

## Mesh Infection after Inguinal Hernia Mesh Repair – Experience of Five Mesh Removal

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**Abstract:** Clinicians have been challenged in the past few years by an increasing variety of mesh related infections following widespread use of meshes after repair of hernias. The possibility of mesh related infection occurring weeks or even years after hernia repairs, should be considered in any patient with chronic, persistent, recurrent sinuses formation following hernia repair. The incidence is influenced by underlying co-morbidities, the type of mesh, the surgical technique and the strategy used to prevent infections. An approach that combines medical and surgical management is necessary for cases of mesh infection. Removal of infected mesh is advocated without a new implant, since transversalis fascia is thickened by fibrosis which prevents recurrence of Hernia In These Cases.

**Keywords :** Hernia repair, mesh related infection, infected mesh removal.

### I. Introduction

Hernia repairs are the most common elective abdominal wall procedures performed by general surgeons. Recently, the use of a mesh has become the standard in hernia repair surgery worldwide owing to reduced rates of recurrence and technical ease of operation. However, this has led to increasingly more frequent occurrence of mesh related complications.

The reported Incidence of mesh related infections following hernia repair varies between 1 and 8% in different series<sup>1</sup>. This postsurgical mesh related infections though rare but causes considerable morbidity and may even necessitate mesh removal, as antibiotic and mesh saving operations are not sufficient to eradicate the infection in majority of cases<sup>2,3,4</sup>. The rate of mesh removal due to infection following inguinal hernia repairs was reported to be 0.13%. The interval between hernia operation and mesh removal could be up to 10 year or longer<sup>5</sup>.

Herein we report our experience of five cases of inguinal hernioplasty, underwent mesh removal to eradicate chronic infection.

### II. Material And Methods

5 patients were presented to us between January 2011 to March 2015, who had open inguinal hernia repairs by using prolene (poly propylene) mesh at other institutions and were referred to us for treatment of chronic infection. The medical records of these patients were reviewed retrospectively and information regarding presentation, operative findings and bacteriological examination result were obtained.

All these referred patients had received repeated courses of antibiotic therapy before presenting to us. Our treatment strategy included systemic antibiotic therapy, drainage of abscesses and removal of the infected mesh. In all of these 5 patients, the infected meshes were removed completely and associated sinus tracts were extirpated. Specimens were sent for bacteriological examination at time of operation.

In none of the patients did we attempt to reinforce the transversalis fascia, which was thickened and fibrosed even after mesh removal. Patients were further followed up and reviewed in an outpatient clinic to determine hernia recurrence following mesh removal.



Photo 1 – Chronic infection and sinus tracts formation after Lichtenstein repair



Photo 2 – Exploration of wound with removal of mesh, showing thickened transversalis fascia



Photo 3 – Infected mesh removed in pieces and prolene knots.

### **III. Results**

During the study period 5 mesh removal were performed because of chronic infection in male patients with a median age of 40 years (range 28 to 52 year). At the time of presentation, all the patients had chronic sinus discharges (photo 1)The interval from hernia repair to mesh removal was 4 to 12 months during this period, all patients were treated with antibiotic regimens, abscess drainage and local wound care and were referred to us after failure of this conservative approach.

Bacterial isolates were obtained in 2 patients and both cultures were positive for staphylococcus aureus. Patients were followed for a median period of 16 months(range12 to 24 months). In all the patients, infections were resolved successfully and none were persistent or recurrent. None of the patient developed recurrent hernia during follow up period.

### **IV. Discussion**

Use of meshes come under standard practice for surgical repair of hernias. As the number of hernias treated worldwide continues to grow, also the number of hernia meshes implanted each year rise inexorably. Mesh infection rate in inguinal hernia surgery in below 1% and is not regarded as a clinical problem. The most important thing regarding the prevention of mesh related infections is that foreign body reactions depend on the amount of prosthesis (mesh) used. For this reason, surgeons should try to minimize the area of mesh that is introduced during the hernia operation, since the inserted foreign material is an ideal medium for bacterial colonization<sup>6</sup>.

Deep prosthetic infections should be distinguished from superficial incisional infections<sup>7,8</sup> which tend to occur in the early postoperative period and do not seem to be influenced by the use of mesh. These infections are typically managed without the need for mesh removal since they do not involve the mesh. In contrast. the most striking features of deep prosthetic infections is that it tend to present after a delayed period of 2 weeks to 39 months following mesh repair<sup>2,9</sup>. In our cases, the mean time period between hernia repair and removal of the infected mesh was 8.6 months.

These patients usually present with symptoms and signs of local acute inflammation (a combination of pain, erythema, tenderness, swelling and increased temperature in the abdominal wall in the area of mesh). In addition, patients may have systemic manifestations such as fever, malaise, chills or rigors. A rare mesh related infection can sometimes manifest with discharging fistula, or with an intra abdominal abscess<sup>1</sup>.

More frequently, deep mesh infection tend to present in a more indolent manner with chronic, persistent or recurrent signs and symptoms. Typically, patients present with sinus formation<sup>2,3,9</sup>, as seen in our cases also.

Radiological techniques, including ultrasound and computerized tomography, are useful for diagnosis<sup>1</sup>. However, in our experience these techniques were not used for making diagnosis of mesh infection, rather diagnosis was made on clinical ground.

The most common pathogens involved in mesh infections are staphylococcus species, streptococcus spp., gram negative bacteria (mainly enterobacteriaceae ) and anaerobic bacteria. Recent or concomitant antibiotic therapy could have been responsible for the low identification of causative pathogens from intra-operative mesh samples of these patients. It is well known that staphylococcus spp. which are the most common causative organisms in mesh infections, produce bio films on prostheses, which also contributed to the low identification rate of organisms via bacteriological examination<sup>10</sup>. Because culture results can be negative in many cases, a diagnosis of chronic mesh infection is based on clinical presentation.

The primary treatment modality is conservative. This is successful in eliminating mesh infection in over 50% of cases without mesh removal<sup>11,12</sup>. The treatment options in long standing wound infections might be problematic to handle<sup>13</sup>. There are no recommendations on how long a conservative regime is acceptable.

In inguinal hernia surgery removal of infected mesh is advocated without a new implant, since the transversalis fascia is thickened by fibrosis<sup>14</sup>. Incomplete removal of the mesh should be suspected in any case with persistent or recurrent symptoms and/or signs of mesh infections. Using this approach, no inguinal hernia recurrence was seen on mean follow up of 62 months<sup>14</sup>, similarly none of our five patients developed recurrence of hernia in a mean follow up of 16 months.

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