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STUDY ON EVALUATION OF LAPAROSCOPIC REPAIR VERSUS OPEN INGUINAL HERNIA REPAIR: A FOLLOW UP STUDY AT OUR TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Inguinal hernia is a relatively common surgical condition seen across the globe. The repair of inguinal hernias has seen an evolution over the past few decades and more research on the same is still underway. Though laparoscopy has gained widespread acceptance in today's era of surgery, there is still a debate between laparoscopic and open hernia mesh repair.

Objectives of the study: to compare the patient's duration of hospital stay and operative time in open inguinal hernia repair versus laparoscopic hernia repair and to compare complications that occur in open inguinal hernia repair versus laparoscopic hernia repair.

Materials and Methods: The prospective study on "Evaluation of Laparoscopic Repair Versus Open Inguinal Hernia Repair: A Follow Up Study at Our Tertiary Care Hospital" was conducted at our tertiary acre hospital in the Dept. of General Surgery. We included a total of 100 subjects in the age group of 20-60 years and were divided into two groups with 50 subjects in each group and randomised in 1:1. Parameters assessed and compared between the two surgical interventions include patient's duration of hospital stay, operative time, intra and postoperative complications and resumption of day to day activities. Intra and post-operative complications include Injury to spermatic cord, vessels and bowel, and the post-operative complications include Urinary retention, wound infection, Orchitis, Seroma and sensory loss.

Results& Discussion: Th**e** mean operative time for unilateral laparoscopic hernioplasty was 62.34 mins and bilateral was 124.66 mins compared to unilateral open hernioplasty which was 48.23 mins and bilateral was 91.22 mins. The difference in the operative time between these two surgical interventions were statistically significant ($p < 0.05$).

The mean duration of stay in hospital in days was found to be 63.54±6.88 hours in subjects with laparoscopic hernioplasty and in subjects with open hernia surgery was 51.89±8.98 hours. The difference in mean duration of stay in hospital was statistically significant ($p < 0.05$). Th**e** mean operative time for unilateral laparoscopic hernioplasty was 62.34 mins and bilateral was 124.66 mins compared to unilateral open hernioplasty which was 48.23 mins and bilateral was 91.22 mins. The difference in the operative time between these two surgical interventions were statistically significant ($p < 0.05$). We evaluated Intra and post-operative complications in these subjects, we found that the 8% had urinary retention, 6% had wound

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infection, 2% had orchitis, 2% had seroma, 8% had sensory loss and none had injury to spermatic cord, vessels, bowel in Group O. Similarly, 2% had wound infection, 2% had orchitis, 4% had seroma, 2% had sensory loss and none had urinary retention, injury to spermatic cord, vessels, bowel in Group L. Group L had comparatively less post-operative complications i.e urinary retention, wound infection, sensory loss than Group O.

Conclusion: In our study we found that the laparoscopic hernia repair, though takes longer duration to perform had lesser post-operative complications and no recurrence. Inguinal hernia repair is one of the most common surgical procedures performed and adapting the laparoscopic approach will have a better outcome and reduced morbidity.

Key-words: Inguinal hernia, open hernioplasty, laparoscopic hernioplasty, post-operative complications, post-operative pain and operative time.

INTRODUCTION:

Inguinal hernia repair is one of the most common operations in General Surgery. Throughout the years there have been many advancements in the operation including the genesis of laparoscopic techniques. With a multitude of surgical methods, it can often become difficult in deciding the best method of repair.[1-3]

Open inguinal hernia repairs can be categorized into two main categories: tissue repair and mesh repair. There are several named techniques that can be utilized for performing a tissue repair such as the Bassini, McVay, Marcy, and Shouldice repairs. The Desarda repair, a more recently described tissue repair, utilizes a partially detached strip of external oblique aponeurosis. The gold standard mesh repair is the Lichtenstein tension-free mesh repair which places the mesh anteriorly between the external and internal oblique aponeuroses. Other open mesh techniques include the plug-and-patch, the Gilbert Praline Hernia System (PHS) Bilayer connected device repair, and the open preperitoneal mesh placed via an inguinal incision after reduction of the hernia.[4-6]

Laparoscopic inguinal hernia repair originated in the early 1990s as laparoscopy gained a foothold in general surgery.There are two main methods of laparoscopic inguinal hernia repair with the same exposure and coverage of the myopectineal orifice but differences in how access to the preperitoneal space is gained. One approach avoids violation of the abdominal cavity (Totally Extra peritoneal - TEP repair) and one enters the abdominal cavity (Transabdominal Preperitoneal - TAPP repair). For both the TEP and TAPP repairs, dissection should ensure the critical view of the myopectineal orifice which routinely exposes the inguinal anatomy allowing any direct, femoral, obturator, or indirect hernias to be identified and reduced. Although these laparoscopic methods necessitate mesh use, recent minimally invasive techniques utilizing robotic platforms may provide a means of mesh-free preperitoneal repair in selected patients with direct and/or indirect defects.[7-9] Laparoscopic inguinal hernia repair is associated with decreased postoperative pain, chronic pain and recovery time in the general population. Hence we have taken up this study to evaluate the same in our population.

OBJECTIVE OF THE STUDY: The objectives of the study were o compare the patient's duration of hospital stay and operative time inopen inguinal hernia repair versus laparoscopic hernia repair and to compare complications that occur in open inguinal hernia repair versus laparoscopic hernia repair.

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MATERIALS AND METHODS:

The prospective study on "Evaluation of Laparoscopic Repair Versus Open Inguinal Hernia Repair was conducted at our tertiary care hospital after taking informed consent from the study subjects who were admitted for surgical intervention of Hernias.

We included a total of 100 subjects in the age group of 20-60 years and were divided into two groups with 50 subjects in each group and randomised in 1:1 ratio using computer random sequence generator to receive either open hernia repair or laparoscopic repair.

Group O: includes 50 subjects who underwent open hernia mesh repair (Lichtenstein's tension free repair) under spinal anaesthesia.

Group L: includes 50 subjects who underwent laparoscopic hernioplasty (TAPP mesh repair) under general anaesthesia.

Parameters assessed and compared between the two surgical interventions include patient's duration of hospital stay, operative time, intra and postoperative complications and resumption of day to day activities. Intra and post-operative complications include Injury to spermatic cord, vessels and bowel, and the post-operative complications include Urinary retention, wound infection, Orchitis, Seroma, Prolonged groin pain and sensory loss.

Statistical Analysis: the data was expressed as mean and standard duration (SD). The post-operative pain was assessed using visual analogue pain scale. The mean value between the two groups was compared using Student 't' test. The p value of <0.05 was considered statistically significant.

RESULTS: We included a total of 100 male subjects in the age group of 20-60 years. The mean age of subjects in Group O was 47.8 years and in Group L was 48.23 years. Out of the total 100 subjects 28 had bilateral inguinal hernia and 72 had unilateral inguinal hernia.

Duration of hospital stay: The mean duration of stay in hospital in days was found to be 63.54±6.88 hours in subjects with laparoscopic hernioplasty and in subjects with open hernia surgery was 51.89±8.98 hours. The difference in mean duration of stay in hospital was statistically significant ($p < 0.05$).

Operative time: The mean operative time for unilateral laparoscopic hernioplasty was 62.34 mins and bilateral was 124.66 mins compared to unilateral open hernioplasty which was 48.23 mins and bilateral was 91.22 mins. The difference in the operative time between these two surgical interventions were statistically significant ($p < 0.05$).

Post-operative Pain: Mean pain score was noted on post-operative day (POD) 0, 3 & 7.The mean pain score for Group L and Group O on POD day 0: 5.1 and 6.7 and POD 3: 3.6 and 4.6 but, on POD 7: pain score for Group L and Group O were 1.7 and 3.1. It is quite evident that the visual analogue score was less in subjects who underwent laparoscopic hernioplasty compared the subjects who underwent open hernioplasty.

Table 1: Shows the Comparison of intraoperative and postoperative complications in Group O and Group L

	Group O (50)		Group L (50)	
	Number	**Percentage**	**Number**	**Percentage**
Urinary retention	4	8%	0	0
Wound infection	3	6%	1	2%

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Orchitis	1	2%	1	2%
Seroma	1	2%	2	4%
Sensory loss	4	8%	1	2%
Injury to spermatic cord, vessels and bowel	0	0%	0	0

Resumption of day to day activities: We noted in our study that the mean duration of resumption of day to day activities following laparoscopic hernioplasty was 5.2 days and in open hernioplasty it was 9.1 days.

DISCUSSION: In our study, we included a total of 80 subjects, who underwent two different mode of surgical interventions for Hernia in the subjects aged 18-60 years. All the subjects included in our study were males. We assessed various parameters in our study between the two surgical interventions.

The mean operative time for unilateral laparoscopic hernioplasty was 62.34 mins and bilateral was 124.66 mins compared to unilateral open hernioplasty which was 48.23 mins and bilateral was 91.22 mins. The difference in the operative time between these two surgical interventions were statistically significant ($p < 0.05$). A meta-analysis in the British Journal of Surgery described a similar increase of 15.2 minutes with laparoscopic inguinal hernia repair($p<0.001$)[10]

The mean duration of stay in hospital in days was found to be 63.54±6.88 hours in subjects with laparoscopic hernioplasty and in subjects with open hernia surgery was 51.89±8.98 hours. The difference in mean duration of stay in hospital was statistically significant ($p < 0.05$). The study conducted by Sudarshan PB et al reported mean duration of hospital stay of about 3.07 days in case of laparoscopic surgeries and 7. 8 days in post open surgery. However, the study conducted by V Singh et al reported a stay of 1.8 days after open surgery and 3.5 days after laparoscopic surgery. The longer duration of stay in laparoscopic surgery was due to complications seen post operatively.[11]

The mean operative time for unilateral laparoscopic hernioplasty was 62.34 mins and bilateral was 124.66 mins compared to unilateral open hernioplasty which was 48.23 mins and bilateral was 91.22 mins. The difference in the operative time between these two surgical interventions were statistically significant ($p < 0.05$).

We found that the mean operative time in minutes for laparoscopic hernia repair was longer than open hernia repair. Similar finding was seen in the study conducted by Hamza et and Rathod CM. We found that the visual analogue score was less in subjects who underwent laparoscopic hernioplasty compared the subjects who underwent open hernioplasty.[12]

We evaluated Intra and post-operative complications in these subjects, we found that the 8% had urinary retention, 6% had wound infection, 2% had orchitis, 2% had seroma, 8% had sensory loss and none had injury to spermatic cord, vessels, bowel in Group O. Similarly, 2% had wound infection, 2% had orchitis, 4% had seroma, 2% had sensory loss and none had urinary retention, injury to spermatic cord, vessels, bowel in Group L. Group L had comparatively less post-operative complications i.e urinary retention, wound infection, sensory loss than Group O. As hernia surgery is a clean operation, it does not require routine

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antibiotic prophylaxis. However, we are practicing in our hospital to administer the pre-operative single dose of antibiotic. Even in the presence of antibiotic prophylaxis, we had a little higher wound infection rate, probably because of poor personal local and general hygiene by the patients.[13-15]

CONCLUSION: In our study, we found that the laparoscopic hernia repair, though takes longer duration to perform had lesser post-operative complications and no recurrence. Inguinal hernia repair is one of the most common surgical procedures performed and adapting the laparoscopic approach will have a better outcome and reduced morbidity.

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