



COMPARATIVE STUDY OF PAIN SCORE, OPERATING TIME, MORBIDITY IN PATIENTS UNDERGOING LAPAROSCOPIC HERNIOPLASTY (LAPAROSCOPIC HERNIA REPAIR) AND OPEN HERNIA REPAIR

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ABSTRACT

Background: A hernia is defined as an abnormal protrusion of an organ or tissue through a defect in its surrounding walls. Although a hernia can occur at various sites of the body, these defects most commonly involve the abdominal wall, particularly the inguinal region. Hernia repair is one of the most common operations performed by general surgeons. About 75% of all hernias occur in the inguinal region. Two thirds of these are indirect and the remainder are direct inguinal hernias. Femoral hernias represent only 3% of all groin hernias. Open Lichtenstein 'mesh repair and laparoscopic mesh repair are widely being practiced across the world.

Aim: The aim of this study is to assess the possible benefit of laparoscopic hernia repair compared to open mesh hernia repair based on Comparative study of pain score, operating time, morbidity.

Methods: Study will be conducted on 100 patients (50 patients in each study group) who would be attending and would be admitted into the surgical O.P.D., I.PD and Emergencies of Maharani Laxmi Bai Medical College, Jhansi during the study period between January 2019 to January 2020.

Results: In our study the mean of VAS for pain scoring in the 1st 24 hrs after surgery was 2.06 ± 0.239 in the laparoscopic group & 3.08 ± 0.695 in the open hernia repair group. This difference was statistically very significant. Similarly in the next 24 hrs it was 1.38 ± 0.602 in the laparoscopic group and 2.02 ± 0.622 in open Lichtenstein hernia repair group. The duration of surgery in minutes was 35.52 ± 3.412 (mean) in the laparoscopic group and 27.20 ± 3.371 (mean) (P value 0.0001) in the Open Lichtenstein group. In our study the mean duration of stay (in days) postoperatively in the hospital was 2.94 ± 0.239 in the laparoscopic group as compared to 3.46 ± 0.613 in the Open Lichtenstein group ($p < 0.0001$).

Conclusion: The operating time is little longer in the laparoscopic procedure in comparison to open Lichtenstein repair. The post operative pain and complications (Seroma , Hematoma , Wound infection) are less in laparoscopic procedure in comparison to open Lichtenstein procedure. There is less hospital stay is in laparoscopic procedure in comparison to open Lichtenstein procedure. There were no life threatening complications over a period of 12 month follow-up in both the groups.

KEYWORDS : Inguinal Hernia, Lichtenstein's repair, Laparoscopic hernioplasty, Post operative pain, Hospital stay.

INTRODUCTION

History of hernia repair is very rich and since ancient times surgeons have tried to improve it bit by bit. It is in fact a game of surgical anatomy, the one who understands the anatomy of Groin, can succeed in a way or the other to do a perfect repair. Herniorrhaphy is one of the commonest general surgical procedures performed and about 700,000 hernia operations are performed each year in the United States which is still on rise⁽¹⁾. Surgical outcome has improved tremendously due to improvements in surgical techniques, prosthetic materials and a better understanding of how to use them. Postoperative pain, prolonged hospital stay and recurrence are a common problem associated with hernia surgery. Failure rate of less than 1% is reported from centers specialized in hernia surgery in contrast to much higher recurrence form non-specialized centers⁽²⁾.

AIMS AND OBJECTIVES

The aim of this study is to assess the possible benefit of laparoscopic hernia repair compared to open mesh hernia repair based on Comparative study of pain score, operating time, morbidity.

The following parameter will be evaluated for both laparoscopic and open producers:

1. Operative techniques.
2. Operative time
3. Intra-operative complication
4. Post-operative complication
5. Post-operative pain and amount of narcotic-analgesic use (acute and chronic pain).
6. Post-operative recovery/ hospital stay.
7. Time to return to work
8. Recurrence
9. Chronic post-operative inguinal pain
10. Cost effectiveness
11. Learning curve

MATERIALS AND METHODS

Study will be conducted on 100 patients (50 patients in each study group) who would be attending and would be admitted into the surgical O.P.D., I.PD and Emergencies of Maharani Laxmi Bai Medical College, Jhansi during the study period between January 2019 to January 2020.

A thorough history and clinical examination with essential pre-operative investigation would be carried out on each patients. The patients will then be divided into unilateral and bilateral groups. In each group, the patients would be alternatively taken up for open/laparoscopic hernioplasty after matching for age and type of hernia. Laparoscopic hernioplasty would be carried out as a TAPP procedure or TEP procedure. Open hernioplasty would be Lichtenstein hernioplasty.

INCLUSION CRITERIA:

1. Patients diagnosed as having inguinal hernia aged 18 years and above giving valid written informed consent.
2. Patients with unilateral or bilateral inguinal hernia.
3. Patients with recurrent inguinal hernia.

EXCLUSION CRITERIA:

1. Patients with strangulated/obstructed inguinal hernia.
2. COPD and cardiac decompensation.
3. Patients deemed unfit for anaesthesia.ASA >3.

RESULT

Table 1: Age distribution in study group

| Age group (years) | Number of patients | | | |
|-------------------|------------------------------|--------|--------------------------------------|--------|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | % |
| 16-30 | 15 | 30.00% | 9 | 18.00% |
| 31-40 | 12 | 24.00% | 9 | 18.00% |

| | | | | |
|-------|----|--------|----|--------|
| 41-50 | 11 | 22.00% | 12 | 24.00% |
| 51-60 | 7 | 14.00% | 11 | 22.00% |
| >60 | 5 | 10.00% | 9 | 18.00% |

Table 2: Mean age distribution in study group

| Parameters | Number of patients | | | |
|------------|------------------------------|---|--------------------------------------|---|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | % |
| Mean+SD | 41.24±15.427 | | 47.4±17.51 | |

Table 3: Sex distribution in study group

| Parameters | Number of patients | | | |
|------------|------------------------------|---------|--------------------------------------|---------|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | % |
| Male | 50 | 100.00% | 50 | 100.00% |
| Female | 00 | 0.00% | 00 | 0.00% |

Table 4: Preoperative diagnosis distribution in study group

| Parameters | Number of patients | | | |
|--------------------|------------------------------|--------|--------------------------------------|--------|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | % |
| Bubonocoele | 41 | 82.00% | 22 | 44.00% |
| Funicular | 10 | 20.00% | 19 | 38.00% |
| Scrotal (complete) | 0 | 0.00% | 10 | 20.00% |

Table 5: Pre operative diagnosis in study group

| Parameters | Number of patients | | | |
|---|------------------------------|--------|--------------------------------------|--------|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | % |
| U/L Direct | 0 | 0.00% | 0 | 0.00% |
| U/L Indirect | 42 | 84.00% | 48 | 96.00% |
| B/L Direct (right direct + left direct) | 1 | 2.00% | 0 | 0.00% |
| B/L Indirect (right indirect + left indirect) | 7 | 14.00% | 2 | 4.00% |
| Combination (indirect + direct) | 0 | 0.00% | 0 | 0.00% |

Table 6: Presenting complaint in study group

| Parameters | Number of patients | | | |
|------------|------------------------------|---------|--------------------------------------|---------|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | % |
| Pain | 50 | 100.00% | 49 | 98.00% |
| Bulge | 49 | 98.00% | 50 | 100.00% |
| Fullness | 48 | 96.00% | 50 | 100.00% |

Table 7: Post operative complications in study group

| Parameters | Number of patients | | | |
|------------------|------------------------------|-------|--------------------------------------|--------|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | % |
| Seroma/ Hematoma | 0 | 0.00% | 3 | 6.00% |
| Chronic pain | 3 | 6.00% | 5 | 10.00% |
| Recurrence | 0 | 0.00% | 2 | 4.00% |
| Wound infection | 0 | 0.00% | 3 | 6.00% |

Table 8: Mean duration of surgery (in minutes) in study group

| Parameters | Number of patients | | | p value |
|------------|------------------------------|---|--------------------------------------|---------|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | |
| Mean+SD | 35.52+3.412 | | 27.02+3.371 | 0.0001 |

Table 9: Pain score (1st 24 hours) in study group using visual analogue score

| Parameters | Number of patients | | | |
|------------|------------------------------|--------|--------------------------------------|--------|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | % |
| 1-2 | 47 | 94.00% | 10 | 20.00% |
| 3-4 | 3 | 6.00% | 26 | 52.00% |
| 5-6 | 0 | 0.00% | 14 | 28.00% |

Table 10: Mean pain score (1st 24 hours) in study group using visual analogue score

| Parameters | Number of patients | | p value |
|------------|------------------------------|--------------------------------------|---------|
| | Group A (TAPP Hernia repair) | Group B (Lichtenstein hernia repair) | |
| Mean+SD | 2.06+0.239 | 3.08+0.695 | 0.0001 |

Table 11: Pain score (next 24 hours) in study group using visual analogue score

| Parameters | Number of patients | | | |
|------------|------------------------------|--------|--------------------------------------|--------|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | % |
| 1-2 | 48 | 96.00% | 40 | 80.00% |
| 3-4 | 2 | 4.00% | 10 | 20.00% |
| 5-6 | 0 | 0.00% | 00 | 0.00% |

Table 12: Mean pain score (next 24 hours) in study group using visual analogue score

| Parameters | Number of patients | | p value |
|------------|------------------------------|--------------------------------------|---------|
| | Group A (TAPP Hernia repair) | Group B (Lichtenstein hernia repair) | |
| Mean+SD | 1.38+0.602 | 2.02+0.622 | 0.0001 |

Table 13: Duration of hospital stay (in days) in study group

| Parameters | Number of patients | | | |
|------------|------------------------------|--------|--------------------------------------|--------|
| | Group A (TAPP Hernia repair) | | Group B (Lichtenstein hernia repair) | |
| | No | % | No | % |
| 1-2 | 3 | 6.00% | 0 | 0.00% |
| 3-4 | 47 | 94.00% | 47 | 94.00% |
| 5-6 | 0 | 0.00% | 03 | 06.00% |

Table 14: Mean duration of hospital stay (in days) in study group

| Parameters | Number of patients | | p value |
|------------|------------------------------|--------------------------------------|---------|
| | Group A (TAPP Hernia repair) | Group B (Lichtenstein hernia repair) | |
| Mean+SD | 2.94±0.239 | 3.46±0.613 | 0.0001 |

DISCUSSION

In our study the overall complication rate was more frequent in the open hernia repair group than in the TAPP group. As such, no visceral injury occurred in our study during the laparoscopic procedure. All laparoscopic procedures completed without conversion to open procedure.

In our comparison of postoperative complications between the laparoscopic repair group (TAPP) and open repair group (Lichtenstein repair), the laparoscopic procedure resulted in lesser post-operative pain & lower incidence rates of wound infection (0%) in laparoscopic group as compared to 6.00% in open repair group

Pain score:

In our study the mean of VAS for pain scoring in the 1st 24 hrs after surgery was 2.06±0.239 in the laparoscopic group & 3.08 ± 0.695 in the open hernia repair group. This difference was statistically very significant. Similarly in the next 24 hrs it was 1.38 ± 0.602 in the laparoscopic group and 2.02 ±

0.622 in open Lichtenstein hernia repair group. This difference too was statistically significant. So these findings are suggestive of the fact that acute pain is lesser in the laparoscopic repair group as compared to open Lichtenstein hernia repair group^[5-8].

Chronic pain:

In our study only 5 patients developed chronic groin pain in the Open Lichtenstein group (incidence of 10%) and 3 of the patients developed chronic groin pain in the laparoscopic group (6% incidence) over a follow up period of twelve months. This difference is statistically insignificant at $p < 0.001$. Although there have been similar studies done in the past showing that the incidence of chronic groin pain is lesser in the laparoscopic group as compared to open group (Lichtenstein)^[5-8].

Wound infection:

In our study the infection rate was a bit higher in the Open Lichtenstein group (6%) as compared to none (0.00%) in the laparoscopic group^[9].

Operating Time:

According to our study, besides less pain & a lower incidence of wound infection, other significant advantages of the laparoscopic procedure were earlier recovery, shorter post-op stay. Only the operative time was a bit longer in the laparoscopic group. The duration of surgery in minutes was 35.52 ± 3.412 (mean) in the laparoscopic group and 27.20 ± 3.371 (mean) (P value 0.0001) in the Open Lichtenstein group^[9-10].

Hospital stay:

In our study the mean duration of stay (in days) postoperatively in the hospital was 2.94 ± 0.239 in the laparoscopic group as compared to 3.46 ± 0.613 in the Open Lichtenstein group ($p < 0.0001$)^[11-13].

CONCLUSION

- My study demonstrated that the Open Lichtenstein & laparoscopic procedure (TAPP) both are effective & safe for groin hernia repair.
- The operating time is little longer in the laparoscopic procedure in comparison to open Lichtenstein repair.
- The post operative pain and complications (Seroma, Hematoma, Wound infection) are less in laparoscopic procedure in comparison to open Lichtenstein procedure.
- There is less hospital stay in laparoscopic procedure in comparison to open Lichtenstein procedure.
- There were no life threatening complications over a period of 12 month follow-up in both the groups.

REFERENCES

1. Malagoni MA, Rosen MJ. Hernias. In: Townsend M Jr, editor. Sabiston Textbook of Surgery. 18th ed. Saunders; 2007. pp. 1155–1179.
2. Bekker J, Keeman JN, Simons MP, Aufenacker TJ. A brief history of the inguinal hernia operation in adults. Ned Tijdschr Geneesk. 2007;151(6):924–931.
3. Ielpo B, Duran H, Diaz E, Fabra I, Caruso R, Malavé L, Ferri V, Lazzaro S, Kalivaci D, Quijano Y, Vicente E. A prospective randomized study comparing laparoscopic transabdominal preperitoneal (TAPP) versus Lichtenstein repair for bilateral inguinal hernias. Am J Surg. 2018 Jul;216(1):78–83.
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 Chir. 2015 Apr;70(2):83–9. Epub 2014 Jul 14.
5. Kozol R, Lange PM, Kosir M, Beleski K, Mason K, Tennenberg S, Kubinec SM, Wilson RF. A prospective, randomized study of open vs laparoscopic inguinal hernia repair. An assessment of postoperative pain. Arch Surg. 1997 Mar;132(3):292–5.
6. Eklund A, Rudberg C, Smedberg S, Enander LK, Leijonmarck CE, Osterberg J, Montgomery A. Short-term results of a randomized clinical trial comparing Lichtenstein open repair with totally extraperitoneal laparoscopic inguinal hernia repair. Br J Surg. 2006 Sep;93(9):1060–8.
7. Li J, Zhang Y, Hu H, Tang W. Early experience of performing a modified Kugel hernia repair with local anesthesia. Surg Today. 2008;38(7):603–8.
8. Butters M, Redecke J, Koninger J. Long-term results of a randomized clinical trial of Shouldice, Lichtenstein and transabdominal preperitoneal hernia repairs. Br J Surg. 2007;94(5):562–565.

9. Deepraj S Bhandarkar, Manu Shankar, and Tehemton E Udwardia. Laparoscopic surgery for inguinal hernia: Current status and controversies. J Minim Access Surg. 2006 Sep;2(3): 178–186.
10. P. Krishna Murthy, Dilip Ravalia. Assessment and comparison of laparoscopic hernia repair versus open hernia: a non-randomized study., No 3 (2018).dx.
11. Li J, Wang X, Feng X, Gu Y, Tang R. Comparison of open and laparoscopic preperitoneal repair of groin hernia. Surg Endosc. 2013 Dec;27(12):4702–10. doi: 10.1007/s00464-013-3118-x. Epub 2013 Aug 23.
12. Umme Salma,1 Ishtiaq Ahmed,2 and Sundas Ishtiaq3. A comparison of post operative pain and hospital stay between Lichtenstein's repair and Laparoscopic Transabdominal Preperitoneal (TAPP) repair of inguinal hernia: A randomized controlled trial. Pak J Med Sci. 2015 Sep-Oct; 31(5): 1062–1066.
13. Arth Shah, Jignesh Rathod, Vipul Yagnik. A Comparative Study between Laparoscopic Hernia Repair and Open Lichtenstein Mesh Repair. January 2017 with 157.