

CONSERVATIVE MANAGEMENT OF MESH SITE INFECTION IN VENTRAL HERNIA REPAIR

Sajjad Ahmad, Tariq Saeed Mufti, Arshad Zafar, Ismail Akbar

Department Surgery, Ayub Medical College, Abbottabad, Pakistan

Background: Mesh Hernioplasty is the preferred surgical procedure for abdominal wall hernias and infection remains one of the most common complications of this technique. In some patients the mesh may need removal to overcome infection, where as others may be salvaged by conservative treatment. This study was conducted to assess the outcome of conservative management for mesh site infection in abdominal wall hernia repairs. **Methods:** This study was carried out in Ayub Teaching Hospital Abbottabad Pakistan from Jan 2006 to Dec 2007. Thirteen consecutive cases were included, who developed mesh site infection after abdominal wall hernia repair. Pus or purulent fluid was sent for culture and sensitivity. All patients were treated by intravenous antibiotics and local wound care. Treatment was taken as successful when there was complete resolution of infection and healing of the wound. **Results:** There were 7 inguinal (53.84%), 4 para-umbilical (30.76%) and 2 incisional hernias (15.38%). Eight patients were males (61.53%) and 5 females (38.46%). Median age of the patients was 40 years (range 28 to 52 years). Staphylococcus aureus was the most commonly found organism causing infection in 8 patients, (76.9%). Mean hospital stay was 22 days (range 18–26 days). All cases were effectively treated conservatively without removing the mesh. Polypropylene mesh was used in all of these cases. **Conclusion:** Conservative management is likely to be successful in mesh site infection in abdominal wall hernia repairs.

Key words: Abdominal hernia, Mesh, Infection

INTRODUCTION

Abdominal wall hernia is a major health problem and only in United States approximately 90,000 ventral hernias are repaired every year.¹

Mesh repair is favoured surgical procedure because there has been a significant decrease in recurrence rate as compared to suture repair.^{2,3} Polypropylene (PP) and Polytetrafluoroethylene (PTFE) are the most commonly used prosthetic materials. The PP meshes are a monofilament polypropylene mesh, non-absorbable, inert, sterile and porous with a thickness approximately of 0.44 mm. The PTFE mesh is 1 mm thick mesh made from strong, soft inert and conformable structure that ensures early fixation to host tissue with minimal foreign body reaction. Both are biologically inert and allow growth of the adjacent tissues in micro spaces of mesh, resulting in durable and strong hernia repair.⁴ Infection is the most commonly reported adverse event in otherwise clean cases of prosthetic hernia repair.⁵ Use of prophylactic antibiotics can decrease but cannot prevent the infection. Infection rate of up to 1.5% has been reported in literature.⁶ Since, large number of prosthetic hernia repairs are performed every year, significant number of mesh infections may be expected. If removal of mesh is the only choice for infection, it will be fearful both for surgeon and the patient to opt for prosthetic repair. It should be stressed that removal of mesh is often a technically difficult procedure. Due to local tissue incorporation in to the mesh, removal is dangerous

and may lead to acute bleeding or entero-cutaneous fistula after adjacent vascular or gut injury. Failure to close primary defect may lead to a larger incisional hernia.² This study was carried out to observe the outcome of conservative management for mesh site infection in abdominal wall hernia repair.

MATERIAL AND METHODS

This study was conducted in department of surgery of Ayub Teaching Hospital Abbottabad from Jan 2006 to December 2007. All the patients with mesh site infection after groin, paraumbilical or incisional hernia repair in this unit or post-operated patients referred from peripheral hospitals were included in this study. Wound infection was diagnosed by clinical evidence of pain, redness, induration, fever and purulent discharge. Patients having painless fluctuant swelling were excluded after negative culture sensitivity and seroma fluid reports.

Local management included removal of skin sutures, opening of wound and drainage of pus, irrigation with saline/Povidone Iodine and gentle debridement of the wound. These measures were repeated till the wound and mesh were clear of pus and necrotic tissue. Pus or purulent discharge was taken for culture and sensitivity. Empirical antibiotic treatment, as I/V injections (Flucloxacillin 250 mg+ Amoxicillin 250 mg 6 hourly and Gentamycin 5 mg/kg/day) was started in all cases and continued according to sensitivity report, till the wound was clean. Closure of the wound was not attempted in any case and defect was left to heal it self.



Figure-1: Complete wound dehiscence



Figure-2: Mesh covered with granulation tissue in same case



Figure-3: Complete healing in same case

RESULTS

Table 1 shows distribution of different cases.

There were 7 inguinal (53.84%), 4 para-umbilical (30.76%) and 2 incisional hernias (15.38%). Eight patients were males (61.53%) and 5 females (38.46%). All the patients with inguinal hernias were male. Average age of the patients was 40 years (range 28 to 50 years). Staphylococcus aureus was found in 8 patients (61.53%) and E. coli

in 3 patients (23.07%). Polypropylene mesh and sutures were used in all of these patients. Two patients with incisional hernia were obese With BMI of 33.34 and 33.78. (Weight in Kg divided by height in sq. meter). No other co-morbidity affecting the outcome was detected. Two patients with cellulites were discharged after 10–12 days with full recovery, with out opening the wound. Eight patients needed partial opening of wound and infection involving the mesh was confirmed. These patients needed daily dressings and 5–7 debridements. Three patients had severe sepsis and complete dehiscence of the wound (Figure-1). These three patients had 10–12 debridements during treatment. Mean hospital stay of all these patients was 22 days (range 18–26 days). All the patients had follow up for 3 months. There was no recurrence of infection or hernia during this period. Recovery was not different in obese patients.

Table-1: Shows distribution of different cases

Types of hernia	Number of cases	%
Inguinal Hernia	7	53.84
Para umbilical hernia	4	30.76
Incisional Hernia	2	15.38

DISCUSSION

Use of prosthetic biomaterials for the repair of abdominal wall hernias has decreased recurrence rates when compared with simple suture closure⁷. Infection following abdominal wall hernia repair may result in significant morbidity. Although traditional surgical teaching advocates removal of prosthetic materials whenever infection occurs, numerous cases of mesh salvage have been reported in the literature. In a personal series of more than 360 ventral hernia mesh repairs, Stoppa has reported an infection rate of 12% and none of prosthesis required removal⁸. In a similar study by Luijendijk *et al* comparing suture repair with mesh repair of incisional hernias, three out of 84 patients developed a wound infection following polypropylene mesh repair. All were successfully treated by intra venous antibiotics and local wound care without removing the mesh⁹. This study also shows that conservative management including suitable intravenous antibiotics and local management is successful for mesh site infection.

In two out of 13 cases the involvement of mesh could not be confirmed clinically. Ultrasonography can be used to detect fluid collections; recurrence of hernia, superficial and deep infections in mesh repairs.¹⁰ Not only in clean cases, the polypropylene mesh has also been successfully used in clean contaminated and contaminated fields¹¹. It is also used in elective colonic operations and for parastomal hernias¹². Prosthetic repairs with polypropylene have been attempted in strangulated

groin hernias without significant increase in morbidity¹³.

On the other hand Avtan L *et al* have reported failure of conservative measures for some cases of mesh infection.¹⁴ These patients ultimately required removal of mesh. Steven R *et al* also mentioned removal of infected mesh after failed conservative treatment.¹⁵

CONCLUSION

This study, including only 13 cases concludes that conservative management is likely to be successful for mesh site infection. These patients remain in hospital for a longer duration and require prolonged antibiotics and debridements. Ultrasound can be helpful to define the superficial and deeper extent of mesh site infection.

A larger multicentre study is required to outline a universal management of mesh site infection in abdominal wall hernia repairs.

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Address for Correspondence:

Dr. Sajjad Ahmed, Assistant Professor, Department of Surgery, Ayub Medical College, Abbottabad-22040, Pakistan.

Email: drsajjadraja@hotmail.com