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FREQUENCY OF SURGICAL SITE INFECTION IN MESH REPAIR FOR INGUINAL HERNIA

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ABSTRACT

Objectives: To determine the frequency of surgical site infection in mesh repair for inguinal hernias and find out the common organisms involved in wound infection through culture and sensitivity.

Material and Methods: This is a descriptive study of 100 patients who underwent inguinal hernia repair, at surgical 'A' Unit Lady Reading Hospital, Peshawar, over a period of one year, from February 2007 to January 2008. Pre-operative assessment was done for fitness of general anesthesia before mesh repair.

Results: The overall frequency of surgical site infection was 06% and culture reports showed that staphylococcus aureus was the commonest organism responsible for surgical site infection 4% cases. Staphylococcus epidermidis and Escherichia coli were found each in 1% of cases.

Conclusion: Propylene mesh repair is the first treatment option for patients with primary and recurrent inguinal hernias with good antibiotics cover according to the most commonly found organisms.

Key Words: Inguinal hernia, repair, mesh hernioplasty, surgical site infection.

INTRODUCTION

Hernia by definition is the protrusion of an organ or part of an organ through an opening in the wall that normally contains it. Hernia constitutes 10-15% of all surgical procedures, 80% being inguinal and 92% in men[1]. Inguinal hernias are common throughout the world. These account for 75% of all forms of hernias. These are more common in males than females in a ratio of 20:1[2]. Aims of hernia repair include reduction of the contents, repair of the fascial defect and restoration of normal abdominal wall contour[3]. Various repair procedures fall into two categories. Fascial repair, tension free prosthetic repair and open preperitoneal mesh repair for recurrent inguinal hernia[4]. Men presenting with inguinal hernia often have minimal symptoms, if any. Although elective surgery is often recommended to prevent complications, it carries the risk of hernia recurrence, pain and discomfort as well as the risks associated with anesthesia and surgery such as hematoma and infection[5].

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In recent years, use of prosthetic materials for inguinal hernia repair has increased dramatically. Tension free repairs have gained popularity not only for recurrent or complicated hernia but for primary hernia repair as well[6]. Inguinal hernia repair with mesh is one of the most common procedures in general surgery. The use of antibiotics for prophylactic purposes is becoming a serious problem due to the risk of contribution to developing bacterial resistance and the significant increase in health-care costs[7].

Polypropylene mesh is the most widely used material in inguinal hernia repair[8]. It is the preferred prosthetic material for tension-free hernioplasties because it is handled easily and becomes quickly incorporated. It has reduced the recurrence rate to below 1%[9]. Wound infection is a potential complication for all inguinal hernia repairs[10]. Wound infection usually appears between the fifth and tenth day after surgery[11]. The incidence of mesh infection during open hernia repair has been reported to be as high as 3%[12].

Bacterial growth rate from wound cultures confirms the superficial surgical site infection rate in all groups[13]. However, when there is established deep infection, there should be no unnecessary delay in removing an infected mesh in order to allow resolution of chronic groin sepsis[10]. It is a fact that there is a high rate of infection in our setup. Our aim was to

find out the frequency and common causative organisms in surgical site infection in mesh repair for inguinal hernia. This study was helpful in detecting infection in these patients at an early stage and removal of mesh was avoided.

MATERIAL AND METHODS

This descriptive study was conducted in surgical 'A' Unit Lady Reading Hospital, Peshawar from February 2007 to January 2008. All male patients over 35 years of age having primary or recurrent inguinal hernia and fit for general anesthesia were included in the study with the exception of those presenting with strangulated inguinal hernias. These patients underwent a thorough physical and clinical examination, noting the history of illness, site of hernia, duration and type of hernia. Routine investigations and fitness for general anesthesia was assessed. In all patients one dose of intravenous antibiotic (ceftriaxone 1 gm) was given peroperatively and two doses postoperatively.

All the patients in whom mesh repair was indicated were operated in the general surgical operation theatre on the routine operation list. After the operation, all these patients were observed in the ward for two days by regular examination of the wound, to know about early sign of wound infection and then discharged. If any pus or discharge was found, it was taken from wound site for culture and sensitivity. After discharge from hospital these patients were advised to come to the out-patient department on 1st, 2nd and third week of operation for examination of the wound. During the study period a note was made of all the patients having surgical site infection and thus frequency of infection was calculated. All the studied variables like increasing wound pain, redness, oedema, warmness, discharge, number of cases having surgical site infection and culture of organisms were analyzed for descriptive statistics.

RESULTS

A total of 100 male patients with primary and recurrent inguinal hernias were subjected to hernia repair with prolene mesh in this study. Age of the patients ranged from 35-95 years with mean age of 53.29 years $\pm$ S.D 13.48. Majority of patients 28 (28%) were in the age range of 51-60 years,details given in Table 1. Surgical site examination findings are shown in Table 2. The overall frequency of surgical site infection was found in 06 (06%) cases of mesh repair and culture reports showed that staphylococcus aureus was the commonest organism responsible for surgical site infection in 4 (4%) cases, details given in Table 3.

Table 1: Age incidence of the patients (n=100)

Age ranges	No. of cases
35- 45 years	24 (24%)
46 - 55years	22 (22%)
56 - 65 years	28 (28%)
66- 75 years	19 (19%)
76 - 85 years	06 (06%)
86 and above years	01 (01%)
Total	100

Table 2: Surgical site examination findings in patients (n=100)

Findings	No. of cases
Increasing wound pain	13 (13%)
Wound redness	11 (11%)
Wound discharge	06 (06%)
Wound edema	10 (10%)
Wound warmness	12 (12%)

Table 3: Culture and sensitivity report

Culture Bacteria	Antibiotic Sensitivity	No. of cases
Staphylococcus aureus	Nafcillin, cephradine	04
Staphylococcus epidermidis	Vancomycin	01
Escherichia coli	Ciprofloxacin	01
Total	06	06

DISCUSSION

Hernia treatment has changed dramatically in the past 25 years. At the end of the 20th century, surgeons began to repair hernias with a laparoscopic approach, but at about the same time, open mesh repair became popular. Both approaches are superior to the older techniques of Bassini or McVay but the open mesh repair is easier to learn and simpler to perform[11,12,13]. Polypropylene mesh is relatively contraindicated in potentially contaminated and infected field because of the potential risk of infection[14].

Inguinal hernia is more likely to occur in men than in women because the spermatic cord passes through the abdominal wall in the inguinal region,

leaving a site of natural weakness[15]. Therefore, in this study there were 100% males who were operated for inguinal hernia.The goals of a successful hernia repair include low recurrence rates, permanent relief of pain or discomfort and low incidence of peri and postoperative complications, such as wound infection and intra-abdominal adhesions[16].

In a local study conducted by Farooq O, et al mean age was 52 years (range 20-75) and there were 11 (2.4%) postoperative wound infection[17]. In our study surgical site infection or wound infection was observed in 06% patients. Wound infection was superficial and was managed with antiseptic dressing and antibiotics. No patient required mesh removal for control of infection. Our findings are comparable with a local study in which the incidence of wound infection reported as 7.5%[18]. In a few other local studies the incidence of wound infection has been reported to be 1% to 4% cases[19,20,21,22]. Osuigwe AN conducted a study in which wound infection was seen in 5% patients[23].

Use of antibiotics has reduced the problem of infection[21]. Infection rate in our study was much more than reported at a local and international level. Reasons for this high rate of infection could be that in our set up there is lack of facilities of proper clean and contamination free environment in operation rooms and wards, over crowding in the hospitals. In a study conducted by Terzi C the overall infection among the study population was 2% and E coli was the commonest organism isolated [24]. While in this study, staphylococcus aureus was the commonest organism found in 4% cases and Escherichia coli was found in 1 (1%) case.

Chronic pain is common after primary inguinal hernia repair in young males, but there is no difference in the pain associated with open mesh and non-mesh repair[25]. Postoperative increasing pain was present in 13% of cases in our study; which is comparable to the national study conducted by Iqbal P [19]. Internationally it has been reported to be 6% and 8% for prolene and darn mesh respectively[26].

CONCLUSION

Propylene mesh repair is the first treatment option for patients with primary and recurrent inguinal hernias with good antibiotics cover according to the most commonly found organisms.

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