MEDICAL CHANNEL

Original Article

LAPAROSCOPIC TOTAL EXTRA PERITONEAL MESH REPAIR AND OPEN LICHTENSTEIN MESH REPAIR FOR THE TREATMENT OF INGUINAL HERNIA

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ABSTRACT

Objective: The aim of this comparative study is to compare the post-operative pain, post-operative complications, hospital stay and early return to normal activities in two groups of procedures, laparoscopic total extra peritoneal mesh repair and open Lichtenstein mesh repair for the treatment of inguinal hernia.

Material and Method: This comparative study was conducted in the department of surgery, Liaquat University of Medical & Health Sciences, Jamshoro. 109 cases of inguinal hernia were collected from January 2007 to March 2008, were randomized in two groups, 52 for Laparoscopic total extra peritoneal mesh repair and 57 for Lichtenstein mesh repair. All patients of inguinal hernia were admitted throughout patient department. Children, patients with complicated inguinal hernia and those who are unfit for general anesthesia were excluded from study.

Results: Majority of patients 53% belongs to age of 41 to 55years. Inguinoscrotal swelling was the commonest presentation. Cough impulse and reducibility was positive in 100% cases. Indirect inguinal hernia was 65% of cases and direct was in 35% of cases. Right sided hernia was also in 60% of cases and left sided hernia in 38 % of cases. Contents of sac were small intestine in 59 % of cases and omentum in 40 % of cases. Mean operative time was shorter in open mesh group 60 minutes than laparoscopic group 75 minutes. The mean analgesic requirement in laparoscopic group was three doses and in open group was 5 doses. The mean period of hospital stay was shorter in laparoscopic group i.e. 1.5 days than open group i.e 4.5 days. The mean period of resumption of daily life activities was 8.5 days in laparoscopic group and 21.5 days in open group.

Conclusion: Laparoscopic herniorraphy is with less postoperative pain, early return to work and less hospital stay. Laparoscopic is best option of treatment for recurrent and bilateral hernias. Recurrence rate is more less because a large mesh is required for posterior repair. Cosmetic results are superior to that of open hernia repair.

Key Words: : Laparoscopic TEP repair, Lichtenstein mesh repair, unilateral hernia, bilateral hernia

INTRODUCTION

A Hernia is a protrusion of a viscus or a part of viscus through an abnormal opening in the walls of its containing cavity. About 75 % of all hernias occur at the groin.[1] In the United States, approximately 96 percent of groin hernias are inguinal and about 20% are bilateral.[2] Inguinal hernia is an abnormal protrusion of the peritoneal contents into the inguinal canal. When this protrusion enters the inguinal canal through the deep inguinal ring it is termed as indirect inguinal hernia. When it occurs through an attenuated and weakened posterior wall it is termed as direct inguinal hernia. The most common hernia in both sexes is indirect inguinal hernia; male to female ratio is 9:1[2]. Herniorrhaphy is form of repair of the posterior wall of the inguinal canal. Repair can be open or Laparoscopic. Herniorrhaphy is the second most common surgical procedure in the world, with more than 500,000 inguinal herniorrahaphy procedures performed annually in the United States. Of these approximately 50,000 to 100,000 herniorrhaphies are

TABLE NO.1

Age (Years)	AGE DISTRIBUTION AMONG GROUP – A AND GROUP - B			
	GROPUP – A		GROUP – B	
	No. of Cases	%	No. of Cases	%
25-40	07	13.4%	12	21%
41-55	28	53.8%	29	50.8%
56-70	11	21%	09	15.7%
71-85	06	11%	07	12.2%

performed for recurrent hernias.[3] A great number of methods of open repair of inguinal canal have been employed over the past 120 years, such as Bassini repair, Lichtenstein mesh repair or Shouldice repair. Lichtenstein mesh repair is best option for open herniorrhaphy. Disadvantages include a 10% recurrence rate, postoperative pain, and lengthy recovery that often result in loss of job productivity. Complications of open hernia repair include injuries to the ilioinguinal and genitofemoral nerves and the spermatic cord, Haematoma, wound infection and orchitis.[9] Laparoscopic hernia repair was first described in 1982.[4] There are two types of Laparoscopic herniorrhaphy (eg. Transabdominal preperitoneal [TAPP] and total extra peritoneal laparoscopic hernia [TEP]). Advantages includes less postoperative pain less chance of spermatic cord or testicular vessel injury, less risk of postoperative orchitis and hence testicular atrophy, a shortened convalescence period, more rapid return of postoperative activity. Disadvantages of laparoscopic procedures include longer surgical time and the need for general anaesthesia, however this is not a significant drawback in a patient who is otherwise healthy and not a risk for general anaesthesia. Recurrence rate for Laparoscopic hernia repair with mesh implants is 1.3% as compared to open repairs which is 9.8%. Extraperitoneal laparoscopic hernia repair compares favourably with open repair and it should replace open herniorrhaphy as the treatment of choice.[4]

MATERIALS AND MTHODS.

This comparative study was conducted in the department of surgery at Liaquat University of Medical & Health Sciences, Jamshoro from January 2007 to March 2008 on 109 cases under going hemiorraphy. All patients were admitted throughout patient department. The study consist 109 patients of inguinal hernia were randomized in two groups. Patients were informed about benefits and risks of surgical intervention. After all preoperative measures informed consent and willing for the operation was taken. Operative findings and the time taken for each operation were recorded. Postoperative analgesia was achieved in both groups. Each dose of analgesics was recorded in every case. The date of discharge was noted and any complication during hospital stay was recorded. The patients were advised to visit surgical Out Patient Department (OPD) for assessment after 15 days or earlier in case of complication. At postoperative visit, the history of patients regarding the general health and time taken for return to normal activities were recorded. Operated area was examined for evidence of wound infection, condition of scar and port hernia. Data was analyzed by using SPSS version 10.

RESULTS:

A total of 109 patients were selected for this prospective study, 52 patients were randomized for laparoscopic TEP repair (Group-A) and 57 patients for open mesh repair (Group-B). There were no significant differences in age, sex, clinical presentation or laboratory findings between two groups. The age distribution ranged from 25 to 85 years. Majority of the patients were between the ages of 35 to 50 years. (Table No. 1).

The Symptomatology of the patients in both groups showed that 61 (55.9%) patients presented with inguinal swelling and 48 (44%) patients with inguinoscrotal swelling, 31 (28.4%) patients with pain, 12 (11%) of the patient with constipation and 16 (14.6%) with urinary complaints. (Table No.2).

The clinical examination of 109 patients revealed reducible hernia in 107 (98.16%) patients and irreducible hernia in 02 (1.84%) cases. Ring occlusion test was positive in 72 (66.1%) patients suggesting indirect inguinal hernia whereas 37 (33.9%) of cases were having direct variety of hernia. Cough Impulse was positive in 109 (100%) patients.\ (Table No.3). Right sided hernia was in 56 (51.37%) patients and left sided in 37 (33.9%) patients, bilateral hernia 12 (11%) and recurrent hernia in 04 (3.6%) patients. 48 (44%) patients of inguinal hernia were presented with complete variety and 61 (55.9%) patient with incomplete hernia (Table No.4 & 5).

Haemoglobin ranged from 09 to 16 g% in all cases of both groups. Blood Urea was also in normal range in all cases of both groups and Blood Sugar was within normal limits 107 (98.16%) cases and only 02 (1.83%) patients were detected diabetic in group A, their blood sugar was controlled and procedure done. X-ray chest was normal in all cases of both groups.

All cases of group A was performed under general Anesthesia while cases of group B were done under spinal and general Anesthesia. Operative findings in group A revealed small intestine, in 31 patients (59.6%), omentum in 21 patients (40.38%), where as in group B small Intestine was seen in 31 patients (54.3%), omentum in 23 (40.3%) patients, caceum in 2 patients (3.5%), sigmoid colon in 01 patient (1.7%) The operative time in Group-A ranged from 55 to 95 minutes where as in Group – B ranged from 45 to 75 minutes. The total numbers of doses of different analgesics were counted from the time of operation and until discharge of the patient from hospital. In group A 52 (100%) patients needed NSAID (diclofenac sodium) 2 to 4 doses, only 05 (9.6%) patients required single dose of sedative analgesics (pentazocine), in group–B 57 (100%) patients needed NSAID (diclofenac sodium) 4 to 6 doses but 19 (33%) patients

TABLE NO. 2
SYMPTOMATOLOGY OF PATIENTS.

S. No	SYMPTOM	GROUP – A		GROUP – B	
1.	Inguinal Swelling	35	67%	26	45.6%
2.	Inguinoscrotal Swelling	17	32%	31	54.3%
3.	Pain	20	38%	18	31.5%
4.	Constipation	06	11.5%	05	8.7%
5.	Urinary Complaints	07	13.4%	03	5.2%

TABLE No. 3
CLINICAL EXAMINATION (SIGNS) OF PATIENTS.

S. No	SYMPTOM	GROUP – A		GROUP – B	
1.	Cough Impulse	52	100%	57	100%
2.	Reducibility	52	100%	55	96.4%
3.	Irreducibility	-	-	02	3.5%
4.	Ring Occlusion Test	35	67.3%	37	64.9%

TABLE No. 4
TYPE OF HERNIA.

S. No	Type of Hernia	GROUP – A		GROUP – B	
1.	Indirect	35	67%	37	64.9%
2.	Direct	17	32.6%	20	35%

TABLE No. 5
SITE OF HERNIA

S. No	TYPE OF HERNIA	GROUP – A		GROUP – B	
1.	Right sided hernia	**21**	**40.3%**	**35**	**61.4%**
2.	Left sided hernia	**20**	**38.4%**	**17**	**29.8%**
3.	Bilateral hernia	**08**	**15.3%**	**04**	**7%**
4.	Recurrent hernia	**03**	**5.7%**	**01**	**1.7%**

required 1 – 3 doses of sedative analgesics (pentazocine). The complications which occurred post operatively in laparoscopic TEP repair (Group – A) were found in form of postoperative pain in 52 (100%), fever in 02 (3.8%) patients, port site wound infection, 04 (7.6%) cases, haematuria in 01 (1.9%) case and scrotal haematoma 01 (1.9%) case. Whereas postoperative complications seen in open mesh repair (Group – B) were as 57 (100%) patients complained of pain, 10 (17.5%) patients developed fever, 08 (14%) patients had wound infection, 03 (5.2%) cases developed respiratory tract infection, 07 cases (12.2%) of post spinal headache and 07 (12.2%) cases scrotal haematoma

DISCUSSION:

Majority of patients (53%) belong to 41-55 year of age. Other studies reported 55.9% cases[5] and 48%[6]. The incidence of symptomatology was that the inguinoscrotal swelling was the commonest presentation in our study, 55.9% of inguinal swelling and 44% of inguinoscrotal swelling. Other studies reported inguinal swelling was 60% and ingunoscrotal swelling was 40%[7]. The incidence of Pain was 28.4% which was not sever but was in dragging nature. In other studies incidence of pain was 20%, 25%[8] and 30%[9], 14.6% of old age patents presents with Urinary complains. Another study had reported that urinary complains were in 20%[10] of cases, so it is necessary to exclude benign prostatic hypertrophy in old age patients. Cough impulse was positive in all 100% of cases. Other studies reported that cough impulse was positive in 99%[56], and 100%[57] of cases. Reducibility was present in 100% of cases in group – A and 96.4% of cases in group - B. Another study also reported that it was 98%[11]. Ring occlusion test was positive in 67.3% of cases in group –A and 64.9 % of cases in group –B, that means indirect inguinal hernia and direct inguinal hernia was 32% of cases in group–A and 35% of cases in group - B. Other studies reported that in direct inguinal hernia was 61%[12], 59%[13] and direct inguinal hernia was 39%[14] and 41%[15]. This also supports that indirect hernia is more common due to patent processus vaginalis. Right sided hernia which is more common was 40% of cases in group – A and 61% of cases in group - B, whereas left sided hernia was 38% of cases in group–A and 29.8% of cases in group – B. Other studies also reported that right sided hernia in 55% of cases and left sided hernia 48% of cases.[16] Bilateral inguinal hernia was 15% of cases in group – A and 7% of cases in group - B. Another study reported bilateral inguinal hernia was 18% of cases.[17]

All cases of laparoscopic TEP repair (Group-A) were done under general anesthesia however 11 cases of open repair (Group- B) were also done under general anesthesia rather than spinal anesthesia because 3 patients had refused for spinal anesthesia and 8 patient were converted due to failure of spinal anesthesia. Other studies reported that general anesthesia is anesthesia of choice for laparoscopic procedure (Group-A) and spinal anesthesia for open repair (Group-B) and general anesthesia is not a draw back if patient is fit for anesthesia. Small intestine was seen as a sac contents in majority of cases per operatively, that were 59.6 % of cases in group – A and 54.3% of cases in group – B. Other studies reported that sac contents small intestine was 62%[18] and 59%[19] of cases. Omentum was 40% of cases in both groups, sigmoid colon was in 1% of case in group – B and caecum was 3.5 % of cases in group - B. Another study reported that omentum was 38% and 61% large intestine was 7% of cases[20]. Mean operative time was shorter in open mesh repair group 60 minutes than laparoscopic group 75minutes. Another study reported that operative time was shorter 54 minutes in open group than 75 minutes in laparoscopic group[21]. About early post-operative pain in my study that was less in laparoscopic Group-A than open Group-B, so analgesic requirement was also less in laparoscopic group. The mean analgesic requirement in laparoscopic group was 3 doses other studies reported that the mean analgesic dose was 2 doses[15], 3 doses and 3.5 doses[16]. In open group the mean analgesic requirement was 5 doses. Other studies reported that mean dose was 4 doses[11], 5 doses[12] and 5.5 doses[13]. In my study the post-operative complications were minor and treated conservatively. No major complications like recurrence or death were occurred post operatively. Pain was not sever in 90% of cases during post-operative 1st 24 hours in Group A only 9.6% of cases needed single dose of sedative analgesics but it was sever in 33% of cases in Group B who were given 1-3 doses of sedative analgesics.

It was observed that in cases of recurrent inguinal hernia open repair Group B procedure was more difficult due to previous surgery. However laparoscopic TEP repair Group A is ideal and safest because in this procedure inguinal canal is not being opened, the whole procedure is done in higher up at pre peritoneal space so there was less chances of heamatoma formation or testicular atrophy. In case of laparoscopic recurrent inguinal hernia repair less analgesia is required as compared to open procedure. Other studies also reported that laparoscopic procedure is easier and safest for recurrent inguinal hernia repair as compared to open repair and less analgesia is also required for laparoscopic group. In my study for the cases of bilateral inguinal hernia repair Group A needed less analgesia as compared to Group B. Other studies had also reported that cases of bilateral inguinal hernia had needed less analgesia in laparoscopic group than open repair.[19,20]

As far as hospital stay is concerned, it was recorded that all patients of laparoscopic group were discharged earlier than open group. In my study the mean period of hospital stay was shorter in laparoscopic group i.e 1.5 days than open group i.e 4.5 days. Another study reported that it was 1.6 days in laparoscopic group and 5 days in open group, another study reported that it was 1day in laparoscopic group and 5.5 days in open group. It was observed during this study follow up all patients of laparoscopic group they resume their daily life activities more earlier than open group comfortably. The mean period of resumption of daily life activities was 8.5 days in laparoscopic group and 21.5 days in open group. In other studies it was 5 days, 7 days, 8.5 days and 9.4 days earlier in laparoscopic group.[21] In our study patients of bilateral as well as recurrent inguinal hernia resumed daily life activities earlier in group-A than group-B. Other studies also reported that laparoscopic procedure is treatment of choice for bilateral as well as recurrent hernias.

So far scar is concerned, results of laparoscopic group were better than open group also, and the patients randomized to laparoscopic hernia repair were more satisfied with cosmetic results.

CONCLUSION:

It can be concluded that Laparoscopic herniorraphy is becoming a more common procedure. Laparoscopic procedure is best option of treatment for recurrent and bilateral hernias. Recurrence rate is less because a large mesh covers inguinal, femoral and obturator openings. Cosmetic results are superior to that of open hernia repair. Laparoscopic herniorraphy gives less postoperative pain, early return to work and less hospital stay. Laparoscopic herniorraphy will be first choice of treatment of inguinal hernia in future.

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