



## Case Report

# Case of lumbar spinal stenosis and chronic tophaceous gout

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## ABSTRACT

**Background:** Rarely, chronic tophaceous gout can result in lumbar spinal stenosis and neural compression.

**Case Description:** A 67-year-old male presented with the radiographic and magnetic resonance findings of gout involving and causing compression of the lumbar spine that responded to surgical decompression.

**Conclusion:** It is difficult to diagnose lumbar spinal stenosis secondary to tophaceous gout. Notably, the treatment, based on the clinical presentation, may include both medication and surgical decompression.

**Keywords:** Joint inflammation, Lumbar spinal stenosis, Multidisciplinary approach, Tophaceous gouty arthritis, Tophi, Urate crystals

## INTRODUCTION

Tophaceous gouty arthritis is characterized by the accumulation of urate crystals in and around joints. It constitutes a chronic and debilitating form of arthritis that primarily affects the peripheral joints (i.e., toes, fingers, and knees), but can also involve other structures (i.e., tendons, bursa, and spine).<sup>[2]</sup> In rare cases, tophaceous gouty arthritis may coexist with and exacerbate the symptoms/signs of lumbar spinal stenosis. The management of these two conditions may require a multidisciplinary approach involving rheumatologists, pain management specialists, and spine surgeons. In addition to the medical management with anti-gout medications, it may require surgical intervention. Here, a 67-year-old male presented with both tophaceous gouty arthritis and lumbar spinal stenosis warranting both medication and decompressive surgery.

## CASE REPORT

A 67-year-old male presented with bilateral radicular lower back pain and neurogenic claudication (i.e., occurring within <5 min of ambulation) for 20 years. He also had pain in both his hands and feet. On physical examination, he had multiple hard, nodular swellings consistent with tophi in his hands and feet, including 0.5 cm tophi involving both big toes and the right little toe, a large 1.4 cm tophus involving the right middle finger, a 1 cm tophus on the right

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ring, and a 0.8 cm tophus at the right wrist [Figures 1 a-c]. There were also numerous 0.5 cm tophi noted involving the inter-phalangeal joints of the left hand [Figure 1b]. On examination, he had midline/paracentral tenderness over the L4 and L5 vertebrae, bilaterally decreased ankle reflexes and diminished L4-S1 sensation to pin appreciation. Laboratory studies showed hyperuricemia (i.e., initial uric acid level of 10.6 mg/dL), normal antinuclear antibody profile, and slightly elevated rheumatoid factor level at 16.17 IU/mL (i.e., Reference range <14 IU/mL).

### Magnetic resonance (MR) studies

Axial and sagittal MR imaging views showed disc desiccation at multiple levels with disc space narrowing and Type II endplate changes at the L3/4 and L4/5 levels. At L3/4, L4/5, and L5/S1, there was significant bilateral lateral recess stenosis attributed to central disc bulges, and marked facet hypertrophy/reactive arthrosis and thickening of the yellow ligament. Added hyperintensities were also noted bilaterally adjacent to the spinous processes of L3 through L5 [Figures 2 and 3]. The patient was referred for surgery and to rheumatology for additional medical management with anti-gout medications.

### Surgery

He underwent a decompressive laminectomy from L3 to L5 with medial facetectomy/foraminotomy and bilateral excision of tophi involving the spinous process and around the bilateral facet joints under spinal anesthesia. Intraoperatively, thickened yellow ligament and hypertrophied facet joints and spinous processes were removed along with multiple tophaceous nodules [Figure 4]. The patient was discharged on the same day, and later the bilateral leg pain and claudication improved significantly. He was then referred to rheumatology.

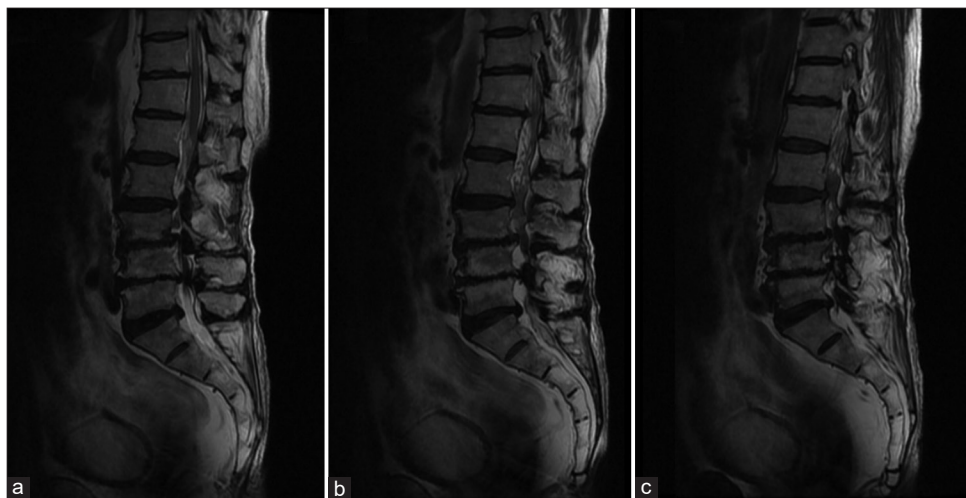
### DISCUSSION

#### Definition of tophaceous spinal gout

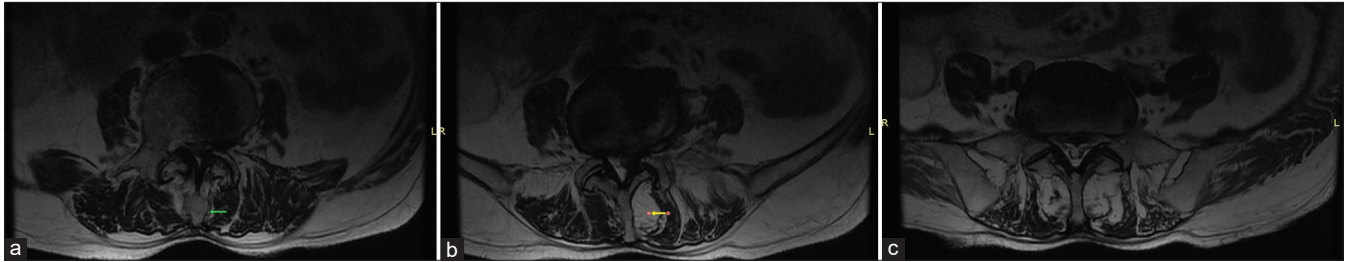
Gout is a crystal arthropathy characterized by the deposition of uric acid within joints. The lumbar region is particularly susceptible to gout,<sup>[3,6]</sup> with various parts of the vertebral body, including the epidural space, ligamentum flavum, pedicle, and facet joint, being potential sites of manifestation.<sup>[5]</sup> Studies have indicated that axial involvement may occur in approximately 14–35% of cases.<sup>[3,6,8]</sup> Tophi deposits in the axial elements of the spine are typically found at the facet



**Figure 1:** Clinical photographs of patient's bilateral feet (a), bilateral hands (b), and front view of the right hand (c) demonstrating multiple tophaceous swellings involving various joints of hands and feet.



**Figure 2:** Sagittal views of magnetic resonance imaging lumbosacral spine of the patient showing right sagittal cut (a), midsagittal cut (b), and left sagittal cut (c).



**Figure 3:** Axial views of the magnetic resonance imaging lumbosacral spine at (a) L3-4, (b) L4-5, and (c) L5-S1 levels of the patient. The green arrow in (a) is demonstrating the thickening of the spinous process noted at the L3-4 level. The yellow arrow in (b) demonstrates a hyper-intense signal in the left paraspinous region.



**Figure 4:** Photograph of the specimen excised intraoperatively demonstrating tophi along with bony tissue.

articulation, but other structures such as the ligamentum flavum, pedicle, lamina, epidural soft tissue, vertebral body, and disc space can also be affected.<sup>[10]</sup>

### Symptoms of spinal tophaceous gout

Patients may present with back pain, myelopathy, and/or radiculopathy (i.e., radiculopathy is the most prevalent symptom in 34.5% of cases)<sup>[3]</sup> Spinal gout tends to occur more frequently in men between 35 and 75 years of age, particularly in those with chronic polyarticular tophaceous gout that is not optimally controlled.<sup>[4-6]</sup> There also appears to be a positive correlation between the onset of symptoms and elevated serum uric acid levels.<sup>[5]</sup>

### MR diagnosis of tophaceous spinal gout

Tophi, characteristic of gout, in the spine may produce a homogenous intermediate to hypointense signal on T1-weighted images, while intensity is variable on T2-weighted sequences.<sup>[8]</sup> Gouty tophi may produce either homogeneous or peripheral heterogeneous patterns attributed to variations

in the vascularization of the inflammatory tissue induced by the deposition of monosodium urate crystals.<sup>[9,10]</sup>

### Medical management

Pharmacologic urate acid-lowering therapies form the mainstay of treatment for spinal gout and tophi. Gout is typically managed using colchicine, nonsteroidal anti-inflammatory drugs, or a combination of both to stabilize acute attacks. Urate-lowering therapy is achieved through the use of xanthine oxidase inhibitors (XOIs), which minimize uric acid synthesis and reduce serum urate levels.<sup>[7]</sup> Allopurinol and febuxostat are the two XOIs approved by the US food and drug administration. Uricosuric agents like probenecid may be used in combination with an XOI or as monotherapy for refractory gout.<sup>[10]</sup>

### Surgery

When tophaceous gout contributes to spinal stenosis and root/cord compression, root surgical decompression often resulting in favorable outcomes may be warranted.<sup>[1]</sup>

### CONCLUSION

Here, a 67-year-old male presented with lumbar radiculopathy and neurogenic claudication attributed to lumbar stenosis complicated by superimposed tophaceous gouty arthritis involving the yellow ligament, lumbar facet joints, and spinous processes. Notably, the patient markedly improved following the lumbar decompression surgery.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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