



Case Report

Prolene granuloma presenting with multiple discharging sinuses after hernioplasty: A Case Report

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Name of Author:

Vasanthbalan S B^{*1}, Kambala Prasanna Kumar², Jayakanthan S³, Manivannan Rajarathinam⁴, Srinivasan C⁵

Affiliation: ¹General Surgery, Sree Balaji Medical College And Hospital, CHENNAI, IND

²Assistant Professor, General Surgery, Sree Balaji Medical College And Hospital, chennai, IND

³Professor, General Surgery, Sree Balaji Medical Hospital and College, Chennai, IND

⁴Professor, General Surgery, Sree Balaji Medical College and Hospital, Tamilnadu, IND

⁵HOD, Department of General Surgery, Sree balaji medical college and hospital, chennai, IND

Corresponding Author:

Vasanthbalan S B

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Abstract: Discharging sinus is a rare postoperative complication following abdominal surgery. They commonly occur as a result of foreign body reaction to non-absorbable sutures. Prolene granuloma occurs as an inflammatory response to Prolene sutures. Its clinical presentation may occur even after years of surgery, as painful nodules or persistent sinus discharge. A 55-year-old male, one year after hernioplasty, presented with seropurulent discharge from the surgical scar, which progressed to multiple foul-smelling sinuses. Ultrasonography showed ill-defined heteroechoic collections. Surgical exploration identified Prolene granuloma with associated sinus tracts; all of which were successfully excised. Histopathological examination confirmed the diagnosis. This highlights the significance of considering Prolene granuloma as a differential diagnosis of chronic post-surgical sinus tracts and emphasizes the role of early detection and surgical intervention in preventing morbidity.

Keywords: Prolene granuloma; Discharging sinus; Hernioplasty; Foreign body reaction; Non-absorbable sutures; Abdominal wall sinus

INTRODUCTION

Abdominal wall sinuses, though uncommon, are serious complications following surgery. They present as multiple chronic discharging tracts, commonly seen in cases of infected surgeries, traumas, and damage control procedures.¹⁻³ Among others, retention of foreign bodies- such as, implants and surgical threads, is the major underlying pathophysiology.⁴

Prolene, a synthetic monofilament polypropylene suture, is broadly used because of its durability as well as low reactivity. Though, in some patients, this could provoke chronic immune-mediated inflammatory response, resulting in a granuloma. The granulomas can present as painful mass or persistent discharging sinuses. They may present

months to even years after the surgical procedure. The patient presents with discharging sinuses, similar to those seen in abscess, scar endometriosis, fistula, or recurrent tumors, leading to difficulty in accurate diagnosis.⁵

introduction

High index of suspicion is essential, especially in patients with a relevant surgical history. A multidisciplinary management including imaging, surgical excision, and antibiotics is required for efficient treatment and the prevention of recurrence.

Case Presentation

A 55-year-old male, one year post-bilateral “Lichtenstein tension-free mesh hernioplasty”, presented with complaints of localized pain and seropurulent discharge at the left inguinal incision site. The patient had no history of comorbid conditions. Twelve months after the surgery, the patient noticed a small area of seropurulent discharge at the superior aspect of the surgical scar. Despite multiple courses of oral antibiotics prescribed by his physician, the discharge persisted and gradually worsened. Multiple additional sites of discharge developed along the length of the surgical incision over the next six months; the fluid becoming increasingly foul-smelling and purulent in nature. Clinical examination revealed a 5×1 cm scar with two sinus openings located at either end (Figure 1). The right inguinal site was unremarkable.



Figure 1: Clinical presentation showing two discharging sinuses at the surgical site.

Mild leukocytosis (12,500 cells/ μ L) with neutrophilia was seen in blood investigation. C-reactive protein levels were elevated (45 mg/L) and erythrocyte sedimentation rate was 38 mm/hr, consistent with the ongoing inflammation. Swabs taken from the wound site were sent for culture which showed the growth of mixed bacterial flora, including *Staphylococcus epidermidis* and *Escherichia coli*, suggesting secondary bacterial colonization.

Ultrasonography showed an ill-defined heteroechoic collection, measuring 4.2×1.6 cm with internal echoes located in the subcutaneous plane of the left inguinal region. The sinus tract measured 6.8 mm in thickness and 1.4 cm in length, extending to the skin. A second heteroechoic collection was also identified, measuring 3.1×2.5 cm with a tract thickness of 3.8 mm and a length of 1.0 cm reaching the skin (Figure 2).



Figure 2: Ultrasonographic image demonstrating the sinus tract.

Based on the clinical presentation, investigations, and failure of conservative management, the decision was made to proceed with surgical exploration and debridement. Under general anesthesia, the previous surgical incision was reopened. Systematic exploration of all sinus tracts was performed. Intraoperatively, a communication was noted between both sinus tracts. A probe could be passed through the tracts (Figure 3). The tracts were lined with granulated tissue and contained purulent material. Most significantly, several Prolene sutures from the original hernioplasty were found to be surrounded by dense granulated tissue, forming discrete nodular masses (Figure 4).



Figure 3: Intraoperative image showing communication between sinus tracts.



Figure 4: Intraoperative view demonstrating presence of retained Prolene sutures

Complete excision of all granulated tissue was carried out, along with removal of all visible Prolene suture material. The sinus tracts were thoroughly debrided and irrigated with normal saline. The mesh implant appeared well-incorporated without signs of infection and hence was left in situ. Primary closure was achieved after ensuring adequate hemostasis and tissue viability.

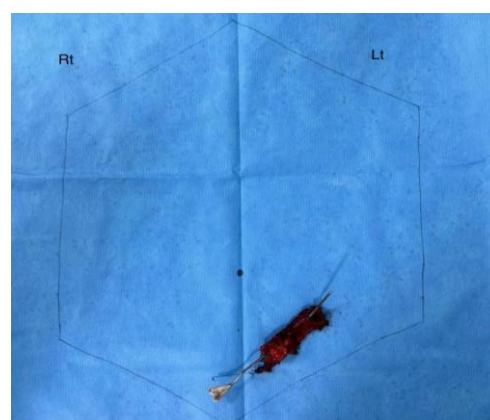


Figure 5: Gross specimen depicting the sinus tract

Histopathological examination revealed granulomatous inflammation consistent with foreign body granuloma. Prolene suture fragments were seen surrounded by epithelioid macrophages, lymphocytes, and multinucleated giant cells (Figure 6).

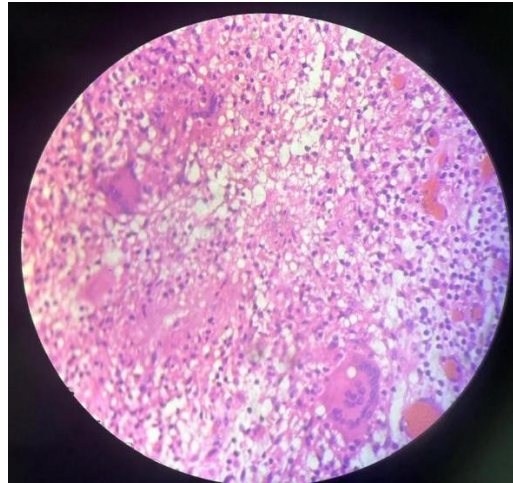


Figure 6: Histopathological image demonstrating epithelioid macrophages, lymphocytes, and multinucleated giant cell

The patient's postoperative recovery was uncomplicated. A course of prophylactic antibiotics was administered postoperatively. The surgical wound healed well without infection or dehiscence. At 2-week follow-up, all discharge had resolved, and the incision appeared well-healed. Long-term follow-up at 6 months demonstrated complete resolution of symptoms with no evidence of recurrent sinus formation or discharge.

DISCUSSION

This case report records the classical and rare presentation of Prolene granuloma presenting with multiple chronic discharging abdominal wall sinuses and its management. The delayed presentation, characteristic imaging findings, and histopathological confirmation are similar to the previously reported cases in the literature.⁶

Among others, foreign material biocompatibility and individual patient immune response seem to play crucial roles in the pathophysiology of Prolene granuloma. Though Prolene is widely used in surgical procedures and is generally well-tolerated, rare cases of granulomatous reactions are reported.⁷⁻⁹ Our case adds to the growing body of literature documenting this uncommon but significant complication.

The diagnostic challenge posed by Prolene granulomas is well-documented. The often delayed and non-specific clinical presentation, along with the potential for secondary bacterial colonization, could lead to misdiagnosis and thus resulting in inappropriate initial management. In our case, the patient had received multiple courses of antibiotics before the correct diagnosis was established, highlighting the importance of maintaining a high index of suspicion in patients with persistent symptoms, especially with a history of surgery. Imaging studies play a key role in diagnosis.

Ultrasonography provides valuable information about the extent and nature of the condition.¹⁰

Complete excision of all granulomatous tissue and foreign material is the surgical management to prevent recurrence. In our case, the identification and removal of multiple Prolene sutures surrounded by granulomatous tissue resulted in a successful outcome. The decision to leave the mesh implant in situ was based on its apparent good incorporation and lack of associated inflammatory changes. The excellent outcome achieved in our case, with complete resolution of symptoms and no evidence of recurrence at 6-month follow-up, highlights the effectiveness of appropriate diagnosis and surgical management. This report is consistent with other published cases in literature, where complete excision has generally resulted in excellent long-term results with no recurrence/complications.

Conclusion

Prolene granuloma should be considered as a differential diagnosis in patients presenting with chronic discharging sinus tracts at previous surgical sites, particularly following hernioplasty or procedures involving non-absorbable sutures. Accurate and timely diagnosis, guided by imaging and confirmed histologically, is critical. Definitive management is complete surgical excision of sinus tracts and granuloma along with removal of involved suture material. This case report emphasizes that early

identification and appropriate treatment can minimize complications and improve patient outcomes.

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