

Open Mesh Hernioplasty versus Laparoscopic Total Extraperitoneal Mesh Repair in the Treatment of Inguinal Hernia

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ABSTRACT

Background: There are multiple techniques used worldwide to repair inguinal hernia. The open mesh hernioplasty is easy to carry out, tension free repair and having good long term results but has few complications as well. Recently the laparoscopic repair of inguinal hernia is the best option because of its merits like lower recurrence rate, lesser postoperative pain, fast recovery and lower risk of complications. The results are controversial so there is a need to evaluate that which technique is better in our population so the aim of current study was to compare the outcome of open mesh hernioplasty versus laparoscopic total extra-peritoneal mesh repair in the treatment of inguinal hernia.

Methods: A randomized controlled trial was conducted in the department of surgery, Ziauddin hospital, Karachi during May to December 2021. Patients included in the study were divided into two groups, Group A included those who underwent open mesh hernioplasty while Group B contained patients treated with laparoscopic total extra peritoneal mesh repair. The complication including scrotal hematoma was assessed clinically and confirmed by ultrasound then putted on follow up for two weeks. Data was collected on self-designed proforma. Statistical Package for Social Science (SPSS) version 20 was used for analysis of data.

Results: The mean age of the study participants was 36.2±5.6 years. In both group A and B, majority of patients were having right sided inguinal hernia. In Group A, majority of patients were presented with direct inguinal hernia while majority of Group B patients were presented with indirect inguinal hernia but the p-value was non-significant. Postoperative scrotal hematoma was found in 19.5% of the study participants among them 7.8% participant were having direct inguinal hernia and 11.7% presented with indirect inguinal hernia. The frequency of scrotal hernia in patients of Group A, having open mesh hernioplasty was 15.6% while in Group B lesser frequency of postoperative scrotal hematoma was noted and the results were highly significant.

Conclusion: It can be concluded that laparoscopic total extra-peritoneal mesh repair is the best technique for repairing inguinal hernia because of its minimal postoperative complications in comparison to open mesh hernioplasty. It is recommended to consider laparoscopic total extra-peritoneal mesh repair as the first line treatment option in the case of inguinal hernia.

Keywords: Inguinal Hernia, Laparoscopic total extra-peritoneal mesh repair, Open mesh hernioplasty

INTRODUCTION

Among all surgeries, inguinal hernia repair is the most commonly performed surgery. It has been estimated that around 800,000 cases of inguinal hernia are operated annually in the United States while about 20 million per year throughout the world (1-4). Due to this high incidence of inguinal hernia repair, it is very important to choose an appropriate surgical procedure. It is the type of surgery in which the surgeon has multiple options to repair inguinal hernia (5). There are multiple techniques used worldwide. The first procedure named open mesh repair was first introduced by Lichtenstein in 1986 (6). The Lichtenstein procedure is commonly used because it is easy to carry out, tension free repair and having good long term results but the technique is slightly modified by few surgeons. Its complications include foreign body reaction, risk of infection, postoperative pain, fistula formation and recurrence (7).

Recently the laparoscopic repair of inguinal hernia is the best option because of its merits like lower recurrence rate, lesser postoperative pain, fast recovery and lower risk of complications (8). Laparoscopic technique of repairing inguinal hernia was introduced in 1982 which consisted of two techniques including trans-abdominal pre-peritoneal repair (TAPP) and total extra-peritoneal repair (TEP) (9). According to the European hernia society, the total extra-peritoneal approach is the most appropriate technique and should always be preferred (10).

Although the laparoscopic repair of inguinal hernia is in trend but the old procedure of open mesh repair is still the gold standard technique (11). Literature review revealed the contradictory results regarding the open mesh repair versus laparoscopic repair. A study conducted by Krishan et.al found that total extra-peritoneal repair is better than open mesh repair on the basis of postoperative complications like risk of developing scrotal hematoma that is 1.9% risk in total extra-peritoneal repair and

12.2% risk in open mesh repair (9). On the other hand, one of the study reported equal risk of developing scrotal hematoma in both the techniques (12). Because of these controversial results there is a need to evaluate that which technique is better in our population so the aim of current study was to compare the outcome of open mesh hernioplasty versus laparoscopic total extra-peritoneal mesh repair in the treatment of inguinal hernia.

MATERIAL AND METHODS

A randomized controlled trial was conducted in the department of surgery, Ziauddin hospital, Karachi during May to December 2021. Study got ethical approval from the concerned institute. Sample size was calculated by using the OpenEpi calculator. Patients between the age of 20 years to 45 years were included in the study. Those patients who were declared as unfit for anesthesia or having persistent chronic cough or past surgical abdominal history or history of wound infection were excluded from the study. Patients included in the study were divided into two groups, Group A included those who underwent open mesh hernioplasty while Group B contained patients treated with laparoscopic total extra peritoneal mesh repair. The procedure used in open mesh repair was as per Lichtenstein's technique and laparoscopic was totally extra peritoneal procedure. The complication including scrotal hematoma was assessed clinically and confirmed by ultrasound then putted on follow up for two weeks. Data was collected on self-designed proforma.

Statistical Package for Social Science (SPSS) version 20 was used for analysis of data. Mean with standard deviation was used to present numerical data while frequency and percentage for categorical data. Chi-square test was used to compare the outcome of two groups. p-value less than 0.05 was considered as significant.

RESULTS

The mean age of the study participants was 36.2 ± 5.6 years. The mean age of the Group A participants was 35.7 ± 4.9 years while those of Group B was 37.9 ± 6.2 years. Age wise distribution of study participants in both groups are presented in Figure 1. In both group A and B, majority of patients were having right sided inguinal hernia (62.5% and 55.7% respectively), while left sided inguinal hernia and bilateral inguinal hernia among Group A and B were 26.2%, 11.3% and 35.9%, 8.4% respectively but the results were non-significant (p -value ≥ 0.05). In Group A, majority of patients (72.3%) were presented with direct inguinal hernia while only 27.7% were having indirect inguinal hernia on the other hand, majority of Group B patients were presented with indirect inguinal hernia as compared to patients with direct inguinal hernia (58.9% and 41.1% respectively) but the p -value was non-significant (p -value ≥ 0.05).

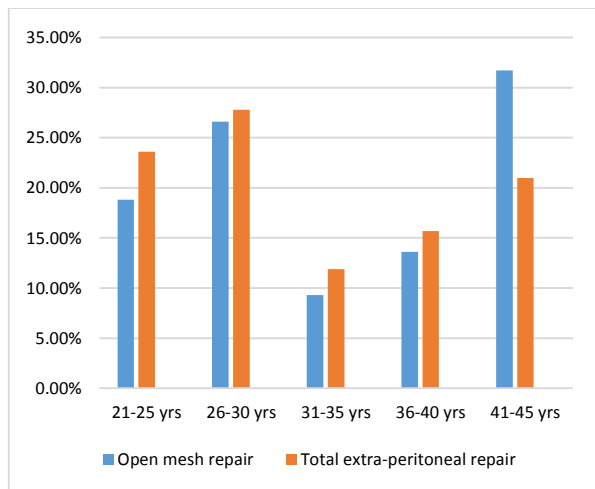


Figure 1: Age distribution among two groups

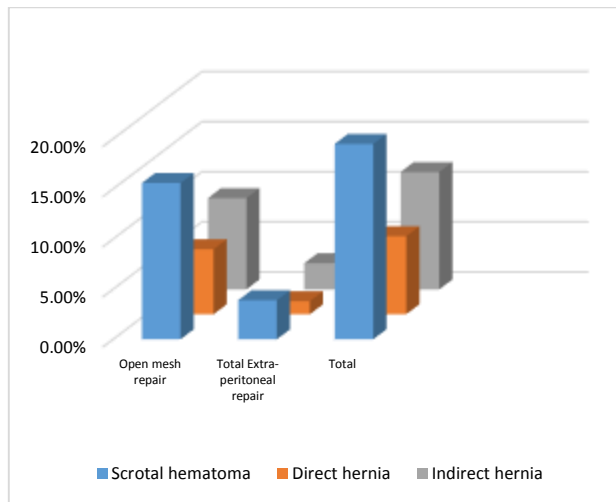


Figure 2: Frequency of scrotal hematoma along with type of hernia among both groups

Postoperative scrotal hematoma was found in 19.5% of the study participants among them 7.8% participant were having direct inguinal hernia and 11.7% presented with indirect inguinal hernia. The frequency of scrotal hernia in patients of Group A, having open mesh hernioplasty was 15.6% out of them 6.5% were presented with direct inguinal hernia and 9.1% with indirect inguinal hernia. Among patients of Group B, who underwent

laparoscopic total extra-peritoneal mesh repair were having lesser frequency of postoperative scrotal hematoma (3.9%) as compared to Group A and the results were highly significant (p -value 0.001), out of them 1.3% were presented with direct inguinal hernia and 2.6% with indirect inguinal hernia as mentioned in Figure 2.

DISCUSSION

Timely operating inguinal hernia is a lifesaving condition as the complication can lead to strangulated hernia. The open mesh hernioplasty is a good option for primary inguinal hernia. It reported excellent postoperative outcomes including lesser intensity of postoperative pain and rapid healing so that patient returns early to his routine activities (7). On the other hand, laparoscopic total extra-peritoneal repair is under criticism because of its cost and need expertise to perform (13, 14) but still it is going to be a future gold standard technique because of its efficacy and cost effectiveness as compared to open mesh repair (15, 16). It is the topic of debate that what should be the indication to choose laparoscopic total extra-peritoneal repair as an ideal option (17). Multiple studies took a part in the debate and performed randomized trial by using trans-abdominal pre-peritoneal repair in comparison to open hernioplasty with or without applying mesh (18).

Current study found that majority of patients were from the age group of 41-45 years of age and were having right sided inguinal hernia. In Group A having open mesh repair, majority of patients (72.3%) were presented with direct inguinal hernia while in Group B having laparoscopic total extra-peritoneal repair, majority patients were presented with indirect inguinal hernia as compared to patients with direct inguinal hernia. The current finding is favored by Krishan et.al who conducted study at Jamshoro, Hyderabad and found that majority of study participants were from the age range of 41-55 years, having right sided hernia. The study also found that indirect hernia was most common in both groups including open mesh repair and laparoscopic total extra-peritoneal repair (9).

Current study also found that the frequency of scrotal hernia in patients of Group A, having open mesh hernioplasty was 15.6% while those of Group B, who underwent laparoscopic total extra-peritoneal mesh repair were having lesser frequency of postoperative scrotal hematoma (3.9%) as compared to Group A and the results were highly significant (p -value 0.001). Krishan et.al in his study found that only 1.9% of postoperative patients presented with scrotal hematoma in the case of laparoscopic total extra-peritoneal mesh repair as compared to higher frequency of 12.2% in open mesh repair so he concluded that laparoscopic total extra-peritoneal mesh repair is the best surgical technique for repairing inguinal hernia (9).

Bringman et.al also performed a comparative study and reported 3.3% of cases with scrotal hematoma in the laparoscopic total extra-peritoneal mesh repair while it was 7.8% in open mesh repair, concluding the superiority of laparoscopic total extra-peritoneal mesh repair over open mesh repair (17). Another study conducted in Pakistan by Bhatti et.al noticed hematoma among 2.4% cases treated with laparoscopic total extra-peritoneal mesh repair so he labelled laparoscopic total extra-peritoneal mesh repair as a safest technique for inguinal hernia (19).

The two most complicated cases in inguinal hernia are recurrence and the occurrence of bilateral hernia and surprisingly laparoscopic total extra-peritoneal mesh repair is the best option in these two scenarios (20). Aly et.al conducted a systematic review to compare the two techniques and concluded that both laparoscopic total extra-peritoneal mesh repair and the open mesh hernioplasty are equally effective in repairing inguinal hernia (12).

CONCLUSION

It can be concluded that laparoscopic total extra-peritoneal mesh repair is the best technique for repairing inguinal hernia because of its minimal postoperative complications in comparison to open

mesh hernioplasty. It is recommended to consider laparoscopic total extra-peritoneal mesh repair as the first line treatment option in the case of inguinal hernia.

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