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COMPARITIVE STUDY OF LAPAROSCOPIC TOTAL EXTRAPERITONEAL HERNIOPLASTY (TEP) AND STOPPA'S TECHNIQUES FOR BILATERAL INGUINAL HERNIA

Adil A Kalam — Resident, Department of Surgery, Armed Forces Medical College, Pune

Manoj Kumar* — Professor, Department of Surgery, Armed Forces Medical College, Pune
*Corresponding Author

ABSTRACT

Background: The study compared the effectiveness and early and long-term clinical outcomes of 30 patients each who have undergone laparoscopic total extra peritoneal hernioplasty (Lap TEP) and Stoppa's repair for bilateral inguinal hernias in terms of duration of surgery, post op morbidities and early & late complications.

Methods: 60 patients who underwent laparoscopic total extra peritoneal hernioplasty and Stoppa's mesh repair at a tertiary care centre, after obtaining consent and satisfying the inclusion and exclusion criteria were assessed intraoperatively and postoperatively and systematically followed up at regular intervals for a duration of one year.

Results: The analysis of the data collected both by medical records and serial follow ups in both the groups with comparable age, showed a lesser operating time for Lap TEP repair. Postoperative morbidity in terms of requirement of added post-operative analgesia, requirement of drain and urinary catheter, delay in ambulation and increased duration of hospital stay was seen in the Stoppa's repair group. Post-operative pain score was more in the Stoppa's and one case of Stoppa's had developed post op recurrence at one month.

Conclusion: The present study reveals that Lap TEP is a better modality than Stoppa's repair in terms of duration of surgery, and early post-operative morbidity for bilateral Inguinal Hernia repair.

KEYWORDS : Inguinal hernia, Mesh repair, Stoppa's, Lap TEP, Lichtenstein's, Recurrence.

Introduction

Open mesh based tension free repairs continues to remain the standard for most inguinal hernias but is facing a tough competition from its laparoscopic cousins -TEP and TAPP (1,2). Many studies show a comparable recurrence rate between laparoscopic total extra peritoneal hernioplasty and conventional open surgeries (4). Laparoscopic hernia repair is now the recommended method for bilateral and recurrent inguinal hernias. Lap TEP repair has shown favorable short term results with regard to reduced postoperative stay, decreased postoperative pain, and earlier return to physical activity in comparison with open mesh repairs.

There are very few studies that compare the efficacy and outcome of bilateral Lap TEP and Stoppa's for bilateral inguinal hernias. This is a retrospective-prospective observational study in a tertiary care center over a period of Aug 2015 to Aug 2017 with one year follow up on 60 patients of bilateral inguinal hernia half of whom underwent Bilateral Lap TEP, and the other half who underwent Stoppa's repair.

The study compares the effectiveness and outcome parameters of the above two groups in management of bilateral inguinal hernias in terms of duration of surgery (from skin incision to placement of last suture), requirement of post op analgesia and early and late complications if any.

Materials and Methods

This is a retrospective-prospective observational study carried at a tertiary care centre, from Aug 2015 to Dec 2017. Both primary and secondary data were used for the study and was collected from all patients presenting with bilateral inguinal hernias and operated between Aug 2015 to Dec 2017 including up to one year of follow up. All patients who undergo inguinal hernia repair are assessed pre operatively, intraoperatively and postoperatively till 48 hours as a part of institutional criteria. The modality of surgery used was purely based on the patients' choice and the surgical unit to which the individual first reported to.

Details of all the bilateral hernias operated were collected retrospectively from the operation theatre dairy and history, examination and intra operative findings were collected from the case files and operative notes. All cases who underwent bilateral Lap TEP (Group 1) and Stoppas' repair (Group 2) were included. Post-operative follow up was done prospectively at 6 hours, 24 hours, 1 week, 1 month, 6 months and 1 year.

Lap TEP was undertaken under general anaesthesia with use of a three port technique (a 10mm port paraumbilical for the camera, a suprapubic 5mm port, and a 5mm midline port between the two). Dissection was exclusively extra peritoneal and the hernia sac is dissected free from the deep ring and off the abdominal wall. An appropriately sized standard polypropylene mesh 13 cm x 15 cm was then used with or without laparoscopic tackers.

GPRVS was performed as described by Stoppa, except that polypropylene mesh (Prolene, Ethicon Ltd.) was used instead of Dacron as originally described by Stoppa in 1995, under general anesthesia or combined spinal-epidural anaesthesia. All the patients in the Stoppa's repair group were preoperatively catheterized in anticipation of possible longer duration of surgery and post-operative morbidity. After making an infraumbilical midline incision, the preperitoneal space of the inguinal regions were dissected out, parietalization of the cord structures done with dissecting the hernia sac which, if not reduced spontaneously, was amputated at its neck, and its distal part left in situ. A standard polypropelene mesh was then interposed between the peritoneum and transversalis fascia.

Postoperative pain was evaluated using Visual Analogue Pain Scale (VAS) at 6 hrs and at 1st, 7th and 30th postoperative days and 6 months and 1 year after surgery where each patient was asked to quantify his pain using the verbal rating scale (0- no pain to 10- excruciating) and was marked on a visual analogue score of 1-10. All patients received a routine intravenous dose of dose of 100 mg injection paracetamol on the evening of the operation day. Thereafter, patients were instructed to take analgesics as needed and total analgesic requirement was noted and graded in 3 groups according to the WHO pain ladder (3). Physical activity was permitted directly after the operation without any restriction. Outpatient physical examinations were performed on the 7th and 30th days postoperatively. Patients were later either examined at 6 months and 1 year or requested to answer a questionnaire. The duration of operation, postoperative complications, and length of hospital stay were recorded in each patient. These patients were systematically followed up at regular intervals up to one year for complications, if any. Statistical evaluation of the differences between the study groups was performed using the SPSS version 22.0 and level of significance was set at five percent.

Results

The study conducted an analysis of the data collected both by medical records and serial follow up in both sets of patients who underwent laparoscopic total extra peritoneal hernioplasty and Stoppa's mesh repair. All patients in the study were male, none of them were lost to follow up for a year, and the patient characteristics studied are summarized in Table 1

The average operating time (mean-73.83 min) and intraoperative

blood loss (15 ml) was significantly lesser in Group 1 and the other intraoperative parameters studied are summarized in Table 2. Patients operated by Stoppa's method required a significantly higher amount of injectable Grade 1 and 2 analgesics (Table 3) and still continued to have higher pain score all through their postoperative periods on evaluation respectively at 6 hrs and 24 hrs post op, after 1 week, I month and 6 months (Table -4). However none of the patients offered any complaints of pain at completion of 1 year follow up in any of the groups. None of the patients in Group 1 required placement of an intraoperative drain; could be ambulated on the post op evening and had a significantly lesser duration of hospital stay. On the other hand in the Group 2, placement of an intraoperative drain was done in all cases electively, were ambulated on the second post-op day and had a longer duration of hospital stay. Early postoperative complications studied are summarized in Table -5. There was one case of recurrence in the right inguinal region at one month post op in Group 2 and no recurrences in Group 1. None of the patients in their respective stages of follow-up have reported chronic groin pain, testicular atrophy, port site/operative site hernias or limitation of truncal movements till the last day of follow up.

Table-1- Patient Characteristics and follow up time in study groups

Patient Characteristic	B/L Lap TEP (n=30)	Stoppas' (n=30)	p-value
Age(mean)	53.73	58.23	NS
Sex	30 Males	30 Males	-
Smoking	22	24	NS
Prostatomegaly	3	3	NS
COPD/Chronic cough/Constipation	2	1	NS
Other Comorbidities	12	14	NS
Follow up (months)	12	12	-

Table-2- List of operative parameters studied

Patient Characteristic	B/L Lap TEP (n=30)	Stoppas' (n=30)	p-value
Duration of surgery (mins)	73.83	86.16	<0.05
Anaesthesia	GA	2 Spinal, 28- GA	-
Mesh Used	Polypropylene	Polypropylene	-
Total Avg Surface area of mesh used	390cm2 (195 cm2 on each side)	505.83 cm2	-
Avg blood loss	15 ml	40 ml	<0.05

Table -3- Post operative injectable analgesia requirement

Post-op injectable analgesia used	B/L Lap TEP (n=30)	Stoppas' (n=30)	p-value
Grade 1(WHO) (mean)	2.50	7.83	<0.05
Grade 2(WHO) (mean)	0.3	02.23	<0.05
Grade 3(WHO) (mean)	0	0	-

Table -4- Post operative pain scores

Visual Analogue score(1-10) (in time post surgery)	B/L Lap TEP (n=30)	Stoppas' (n=30)	p-value
6 hrs	2.3	3.73	<0.05
24 hrs	1.5	3.8	<0.05
1 week	1.43	4.06	<0.05
1 month	0	2.3	<0.05
6 months	0	0.23	<0.05
1 year	0	0	-

Table-5- Early post-operative complications

Patient Characteristic	B/L Lap TEP (n=30)	Stoppas' (n=30)
Delayed Wound-healing	0	0
Post-op wound Infections (SSI)	0	2
Urinary retention	2	All patients pre operatively catheterized
Seroma	2	1
Haematoma	0	0
Post op Ileus	0	1

Discussion

Rene' E Stoppa described the GPRVS repair in 1969 as a technique most suited for multiple, recurrent and bilateral hernias and had reported excellent results with his technique. Advantages of Stoppa's repair are that it allows bilateral approach via single incision covering all the hernial orifices, avoids reoperation through defective, scarred and weakened tissues, especially in recurrent hernias and intra operative complications are minimal as plane of dissection avoids major vascular structures, no dissection of cord structures or dissection or repair of defect.

As groin hernias are the commonest surgical conditions encountered, a significant number of studies have compared laparoscopic techniques to open surgeries of which the Lichtenstein method is considered the gold standard. Lap TEP has an average recurrence rate of 3.75% in experienced hands. Many recent studies (LEVEL trial) have shown equivalent recurrence rates for lap TEP when compared to Lichtenstein (4).

The advantages of Lap TEP are that it allows laparoscopic minimal incision approach for all hernias including bilateral and recurrent and also avoids reoperation through defective, scarred and weakened tissues (especially in recurrent hernias) so as in the Stoppa's repair.

Bilateral inguinal hernias were traditionally treated with sequential unilateral open repair, or by Stoppa's repair, however with the advent of laparoscopic hernia repair TEP has gained much popularity although some surgeons still resort to Stoppa's repair for managing bilateral inguinal hernias. It is argued that decreased post-operative pain and lesser morbidity are the main advantages of Total Extra Peritoneal Repair (TEP) over open hernia repair and that TEP repair has shown favorable short term results with regard to reduced postoperative stay, decreased postoperative pain, and earlier return to physical activity in comparison with open mesh repairs.

Literature review has shown that all of the studies revealed that the group of patients submitted to laparoscopic surgeries not only had less pain and lesser requirement of analgesics than the group submitted to the Stoppa's procedure and these results were consistent with our study (5,6). Although our study revealed shorter duration of surgery for Lap TEP group, other studies have shown the opposite (7).

Conclusion

Postoperative morbidity in terms of requirement of added post op analgesia, requirement of drain, late ambulation and increased duration of hospital stay was seen in the Stoppa's repair group. The early & late complications studied in the form of post-operative pain at 1 month was significantly more in Stoppa's repair which had subsided on later follow up periods of 6 months and 12 months. There was one recurrence in the Stoppa's group. In this study we concluded that Lap TEP repair is superior to Stoppa's repair for bilateral inguinal hernias in terms of operative time, post-operative morbidities and early & late complications.

Conflict of interest

Authors have none to declare

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