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## Case Report

# Sequestered disc herniation mimicking psoas abscess: A rare case report <sup>☆,☆☆</sup>

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## ABSTRACT

Intervertebral disc herniation is common condition, with majority occurring in lumbar and cervical spine. Most lumbar disk herniations occur within the spinal canal, with approximately 7%-10% identified within the foramen or extraforaminal location. Extraforaminal disc herniation in extreme lateral, retroperitoneal or anterior terms are used when disc material is seen towards anterolateral or anterior to the spine. Disc herniation in these locations is easily mistaken for an abscess or a neoplasm especially when it is not connected to the parent disc (sequestered disc). We describe a case of 60-year male who initially was misdiagnosed as psoas abscess and subjected to invasive investigation which later turned out to be histologically confirmed disc sequestration in the retroperitoneum. Thus, knowledge of this condition is essential in avoiding unnecessary workup and treatment.

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## Introduction

Intervertebral disc herniation is a common medical condition with estimated incidence of about 5 to 20 cases per 1000 adults annually. It is most commonly seen in 3rd to 5th decade life, with male to female ratio of 2:1. Symptomatic lumbar disc herniation has an estimated prevalence of about 1-3 percent of

patients [1]. Most lumbar disk herniations occur within the spinal canal, with only approximately 7%-10% being within the foramen or extraforaminal [2]. Extraforaminal disc herniation such as extreme lateral, retroperitoneal or anterior terms are used when these occur towards anterolateral or anterior aspect of the spine. The recently updated standardized lumbar spine nomenclature helps prevent the confusion between the different terminology [3]. When disc herniation occurs in

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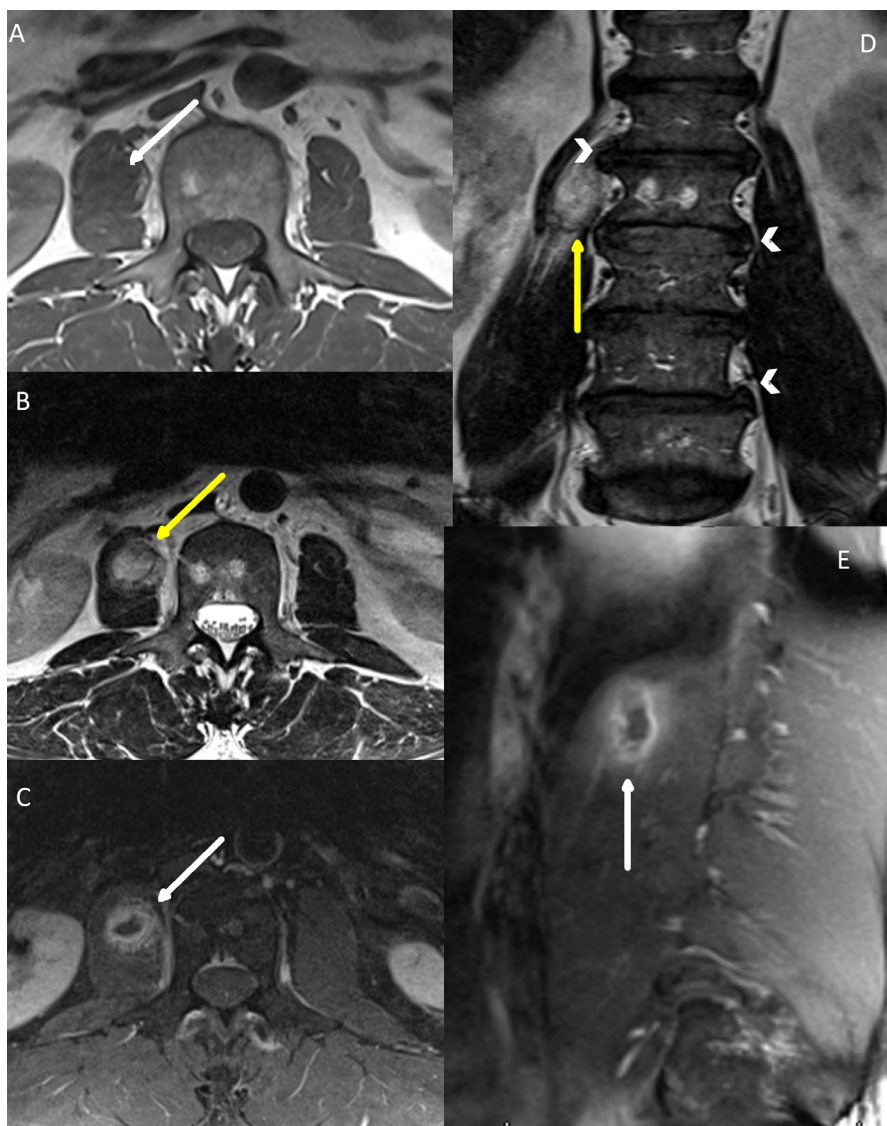
anterior or anterolateral aspect of spine, it can be mistaken for an abscess or a neoplasm. This is especially true when it is not connected to the parent disc (sequestered disc). We describe a rare case of 60-year male who initially was misdiagnosed as psoas abscess and later turned out to be histologically confirmed disc sequestration in the retroperitoneum within the psoas musculature.

### Case report

A 60-year male with past medical history of hypertension, hyperlipidemia, and osteoarthritis presented with longstanding (>20 years) waxing and waning sharp stabbing right groin pain. Over several months prior to presentation, there

has been acute on chronic worsening of pain, most notably with exercise (cycling) and with bending or squatting positions. Pain was non-radiating; however, consistently worsened with activity, and improved only with rest. No extremity swelling or redness. No history of recent travel or illicit drug use.

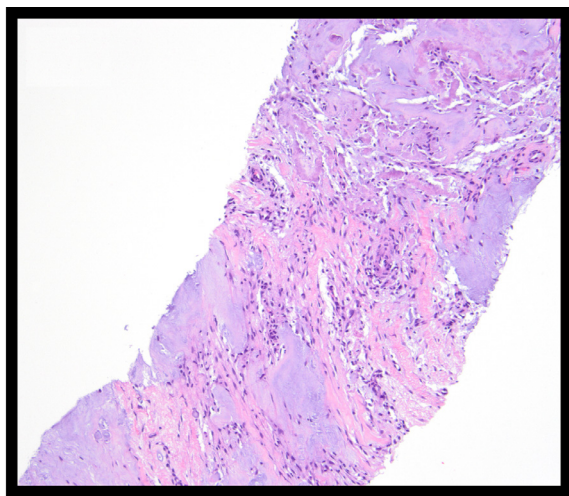
On examination he was afebrile (98.4 F), walked without a limp and had a normal gait. Right groin pain was reproducible with resisted straight leg raise and with the resisted eccentric contraction of right psoas while letting his leg down. On passive examination, aggressive forward flexion, internal and external rotation, and FABER testing did not demonstrate reproducible pain. Motor and sensory examination revealed no abnormality. Laboratory work up was unremarkable. Patient had MRI lumbar spine at an outside facility, which revealed concern for right psoas abscess.



**Fig. 1** – Axial T1 (A) and axial T2 (B) weighted images demonstrates hypo to isointense T1 (white arrow in A) and hyperintense T2 in right psoas muscle (yellow arrow in B and D). Post contrast T1 weighted fat saturated axial (C) and sagittal (E) demonstrates thick ring enhancement. Coronal T2 weighted image (D) demonstrates additionally degenerative disc changes in the lumbar spine (blue arrowheads).



**Fig. 2 – CT guided core biopsy image demonstrates core biopsy needle tip within the right psoas lesion (yellow arrow).**



**Fig. 3 – Hematoxylin and Eosin (H & E) stain of the core biopsy specimen demonstrates cartilage fragments (blue tissues) with focal granulation tissue (pink tissues) suggestive of disc material.**

MRI without and with contrast was repeated at our institution revealing asymmetric and mildly enlarged right psoas muscle on T1W and hyperintense focus in right psoas muscle (less hyperintense than CSF) on T2W (Fig. 1A-B, D). Post contrast images demonstrated peripheral irregular thick rim enhancing focus in right psoas with central area of hypointensity (Fig. 1C, E). There was no evidence of spondylodiscitis.

Given the concerns for abscess CT-guided fine needle biopsy was performed, CT image demonstrating core biopsy needle in right psoas (Fig. 2). Pathology revealed cartilage/disc

tissue with focal granulation tissue, suggestive of herniated disc (Fig. 3). There was no evidence of malignancy and or acute inflammation. The constellation of all the findings were diagnostic of disc sequestration mimicking psoas abscess.

## Discussion

Intervertebral disc herniation is commonly encountered in radiology practice; however, the extreme far lateral disc sequestration is uncommon. Disc herniation is a localized or focal migration of the disc material beyond the limits of the disc space. Disc material may be cartilage, nucleus, annular tissue, fragmented apophyseal bone or any combination of these. Disc herniations that completely loses continuity with the parent disc are characterized as sequestration. Extreme lateral lumbar disc herniations in the retroperitoneum along the anterolateral aspect of spine is rare and can mimic the psoas muscle pathology [2]. A sequestered disc within the retroperitoneum with the imaging appearance of psoas abscess has been reported rarely and to our knowledge 2 case reports so far and reported only once in a series of 3,000 histologically confirmed cases of disc herniation [4–6]. Unlike other case reports, in our report there is complete loss of continuity with disc and very mild adjacent lumbar disc degeneration.

Sequestered disc on MR imaging frequently demonstrates T1W iso to hypointensity and T2W hyperintensity when compared to adjacent disc [7]. Contrast enhancement is usually seen and expected to be rim type enhancement, as seen with disc herniation in more typical locations. Central portion do not show enhancement and usually corresponds to sequestered disc fragment. Rim enhancement is thought to be due to vascularized granulation tissue surrounding the sequestered disc. However, more homogeneous enhancement has also been described in the literature [4,8].

Psoas abscess can have remarkably similar features on MR imaging as seen with disc sequestration. T2W hyperintensity and post contrast rim enhancement is quite typical. T1W appearance can vary but is usually iso to hypointense [9]. Often adjacent spondylodiscitis can also be seen. Psoas abscess are frequently encountered problem in developing countries and often caused by tuberculosis. Tuberculous spondylodiscitis with paraspinal abscess formation is the usual presentation. However, psoas abscess can also be seen with other bacteremia such as staphylococcal, streptococcal, E. coli and Bacteroides. In developed countries psoas abscess is uncommon and common predisposing factors can include immunodeficiency, diabetes, inflammatory bowel disease, colon cancer and appendicitis. Common presenting symptoms of psoas abscess is back or flank pain, fever, limp, anorexia, inguinal mass. Tuberculous psoas abscess can be painless and often described as “cold abscess” [10]. Labs usually demonstrates leukocytosis, elevated ESR and CRP. However normal levels of inflammatory markers cannot exclude this diagnosis. Image guided drainage is usually both diagnostic and therapeutic [11,12].

In our case patient had long standing right groin pain with acute on chronic worsening. No fever and no lab evidence of leukocytosis or elevated inflammatory markers. MR imaging

revealing of rim enhancing focus in right psoas muscle at the L2 level without evidence of spondylodiscitis. Patient's groin pain was related to inflammation within the psoas muscle and/or involvement of adjacent L2 nerve fibers. Groin area is usually innervated by ilioinguinal, iliohypogastric, and genitofemoral nerves and these nerves arise from the L1 and L2. Also, involvement of psoas muscle can give rise to referred pain in the groin area.

In summary, clinician and radiologist should be aware of uncommon appearance of sequestered disc mimicking psoas abscess on MR imaging. Absence of elevated inflammatory markers or clinical feature of an abscess should raise the suspicion for an alternate pathology. Repeat imaging can be considered and in case of doubt image guided biopsy should be performed. Rim enhancing focus can be mistaken as psoas abscess and differentiating it from sequestered disc is crucial in avoiding unnecessary treatment and workup.

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### Patient consent

The patient gave permission for the case to be published.

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