

A Prospective Comparative Study between Open Lichtenstein Method and Laparoscopic TAPP (Transabdominal Preperitoneal) Inguinal Hernia Repair

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Abstract: This study is regarding to compare the outcome of both open and laparoscopic inguinal mesh repair, time taken for surgical procedure, patient's duration of postoperative hospital stays, postoperative pain and other complication, recurrence in first postoperative year between open lichtenstein hernia repair and laparoscopic transabdominal preperitoneal (TAPP) hernia repair in inguinal hernia patients. We encountered 100 cases of inguinal hernia, 50 cases operated by laparoscopic repair and 50 cases were operated by open repair during a period of 2 years, between July 2017 to July 2019, at P.D.U. medical college, Rajkot. Hence the study showed that after laparoscopic inguinal hernia repair, postoperative pain and other complications, postoperative hospital stay were less in comparison to that after open inguinal hernia repair. While duration of surgical procedure was more in laparoscopic hernia repair in comparison to that in open inguinal hernia repair.

Date of Submission: 07-11-2019

Date of Acceptance: 23-11-2019

I. Introduction

Of the study of the many operations available in a general surgeon's armamentarium, that of hernia repairs has been written about repeatedly. The rapid changes that have been witnessed in open approach surgeries, prosthetic materials and laparoscopic surgeries have made hernia surgery, a most interesting field of endeavor that demands renewed discipline and dedication. Though a variety of procedure are performed none can be termed as an ideal procedure as each one is accompanied by varied early & late complications, the most significant being recurrence. In 1981, William Bull, one of the most prominent Surgeons, wrote of hernia repairs, "It is wise to estimate the value of given procedures by the relative proportions of relapses".

In our Institution, inguinal hernia repair is one of the common surgeries performed daily. This study aims at studying the advantages, disadvantages, limitations, post-operative pain & other complications, duration of surgical procedure, duration of postoperative hospital stay between the open inguinal hernia mesh repair and laparoscopic inguinal hernia mesh repair surgeries and to arrive at a conclusion as to the best modality of treatment after comparison of morbidity and recurrence of these procedures among them and in relation to standard published material.

II. Material and methods

We have used 100 patients between the age of 20 to 65 years scheduled for laparoscopic TAPP (50) and open hernioplasty (50) repair of inguinal hernia admitted to general surgery department in Pandit Dindayal Upadhyay Medical College & Civil Hospital, Rajkot, Gujarat.

Study design: Prospective comparative study

Study location: PDU Medical College & Civil Hospital, Rajkot, Gujarat, India

Study duration: 2 years

Sample size: 100 patients

Sample size calculation: we have done this study on total of 100 patients of inguinal hernia. Each group of our study was containing 50 patients.

Subjects and selection method: The study population was drawn from consecutive patients of inguinal hernia who presented to Pandit Dindayal Upadhyay Medical College & Civil Hospital, Rajkot, Gujarat, who underwent laparoscopic TAPP and open hernioplasty between July, 2017 to July, 2019.

Inclusion criteria:

- All patients between age of 20 to 65 years.
- All patients with unilateral or bilateral inguinal hernia which is reducible and nonobstructive.

Exclusion criteria:

- All patients below age of 20 years and above age of 65 years.
- All patients of obstructed or strangulated hernias.
- All patients with hernias other than inguinal hernia.

Procedure methodology:

After obtaining institutional ethical committee approval and written informed consent, 100 patients of between the age of 20 to 65 years scheduled for laparoscopic TAPP (50 cases) and open Lichtenstein hernia repair (50 cases) were enrolled in this Prospective comparative study, which was conducted in patients with inguinal hernia.

The following parameters were evaluated for both open and laparoscopic procedures:

- Operative technique
- Duration of surgery
- Intraoperative and Postoperative complication
- Postoperative hospital stays
- Recurrence in first postoperative year

Statistical analysis:

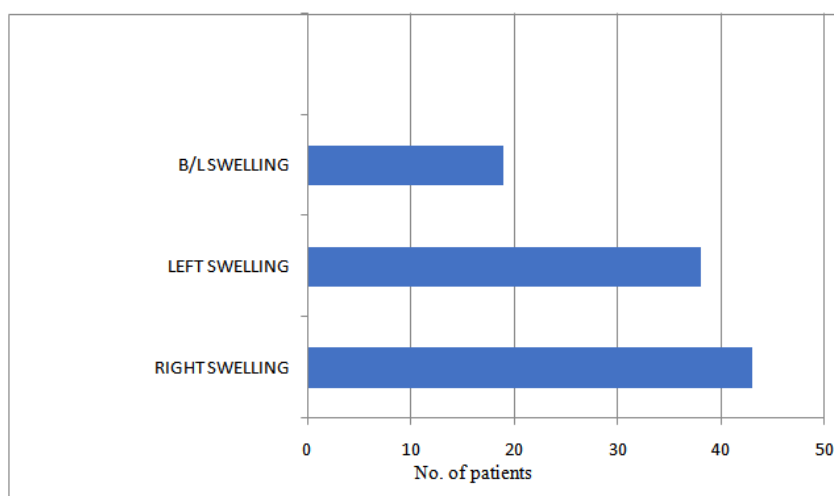
Analyses were performed on the data by using the student t-test for continuous quantitative variables. Numerical values were expressed as Mean± Standard Deviation (SD) to test the duration of operative procedures and postoperative hospital stay in laparoscopic TAPP and open lichtenstein hernia repair of inguinal hernia patients. A p-value less than 0.05 were considered statistically significant for all analyses.

III. Result

A total of 100 (50 for open&50 for laparoscopicrepair) patients of inguinal hernia in whom laparoscopic TAPP and open Lichtenstein hernia repair was conducted in the department of General Surgery at the PDU Medical college, Rajkot during a period of 2 years from July, 2017 to July, 2019 were enrolled. Patients were divided in 2 groups (50 + 50).All patients were evaluated for presenting symptoms, duration of surgery, intraoperative and postoperative complication, postoperative hospital stay and recurrence.

Table 1:Presenting Symptoms

Complain	Frequency	Percent
Bilateral groin swelling	19	19%
Left groin swelling	38	38%
Right groin swelling	43	43%
Total	100	100%

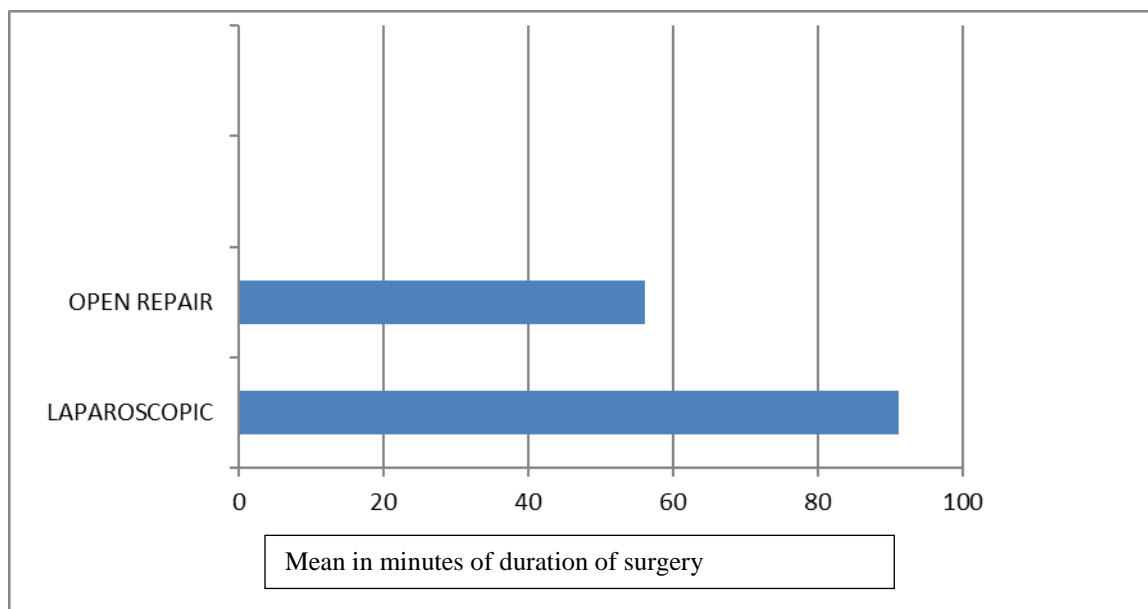


In this study we found that right inguinal hernia is more common. 43 % of the study group presented with right inguinal hernia.

Table 2:Duration of the surgery

Type of surgery	N	Mean	Std. deviation
Open Hernioplasty	50	65.12	31.85
Laparoscopic Repair	50	111.20	39.85

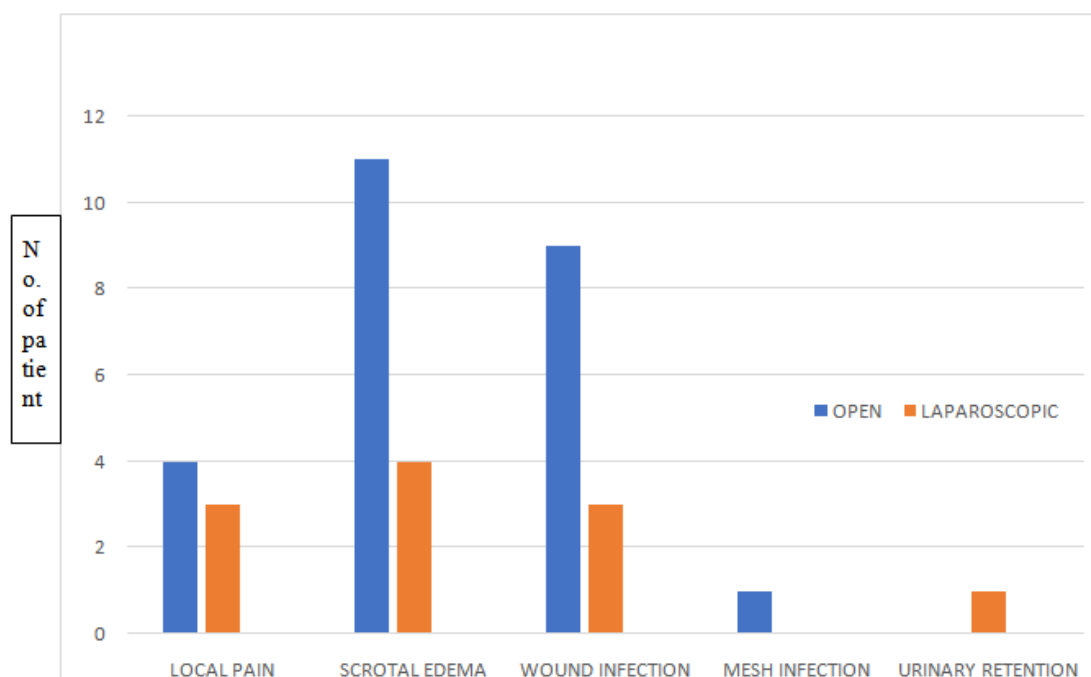
't' test P value = 0.0001



In our study we found that the mean time taken for open inguinal hernia repair was about 65.12 minutes as compared to the mean time of 111.20 minutes taken for laparoscopic inguinal hernia repair. Time taken for laparoscopic inguinal repair is prolonged. In our study unpaired “t” test P value is 0.0001 which is <0.05, it means our study is statistically significant for the duration of surgical procedure.

Table 3:Post-operative complications

Complications		Surgery done	
		Open hernioplasty	Laparoscopic repair
Local pain	Count	4	3
	% within surg done	8%	6%
Scrotal edema	Count	11	4
	% within surg done	22%	8%
Wound Infection	Count	9	3
	% within surg done	18%	6%
Mesh infection & removal	Count	1	0
	% within surg done	2%	0
Urinary retention	Count	0	1
	% within surg done	0	2%
Total	Count	25	11
	% within surg done	50.0%	22.0%



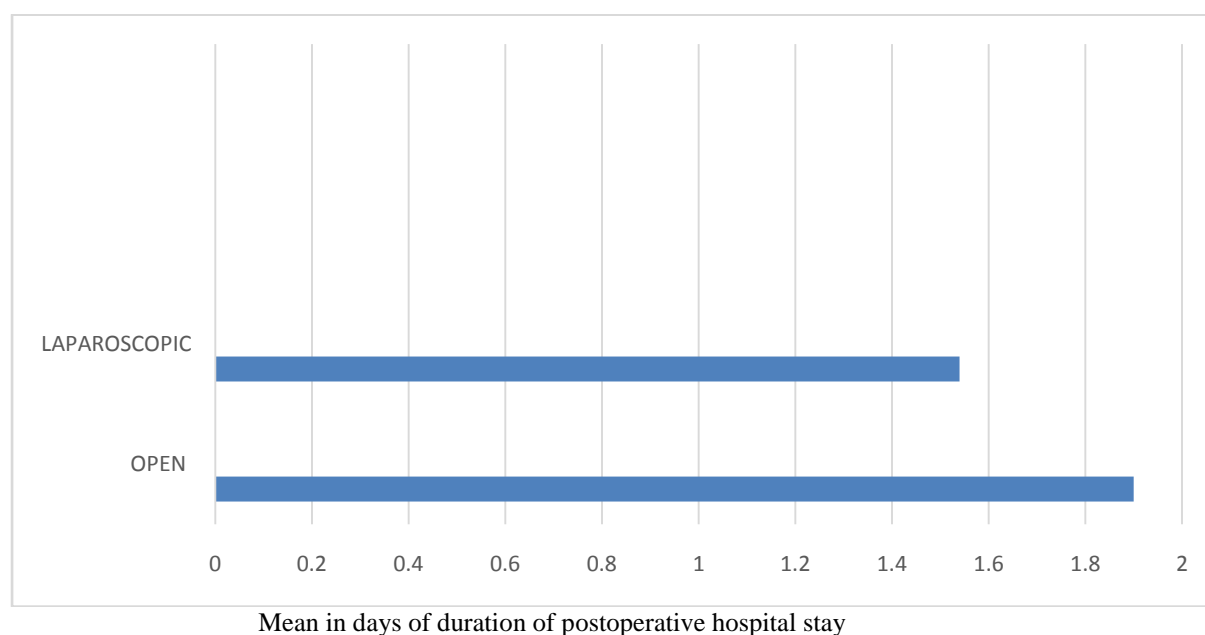
4 cases of local pain were found in open hernioplasty group whereas 3 in laparoscopic repair group. 11 cases of scrotal edema were found in open hernioplasty group whereas 4 in laparoscopic repair group. 9 cases of wound infection were found in open hernioplasty group whereas 3 in laparoscopic repair group. 1 case of mesh infection & removal was found in open hernioplasty group whereas zero case in laparoscopic repair group. Zero case of urinary retention was found in open hernioplasty group whereas 1 in laparoscopic repair group. 28 cases without complications were found in open hernioplasty group whereas 40 in laparoscopic repair group. Postoperative complications were fewer in laparoscopic hernia repair while compared to the open hernia repair group.

Intraoperative complications not occurred in either of groups.

Table 4:Duration of postoperative hospital stay

	Surgery done	N	Mean	Std. deviation
Hospital stay	Open hernioplasty	50	1.90	1.37
	Laparoscopic repair	50	1.54	0.61

“t” test P value = 0.0928



The mean duration of hospital was found to be 1.90 days for the open hernioplasty group compared to the laparoscopic hernia group which was around 1.54 days.

In our study unpaired “t” test P value is 0.0928 which is more than 0.05, it means our study is statistically not significant for postoperative hospital stay.

Follow up up to one year postoperatively for recurrence:

There was no recurrence up to one postoperative year in both the groups.

IV. Discussion

The mean duration for hernioplasty in our study was 65.12 min which is in comparison to the study conducted by Udawadia Tehemton et al. Time for laparoscopic inguinal hernia repair (TAPP- Transabdominal preperitoneal) was 111.20 min which is more as compared to the standard study which was around 67.5 min. In the MRC trail the operating times were 43.3 min for open hernioplasty group compared to 58.4 min for laparoscopic hernia repair group.

In our study the postoperative complications like local pain, scrotal edema, mesh infection & removal and wound infection were comparatively lower in the laparoscopic hernia repair group respectively 6%, 8%, 0%, 6% compared to that of the open hernioplasty group 8%, 22%, 2%, & 18% respectively. In the study done by Udaeardia Tehemton et al wound infection rates were significantly lower after laparoscopic technique (1%) than after open repair (2.7%). The incidence of scrotal edema was found to be significantly lower after the laparoscopic repairs (13%) than after open repair (16%). Our study has comparable results with the above study regarding postoperative complications.

In our study we found that the mean period of postoperative hospitalization was 1.54 days in case of laparoscopic repair and 1.9 days in open hernia repair.

In our study we do not found recurrence in the open as well as in the laparoscopic hernia repair in postoperative one year. MRC laparoscopic hernia trail group found 1.9% recurrence rate in laparoscopic group and zero percent recurrence in open group at one year. Champault et al found recurrence rate of 6% in laparoscopic group versus 3% in open group in a series of 100 patients in a randomized trial.

V. Conclusion

All patients were intensively monitored in the immediate postoperative period and the complication noted. We found that there were less number in postoperative pain and other complication in laparoscopic hernia repair in comparison to open inguinal hernia repair. Postoperative hospital stay was also less in laparoscopic repair in comparison to open inguinal hernia repair. But the duration of surgery was more in laparoscopic repair in comparison to open inguinal hernia repair. Both the groups were followed up for one postoperative year for recurrence but we do not found recurrence in either group.

To summarise, there is no universal repair for groin hernia and no two surgeons will disagree on that point. All the techniques will have hard proponents as well as opponents. This is where the practice of evidence-based medicine is very crucial and one should have close watch on the long term follow up results of any particular newer procedures. Till then one may practice a time honored and a good surgical technique, which has the least recurrence rate is handed over them by their seniors, taken into account the cost factor which is still important in the developing country like ours and the noble thought that the patient is not a Guinea pig.

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