DOI: https://doi.org/10.53350/pjmhs22168859

ORIGINAL ARTICLE

Compare Short Term Post-Operative Complication of Laparoscopic Transabdominal Preperitoneal (TAPP) and Lichtenstein's Tension Free Hernia Repair

MASHAL NAZIR[1], RAHMAN ULLAH[2], AQSA SALEEMA[3], NISAR AHMED[4], JAVAID SAJJAD HASHMI[5], MUHAMMAD TARIQ KHAN[6], IBRAHIM SHUJJAH[7]

[1]*Junior Registrar, Bacha khan Medical Complex Swabi*
[2]*Assistant Professor Accident and Emergency/General Surgery, Bacha Khan Medical Complex Swabi*
[3]*Medical Officer, Liaqat Memorial Hospital Kohat*
[4]*Assistant Professor, General Surgery, Khyber Teaching Hospital Peshawar*
[5]*PUNJAB Rangers Teaching Hospital Lahore, Affiliated with Rahber Medical and Dental College Lahore, PMDC REG NO 10*
[6]*Assistant Professor, CMH Lahore Medical College and Institute of Dentistry*
[7]*Assistant Professor, General Surgery, Bacha khan Medical Complex Swabi*
Corresponding author: Rahman Ullah, Email: Rehmankttk@gmail.com

ABSTRACT

Objective: To compare short term post-operative complication of laparoscopic transabdominal preperitoneal (TAPP) and Lichtenstein's tension free hernia repair.

Study Design: Randomized clinical trial.

Place & Duration of Study: Surgical Unit of Khyber Teaching Hospital (KTH) Peshawar during the period of 6 months from 1st January, 2020 to 30 June, 2021.

Material and Methods: In this study 492 cases of inguinal Hernia with 246 in each group. For group A, laparoscopic TAPP repair were performed with 10cmx 15cm polyprophlene mesh (prolene-Ethicon) and were fixed with tackers (Protack 5mm fixation device - covidien). For Group B Lichtenstein's repair were performed through supra inguinal incision, using 10cmx 15 cm polypropylene mesh (prolene- ethicon). Then the patients were monitored for short term post-operation complication post-operatively.

Results: Our study shows that in Group A(Laparoscopic TAPP) mean age was 42 years with SD ± 8.13 and in Group (Lichtenstein repair) mean age was 45 years with SD ± 8.13. In Group A (Laparoscopic TAPP) 99% patients were male and 1% patients were female while in Group B (Lichtenstein repair) 99% patients were male and 1% patients were female. In Group A(Laparoscopic TAPP), urinary retention was 5(2%), hematoma was 5(2%), surgical site infection was 10(00%), Ischemic orchitis was 2(1%), seroma was 20(8%) While in Group B (Lichtenstein repair). urinary retention was 25(10%), hematoma was 39(16%), surgical site infection was 66(27%), Ischemic orchitis was 5(2%), seroma was 54(22%).

Conclusion: Frequency of short term post operative complication are higher in Lichtenstein's tension free hernia repair as compare to laparoscopic transabdominal preperitoneal (TAPP) group.

Keywords: Short Term, Post-Operative Complication, Laparoscopic Transabdominal Preperitoneal (TAPP), Lichtenstein's Tension Free, Hernia Repair.

INTRODUCTION

Because of recent developments in anaesthetic and surgical technique, most inguinal hernia repairs can now be performed as outpatient procedures with minimal risk of complication. Most inguinal hernias (about 75%) are located in the groyne, and the lifetime chance of developing one is 27% in males and 3% in women. About 90% of inguinal hernia repairs are done on men, while only 10% are done on women (1).

Inguinal hernias have been repaired surgically since the time of ancient Egypt and Greece. Testicular removal was a common surgical procedure at the time, and wounds were either cauterised or allowed to heal naturally. Surgeons such as Marcy, Kocher, and lucas championniere performed sac dissection, high ligation, and closure of the internal ring after improvements in anatomy and the introduction of aseptic techniques in the early 1800s. Prior to this, doctors such as Hesselbach, Cooper, camper, Scarpa, Richter, and Gimbernaut had identified and defined the anatomy of the inguinal region (2).

A better understanding of the anatomy helped Bassini (1844-1924) make inguinal hernia repair a safe and effective procedure. Shouldice and McVay later made adjustments to the Bassini fix. Nowadays, practitioners employ all three of these methods, as well as modifications on them, such as Desarda operations.

Lichtenstein's tension-free hernia repair with marlex (polypropylene) mesh revolutionised inguinal hernia repair in the early 1980s. The stress in the defect closure was decreased thanks to the mesh, making this repair preferable to previous tissue repairs. Return rates in Lichtenstein were reported at 0.7%.

The most recent development in inguinal hernia repair is the use of minimally invasive surgery. The original laparoscopic technique was described by Ger, but since then, several improvements have been made. TAPP and TEP are two of the most common methods utilised nowadays. In one study, researchers found that the recurrence rate following laparoscopic hernia repair was only 0.4%. (3).

Hernia repair has the same risks as other minimally invasive surgeries, such as the potential for excessive bleeding, hematoma, seroma, wound infections, urinary retension, ileus, and harm to the neighbouring structures.

Patients in the TAPP group had considerably less post-operative discomfort than those in the lichtenstein group at all time points (p0.05), and the TAPP group had a reduced incidence of hematoma (6.6% vs. 13.3%, p=0.67), seroma (10.0% vs. 13.3%, p=1.00), and infection (0% vs. 1.6%, p=0.67). However, there was no discernible difference in post-operative complications between the two groups. Li et al. (1) found that urine retention occurred in 35% of patients undergoing TAPP but only 31% undergoing Lichtenstein repair (p=0.62). Ischemic orchitis/atropy occurs in 0.2–1.1% of all inguinal hernia surgeries, according to another study by Dellabianca et al (5).

The goal of our index study is to compare the success rates of TAPP and Lichtenstein's repair of inguinal hernia after surgery. It has been found, as with any other literature search, that there is international literature on this topic but that local studies, especially in this region, are still in the minority. Since our people are geographically and genetically diverse, but they also lack information and awareness and come from low- to middle-income backgrounds, it is impossible to apply foreign findings to our situation. We can improve our surgical practise and lessen post-operative complications if we use the method with the best results (6).

MATERIALS AND METHODS

This randomized controlled trial was conducted at Surgical Unit of Khyber Teaching Hospital (KTH) Peshawar during the period of 6 months from 1st January, 2020 to 30 June, 2021 and total 492 cases of inguinal hernia with 246 in each group with 95% confidence interval, 80% power and taking 6.6% proportion of TAPP and 13.3% proportion of Lichtenstein's repair, using WHO sample size calculator. Primary inguinal hernias, age above ≥18 years and <60 years and American society of Anesthesiologist (ASA class 1 or 2) patients of inguinal hernia repair were included. High risk for general Anesthesia (ASA class 3 or 4), irreducible hernias, recurrent inguinal hernias, and patients with femoral hernias were excluded.

Participating patients' information was gathered based on predetermined inclusion and exclusion criteria. Using a random number system, they were split into two groups, A and B. (Microsoft excel has this capability in built). They went under the knife while under general anaesthesia after giving their approval.

The laparoscopic TAPP repairs in group A were completed using a 10cm × 15cm polyprophlene mesh (prolene-Ethicon) and tackers (Protack 5mm fixation device - covidien). Group B had a Lichtenstein repair done with a 10cm × 15cm polypropylene mesh through a supra inguinal incision (prolene- ethicon). After surgery, patients were observed for signs of any immediate complications. Pain levels after surgery were measured using a visual analogue scale (VAS), and the results were classified as either moderate or severe. All patients were followed up with within 8 hours, 24 hours, 10 days, and 6 weeks after surgery to check for problems. Post-operative hematoma and seroma were evaluated clinically, and sonography would confirm any positive findings.

Spss 20, Epi-info 7, and other statistical software packages were used to evaluate all the data. For quantitative factors like age and postoperative discomfort, we estimated means and standard deviations, whereas for categorical variables like gender and postoperative sequelae including seroma, hematoma, urinary retention, and ischemic orchitis, we calculated frequencies and percentages. The chi-square test was used to evaluate differences in postoperative complications between the two groups, with a significance level set at $p < 0.05$.

RESULTS

Age was analyzed as in Group A (Laparoscopic TAPP) 160(65%) patients were in age range 18-40 years, 86(35%) patients were in age range 41-60 years. Mean age was 42 years with SD ± 8.13. While in Group (Lichtenstein repair) 155(63%) patients were in age range 18-40 years, 91(37%) patients were in age range 41-60 years. Mean age was 45 years with SD ± 8.13. (table 1)

Table 1: Age distribution (n=492)

Age	Group a	Group b
18-40 years	160(65%)	155(63%)
41-60 years	86(35%)	91(37%)
Total	246(100%)	246(100%)
Mean and SD	42 years ±8.13	45 years ±7.62

Student T Test was applied in which P value was 0.0001

Gender was analyzed as in Group A (Laparoscopic TAPP) 244 (99%) patients were male and 2(1%) patients were female. While in Group B (Lichtenstein repair) 244(99%) patients were male and 2(1%) patients were female. (table 2)

Table 2: Gender Distribution (n=492)

Gender	Group a	Group b
Male	244(99%)	244(99%)
Female	2(1%)	2(1%)
Total	246(100%)	246(100%)

Chi Square test was applied in which P value was 1.0000

Type of hernia was analyzed as in Group A (Laparoscopic TAPP) 79 (32%) patients had direct hernia and 167 (68%) patients had indirect hernia. While in Group B (Lichtenstein repair) 84 (34%) patients had direct hernia and 2 (1%) patients indirect hernia. (table 3)

Table 3: Type of Hernia (n=492)

Type of hernia	Group a	Group b
Direct	79(32%)	84(34%)
Indirect	167(68%)	162(66%)
Total	246(100%)	246(100%)

Chi Square test was applied in which P value was 0.6319

Common compilations among two groups was analyzed as in Group A(Laparoscopic TAPP), urinary retention was 5(2%), hematoma was 5(2%), surgical site infection was 10(00%), Ischemic orchitis was 2(1%), seroma was 20(8%) While in Group B (Lichtenstein repair). urinary retention was 25(10%), hematoma was 39(16%), surgical site infection was 66(27%), Ischemic orchitis was 5(2%), seroma was 54(22%) (table 4)

Table 4: Comaprison of Compilations (n=492)

Common compilations		Laparoscopic tapp Group a	Lichtenstein repair Group b	P Value
Urinary retention	Yes	5(2%)	25(10%)	0.0001
	No	241(00%)	221(00%)	
Total		246	246	
Hematoma	Yes	5(2%)	39(16%)	7.8081
	No	241(00%)	207(00%)	
Total		246	246	
Surgical site infection	Yes	10(4%)	66(27%)	2.8320
	No	236(00%)	180(00%)	
Total		246	246	
Ischemic orchitis	Yes	2(1%)	5(2%)	0.2534
	No	244(00%)	241(00%)	
Total		246	246	
Seroma formation	Yes	20(8%)	54(22%)	1.8026
	No	226(00%)	192(00%)	
Total		246	246	

DISCUSSION

Repair of an inguinal hernia is the most common type of surgery performed everywhere in the globe. As a result of advancements in surgical techniques and anaesthetic methods, the majority of these operations can now be performed as outpatient procedures with significantly reduced rates of recurrence and complications. Groin hernias account for approximately 75% of all abdominal hernias. Over the course of their lifetimes, men have a 27% chance of developing an inguinal hernia, while women have a 3% chance of doing so. Only ten percent of inguinal hernia repairs are performed on women, compared to ninety percent performed on men [1].

According to the findings of our study, the group that underwent laparoscopic TAPP had a mean age of 42 years and a standard deviation of 8.13, whereas the group that underwent Lichtenstein repair had a mean age of 45 years and a standard deviation of 8.13. In the group that underwent laparoscopic TAPP, known as Group A, 99% of the patients were male, whereas only 1% were female. Both groups in Lichtenstein repair Group B (Group B) had an equal number of male and female participants. In Group A (Laparoscopic TAPP), there were a total of 20 cases of seroma, 5 cases of urinary retention, 5 cases of hematoma, 10 cases of surgical site infection, and 2 cases of ischemic orchitis. On the other hand, there were a total of 20 cases of seroma found in Group B. (Lichtenstein repair). There were a total of 66 cases of surgical site infection (27%), 39 cases of hematoma (16%), 54 cases of seroma (22%), 5 cases of ischemic orchitis (2%), and 25 cases of urinary retention (10%). An additional investigation carried out by Kargar S. According to the findings of et al. [7], patients in the TAPP group experienced much less pain after surgery than those in the Lichtenstein group did at any given moment (p0.05). The TAPP group saw a significantly lower incidence of hematoma (6.6% compared to 13.3% in Lichtenstein, p=0.67), seroma (10% compared to 13.3% in Lichtenstein, p=1.00), and infection (0%

compared to 1.6% in Lichtenstein, p=0.67) than Lichtenstein did. However, there was no discernible difference in the number of problems that occurred following surgery between the two groups.

Another investigation by Li et al. [8] came to the same conclusions as the previous one. There were a total of 1,760 patients who participated in the study (530 open and 1,230 laparoscopic), and 96.08% of them completed the follow-up (24-60 months). Patients who were treated via open surgery were found to be significantly older (p 0.001) than those who were treated via laparoscopic surgery. People who had bilateral hernias (91.45%) and recurrent hernias (82.12%) were more likely to have laparoscopic procedures performed on them (p 0.001 and p = 0.004, respectively). The rate of recurrence was calculated to be 0.71 percent overall, and there was not a significant difference between the two approaches (p = 0.227). The overall rate of problems was lower with the laparoscopic method (14.47 vs. 19.25%, p = 0.012), although the rates of life-threatening complications were the same (1.51 vs. 0.98%, p = 0.332). In comparison to the open group, the laparoscopic group experienced significantly reduced rates of wound infection and chronic pain (p = 0.016 and p 0.001, respectively). Additionally, the laparoscopic group had a shorter operative time, lower Visual Analogue Scale scores, and a quicker recovery period (p 0.001).

When an inguinal hernia is repaired, ischemic orchitis or atropy occurs between 0.2 and 1.1% of the time, according to the findings of another study carried out by Dellabianca and colleagues [9].

CONCLUSION

Our study shows that the frequency of short term post-operative complication are higher in Lichtenstein's tension free hernia repair as compare to laparoscopic transabdominal preperitoneal (TAPP) group.

REFERENCES

1. Li J, Wang X, Feng X, Gu Y, Tang R. Comparison of open and laparoscopic preperitoneal repair of groin hernia. Surg Endosc. 2013;27(12):4702-10.
2. Yang GP, Tung KL. A comparative study of single incision versus conventional laparoscopic inguinal hernia repair. Hernia. 2015;19(3):401-5.
3. Pisanu A, Podda M, Saba A, Porceddu G, Uccheddu A. Meta-analysis and review of prospective randomized trials comparing laparoscopic and Lichtenstein techniques in recurrent inguinal hernia repair. Hernia. 2015;19(3):355-66.
4. Kargar S, Shiryazdi SM, Zare M, Mirshamsi MH, Ahmadi S, Neamatzadeh H. Comparison of postoperative short-term complications after laparoscopic transabdominal preperitoneal (TAPP) versus Lichtenstein tension free inguinal hernia repair: a randomized trial study. Minerva chirurgica. 2015;70(2):83-9.
5. Dellabianca C, Bonardi M, Alessi S. Testicular ischemia after inguinal hernia repair. Journal of ultrasound. 2011;14(4):205-7.
6. Symeonidis D, Baloyiannis I, Koukoulis G, Pratsas K, Georgopoulou S, Efthymiou M, et al. Prospective non-randomized comparison of open versus laparoscopic transabdominal preperitoneal (TAPP) inguinal hernia repair under different anesthetic methods. Surg Today. 2014;44(5):906-13.
7. Kargar S, Shiryazdi SM, Zare M, Mirshamsi MH, Ahmadi S, Neamatzadeh H. Comparison of postoperative short-term complications after laparoscopic transabdominal preperitoneal (TAPP) versus Lichtenstein tension free inguinal hernia repair: a randomized trial study. Minerva chirurgica. 2015;70(2):83-9.
8. Li J, Wang X, Feng X, Gu Y, Tang R. Comparison of open and laparoscopic preperitoneal repair of groin hernia. Surg Endosc. 2013;27(12):4702-10.
9. Dellabianca C, Bonardi M, Alessi S. Testicular ischemia after inguinal hernia repair. Journal of ultrasound. 2011;14(4):205-7.