

# Tubercular Intramuscular Abscess Mimicking Lumbar Hernia: A Rare Case Report

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## ABSTRACT

Tuberculosis (TB) is a worldwide health concern. Although pulmonary TB is common, extrapulmonary TB, such as infections of the musculoskeletal system, poses diagnostic challenges. The present report details a case of a tubercular intramuscular abscess in the lumbar region, which clinically resembled a lumbar hernia. The present report focuses on a 53-year-old male patient with a progressive, severe mass in the mid-lower back that had lasted for several months. The initial clinical assessment and radiography suggested a lipoma, sebaceous cyst, or lumbar hernia. An ultrasonographic examination revealed that the mass was heterogeneously hypoechoic with internal echoes that did not correlate with lipomas or sebaceous cysts. Further systemic cytological and histopathological analysis revealed tuberculous alterations, including caseation necrosis, epithelioid granulomas and Langhans giant cells. Surgical exploration revealed an abscess within the extrinsic muscular plane, which was drained successfully. Anti-tubercular Therapy (ATT) was initiated after surgery and resulted in marked improvement of the patient's symptoms. At the one-year follow-up, the lesion had not recurred, nor were there any associated manifestations of systemic disease. The present case emphasises the importance of considering tubercular aetiology in unusual complaints of lumbar swellings, particularly in TB-endemic areas. The diagnostic process, based on imaging and histopathological examination, was instrumental in achieving the correct diagnosis and ruling out mimicking conditions, such as lumbar hernia or fat necrosis. Specifically, the early initiation of ATT, combined with surgical intervention, led to a positive outcome. Reporting such cases is essential to raise awareness and provide clinicians with knowledge about rare extrapulmonary TB.

**Keywords:** Cytology, Granuloma, Muscles, Necrosis, Spine, Tuberculosis, Ultrasonography

## CASE REPORT

A 53-year-old male patient came to the Outpatient Department (OPD) with the complaint of swelling in the mid-lower back (lumbar) region, measuring 2x3 cm. The swelling has been slowly increasing in size over the last few months and is associated with moderate pain. The swelling is localised and occurs intermittently, worsening when touched. It has become progressively larger and uncomfortable for the patient.

The patient reported that he had undergone several sessions of treatment at different private hospitals, which involved conservative management; however, he did not notice any marked improvement. The patient has no history of fever, night sweats, or sudden weight loss at any time in the past. He did not report any other complaints that could be related to the case.

A well-defined swelling discovered during a physical examination was located in the lumbar region of the patient's body. The swelling was firm and non fluctuant, moderately painful to the touch, without any overlying changes in skin colour or erythema. Considering the anatomic site and clinical characteristics, an initial differential diagnosis of a lipoma or an infected sebaceous cyst was proposed. Clinically, the patient was otherwise stable and did not exhibit features suggestive of a systemic infection. Additional assessment was performed using ultrasound.

On ultrasound, a well-defined, oval, heterogeneously hypoechoic collection with internal echogenic fat lobules was observed. This finding did not correlate with a lipoma (which is typically homogeneously hypoechoic) or a sebaceous cyst (which is usually anechoic with posterior enhancement). The lack of prominent vascularity on Doppler examination diminished any signs of an active infectious process or vascular lesion. When a lumbar hernia was considered as a possibility, the discontinuity with abdominal contents ruled this option out. An X-ray of the lumbosacral spine revealed a hypodense translucent lesion, as seen in [Table/Fig-1].



[Table/Fig-1]: X-ray of lumbosacral spine shows a hypodense translucent lesion.

The size of the collection material was 4x2.3 cm, with a calculated volume of approximately 28 cc. It extended superior and lateral to the superficial muscular fascia; superficial vascularity was not identified on Doppler examination. Based on these findings, the possibility of a lumbar hernia with fat necrosis was considered as a differential diagnosis. However, further diagnostic work-up was necessary for the present case.

While early investigations suggested the potential for a lumbar hernia, the findings during surgery did not support this opinion. No gross evidence of a hernia was observed during the intraoperative procedure. The surgical process began after placing the patient in

the prone position, thereby allowing access to the swelling over the mid-lower back region. A 5 cm long incision was made following the intubation of the patient, with adherence to aseptic measures. The incision was made in the middle of the medial aspect, precisely over the swollen mass. This incision site was chosen because it provided direct access to the mass without invading other nearby major structures. The incision was deepened through the skin and subcutaneous tissues and no injury was inflicted on any neighbouring structures, as seen in [Table/Fig-2].



[Table/Fig-2]: The incision deep to the skin and subcutaneous tissues.

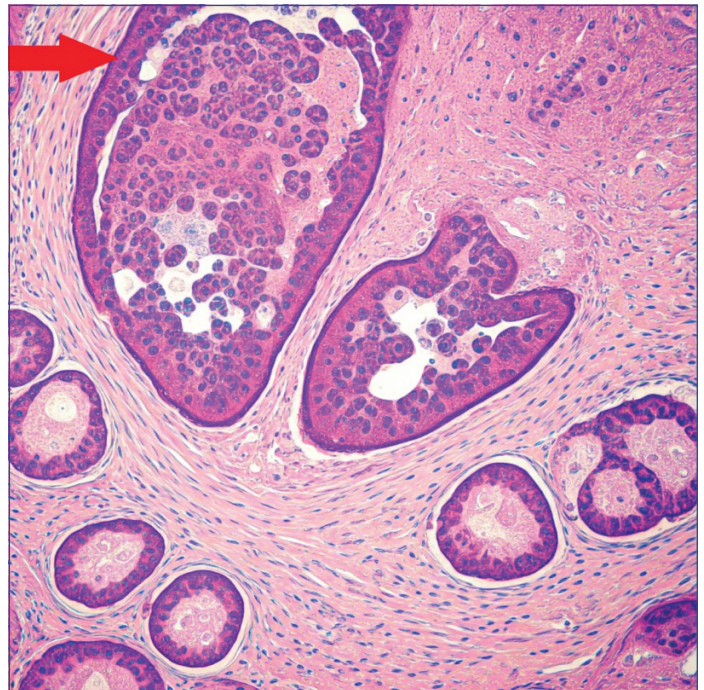
As the dissection advanced deeper into the subcutaneous layer, the initial impression of a hernia sac and/or herniated abdominal contents was not identified, contrary to observations from preoperative imaging studies. As dissection progressed, an abscess cavity was identified within the intramuscular plane, lying between the muscle fibers, as seen in [Table/Fig-3].



[Table/Fig-3]: Abscess cavity was identified within the intramuscular plane.

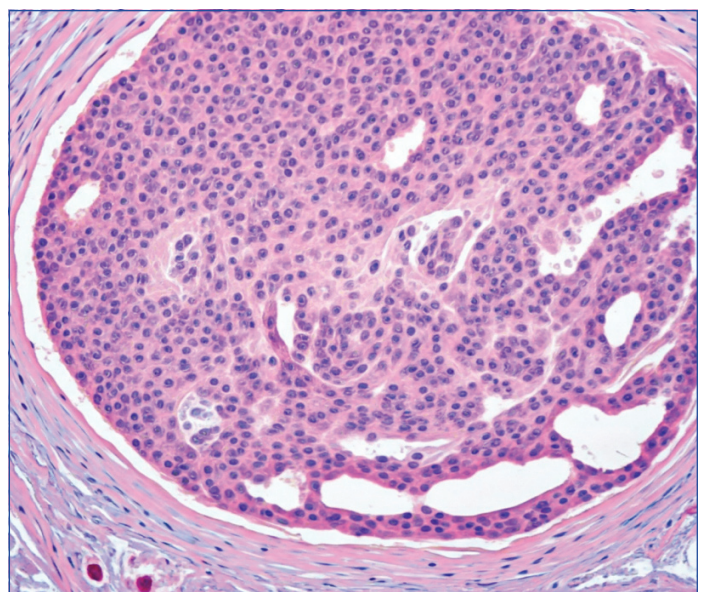
The abscess was an encapsulated collection of pus, enclosed in deeply red-coloured inflamed skin tissue. Special attention was paid to the use of a surgical retractor to gain access to the site while the abscess cavity was being opened. Thick, purulent material was drained from the cavity and a sample of the pus was used for the detection of the causative agent in the microbiological and cytological examination. The cytology report on the pus fluid sample was labelled as originating from the right infraclavicular region. A sample of less than 0.5 mL of reddish, blood-tinged, turbid fluid was taken. The cytological examination revealed a haemorrhagic background in which polymorphonuclear cells, lymphocytes and macrophages were present. These cells were arranged in small

clusters as well as diffusely distributed to varying extents in the smears, suggestive of inflammation. At this stage, the precise nature of the underlying condition remained unclear, although an infectious process was suspected. The cytological examination and histopathology are shown in [Table/Fig-4].



[Table/Fig-4]: Cytological examination histopathology (Haematoxylin and Eosin (H&E) stain, 10x power).

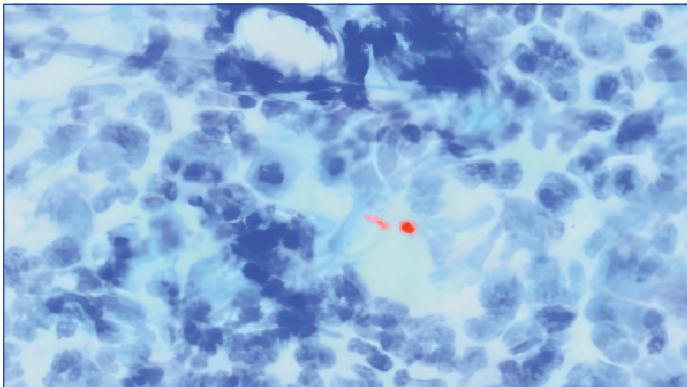
Histopathological examination was performed on a sample that was removed from the left infraclavicular region. The specimen consisted of several variously sized blackish tissue fragments, which measured a total of 7×4×1 cm. Examination under the microscope further confirmed tubercular changes, characterised by caseous necrosis, epithelioid granulomas, Langhans giant cells, chronic inflammatory cells and extensive fibrosis. These findings supported the clinical diagnosis of tubercular inflammation, indicating the possibility of a tuberculous abscess over a hernial or fat necrotic aetiology. The histopathological examination of the left infraclavicular region sample confirming tubercular changes is shown in [Table/Fig-5].



[Table/Fig-5]: Histopathological examination of left infra-clavicular region sample confirming tubercular changes (Haematoxylin and Eosin (H&E) stain, 10x power).

In the microbiological examination, the specimen received from the pus intraoperatively was positive for Mycobacterium Tuberculosis (MTB) through Ziehl-Neelsen staining, implying a tubercular origin.

There was no other bacterial growth isolated on aerobic or anaerobic culture. The histopathology of the microbiological examination of the intraoperative pus is seen in [Table/Fig-6].



**[Table/Fig-6]:** Histopathological examination of abscess cavity intraoperative pus sample with presence of Mycobacterium Tuberculosis (MTB) bacteria (Red coloured). (Ziehl-Neelsen (ZN) stain, 100x power).

Once the abscess had been adequately drained, the cavity was washed with saline to minimise the possibility of harbouring infectious material. Nonetheless, there was engorgement of the surrounding soft tissue; otherwise, no signs of active bleeding or other complications were noted. The abscess cavity was then left open to granulate and any remaining infection was allowed to discharge freely. A sterile dressing was placed over the wound and a small drain was sutured to help control postoperative effusion or pus. There were no complications recorded during the surgery and the patient did not complain of any discomfort throughout the process of the tubercular intramuscular abscess operation. After the operation, the patient was observed for any signs of infection, such as fever or complications in the operated region. The patient had a favourable outcome following the initiation of ATT after surgery, based on histopathological evidence of TB.

As the first few weeks went by, he reported relief from localised pain and no soreness in his hands. Subsequent visits demonstrated continued granulation tissue formation and skin healing, as well as the absence of further evidence of infection, including reinfection with MTB, or other TB-related complaints such as fever, weight loss, or night sweats.

Regarding the treatment, the patient continued the ATT regimen he was on, which included first-line anti-TB medications (isoniazid, rifampicin, pyrazinamide and ethambutol). To monitor safety and compliance and to prevent the mentioned side-effects, liver function tests and other side-effects were constantly evaluated. Eventually, the abscess cavity was closed and imaging studies conducted afterward did not reveal evidence of residual or recurrent disease. After the surgery, the patient experienced no complications and over the next several days, his condition gradually stabilised. He had no complaints, so he was discharged with wound care instructions and a plan for follow-up visits.

In a one-year follow-up, the symptoms had resolved, there were no new lesions and, more importantly, there was no systemic involvement, suggesting a favourable outcome. The issue of discontinuing ATT was discussed with the patient and he was informed of the consequences of stopping the medication before completing the prescribed dosage; a relapse would be inevitable.

## DISCUSSION

Lumbar swelling is an abnormal protrusion that may occur around the lumbar spine, which includes the L1-L5 vertebrae [1]. This can be related to infection, haematoma, tumour, disc herniation, cyst, or soft-tissue lesion, which might present with localised pain, tenderness, or limited range of motion [1]. An oval, heterogeneously hypoechoic collection with internal echogenicity of fat lobules is an X-ray finding of an oval-shaped mass that is darker (hypoechoic) compared to the surrounding tissue; it has less dense material [2].

A lumbar hernia with fat necrosis is a condition where tissue (which may include fat) protrudes through a weakened area in the lower back (lumbar region), related to the muscular and fascial floor of the abdominal wall [3]. A tuberculous abscess is a localised collection of pus due to an infection with MTB, commonly known as TB. These abscesses may occur if TB bacteria extend beyond the lungs and affect other tissues, which is common in extrapulmonary TB, including lymph nodes, bones, muscles, or organs [4].

Pott's spine, or tubercular spondylitis, is a TB condition that predominately affects the vertebrae of the spine. It can only be suspected clinically and then confirmed by imaging of the spine {Magnetic Resonance Imaging (MRI) or Computed Tomography (CT)} and microbiological examination; its treatment traditionally involves anti-TB therapy [5]. This condition occurs when MTB extends to the spine, typically affecting the vertebral column near the intervertebral disc, causing destruction of the bone and the surrounding soft tissues. Pott's spine may lead to severe lower back pain, spinal deformities such as kyphosis or "hunchback," and in worse cases, may result in neurological problems, including spinal nerve complications like weakness or even complete paralysis due to spinal stenosis [6,7].

Extrapulmonary TB accounts for approximately 15-20% of all TB patients and musculoskeletal involvement particularly affects the spine [1,2]. Tuberculous abscesses are common in high-burden TB countries, including India, sub-Saharan Africa and Southeast Asia. Patients often experience complications such as spinal deformity, neurological dysfunction and unbearable pain [1,6]. In developed countries, the incidence is considerably lower due to better healthcare access and TB control; however, the illness can still manifest, particularly in patients with immunocompromised status, including those with Human Immunodeficiency Virus (HIV)/ Acquired Immunodeficiency Syndrome (AIDS), diabetes and other immunosuppressive diseases [5,6].

Soft-tissue tumours like liposarcomas or myxomas should always be considered because these are painless, gradually growing masses that should be biopsied to determine histological variations [2,3]. Similarly, abscesses may be confused with epidermoid or dermoid cysts, but the differences can be discerned through imaging and histopathological examination [2]. Other notable differentials include hydatid cysts, where serological examinations along with imaging studies reveal the classic feature of daughter cysts and vascular lesions like lymphangiomas or hemangiomas, where Doppler and MRI studies play a crucial role [4,5].

A case involving a 77-year-old male patient, as described by Panigrahi S et al., with a history of diabetes, chronic renal disease on haemodialysis and previous surgery for right lung carcinoma, presented to the outpatient department with acute low back pain and generalised weakness [8]. On physical examination, mild tenderness at the L5 vertebra was noted. An MRI of the lumbosacral spine revealed an epidural abscess at the L4-5 level causing spinal compression [8]. The patient underwent surgery and a laminectomy with abscess drainage was performed [8]. Microscopic examination of the pus revealed budding yeast cells and cultures confirmed the presence of *Candida tropicalis* [8]. The patient was treated with intravenous amphotericin B followed by oral fluconazole [8].

In a case discussed by Singh J et al., a 30-year-old male with a cervical abscess secondary to Pott's disease, which is a form of extrapulmonary TB affecting the spine, was treated [9]. The histopathological findings following surgery confirmed a tubercular aetiology and after surgical decompression and anti-tuberculous treatment, the patient demonstrated marked improvement in his condition [9]. The present case highlights the serious nature of spinal abscesses in the context of Pott's disease, emphasising the risk of neurological impairment if not addressed promptly [9].

Case	Age (years)/ Gender	Presentation	Investigations	Diagnosis	Management	Outcome
Panigrahi S et al., [8], 2023	77/Male	Acute low back pain, limp, mild tenderness at L5	Elevated WBC, CRP, ESR; MRI: epidural abscess	Candida epidural abscess	Laminectomy, abscess drainage, i.v. amphotericin B, oral fluconazole	Smooth recovery, no postoperative issues
Singh J et al., [9], 2023	30/Male	Cervical abscess, neurological deficits, cord compression	MRI: peripherally enhancing collection	Cervical Pott's disease	Anterior cervical discectomy, fusion, ATT	Significant neurological improvement
Özdoğan S et al., [10], 2018	59/Female	Back pain, recurrent surgeries, night sweats	MRI: abscess formation, elevated CRP & ESR	Tuberculous spondylodiscitis	Surgical debridement, anti-TB therapy	Recovery following necrotic tissue removal
Hurtado Caballero E et al., [11], 2015	29/Female	Retroperitoneal swelling, initially misdiagnosed as hernia	Imaging: abscess without hernia; osteolysis	Retroperitoneal abscess (TB-related)	Abscess drainage, broad-spectrum antibiotics, ATT	Successful resolution of abscess and TB
Pandita A et al., [12], 2017	26/Female	Back pain, radicular symptoms, neurological deficits	MRI: Schmorl node, epidural abscess	Spinal TB (Pott's disease)	Adjusted ATT regimen; surgical intervention declined	Neurological improvement with tailored ATT regimen
Meena S et al., [13], 2014	25/Male	Abdominal pain, weight loss, back pain	MRI: perivertebral collection, radiographs	Pott's spine	ATT	Complete resolution of abscess
Current Case	53/Male	Lumbar swelling, no systemic symptoms	Sonography: encapsulated abscess; biopsy: caseous necrosis	Tuberculous abscess	Abscess drainage, ATT	Symptoms resolved, no relapse after 1 year follow-up

[Table/Fig-7]: Similar cases from the literature [8-13].

WBC: White blood cell, ESR: Erythrocyte sedimentation rate, CRP: C-reactive protein

In a case described by Özdoğan S et al., a 59-year-old female with a history of significant back pain and recurrent spinal surgeries ultimately presented with spondylodiscitis, evidenced by MRI findings of abscess formation in the lumbar disc [10]. The presence of inflammatory markers, alongside the surgical findings of an abscess, indicated an ongoing infection necessitating the use of antibiotics, including vancomycin [10]. In a case reported by Hurtado Caballero E et al., a 29-year-old female patient from India presented with a retroperitoneal abscess secondary to tuberculous spondylodiscitis [11]. She was initially misdiagnosed with an incarcerated inguinal hernia based on clinical and ultrasound findings [11]. Postoperative imaging demonstrated bilateral retroperitoneal abscesses associated with osteolysis of the lumbar spine, suggestive of tuberculous involvement, which necessitated broad-spectrum antibiotics and anti-TB therapy [11].

The case reported by Pandita A et al., describes a 26-year-old Indian female diagnosed with spinal TB after a prolonged diagnostic journey that included symptoms of back pain and radicular symptoms, ultimately leading to the discovery of a Schmorl's node associated with MTB infection [12]. The prolonged time to diagnosis, marked by initial treatments for presumed mechanical back pain and inflammatory arthropathy, exemplifies the challenge of recognising spinal TB, particularly in a patient with recent immigration from an endemic region [12].

A 25-year-old Indian male reported by Meena S et al., presented with abdominal pain, weight loss and subsequent back pain, which were suggestive of Pott's spine, based on MRI findings that revealed perivertebral collection and radiographic signs in favour of TB [13]. Although several conservative measures were applied, the patient had a favourable response to ATT and all imaging studies revealed complete resolution of the abscess [13].

These cases call attention to the necessity of a thorough diagnostic work-up in instances of atypical symptoms and the role of an appropriate surgical approach in managing TB-associated abscesses [13]. A comparative table summarising similar cases from the literature is presented in [Table/Fig-7] [8-13].

## CONCLUSION(S)

The present case emphasises the difficult diagnostic scenario and the increased challenges when generalised lumbar swellings are

encountered in clinical practice. In such cases, one should consider an infectious process such as a tuberculous abscess or Pott's spine, particularly in regions where tuberculosis is endemic. The initial histopathological assessment is essential for diagnosis and effective treatment. The present case highlights the importance of an early start on ATT to avoid adverse effects and enhance prognosis. Improving knowledge and subsequent exploration of the complexity of the clinical spectrum of tuberculosis, particularly in low-resource settings, is crucial for the development of more effective diagnostic strategies and better management of patients.

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