A COMPARATIVE STUDY ON OUTCOMES OF OPEN & LAPAROSCOPIC REPAIR IN INGUINAL HERNIA IN A TERTIARY CARE CENTRE

General Surgery

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ABSTRACT

Background: Over the last decade, the field of hernia surgery got a new transformation, with exponential growth in mesh technology. Laparoscopic hernia repair has remained a contentious issue since its inception. Though a variety of procedures performed; none can be termed as an ideal procedure as each one is accompanied by varied early and late complications. The most scientific way to conclude the superiority of one method over others is evidence-based medicine. Hence, we have conducted a study in our institute, to compare Lichtenstein tension-free open hernioplasty with Transabdominal pre-peritoneal repair (TAPP) comparing the intraoperative and early postoperative complications.

Methods: Our study was a single-centre, prospective comparative study conducted on sixty-one patients, over a period of 2 years from August 2018 to August 2020. All the cases included in the study were uncomplicated inguinal hernias. A detailed history of the symptoms, thorough clinical examination and investigations were done, which were analysed.

Results: Most of the patients presented in the 5th decade. Male to female ratio of incidence of inguinal hernia was 11.2:1. Majority of the patients presented with unilateral hernia with right inguinal hernia being the most frequent presentation. The mean duration of surgery for TAPP is more when compared to Lichtenstein operation. The mean duration of hospital stay for open hernioplasty is more when compared to the laparoscopic hernia repair. TAPP is associated with lesser complications when compared to Lichtenstein's hernioplasty. Seroma, hematoma, and wound infection were the common complications noted.

Conclusion: TAPP repair is a better procedure when compared to Lichtenstein operation in terms of hospital stay, post-operative recovery, intra-operative and post-operative complications.

KEYWORDS

TAPP, Lichtenstein operation, inguinal hernia, hernioplasty.

Background

Over the last decade, the field of hernia surgery got a new transformation, with exponential growth in mesh and mesh technology. Laparoscopic hernia repair has remained a contentious issue since its inception. Though a variety of procedures performed, none can be termed as an ideal procedure as each one is accompanied by varied early and late complications. The most scientific way to conclude the superiority of one method over others is evidence-based medicine. Hence, we have conducted a study in our institute, to compare Lichtenstein tension-free open hernioplasty with Transabdominal pre-peritoneal repair (TAPP) comparing the intraoperative and early postoperative complications.

METHODS

The present study is a single-centre, prospective comparative study conducted on sixty-one patients, over a period of 2 years from August 2018 to August 2020. All the cases included in the study were uncomplicated inguinal hernia cases. A detailed history of the symptoms, thorough clinical examination and investigations were done, the outcomes of both the procedure were noted, analysed and compared.

INCLUSION CRITERIA

1. Only inguinal hernia cases.
2. Uncomplicated inguinal hernias for elective repair.
3. Patients fit for general anaesthesia.
4. No infection, immunosuppression, and anaemia.

EXCLUSION CRITERIA

1. Other hernias of the anterior abdominal wall.
2. Unfit for anaesthesia (cardiac disease and COPD).
3. Unwilling patients were obliged for the study.

4. Complicated hernia.
5. Patients who have undergone prior pelvic lymph node resection or groin irradiation or open prostatectomy.
6. Recurrent cases.
7. Pediatrics age group.

1. Results

Age and gender distribution:

Out of the 61 patients taken up for our study, 56 (91.8%) patients were males, and the remaining 5 (8.1%) were females with male to female ratio of 11.2:1. The mean age of incidence of hernia in our study was 44.77 years. The mean age of occurrence differed between males and females. The average age for the males was 44.87 years, and that of females was 43.6 years.

Figure 1: Age Wise Distribution

From the above figure, it has been observed that most of the patients presented in the 5th decade. The maximum age of the patient in our study was 73 years, and the minimum age was 19 years.

Occupation:

Farmers and daily wage workers formed the majority of patients in our

study. Farmers accounted for 49.18% of the cases, and regular wage workers constituted 32.8% of the cases. Teachers and other officials suffered from the hernia in 13.11% of the cases, followed by businessmen in 4.91% of the patients.

Clinical Presentation:

We have observed in our study that right inguinal hernia was the most familiar presentation, which was seen in 37 patients followed by a left inguinal hernia in 18 patients and bilateral inguinal hernia in 6 patients.

Duration of symptoms:

Approximately 90% (55 patients) of the patients were presented with symptoms of less than one-year period. The remaining six patients suffered from hernia with a duration of more than one year.

Precipitating factors:

Figure 2: Precipitating factors

Associated illness:

A few patients in our series had some associated diseases which had to be optimized. Eleven patients had hypertension, four patients had diabetes, two patients had lung infection, one patient had alcoholic liver disease and one had multiple co-morbid conditions.

Type of hernia:

Figure 3: Type of hernia

Duration of Surgery:

Lichtenstein's tension-free hernioplasty was performed in 31 patients, and TAPP was performed in 30 patients in our study. Lichtenstein's repair was done in one bilateral hernia and 30 patients of unilateral hernia. The mean duration of surgery in unilateral hernia for Lichtenstein's repair was 56.26 minutes, and that for bilateral hernia was 95 minutes. TAPP was performed in 25 cases of unilateral hernia and 5 cases of bilateral hernia. The mean duration of surgery for TAPP in unilateral hernia was 108.12 minutes, and for bilateral hernia, it was 150.8 minutes.

Intraoperative complications:

Intraoperative complications, like major vessel injury or bladder injury, which are described in the literature were not encountered in our study.

Post-operative complications:

Our study on hernia is not without complications. However, it has been observed that TAPP is associated with lesser complications compared to Lichtenstein's hernioplasty. Seroma was the most frequent complication encountered in our series, with four cases recorded in the open hernioplasty group and only two cases in the TAPP group. One case each of wound infection and hematoma were registered in the open group, but not in the TAPP group.

Post-operative pain:

Eighteen patients complained mild pain in the TAPP group and in only one patient of the open group, whereas moderate pain was complained by 24 patients in the open group and 11 patients in the TAPP group.

Severe pain caused trouble in 6 and 1 patients in the open and TAPP groups, respectively.

Figure 4: post-operative pain

Duration of hospital stay:

The mean duration of hospital stay was found to be 4.16 days for the open hernioplasty group compared to the laparoscopic hernia group, which was around 3.56 days.

Recurrence of hernia after surgery:

In our study, we did not encounter any recurrences. The cause for lack of recurrence could also be due to a short follow up period.

DISCUSSION

The mean age of incidence of hernia in our study was 44.77 years. Natalie Dabbas *et al*¹ have observed a mean age of 56.1 years for inguinal hernia and Hospital Episode Statistics, England² have shown a mean age of 53 years.

In our study, male to female ratio is 11.2:1. This fact, that inguinal hernias were more common in men was similar to a study conducted by Burcharth J *et al*³, who observed that inguinal hernia was 15 times more common in men. Russell *et al*⁴, also quoted that inguinal hernia was 20 times more common in men than in women, whereas Ruhl CE *et al*⁵ reported that inguinal hernias occur eight times as often in men as in women.

We have observed in our study that right inguinal hernia was the most familiar presentation, which was seen in 60.7% of the patients, similar to that of studies conducted by Russell *et al*⁴ and Burcharth J *et al*³ with right predominance seen in 55% and 51% of the cases respectively.

In a study by Mike S.L Liem *et al*⁶, the precipitating factors were strenuous activity in 24%, COPD in 10%, BPH in 5% cases. Strenuous work was the precipitating factor in the majority (34) of patients in our study, which accounts for 55.73%, followed by smoking in 16 (26.22%) patients, BPH in 4 (6.56%) patients, COPD in 4 (6.56%) patients constipation in 2 (3.28%) patients and bronchial asthma in one (1.65%) patient.

Table 1: Comparison of mean duration of surgery

Study group	Mean time for Lichtenstein repair (min)	Mean time for TAPP (min)
Present study	56.26	108.12
Bhandarkar Deepraj S <i>et al</i>	55.5	65.7
Dr. Deba Kumar Choudhury <i>et al</i>	40	129
Rajan Koju <i>et al</i>	42.5	96.08

It has been observed from all the above studies that the mean duration of surgery for TAPP is higher than that of Lichtenstein's repair of the hernia. However, the difference in the mean duration of operation for both the procedures was different in different studies.

Intraoperative complications, like major vessel injury or bladder injury, which are described in the literature, were not encountered in our study.

The postoperative pain in our study was significantly less in patients who underwent TAPP compared to those for whom Lichtenstein's tension-free hernioplasty was done. The same results were also

concluded by McCormack K et al⁷, Koning GG et al⁸, and study by Kumar S et al⁹.

Figure 5: Comparison of post-operative pain

Deba Kumar Choudhury et al. have observed 1 (3.3%) case of a hematoma, 6 (20%) cases of seroma, and 2 (6.6%) cases of wound infection in the open Lichtenstein hernia repair group¹⁰. In the laparoscopic TAPP repair group, there was no wound infection and hematoma, but 2 (6.6%) cases in laparoscopic repair developed seroma in the immediate postoperative period. In our study, TAPP is associated with lesser complications compared to Lichtenstein's hernioplasty. Seroma was the most frequent complication encountered in our series, with 4 (12.9%) cases recorded in open hernioplasty group and only 2 (6.6%) cases in the TAPP group. One (3.22%) case each of wound infection and hematoma were recorded in the open group, and these complications were not seen in the TAPP group.

Regarding hospital stay, our results show that hospital stay was slightly more in open repair than in laparoscopic hernia repair. The mean duration of hospital stay in our study was found to be 4.16 days for the open hernioplasty group compared to the laparoscopic hernia group, which was around 3.56 days. This is in contrast to Umme Salma et al., who observed that the mean length of postoperative hospital stay was slightly less (35.10 hrs.) in the open group as compared to the TAPP group (38.70 hrs.)¹¹. Z. Demetrashvili et al. observed no statistical significance between the open group and TAPP group regarding the postoperative time spent at the ward. According to their study, the postoperative hospital stay was 1.9 days for the open group and 1.8 days for the TAPP group¹². Tatulli F et al. quoted that the hospital stay averaged 3.7 days overall, averaging 3.3 and 3 days for bilateral and unilateral repairs in the TAPP group¹³.

We did not encounter any recurrence in our study period. This is probably due to the short follow up period. Similarly, no recurrence recorded in a study by Deba Kumar Choudhury et al. in a one-year follow-up period in both groups¹⁰. The laparoscopic technique had a lower recurrence rate than open technique in long term followup⁷. McCormack et al. comparing laparoscopic and open repair had revealed no apparent difference in recurrence⁷. Recurrences were diagnosed by Mike S. L. Liem et al in 21 patients (recurrence rate at 2 years 3.8%; recurrence rate at 4 years 4.9%) in the laparoscopic group and in 43 patients (recurrence rate at 2 years 6.3%; recurrence rate at 4 years 10.0%) in the open surgery group⁸.

CONCLUSION

TAPP repair is a better procedure when compared with Lichtenstein operation. Established advantages of the laparoscopic inguinal hernia repair over open repair are, more comfortable repair, less post-operative pain and complications, short period of hospital stay, quicker return to regular activity without a large groin incision. However, TAPP was associated with a longer duration of surgery and increased cost. As compared to open Lichtenstein repair, TAPP repair was found to be costlier as it requires a fixation device and larger size mesh. Laparoscopic repair is exorbitant to health care service as compared to open hernia repair.

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