



MESH EXPLANT: STILL A CONCERN IN LAPAROSCOPIC ERA

General Surgery

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ABSTRACT

The introduction of synthetic mesh for hernia repair was a landmark breakthrough and has significantly reduced recurrence rates thus improving surgical outcomes. Despite the benefits of mesh, some new complications have come in to picture. One of them, mesh-related infections have emerged as a major challenge in both open and laparoscopic hernia repair techniques. Laparoscopic approaches, particularly the IntraPeritoneal Onlay Mesh (IPOM) technique, are associated with a risk of mesh infections, often due to technical factors, inadequate sterilization, or host-related factors. We present a case of a 43-year-old woman who developed chronic discharging sinus secondary to mesh infection following laparoscopic hernia repair. Surgical explantation of mesh and debridement were performed successfully. This case underscores the importance of aseptic technique, nutritional adequacy, vigilant postoperative monitoring, and prompt management of complications. Prevention through meticulous technique and infection control remains the cornerstone for management of mesh-related complication, thus preventing explant

KEYWORDS

Mesh explant, IPOM, mesh infection, laparoscopic hernia repair, chronic sinus, prosthetic complications

INTRODUCTION

Hernia repair has undergone a paradigm shift with introduction of synthetic meshes, particularly polypropylene. The laparoscopic IPOM (IntraPeritoneal Onlay Mesh) technique has gained popularity and is by far considered the standard operative technique for extensive and complex abdominal wall hernias due to advantages like lower recurrence rate, shorter recovery time, reduced postoperative pain and less wound complications. However, despite its benefits, mesh implantation—especially within the peritoneal cavity—carries the risk of mesh infection, a severe and sometimes delayed complication.

They can present as early postoperative wound infections / dehiscence or as chronic late discharging sinus due to biofilm formation on the mesh surface. This complication is difficult to manage due to the nature of biofilms, which can resist both immune clearance and antibiotic therapy. The management of infected mesh often requires explantation, which increases patient morbidity, resurgery, delayed healing, and hernia recurrence.

Case Report:

A 43-year-old female resident of Srikakulam, housewife by occupation, presented to the general surgery outpatient department with complaints of a swelling in the umbilical region associated with purulent discharge since one month. The swelling in the umbilical region began insidiously, gradually progressive, no aggravating or relieving factors. Associated with pus discharge, intermittent nature. No other complaints of fever, pain, gastrointestinal symptoms.

She had undergone laparoscopic incisional hernia repair (IPOM technique) 8 months earlier. There were no other significant comorbidities, smoking history.

On Local Examination : A swelling of size 10 × 8 cm noted in the umbilical region, non tender, firm consistency, with irregular borders. Scar noted at umbilicus. Active pus discharge was observed from the umbilicus and other laparoscopic port sites.

Blood work revealed mild leukocytosis. C-reactive protein and ESR were elevated.

On CT Abdomen A well-defined hypoechoic collection measuring approximately 161 cc with echogenic debris was noted in the periumbilical region, communicating with sinus tracts extending to the port sites suggestive of **postoperative collection / abscess**

The patient planned for re-exploration under general anesthesia.

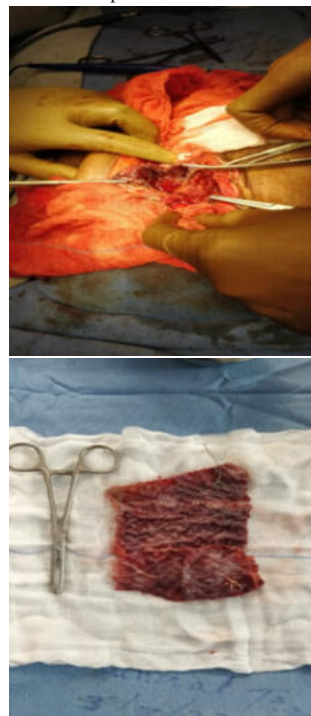
Intraoperative Findings: A thick-walled abscess cavity containing

about 160 cc of pus found over the infected mesh. Infected mesh was adherent to surrounding tissues. Multiple sinus tracts were extending from the collection to the previous port sites. Necrosis of adjacent rectus muscle noted

Complete explantation of infected mesh done with excision of necrotic rectus muscle. Purulent fluid aspirated and sent for culture and sensitivity. Thorough lavage done with normal saline and antiseptic solution. Midline closure of rectus muscle done post repair. Abdominal wall and skin closed in layers.

The patient received broad-spectrum intravenous antibiotics based on culture sensitivity, followed by tailored oral antibiotics. Postoperative recovery was uneventful, and the patient was discharged in a stable condition with regular follow-up.

Postoperative Diagnosis: Postoperative intra peritoneal onlay mesh infection underwent mesh explantation



DISCUSSION

Mesh infection is a significant complication of hernia repair with its incidence 5% of overall patients. In laparoscopic procedures, the risk is increased by factors such as improper sterilization of instruments, contamination during placement, and host immune factors. Mesh infections post hernia repair are broadly divided into early superficial infections and late-onset deep infections. Early superficial infections usually occur within the first month post-surgery, usually due to operative contamination. These often respond to antibiotics and local wound care. Late-onset deep infections on the other hand may present months or even years later, have unclear mechanism of development and often require mesh explantation due to established biofilms.

Biofilms act as a protective matrix for microorganisms and makes systemic antibiotics less effective. Once biofilm-associated infection have started with the mesh, eradication without mesh explantation is nearly impossible. Reported incidences of deep mesh infection vary between 0.09% to 0.35%.

Various Studies, Including Meta-analyses, Have Identified Risk Factors For Mesh Infection:

- Inadequate sterilization protocols (particularly laparoscopic instruments)
- Prolonged operative time
- Postoperative seroma or hematoma
- Immunosuppression
- Diabetes mellitus

Preventive Strategies Include:

- Using lightweight, coated, or antimicrobial-impregnated meshes
- Strict adherence to aseptic surgical techniques and antisepsis
- Avoiding contamination of surgical instruments
- Thorough hemostasis to prevent seroma/hematoma
- Adequate antibiotic prophylaxis
- Vigilant wound care postoperatively
- Adequate nutrition to patient

CONCLUSION:

Although mesh infection is a rare complication, it has significant morbidity risk. Laparoscopic techniques in fact may have higher problems with sterilization. It is preventable with stringent sterility protocols regarding operative theatre, instruments and techniques, antibiotic stewardship, proper selection of mesh material, following evidence-based perioperative practices. The key to management is high suspicion, early imaging, systemic antibiotics and immediate surgical intervention if necessary like local debridement or mesh explantation. Nevertheless, it would be worth emphasizing 'prevention is better than cure'.

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Ethical Approval: The study was approved by the Institutional Ethics Committee

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