



A COMPARATIVE STUDY OF LAPAROSCOPIC REPAIR VERSUS OPEN REPAIR FOR INGUINAL HERNIA

Surgery

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ABSTRACT

Introduction: The repair of inguinal hernias by the laproscopic hernioplasty over open hernioplasty is preferable in terms of less post operative pain, morbidity and early resumption of activity and work . Though laparoscopy has gained widespread acceptance in today's era of surgery, there is still a debate between laparoscopic and open hernia mesh repair.

Methods: A randomized prospective study was conducted in the Department of General Surgery, All India Institute of Medical Sciences, Patna, Bihar, India from May 2018 to Feb 2019 to compare laparoscopic hernioplasty and Lichtenstein's open mesh repair. The study consisted of 50 subjects with unilateral or bilateral inguinal hernia and they were randomly allocated into either group. Various parameters like duration of surgery, intra and post-operative complications, post-operative pain, recurrence, stay in the hospital and resumption of daily activities were compared.

Results: Out of the 50 patients, 12 had bilateral inguinal hernia and the rest 38 had unilateral. 7 patients with bilateral hernia underwent laparoscopic repair and 5 underwent open mesh repair. 18 patients with unilateral hernia underwent laparoscopic hernioplasty and 20 underwent open mesh repair .The mean operative time for unilateral open hernioplasty was 46.86 mins and bilateral was 91.10 mins whereas, for unilateral laparoscopic hernioplasty it was 65.18 mins and bilateral was 120.55 mins. post-operative complications, like wound infection was noted in 12% (3 out of 25 patients) and 16% had seroma formation (4 out of 25 patients) in the open hernioplasty group. In laparoscopic hernioplasty group, 4% (1 out of 25 patients) had wound infection but, seroma formation was noted in 12% (3 out of 25 patients). Urinary retention was noted 20 % of open hernioplasty group (5 out of 25 patients) and 8% of laparoscopic hernioplasty group (2 out of 25 patients).

Conclusion: Laparoscopic hernioplasty is more beneficial than Lichtenstein's open hernia mesh repair as it is safer, with faster recovery, lesser post-operative complications and reduced morbidity.

KEYWORDS

Inguinal hernia, Lichtenstein's repair, Laparoscopic hernioplasty

INTRODUCTION

Repair of inguinal hernia is one of the commonest operations performed by surgeons around the world. The treatment of this common problem has seen an evolution from the pure tissue repairs to the prosthetic repairs and in the recent past to laparoscopic repair. Preferred approach for open inguinal hernia repair is Lichtenstein's tension free inguinal hernioplasty using a prosthetic mesh.¹

The recurrence rate is less than 1% in experienced hands as compared to tissue repairs where it may be as high as 15%.² The postoperative morbidity is low and recovery is quick.

Laparoscopy had gained widespread acceptance in today's era of surgery. The advantages and efficacy of laparoscopic cholecystectomy over open cholecystectomy have been well documented and it has become the gold standard for management of gallstone disease.³

Several studies have shown the benefit of the laparoscopic hernioplasty over open hernioplasty (OH) in terms of less postoperative pain and morbidity, wound complications, postoperative pain, early resumption of activity and work and better cosmetic results.⁴

But it had some limitations like twice longer operative time, longer learning curve, higher hospital cost and a potential for serious life threatening accidents as compared with open surgery.

Laparoscopic hernioplasty can be done by two methods; transabdominal preperitoneal (TAPP) and totally extraperitoneal (TEP) mesh repair. TAPP involves entering the abdominal cavity and direct visualization of the sac and contents, followed by placing the mesh pre peritoneally.⁷ on the other hand, Lichtenstein's open mesh repair is considered the gold standard among all open techniques.⁸

This study aims at comparing the outcome of laparoscopic (TAPP mesh repair) and open hernia repair with respect to the duration of surgery, intra and postoperative complications, postoperative pain, recurrence, stay in the hospital and resumption of daily activities.

MATERIALS AND METHODS

A randomized study was conducted in the Department of General Surgery, All India Institute of Medical Sciences, Patna, Bihar, India from May 2018 to Feb 2019, after taking the approval of the protocol review committee and institutional ethics committee.

Methodology

The technique, risks, benefits, results and associated complications of the procedure were discussed with all patients. Total 50 patients with unilateral and bilateral inguinal hernia were operated. Sample size was obtained from previous study done by Rathod CM et al.⁹

The study included adults above 18 years of age with unilateral or bilateral primary inguinal hernia. Patients with complicated hernia (irreducible, obstructed, strangulated), those with large size sac, recurrent hernia were excluded. Also excluded were those unfit for general anesthesia, laparoscopy or pneumoperitoneum i.e. those with cardiac diseases (MI, IHD), respiratory diseases (chronic asthma, COPD), renal or hepatic diseases, bleeding disorders etc were excluded from the study.

Groups

The patients were divided into two groups of 25 each and randomized in 1:1 ratio using computer random sequence generator to receive either laparoscopic technique or open hernioplasty. Each patient was given a unique identity number. Demographic data, medical history, concomitant medications, physical examination was recorded by the treating surgeon in the study proforma and relevant investigations such as complete blood count and ultrasound abdomen and pelvis were done at the baseline visit.

Patients in group A underwent laparoscopic hernioplasty whereas, patients in group B underwent open hernia mesh repair. For open hernioplasty, Lichtenstein's tension free repair was done under spinal anesthesia. The laparoscopic repair was done by TAPP mesh repair method under general anesthesia. The parameters assessed were operative time, intra and post-operative complications, post-operative pain, recurrence, duration of stay in the hospital and time taken to resume normal daily activities post-surgery. The data was represented as mean $\pm$ SD. The post-operative pain was assessed using visual analogue pain scale. The mean of two groups were compared using t test and $p < 0.05$ was considered statistically significant.

RESULTS

Table 1. Type Of Hernia

Type	Unilateral inguinal hernia	Bilateral inguinal hernia	Total
Laparoscopic hernioplasty	18	7	25

Open hernioplasty	20	5	25
Total	38	12	50

Table 2. Mean Duration Of Surgery

Types	Mean duration of hospital stay	Time taken to resume daily activities
Laparoscopic hernioplasty	4	5.1
Open hernioplasty	7	8.4

Table 3. Post-operative Complications

Types	Wound infection	Seroma formation	Urinary retention
Laparoscopic hernioplasty	1	3	2
Open hernioplasty	3	4	5

Table 4. Post-operative Pain Score (Visual Analogue Scale Score)

Type	POD 0	POD 3	POD 7
Laparoscopic hernioplasty	5.8	4.2	1.7
Open hernioplasty	6.6	5.0	2.9

Table 5. Mean Duration Of Hospital Stay And Time Taken To Resume Daily Activities

Types	Mean duration of hospital stay	Time taken to resume daily activities
Laparoscopic hernioplasty	4	5.1
Open hernioplasty	7	8.4

DISCUSSION

This study compares the outcomes in patients with unilateral and bilateral inguinal hernias who underwent laparoscopic hernioplasty (TAPP) versus Lichtenstein's open mesh repair. The mean age of the patients was similar in both the groups in our study. This was similar to earlier studies by Hamza et al. and Sudarshan PB et al.^{10,11} Our study analyzed both unilateral and bilateral hernia patients unlike the previous studies such as Sudarshan PB et al.¹¹ which looked into unilateral hernias only. In our study, 38 had unilateral inguinal hernia and 12 had bilateral. 7 out of those with bilateral underwent laparoscopic hernioplasty and 5 open mesh hernia repairs. The mean operative time for unilateral open hernioplasty was 46.86 mins and bilateral was 91.10 mins whereas, for unilateral laparoscopic hernioplasty it was 65.18 mins and bilateral was 120.55 mins. Rathod CM et al. and Hamza et. reported similar results where laparoscopic mesh repair took longer than Lichtenstein's open mesh repair.^{9,10}

In our study, we did not record any intra operative complications like injury to spermatic cord, vessels and viscera in both the groups. Sudarshan PB et al. and Hamza et al. had reported similar results in their studies.^{10,11} Whereas, Neumayer L et al had reported that 4.8% of laparoscopy patients and 1.9% of open repair patients had intra operative complications.¹² McCormack et al conducted a meta-analysis and noted that operative complications such as visceral, especially bladder and vascular injuries were higher in laparoscopic technique.¹³ Several other older studies had observed higher complications with laparoscopic surgeries.¹⁴⁻²⁰ Post-operative complications, like wound infection was noted in 12% (3 out of 25 patients) and 16% had seroma formation (4 out of 25 patients) in the open hernioplasty group. In laparoscopic hernioplasty group, 4% (1 in 25 patients) had wound infection but, seroma formation was noted in 12% (3 out of 25 patients). Urinary retention was noted 20 % of open hernioplasty group (5 out of 25 patients) and 8% of laparoscopic hernioplasty group (2 out of 25 patients). Sudarshan PB et al had reported similar results with respect to seroma formation and urinary retention.¹¹

On comparing the mean pain score of two groups, POD 0 score was not statistically significant (p value 0.1188) but the pain score of POD-3 (p=0.0145) and POD-7 (p<0.0001) were statistically significant. Hence, laparoscopic hernia had significantly lesser pain score on postoperative day 3 and 7. Sudarshan PB et al. had reported similar results in their study.¹¹

The mean duration of hospital stays showed a statistically significant difference of 4 days for laparoscopic surgery and 7 days for open

hernioplasty (p<0.0001). Sudarshan PB et al. reported that in laparoscopic surgeries it was 3.07 days and 7.8 days post open surgery.¹¹

In our study, the mean duration for resumption of day-to-day activities was 5.1 days following laparoscopic hernioplasty and 8.4 days following open hernioplasty which was statistically significant (p<0.0001). Rathod CM et al reported similar results with p<0.03 where laparoscopy group took 4.56 days and open group took 5.76 days.⁹

The strength of this study is that it compares TAPP mesh repair with Lichtenstein's open mesh repair unlike the previous studies which were TEP only or both and it includes unilateral as well as bilateral hernia. The limitation of this study is that it doesn't look into a long term follow up and it has excluded complicated hernias.

CONCLUSION

Laparoscopic hernia repair, though takes longer duration to perform, had lesser intra operative, lesser post-operative complications and almost no recurrence. Patients had lesser duration of hospital stay, lesser postoperative pain and early resumption of daily activities. Inguinal hernia repairs 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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