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COMPARISON OF POST OPERATIVE MORBIDITY AMONG LAPAROSCOPIC INGUINAL HERNIA REPAIR VERSUS LICHTENSTEIN TENSION FREE HERNIA REPAIR.

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Abstract:

AIMS AND OBJECTIVES:

The primary objective was to compare post operative pain using visual analogue scale (VAS).

Secondary objectives measured were hospital stay in days, time to resume normal activities and post operative complications.

METHODS:

This was a comparative randomized control study where 40 patients with inguinal hernias were enrolled. Patients undergoing Laparoscopic hernia repair (LHR) and Lichtenstein tension free hernia repair (LTHR), were randomized into two groups. An informed consent was taken following various investigations. Further, the patients who underwent surgery, were evaluated for post-operative pain, hospital stay, time to return to normal activities and complications.

RESULTS:

It was found that the VAS score was lesser in LHR group as compared to LTHR group in different time points (day 1, day 3 and week 1) and it was showing a significant difference ($p<0.0001$) between the groups. There was also a significant difference found in median of time that is required for normal activity and it was significantly more in LTHR group (6.55±1.73) as compared to the LHR group (3.25±1.25) ($p<0.0001$). The median of hospital stay in LTHR group is significantly more (4.35±1.81) than LHR group (2.8±0.89). Even the complications were found more in LTHR group (10%) than in LHR group (5%).

CONCLUSION:

Apart from the complications, which were found to be similar, laparoscopic hernia repair was found to be better in all the above mentioned aspects. However, the data is insufficient to conclude which surgery is better overall, as long-term follow up is required to evaluate for chronic pain, recurrence and learning curve in laparoscopic hernia repair.

Index Terms **- Inguinal Hernia; Post-operative pain; Laparoscopic inguinal hernia; Lichtenstein hernia repair**

I. Introduction:

It is well established fact that the most common elective surgical procedures are the inguinal hernia repairs. With the use of newer prosthetic materials and detailed anatomy the surgical techniques have been improved with better outcomes.[1]

Over past few years various techniques have evolved in the treatment of inguinal hernia from just observation to open surgery and advanced laparoscopic surgery. However evidence based medicine is the most scientific way to conclude the superiority of one technique over another. In our hospital the most widely performed surgeries are for inguinal hernias and cholelithiasis. Till date laparoscopic inguinal hernia repair is not widely accepted in as compared to laparoscopic cholecystectomy.

However, very few studies are conducted in this part of country on laparoscopic inguinal hernias and our study was one of the first of its kind in this region and intended to evaluate and compare post-operative morbidity between Lichtenstein tension free hernia repair and laparoscopic repair of inguinal hernias in patients at a tertiary care hospital.

II. Subjects and Methods:

2.1 Study design: Randomized controlled trial.
2.2 Sample size: 40 patients divided into two groups
2.3 Study duration: January 2018 to December 2018
2.4 Inclusion criteria:
Patients aged above 12 years of age.

Patients with uncomplicated inguinal hernias.

ASA I, II categories.

Unilateral/bilateral inguinal hernias.

2.5 Exclusion criteria:

Patients with bleeding diathesis.
ASA III, IV, V categories.
with complicated inguinal hernias.
Uncooperative and unwilling patients.
2.6 Methodology:

After randomization, the patient was assigned to Group A or B, consent for the proposed surgery taken with explained risks and benefits and the same was informed to the operating surgeon and the procedure was done. All the surgeries in both groups were done by a single operating surgeon in a single surgical unit.

Group A (Lichtenstein tension free hernia repair patients): 20 patients

Group B (Laparoscopic inguinal hernia repair patients): 20 patients

2.7 Operative procedure:

- **Lichtenstein tension free hernia repair:** Under spinal anesthesia the inguinal canal is opened after opening EOA and ilioinguinal nerve identified and retracted. Cord is lifted all by using blunt dissection and hernia sac is identified and separated from the cord structures till preperitoneal pad of fat. For indirect hernia sac opened and contents reduced, transfixation and ligation of sac done using 2-0 vicryl and for direct hernias herniorraphy with mesh repair was done. Using aseptic precautions a 6 x 11 cms prolene mesh is placed after making slit in the lateral third to place cord. Mesh is fixed using prolene suture in intermittent fashion starting with first bite on pubic tubercle and laterally to reflected part of inguinal ligament carefully. Lateral and medial slit is overlapped below the spermatic cord and suture placed. Medially mesh fixed to conjoined tendon and layers closed.[2]

Laparoscopic inguinal hernia repair:

- **Trans abdominal pre peritoneal repair (TAPP):** Under general anesthesia and patient in supine position pneumoperitoneum created using verres needle and one 10 mm umbilical port and two 5 mm working ports placed lateral to umbilical port (midclavicular line). Bilateral inguinal regions noted for hernias. Transverse peritoneal incision made from medial umbilical ligament to ASIS. Then a preperitoneal plane is created using both sharp and blunt dissection, the cord structures are separated from hernial sac and sac ligated. Sufficient space created by raising peritoneum to place 10 x 15 cm polypropylene mesh. The mesh is properly spread flat without folds and the peritoneal flaps are closed using vicryl suture in continuous fashion and abdomen closed.[2]

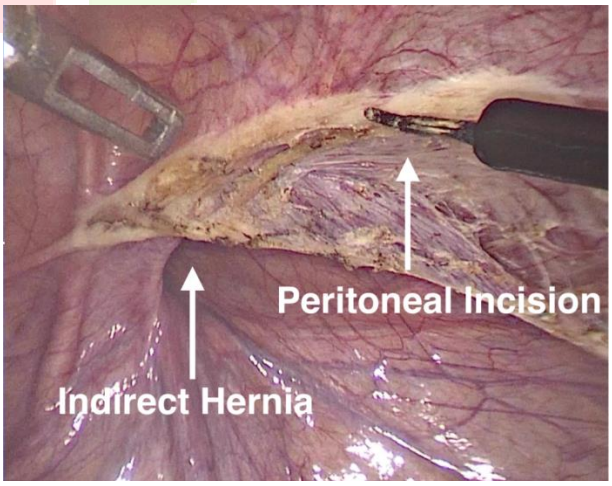

Fig 1: Incision of peritoneum from medial umbilical fold to ASIS

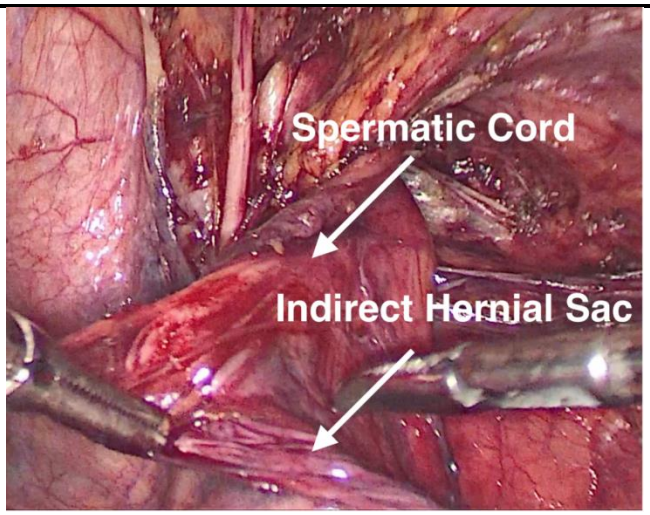

Fig 2: separating cord structures from hernia sac

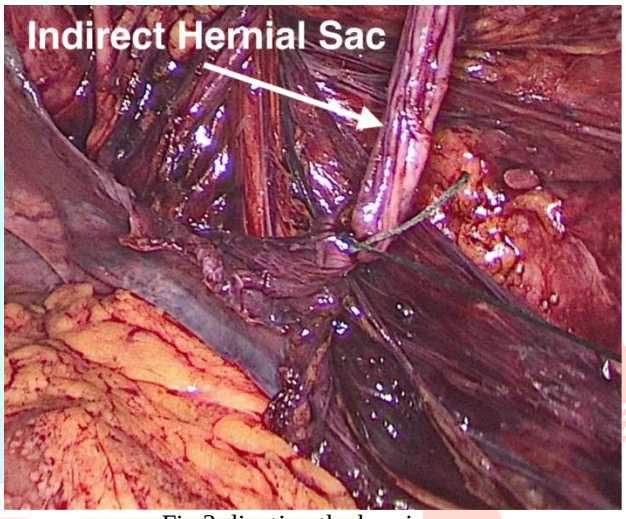

Fig 3: ligating the hernia sac

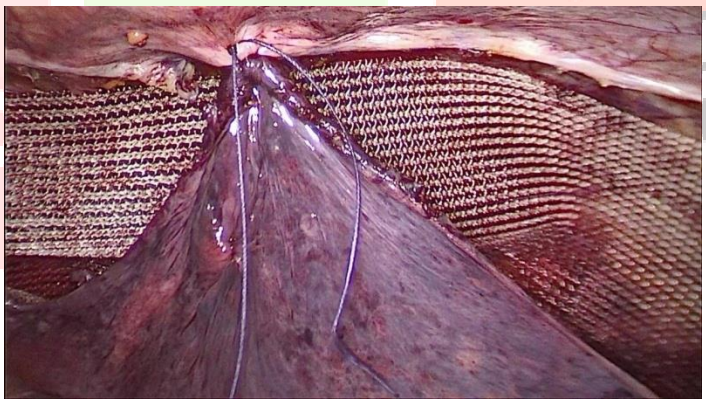

Fig 4: placing a 10 x 15 cm polypropylene mesh without folds in the pre peritoneal space

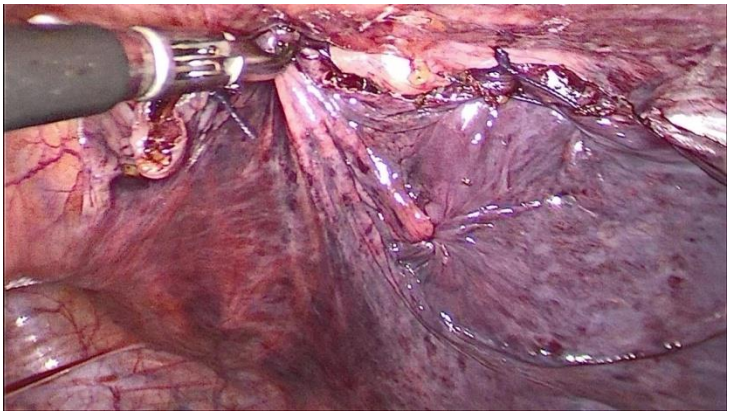

Fig 5: closure of peritoneal flaps using vicryl

- **Totally extra peritoneal repair (TEP):** In TEP approach, the three ports (One 10 mm camera port and other two 5 mm working ports) were placed typically in line from pubic symphysis to umbilicus. Then, preperitoneal space was created by blunt dissection using zero degree scope under vision. Subsequently, the mesh was placed such that it covered the entire myopectineal orifice.[2]

- After the surgery all the patients were monitored in post operative ward for pain, bleeding, hypotension and urinary catheter is removed on post operative day 1 and patients were advised to mobilize from bed.

- All the patients have been given standard analgesic tramadol injection 1 ampoule in the post operative period every 8th hourly for two days and then analgesia of paracetemol tablet 500 mg twice a day is given for 5 days.

- Any time if severe pain was there then patient was given rescue analgesia with paracetemol injection 1gm IV.

- Patients are evaluated for post operative pain at 24 hrs, 72 hrs and 1 week by visual analogue scale and scores recorded. If patients are discharged the VAS scores were collected on telephone.

- Hospital stay is calculated in number of days from the day of surgery to day of discharge.

- Time to resume normal activities as defined earlier is calculated in number of days by asking the patients.

- Post operative complications like seroma, wound infection and urinary retention in patients were recorded.

III. Results:

The age distribution of the subjects ranged from 12 to 78 years. The mean age of patients of laparoscopy group was 45.65±18.50 years and the mean age for Lichtenstein repair group was 51.05±15.58 years.

Out of the total 20 cases in open group 10 cases are on left side and 9 cases are on right side and 1 case has bilateral hernia, and out of 20 cases of laparoscopic group 5 cases are on left side, 14 cases on right side and 1 case has bilateral inguinal hernia.

In open group out of 11 direct hernias, 8 were operated with both posterior wall repair and meshplasty and 3 for only meshplasty and rest all were indirect hernias operated for mesh repair. In laparoscopic group only 2 patients with direct hernias were operated with TEP repair and rest all by TAPP repair of which 11 were indirect and 6 were direct hernias.

The postoperative pain is compared using VAS scores at 1st day, 3rd day and 1 week. Here the mean values of VAS score are 4.70 and 3.90 for open and laparoscopy group at day 1, 3.05 and 1.90 at day 3 and 1.80 and 0.80 at 1 week time points. The p value is significant at day 3 and 1 week time points for laparoscopic group. Also pain scores were compared between day 1 and day 3, between day 3 and 1 week and day 1 and 1 week time points by Mann-Whitney U test.

The mean hospital stay between two groups is compared in number of days using t test which is found to be significantly less in laparoscopic group with mean of 2.80 when compared to open group with mean of 4.35

The mean time to return to normal activities is found to be 6.55 days in open group and 3.25 days in laparoscopic group and is significant with $p<0.05$

Post operative seroma was observed in 1 case in open group for which no intervention was done. Post operative urine retention was observed in each 1 case in both open group and laparoscopic group after removal of foley's catheter, for which reinsertion of catheter has been done and removed later on.

IV. Discussion:

Lichtenstein tension free repair became popular when the scope for tissue-based repairs such as Bassini's repair and Shouldice repair became limited with increased recurrence rate.[3] The ideal technique still remains debatable and is individualized to person for inguinal hernia repair. Although open tension free mesh repair offer good outcome but the superiority of laparoscopic technique to be considered in view of reduced postoperative pain, discomfort and earlier resuming of normal activities.[4]

In the present study of 40 cases, all of them satisfied the inclusion criteria and so included in the study. 20 cases underwent Lichtenstein tension free repair and 18 cases TAPP repair and 2 cases TEP repair. The biggest advantage of TAPP repair is that any other surgery can be performed in the same sitting. In our study one patient has associated cholelithiasis for which laparoscopic cholecystectomy was done in the same sitting.

Post operative pain has become an important measurable outcome in the field of inguinal hernia repairs

In our study, Visual analogue scale (VAS) was used to measure the pain score in the patients measured on post operative day 1, day 3 and on 1 week. The mean of postoperative VAS score was less in the LHR group than LTHR group at each time points ($p<0.05$) which is similar in a study conducted by Neumayer L et al,(2008)[5] where it was noted that the group undergoing surgery with laparoscopic technique has less pain than the group undergoing surgery with Lichtenstein technique.

In our study mean of VAS score at day 1 was 4.7 and 3.9 for LTHR and LHR groups respectively where p value was not significant. On day 3 it was 3.05 and 1.9 and on 1 week it was 1.8 and 0.8 respectively for both the groups with p value being significant.

The duration of hospital stay in our study is calculated from the day of surgery to day of discharge. In our study the patients in LTHR group had longer duration of hospital stay that is 4.35 days, compared to the LHR group of 2.8 days which is similar to a study conducted by K. Pooraneson et al.,[4] where the length of hospital stay was more in Lichtenstein mesh repair 7.2 days than the laparoscopic repair group 4.6 days.

The time to get back to the normal activity was shorter in Laparoscopic group which is 3.25 days when compared to open group mean being 6.55 days. The study conducted by a Kouhia ST et al,(2009)[6] showed the similar results that the group repaired with Laparoscopic technique (5.08±0.28) days took shorter time to get back to normal activities than the Lichtenstein Mesh Repair group (10.08±0.76) days.

In our study, the complications were comparable among the LTHR group (10%) compared to the LHR (5%) group that is two patients have complications like seroma and urinary retention in post operative period in open group. While only one patient has urinary retention in laparoscopy group.

Study conducted by Udwania et al, for wound infection rates were less for laparoscopic repairs (1%) compared to open repairs (2.7%).[7]A study conducted by Prasad et al., compared the incidence of post operative complications between open and laparoscopic repair and concluded that post operative pain and mean duration of hospital stay was less in laparoscopic group[8]. However our study did not compare recurrence rates and chronic pain after surgery.

The high cost of laparoscopic surgery and training can be balanced with the reduced costs in the form of less hospital stay, reduced complications and early return to normal activity and work.

V. Conclusion:

As compared with the open repair, laparoscopic repair is much better in terms of early resumption of work and less pain post operatively. The cost burden also decreases for the patients in terms of less hospital stay, early return to work post surgery and better cosmesis. Also the complications of both the groups were comparable. But the operative time and learning curve is more for laparoscopic group.

Hence according to this study I would like to support laparoscopic hernia repair in terms of feasibility, efficiency and is safe in experienced surgeon's hands and is nearly scar less surgery. However long-term follow up is needed to evaluate for the chronic pain, recurrence rates.

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