International Surgery Journal
Baid S et al. Int Surg J. 2025 Oct;12(10):1852-1855
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20253046

Case Report

Delayed-onset deep mesh infection presenting as discharging sinuses years after lichtenstein hernioplasty: a case report

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Received: 25 July 2025
Accepted: 04 September 2025

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ABSTRACT

Lichtenstein tension-free mesh hernioplasty is the gold standard for inguinal hernia repair due to low recurrence and minimal complications. However, delayed-onset mesh infections are rare and often underdiagnosed due to their subtle clinical presentation. They can manifest years later as chronic discharging sinuses and require high clinical suspicion for accurate diagnosis. Here a 50-year-old male presented with multiple discharging sinuses over the right inguinal region, several years after undergoing mesh hernioplasty. He was afebrile and hemodynamically stable. Magnetic resonance imaging (MRI) revealed subcutaneous T2 hyperintense collections, sinus tracts, and an enlarged lymph node. Surgery revealed purulent discharge with fibrotic adhesions and sinus tracts involving the mesh and spermatic cord, which were excised en bloc along with a lymph node. Histopathological analysis revealed foreign body-type granulomas, lymphocytic infiltration, and follicular hyperplasia, consistent with a chronic foreign body reaction. The patient received culture-sensitive antibiotics postoperatively and had an uneventful recovery with no recurrence on follow-up. Delayed-onset mesh infections are typically caused by biofilm-forming bacteria and may not respond to conservative treatment. Imaging assists in localization, but surgical removal of the infected mesh and affected tissues is the cornerstone of management. Histopathology helps confirm the chronic inflammatory response to synthetic mesh. This case emphasizes the need for long-term vigilance following mesh repair surgeries. Early recognition, thorough imaging, and prompt surgical intervention are vital for resolution. Awareness of this rare but significant complication can improve patient outcomes and reduce morbidity.

Keywords: Inguinal hernia, Delayed mesh infection, Lichtenstein hernioplasty

INTRODUCTION

Globally, inguinal hernia repair is among the most frequently performed general surgeries, with over 20 million procedures conducted annually.[1] The Lichtenstein tension-free mesh repair remains the gold standard for inguinal hernia surgery due to its low recurrence rates, reduced postoperative pain, and faster recovery times.[2] However, the widespread use of synthetic mesh has introduced mesh-related complications, including chronic groin pain, seroma, foreign body sensation, and mesh infection, the latter being a rare but significant concern.[3]

Mesh infections are generally classified as early-onset (occurring within 30 days) or delayed-onset (occurring months to years after surgery). While early infections are often due to perioperative contamination, delayed infections are believed to arise from low-grade bacterial colonization, biofilm formation, or late hematogenous seeding, leading to chronic inflammation and abscess or sinus tract formation.[4] The reported incidence of mesh infection ranges from 0.1% to 1.4% for inguinal hernia repairs, but delayed-onset infections are even rarer, with only sporadic cases documented in the literature.[5] One of the hallmark clinical features of delayed mesh infection is the development of chronic discharging sinuses, sometimes many years after an otherwise uneventful

surgery.[6] Such infections may resemble other conditions, frequently causing delays in diagnosis. Imaging modalities such as ultrasonography, computed tomography (CT), or magnetic resonance imaging (MRI) may aid in delineating sinus tracts and identifying mesh involvement, but definitive diagnosis often requires surgical exploration and histopathological analysis.[7]

The management of deep mesh infection is challenging and often necessitates complete removal of the infected mesh, along with excision of sinus tracts and appropriate antibiotic therapy. Conservative management without mesh explantation often results in persistent or recurrent infection.[8] Notably, delayed infections may not respond well to conventional antibiotics due to biofilm-associated resistance, and the success of treatment largely depends on timely diagnosis and complete debridement.[9]

Here, we report a rare case of delayed deep mesh infection presenting as discharging sinuses years after Lichtenstein hernioplasty, highlighting the importance of recognizing this uncommon complication, diagnostic vigilance, and the importance of individualized surgical management.

CASE REPORT

A 50-year-old male presented with a history of multiple discharging sinuses along the previous surgical incision line, several years after undergoing Lichtenstein mesh hernioplasty for a right inguinal hernia at our institution. No associated fever or systemic symptoms reported. On examination, the patient was hemodynamically stable. Abdominal examination revealed a soft, non-tender, and uniformly distended contour. A well-healed surgical scar was noted in the right inguinal region, along with multiple actively discharging pus sinuses. No signs of acute inflammation were present.

Radiological investigations were carried out for further evaluation. Ultrasound imaging demonstrated a fluid collection measuring 2.1×1.1×1.9 cm (volume 2.3 ml) at the operative site, accompanied by surrounding inflammatory changes. MRI showed a peripheral enhancing subcutaneous collection that appeared T2 hyperintense and T1 hypointense in the right inguinal region. Multiple sinus tracts were visualized, and a significantly enlarged lymph node measuring 3.2×3.3 cm was detected in the same region as shown in Figure 1.

The patient was taken up for surgical exploration under general anaesthesia. Around 30 ml of purulent discharge encountered. Several interlinked sinus tracts were found involving the mesh and spermatic cord. Mesh was encapsulated in granulomatous tissue. A firm lymph node (3×2 cm) found near inferomedial border of the inguinal canal. The mesh and dense fibrotic tissue had enveloped the spermatic cord. En bloc resection was performed, including the mesh, sinus tracts, fibrotic tissue, and associated lymph node as shown in Figure 2.

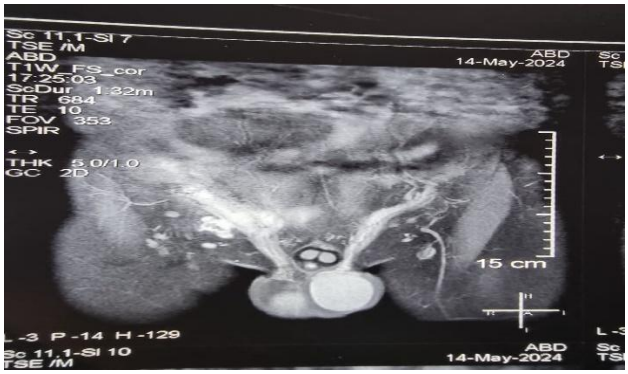

Figure 1: MRI showing enhancing abscess with sinus tracts in right groin.

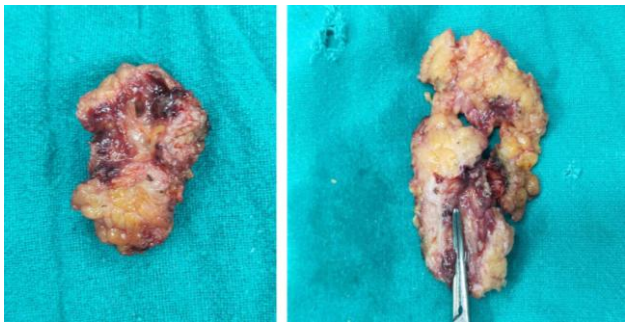

Figure 2: Intraoperative excision specimens showing infected mesh and granulomatous tissue.

Histopathological examination of the excised specimen revealed foreign body-type granulomas, lymphocytic inflammatory infiltration, and follicular hyperplasia of the lymph nodes, confirming a chronic foreign body reaction as shown in Figure 3. The patient was managed postoperatively with incision and drainage, followed by culture-sensitive antibiotic therapy administered for four weeks. Recovery was smooth, with no recurrence noted on follow-up.

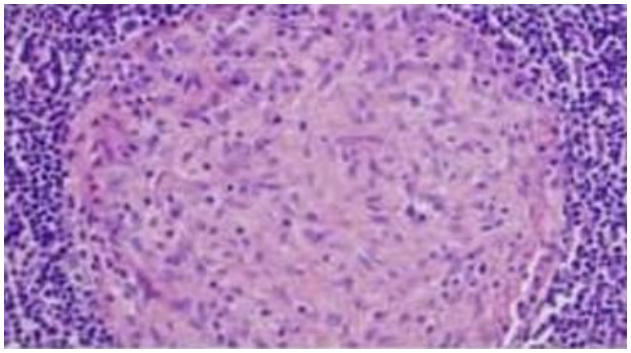

Figure 3: Histopathological section showing granulomatous inflammation with lymphocytes.

DISCUSSION

Chronic mesh infections represent a serious postoperative complication that often demands a multidisciplinary

management approach. Infections can remain clinically silent for prolonged periods, later presenting with chronic discharging sinuses, persistent swelling, or inguinal pain unresponsive to analgesics. Systemic symptoms like fever and malaise may also be observed.

In the present case, the patient developed discharging sinuses several years after Lichtenstein hernioplasty, a hallmark feature of delayed mesh infection. Although the reported incidence of mesh infection ranges between 0.1% and 1.4%, the subset presenting with delayed sinus formation is significantly less common and often misdiagnosed due to its insidious presentation and nonspecific symptoms.

Imaging modalities such as ultrasonography, CT, and MRI play a supportive role in diagnosis. In our case, MRI was particularly useful in identifying T2 hyperintense collections and sinus tracts tracking to the mesh, along with an enlarged lymph node—features consistent with chronic mesh infection. However, imaging findings must be interpreted alongside clinical suspicion, as definitive diagnosis often requires surgical exploration and histopathological confirmation.[10] Histopathological examination confirmed the presence of granulomatous inflammation, foreign body-type granulomas, and follicular hyperplasia of lymph nodes—findings characteristic of chronic inflammatory responses to synthetic material.[11]

Management of delayed mesh infection remains surgical in most cases. Conservative treatment with antibiotics alone often fails due to biofilm resistance and does not address the nidus of infection. Several reports have indicated that partial removal or simple drainage often results in recurrence or persistence of infection. In our case, en bloc resection of the infected mesh, associated sinuses, and involved lymph node resulted in complete resolution of symptoms, supporting the effectiveness of aggressive surgical management.

This case underscores the importance of long-term vigilance in patients with mesh implants and highlights that deep mesh infections may present years after surgery, often in the form of persistent or recurrent sinus tracts. Early recognition, appropriate imaging, and definitive surgical management are essential to prevent further complications and ensure complete recovery.

CONCLUSION

This case highlights the rare but clinically significant occurrence of delayed-onset deep mesh infection following Lichtenstein hernioplasty, manifesting as multiple discharging sinuses years after the initial surgery. Despite the procedure's widespread acceptance as the gold standard for inguinal hernia repair, clinicians should remain aware of potential late complications, including chronic mesh infections. Such infections are often underrecognized due to their indolent presentation and long latency, leading to diagnostic delays.

Our case reinforces the importance of maintaining a high index of suspicion in patients presenting with chronic discharging sinuses along previous surgical sites, even in the absence of systemic symptoms. Imaging modalities such as MRI are valuable adjuncts in delineating sinus tracts and identifying associated mesh involvement. However, surgical exploration remains both diagnostic and therapeutic, especially in cases complicated by biofilm-associated infections unresponsive to conservative management.

Definitive management involves complete mesh explanation along with resection of involved tissues, including fibrotic adhesions and lymph nodes, followed by culture-directed antibiotic therapy. Histopathological confirmation of a chronic foreign body reaction further corroborates the diagnosis.

This case underscores the need for individualized management strategies, careful long-term surveillance of hernia repair patients, and multidisciplinary involvement to optimize outcomes. Awareness of this delayed complication can facilitate timely intervention and prevent recurrence, enhancing overall surgical care quality.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Baid S, Mahajan S, Parineeta, Sharma S. Delayed-onset deep mesh infection presenting as discharging sinuses years after lichtenstein hernioplasty: a case report. Int Surg J 2025;12:1852-5.