Mass appears as isointense lesion on T<sub>1</sub>-weighted images and heterogeneous isointense to hyperintense lesion on T<sub>2</sub>-weighted images. The addition of Gd-DTPA contrast enhanced the outer border of the ligament on T<sub>1</sub>-weighted images. (a) Sagittal T<sub>2</sub>-Weighted MRI, (b) Sagittal T<sub>1</sub>-Weighted MRI, (c) Axial T<sub>2</sub>-Weighted MRI, (d) Axial T<sub>1</sub>-Weighted MRI with contrast**

## DISCUSSION

Spontaneous epidural hematoma arising from the ligamentum flavum is a rare occurrence. There are rare reports of this entity in the cervical, thoracic, and lumbar spine. To date, there have been only four reported cases in the cervical spine.<sup>[1-5]</sup> In addition, all reported cervical ligamentum flavum hematomas have been surgically managed with immediate improvement of symptoms.

MRI is helpful in diagnosing ligamentum flavum hematomas, but there may be considerable variation in the intensity of T<sub>1</sub>, T<sub>2</sub>, and contrast enhanced images.<sup>[1-4]</sup> Nevertheless, the lack of characteristic traits on MRI makes radiographic diagnosis difficult, especially when attempting to separate from other etiologies, including synovial cyst, abscess, or neoplasm.

Histological degenerative changes within the ligamentum flavum increased angiogenesis in regions of degeneration, and loss of elastic fibers likely constitute the pathogenic mechanism for ligamentum flavum hematomas.<sup>[1-4]</sup>

Yayama *et al.* have corroborated the spatial association between angiogenesis and fiber degeneration in histological and immunohistochemical analyses.<sup>[5]</sup> Therefore, it is entirely plausible that repeated microtrauma in the cervical spine progressively damages elastic fibers within the ligamentum flavum, creating a nidus for hematoma formation.

Previous cases have been managed operatively with hemilaminectomy or laminectomy and occasionally facetectomy or interlaminotomy. In this case, the lack of neurologic compromise despite an acute presentation warranted watchful waiting and observation for hematoma progression. Cervical orthosis was placed, and the patient instructed to remain in the collar for 4 weeks. At follow-up, the patient was symptom-free with complete resolution of the hematoma.

## CONCLUSIONS

The present case is the first to report on the successful conservative management of a patient with a spontaneous epidural hematoma arising from the ligamentum flavum. While surgical decompression has proven immediately

beneficial in previous cases with acute neurologic decline, stable patient condition and examination may warrant initial observation and conservative management.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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