COMPARISON OF LAPAROSCOPIC TRANSABDOMINAL PREPERITONEAL REPAIR (LAP TAPP) VS LICHTENSTEIN REPAIR IN INCOMPLETE INGUINAL HERNIA

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ABSTRACT

Objective: To compare and analyze the outcome of laparoscopic inguinal hernia repair with Lichtenstein repair in Incomplete inguinal hernia.

Study Design: Controlled prospective study.

Place and Duration of Study: The study was conducted at Department of Surgery Combined Military Hospital Lahore, from Jan 2017 to Jan 2018.

Methodology: Incomplete Inguinal hernia patients were admitted electively. They were randomly assigned into groups A and B. The group A patients were treated with laparoscopic transabdominal pre peritoneal repair (lap tap) and group B patients underwent Lichtenstein's open repair. Postoperative follow up of early complication of pain, testicular swelling and wound in duration was done. Follow up was at 1 week, 2 weeks, 1month and then 3 month.

Results: A total of 80 patients of incomplete inguinal hernia were included with 40 patients in each group. Group A patients had short hospital stay (discharged within 24 hours 68.08%) as compared to group B (31.91% $p<0.001$). From 2nd to 6th postoperative week group A patients had significantly less postoperative pain as compared to group B ($p<0.05$).

Conclusion: Laparoscopic TAP repair was safe with early hospital discharge and less postoperative pain and post-operative complications.

Keywords: Inguinal hernia, Laparoscopic repair, Lichtenstein repair, TAP.

INTRODUCTION

Inguinal hernia is one of the most common surgical problems and is a leading cause of work loss and disability[1]. Open surgery for inguinal hernia has gone through many stages of development. Understanding of the hernia anatomy was appreciated andunderstood in the mid 1700's by means of dissectionof cadavers. Two advancements which enabled the development of hernia surgery greatly were the aseptic technique and improvement in of anesthesia. Edoardo Bassini was an It alian surgeon who described a durable inguinal hernia repair based on an understanding of inguinal (groin) anatomy. Shouldice developed an anatomic based surgicaltechnique which produced a very low recurrence rate. From the 1940s various forms of synthetic polymers were used in inguinal hernia repair. Lichtenstein published the results of 6, 321 patients followed for 2-14 years after inguinal hernias repair with polypropylene mesh in 1987. This approach revolutionized hernia repair[2]. Today tension free mesh repair is regarded as gold standard. This technique is simple, safe and effective, with relapse rate of 0.7%[4]. Laparoscopic approach has markedly improved recovery time that prompted surgeons to attempt laparoscopic approach in hernia repair. Ger was the first surgeon to attempt the laparoscopic hernia repair[6]. The open surgery techniques are gradually being replaced by the transabdominal preperitoneal repair (TAPP) and total extraperitoneal repair (TEP)[7]. Better postoperative outcomes has been reported with regards to reduced postoperative pain and early return to daily activity[8]. Recurrence rate of 0.4% has been reported with TAP[9]. The rationale of the study was to compare the laparoscopic repair with Lichtenstein repair in terms of discharge

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rate and postoperative pain, testicular swelling and wound induration.

METHODOLOGY

This study was conducted at CMH Lahore department of surgery tertiary care hospital. The duration of the study was from January 2017 to June 2018 (12 months). Study design for this was controlled prospective study. The study was started after approval from "Institute Ethical Committee." The patients presenting with an inguinal hernia to the Department of General Surgery were screened for eligibility. All eligible patients underwent preliminary investigations and pre-anesthetic check-up. It was a new approach for the existing problem in single surgical unit under controlled conditions. Total Sample size was 80 patients as a pilot study based on the work load. Inclusioncriteria was Age between 20-65 years, Male Gender, Primary reducible incomplete inguinal hernias. Exclusion criteria was patient having recurrent inguinal hernias, bilateral hernias, complete inguinal hernia & patient having morbid obesity, Acute or chronic Liver or kidney diseases, Hepatitis B & C positive patients. The importance of the article were in reference to operative time and financial burden which resists the change in Government Sector Hospital. They were randomly allocated into two groups A and B by using random numbers table method after matching the confounding variables. After informed consent all patients were operated under general or spinal anesthesia. All patients of group A were done in General anesthesia. For group A laparoscopic repair was performed with transabdominal. A 10cm x 15cm polypropylene mesh (Prolene-Ethicon) was placed in the preperitoneal pocket and fixed with tackers i.e Protack 5mm fixation device-Covidien (shown in figure). 15 x 15 cm mesh was custom made by cutting itto adequate size of the inguinal canal. For group B Lichtenstein repair was performed through suprainguinalgroin crease incision. The posterior wall was strengthened with the 11cm x 6cm polypropylene mesh (Prolene Ethicon) fixed with polypropylene suture (Prolene-Ethicon). Local infiltration of the wound and port was done with bupivacaine 0.25%. Post-operative follow up of early complication of pain, testicular swelling and wound induration was done. Patients were monitored for severity of postoperative pain on 1st hospital stay early postoperative follow up was at 1 week, 2 weeks, 1 month and then 3 months. Data analysis was descriptive by SPSS version 23.

RESULTS

A total of 80 patients of incomplete inguinal hernia were included with 40 patients in each group. Group A patients had short hospital stay

Table-I: Length of hospital stay and pain on discharge.

Comparison	TAPP	Lichtenstein
Average time in min	51.9	48.5
Average no. of tackers used	5	-
Average Pain score on visual analogue scale at discharge	0.92	4.04 *p*-value <0.05
Number of sutures used	1 Prolene	2 Prolene 2 Vicryl
Stay in hospital/ (days)	1-1.5	2-3

Table-II: Complications.

Testicular swelling (mild to moderate)	**2 (5%)**	**11 (27.5%) *p*-value <0.05**
Seroma	-	2
Induration Scar in first week	1 (2.5%)	16 (40%) *p*-value <0.05
Induration scar in first month	1	10
Induration after 3 months	-	4
Mild Surgical Site infection	-	3
Recurrence in first 3 months	-	-

(discharged within 24 hours-68.08%) as compared to group B (31.91% $p<0.001$) from 2nd to 4th post-operative day as in table-I. Average hospital stay for TAPP was 1.5 days where as 3 days for Lichtenstein mesh repair group A patients had significantly less postoperative pain as compared to group B[13 17]. Mann Whitney U-test revealed ($p<0.05$). In our study the average operating time in minutes for TAAP and Lichtenstein was 51.9

and 48.5 min respectively with no significant statistical difference. Patients were assessed for pain in both groups by visual analogue scale at discharge. There was significant difference of pain on visual analogue scale in both groups (p<0.05) with average pain of 0.92 in TAPP compared to average pain score of 4.04 in Lichtenstein repair as shown in table-I. The percentage of complication between two group on application of Fischer exact test was significant with p<0.05 was noted. Number of patients who developed mild testicular swelling in TAPP were 2 where as in Liechtenstein were 11 showing the patients with tap have significant lesser chance of developing swelling as in table-II. Patients with induration of scar in first week and 1stmonth was 1 and 1 respectively in case of TAPP where as it was 16 and 10 respectively in Lichtenstein[3]. Month follow up revealed no induration in lap patient and 4 of Lichtenstein group have induration[3]. Of the patients developed mild surgical site infection in Lichtenstein, no patient developed Surgical site infection who underwent TAPP. Seroma was seen only in 2 of open

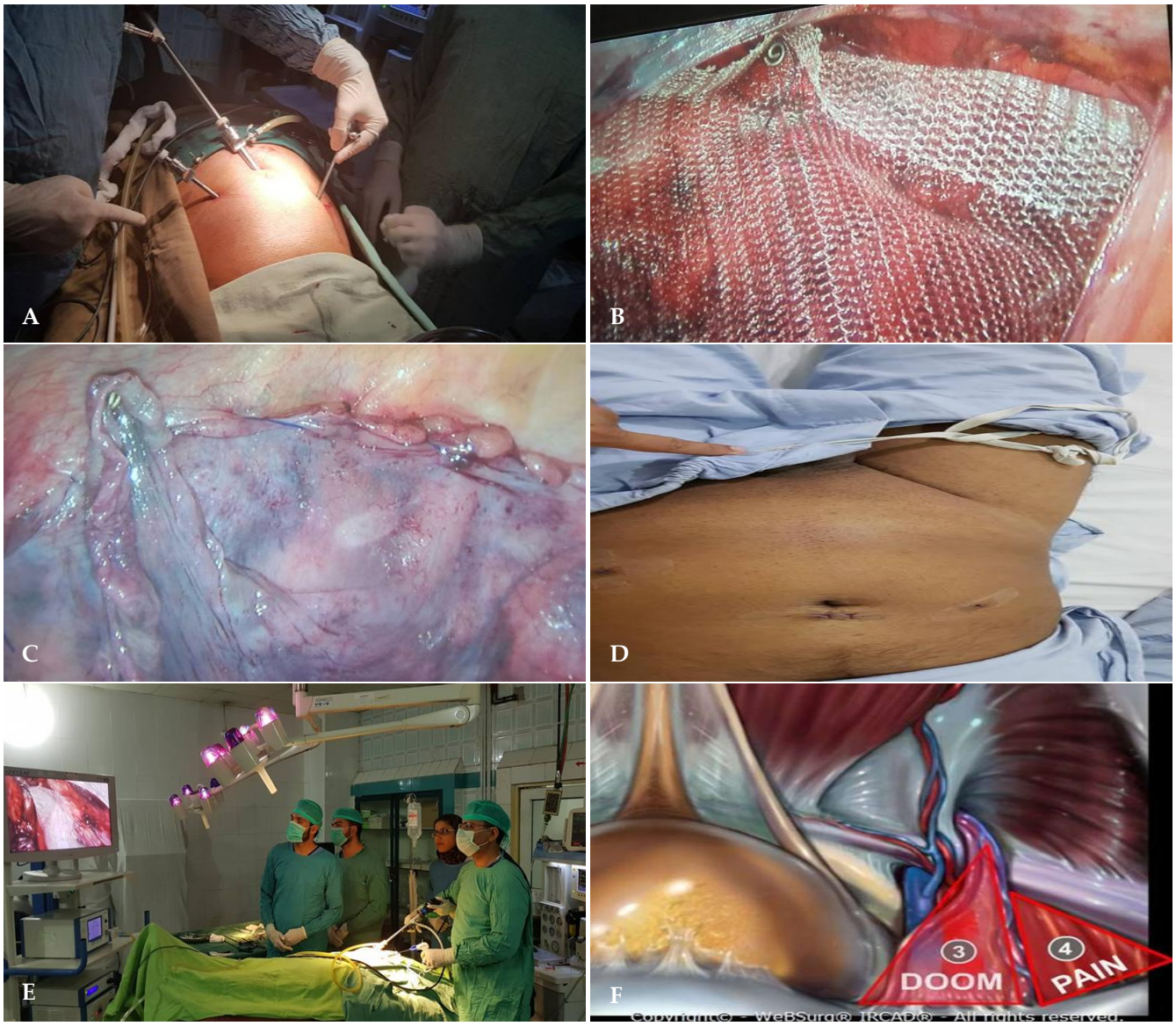

Figure: (A): Old Port Position, (B): Mesh Placement, (C): Liechtenstein, (D): Post Result (E): Laptop ergonomic, (F): Triangle of Doom & Pain.

Lichtenstein cases. In our study, no major intraoperative complication occurred in both the groups. There were no cardio-pulmonary, cerebrovascular or thrombotic complications in both the groups However after 12 weeks the difference in pain outcomes between the two groups didn't show significant.

DISCUSSION

Inguinal and femoral hernias are the most common conditions for which primary care physicians refer patients for surgical management. Hernia repair under tension is the prime cause of postoperativepain and recurrence. This led to development of tension-free hernioplasty. Presently tension free hernioplasty with mesh has become a gold standardprocedure. Mesh replacement can be done open or by minimal access surgery. Laparoscopic repair of inguinal hernias has gained remarkable popularity in recent years[14]. The advantages of laparoscopic surgery favor its application to various surgical procedures. Better patient comfort and cosmesis, allowing tension free repair with better revelation to groin anatomy, less postoperative pain, shorter hospital stay and early return to daily activity. These are the advantages of TAPP technique. A Cochrane meta-analysis favored TAPP procedure[11]. In our study group A TAPP patients had significantly less postoperative pain as compared to group B. However, laparoscopic hernioplasty requires lengthy learning curve and it is more costly mainly due to the use of disposables during surgery. Furthermore, with the use of laparoscopic technique the assessment of both groins, particularly incidental defects, is easier and both defects can be repaired at the same operation without the need of further surgical incision, with very little dissection and minimal additional postoperative discomfort. Therefore, bilateral inguinal hernia is an idealindication for laparoscopic repair although in our study being a pilot study and seeing the feasibility of the TAPP in our set we excluded the patients with bilateral hernia. Today, most laparoscopic hernioplasties are performed using either transabdominal preperitoneal (TAPP) or total extraperitoneal (TEP) approachin Manjunath *et al*, study it was highlighted that lap has intraoperative complications include hemorrhage, technical failure, conversion, injury to vas deferens, injury to vessels, injury to viscus, and major vascular injury. None oftheir patients in study had any intraoperative problem. They found no difference between the two groups in terms intraoperative complications[11]. In our study, no major intraoperative complication occurred in both the groups. The postoperative complications of hernia repair include seroma, hematoma, wound infection (superficial and deep), neuralgia, urinary retention and recurrence which occurred as listed in table-II. There were no cardiopulmonary, cerebrovascular or thrombotic complications in both the groups. In current study the postoperative pain outcome at 2, 4 and 12 weeks were noted. These were statistically significant. This significant reduction inthe early postoperative pain has helped the patients by requiring less analgesia, early mobilization and quick recovery in TAPP group[16]. Regarding the postoperative hospital stay it is generally accepted that laparoscopic group will be discharged earlier. In our study all patients, in both the groups were admitted after surgery. However, patients who underwent laparoscopic hernioplasty were discharged earlier than the patients who had open mesh hernioplasty. Open Lichtenstein had increased incidence of wound infection 12 in our study 3 patient with Lichtenstein repair developed mild surgical siteinfection[18]. We compared the 24 hour discharge rate between the open and the laparoscopic group and found statistically significant difference. Average hospital stay for TAPP was 1.5 days where as 3 days for Lichtenstein mesh repair group A patients had significantly less postoperative pain as compared to group B[15 16]. Our study has few limitations namely small number of patients and short follow up period of 3 months only.

Ethical Approval

The study was approved by the Institutional Ethics Committee of Combined Military Hospital Lahore.

CONCLUSION

Laparoscopic trans-abdominal preperitoneal (TAPP) is feasible and superior to open mesh repair in terms of lower post op complications in terms of pain, induration, testicular swelling and hospital stay. It can replace the conventional procedure in Military hospital without having much constrain of operative time and financial burden.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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