FREQUENCY OF SURGICAL SITE INFECTION IN MESH REPAIR FOR INGUINAL HERNIAS

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ABSTRACT

OBJECTIVES

To determine the frequency of surgical site infection in mesh repair for inguinal hernias.

METHODOLOGY

This Descriptive observational study was carried out at the Surgical B unit of Hayatabad Medical Complex Peshawar from November 2021 to October 2022. A total of 179 patients were included in the study were given a single dose of antibiotics, i.e.1, gm Ceftriaxone, one hour before inguinal hernia mesh repair.

RESULTS

A total of 179 patients aged between 30-60 years with a mean age of 45 years were enrolled. There were 98(54.7%) male while 81(45.3%) females. The frequency of wound infection was noted in 23 (12.8%) patients following mesh repair for inguinal hernia. Out of 23, most of the patients, 10(43.5%) had Medical redness & tenderness, 8(34.8%) patients had pus discharge from the wound side, and 5(21.7%) patients had wound site abscesses.

CONCLUSION

Surgical site infection after mesh repair was higher than the internationally reported incidence. Establishing a baseline SSI rate for inguinal hernia repairs offers a useful benchmark for future studies and surgical programs in these countries.

KEYWORDS: *Mesh Repair, Inguinal Hernia, Surgical Site Infection (SSI)*

INTRODUCTION

Surgical site infection is the most commonly reported adverse event in otherwise clean cases of prosthetic hernia repair.[1] The possibility of mesh infection should be considered if a patient develops a fever of unknown origin or has local signs of infection postoperatively.[2,3] In clean elective surgery, the common pathogen causing the infection is from the skin and 1st generation cephalosporin gives excellent prophylaxis. Cefazolin is the antibiotic of choice for clean surgery and is given in single dose.[4] It is debated and contentious whether or not antibiotic prophylaxis is necessary in cases of inguinal hernia mesh repair. There are currently no clear criteria, despite a few trials that have been done to explain this matter.[5] The main defences against routine antibiotic prophylaxis in Lichtenstein hernia repair are that infections can still occur in the presence of antibiotics, that excessive use of antibiotics can lead to the development of resistance, and that mesh repair is extremely expensive for the healthcare system.[6] Although there is no way to predict allergic reactions, which can occasionally be fatal, infections are usually treatable. In contrast, if an infection develops following mesh repair, it has a fourfold higher chance of recurring, necessitating drainage or potentially Mesh removal.[7] So, while the presence of a Mesh does not raise the risk of infection, the consequences of infection are severe.[8] It is a misconception among surgeons that antibiotic prophylaxis is always required to lower the incidence of post-operative wound infection, especially in our system.[9] Therefore, every surgery involves at least 4-5 doses of intravenous antibiotics. Frequent usage which may cause the development of multi-drug resistant bacterial strains in our communities, even in clean cases.[10] Surprisingly, there hasn't been much research on antibiotic prophylaxis in mesh repair situations. Therefore, neither can it be advised nor disregarded. My research aims to evaluate the efficacy of routine antibiotic usage in prophylaxis against surgical site infection. If successful, this use will be routinely advised for prophylaxis against SSI following mesh repair.

METHODOLOGY

This Descriptive observational study was carried out at the Surgical B unit of Hayatabad Medical Complex Peshawar from November 2021 to October 2022. Participants in the study had systolic blood pressure greater than 90 mmHg. Patients with strangulated inguinal hernias and those with a documented coagulation problem history. Ischemic heart disease, patients who did not volunteer to participate in the

study, and other conditions were excluded (based on medical records and history). An inguinal hernia was determined to be the cause after a thorough clinical examination and detailed history. Surgery preparation for the patient included a pre-anaesthesia evaluation. Every patient underwent surgery while under general anaesthesia. All patients received a prophylactic intravenous antibiotic from Ceftriaxone sodium 1gm within an hour of surgery. SPSS 23.0 was used for data analysis.

RESULT

Total of 179 patients of age ranged between 30-60 years with a mean age of 45 years were enrolled. There were 98(54.7%) male while 81(45.3%) females. Most of the patients, 51(28.5%), had a bulge in the inguinal region, which becomes more obvious with coughing or straining. 35 (19.5%) had a burning or aching sensation at the bulge, 27(15%) had pain & discomfort in the groin, especially when bending over, coughing or lifting, 25(14%) had a heavy or dragging sensation in the groin, 22(12.3%) had weakness or pressure in the groin, 19(10.7%) occasionally had pain and swelling around the testicles when the protruding intestine descends into the scrotum.Table-1. The frequency of wound infection was noted in 23(12.8%) patients following mesh repair for inguinal hernia. Figure 1. Out of 23, most of the patients, 10(43.5%) had wound site redness & tenderness, 8(34.8%) patients had pus discharge from the wound side, and 5(21.7%) patients had wound site abscess Table-2.

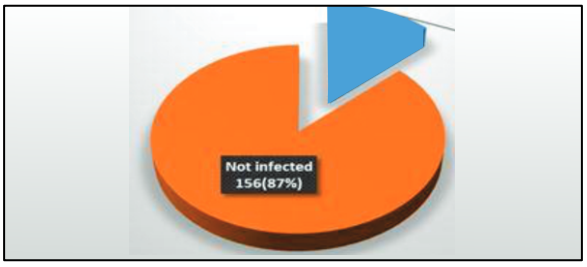

Figure 1: Frequency of Surgical Site Infection (SSI)

Table 1: Indication of Inguinal Hernia (n=179)

Indications	f	%age
Bulge in the inguinal region	51	28.5%
Burning or aching sensation at the bulge	35	19.5%
Pain & discomfort in the groin area	27	15%
Heavy or dragging sensation in the groin	25	14%
Weakness or pressure in the groin	22	12.3%
Pain and swelling around testicles	19	10.7%

Table 2: Complications of Surgical Site Infection (SSI) (n=23)

Complications	f	%age
Wound site redness & tenderness	10	43.5%
Pus discharge	08	34.8%
Wound site abscess	05	21.7%

DISCUSSION

The inguinal hernia is the most frequent among all external hernias, and inguinal hernia repair accounts for 10-15% of all operations in general surgery. All life stages are evenly dispersed by age incidence. Additionally, inguinal hernia frequency is race related; black Africans are thought to have more common, i.e. three times as many as the general white population. In men, 80–90% of repairs are made to the right side, with the left being the least frequently repaired for unexplained reasons. Hernias are one of the most extensively studied medical conditions as a result of how much pressure they are putting on the healthcare system.[11] As all hernia repairs had some of the same issues, such as recurrence, post-operative pain, and wound infection, doctors had varying viewpoints on the various procedures and materials. All of these issues were significantly decreased with inert Ethicon mesh repair development. Low suture line tension, a strong character, and an incapacity to harbour infection are the causes. Additionally, it is immune to rejection, does not degrade, and cannot be felt by patients or surgeons after surgery.[12] Surgical site infections, a major cause of post-operative morbidity, cause a quarter of all nosocomial infections. They are the second or third most prevalent category of hospital-acquired diseases, behind pneumonia, urinary tract infections, and blood-borne infections. In general and for many different types of surgical operations, national studies have identified the most at risk for infection. In the past 20 years, there has been a significant advancement in antibiotic prophylaxis before surgery. The effectiveness of this strategy in lowering post-operative wound infection has been more precisely characterized as a result of advancements in the timing of initial administration, the optimal selection of antibiotic agents, and shorter treatment periods.[13,14] Tantalum mesh was first developed historically by Douglas and Koontz in 1948. In 1964, Lichtenstein developed the inguinal hernia prosthesis repair. Usher was the first to employ Marlexmesh. Because it differs from center to center, it is unknown what the actual incidence of mesh infection is. It has been documented between 7% -15% at various sites and times in multiple investigations.[15] In our study, 23(12.8%) patients experienced wound infection, which contrasts with other studies published in the literature at various local and international points. According to statistical analysis, there was no discernible difference in the number of wound infections. Infection rates were 4.5% after repair under local anaesthetic and 6.8% after repair under general anaesthesia. According to Yuksel, EP et al and KE et al reported an incidence of wound sepsis of 1.9% and

7.5%, respectively, in patients who underwentlitchenstein's mesh repair.[16,17] Sartelli M et al reported an infection rate of 4% after Lichtenstein hernia repair in their study.[18] Another survey conducted by De Alneida JR reported 1.7% of wound infections after mesh repair.[19] Our study demonstrates that surgical site infections are more likely to occur in older age groups than in younger ones because most patients with compilations were found to be between the ages of 31 and 60 years. Similar to how more male patients experience surgical site infections than female patients, most of the patients who experienced complications in our study were male rather than female. A survey by Latifa M et al explained a similar concept.[20] Some surgeons opposed the use of prosthetic material because, being a foreign substance, it would increase the risk of infection. This infection is challenging to treat and can require mesh removal, which would increase morbidity and mortality.

LIMITATIONS

One limitation of our study is the small sample size and a single center study. More trials with a large sample size, with multiple tertiary care centers, are required to overcome with best results.

CONCLUSION

In a daycare setting at a tertiary care hospital in a low-income country, the surgical site infection rate following mesh hernia repair was greater than the rate reported internationally. In these countries, establishing a baseline SSI rate for inguinal hernia repairs provides a helpful benchmark for ongoing research and surgical programs.

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CONTRIBUTORS

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