e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(2); 101-107

Original Research Article

A Comparative Study of the Systemic Inflammatory Response and Post-operative Pain after Transabdominal Preperitoneal (TAPP) Repair versus Open Lichtenstein Hernia Repair: A Prospective Randomized Study

Mohit Sethi[1], Ram Prasad[2], Nitesh Kumar[3]

[1,3]PG Resident, Department of General Surgery, J.L.N. Medical College & Associated Group of Hospitals, Ajmer, Rajasthan, India

[2]Associate Professor, Department of General Surgery, J.L.N. Medical College & Associated Group of Hospitals, Ajmer, Rajasthan, India

Received: 01-11-2025 / Revised: 15-12-2025 / Accepted: 21-01-2026

Corresponding author: Dr. Mohit Sethi

Conflict of interest: Nil

Abstract

Background: Inguinal hernia repair is one of the most commonly performed surgical procedures worldwide. This study aimed to compare the systemic inflammatory response and postoperative pain following two tension-free methods of inguinal hernioplasty using polypropylene mesh: Transabdominal Preperitoneal Repair (TAPP) and Open Lichtenstein Hernia Repair.

Methodology: This prospective randomized study included 50 patients (25 in each group) with primary unilateral inguinal hernias. Systemic inflammatory markers (C-reactive protein, ESR, lymphocytes and neutrophils) were measured preoperatively, 24 hours postoperatively and on the 10th postoperative day. Pain assessment was performed using the Visual Analog Scale (VAS) at 24 hours, 10 days, 1 month, 3 months and 6 months postoperatively. Intraoperative and postoperative complications were also recorded and compared.

Results: Both groups showed similar demographic characteristics. TAPP patients had significantly shorter hospital stays (2.20 ± 0.40 days vs. 2.48 ± 0.51 days, p=0.03). While both procedures elicited inflammatory responses, CRP levels were significantly lower in the TAPP group by the 10th postoperative day (0.40 ± 0.31 mg/dl vs. 1.15 ± 1.21 mg/dl, p=0.004). Lymphocyte counts were significantly higher in the TAPP group on the 10th postoperative day (2563.28 ± 733.14 cells/mm³ vs. 1842.00 ± 260.45 cells/mm³, p<0.001). Pain scores at 24 hours postoperatively were significantly lower in the TAPP group (5.64 ± 0.76 vs. 7.16 ± 0.94, p<0.001), though this difference diminished by the 10th day. Both procedures had similar complication profiles with low incidence of seroma (8%) and infection (2%) and no recurrences during the follow-up period.

Conclusion: TAPP repair offers advantages over Open Lichtenstein repair in terms of reduced inflammatory response, lower immediate postoperative pain and shorter hospital stay. Both techniques demonstrate similar safety profiles and long-term pain outcomes, suggesting that surgeon expertise and patient factors should guide the choice between these effective approaches.

Keywords: Inguinal hernia, TAPP, Lichtenstein repair, systemic inflammatory response, postoperative pain, C-reactive protein, Visual Analog Scale.

DOI: 10.25258/ijcpr.18.2.16

Introduction

Hernia repair is one of the most frequently performed surgeries globally due to the high prevalence and potential complications of hernias. The two main techniques are open Lichtenstein hernia repair and laparoscopic transabdominal preperitoneal (TAPP) repair, each with its own benefits and limitations. Understanding the systemic inflammatory response and postoperative pain associated with these methods is vital for improving outcomes and surgical practices [1]. Hernias present a major global health issue, affecting millions annually. The World Health Organization (WHO) reports about 20 million hernia repairs each year with inguinal hernias accounting for roughly 75% of abdominal wall hernias. These commonly occur due to anatomical weaknesses in the inguinal region and, if untreated, may result in complications like bowel obstruction and strangulation [2]. Surgery remains the primary treatment for hernias. The Lichtenstein technique, developed in the 1980s, uses an open mesh placement over the defect, while the TAPP method,

introduced in the 1990s, employs laparoscopic mesh placement behind the peritoneum [3]. Though both techniques are effective, they differ in approach, intraoperative factors and recovery profiles. Investigating the inflammatory response to these procedures is essential, as it influences healing and risk of complications like pain or infection [4]. Postoperative pain is a key consideration, impacting recovery, patient satisfaction and hospital stay duration. Pain levels vary depending on surgical technique, patient factors and pain management strategies [5]. While many studies have explored aspects of these procedures, comprehensive comparisons of systemic inflammation and postoperative pain remain limited. A study by Olanrewaju et al. highlights the need for focused research in this area [6]. This study aims to fill this gap through a prospective randomized comparison of the open Lichtenstein and laparoscopic TAPP repairs. It will analyze inflammatory markers, pain levels, analgesic use and patient-reported outcomes to offer evidence-based guidance for surgical decision-making and improved patient care.

Methodology

This prospective, randomized study was conducted in the Department of General Surgery at J.L.N. Medical College & Associated Group of Hospitals, Ajmer, Rajasthan, from January 2023 to July 2024. The primary aim was to compare the systemic inflammatory response and postoperative pain following two tension-free methods of hernioplasty: Open Lichtenstein hernia repair and laparoscopic Transabdominal Preperitoneal (TAPP) repair. Patients were selected from those attending the Surgical Outpatient Department. Patients were allocated into two groups using a simple random sampling technique through the lottery method. Inclusion criteria encompassed adult patients above 20 years of age with primary unilateral inguinal hernias. Exclusion criteria included patients below 20 years, those with bilateral or recurrent inguinal hernias, incarcerated or strangulated hernias, a history of previous lower abdominal surgery, concomitant intra-abdominal disease, contraindications to general anesthesia and coagulation disorders. A total of 50 patients meeting the inclusion criteria were enrolled in the study. They were equally divided into two groups: 25 patients underwent the TAPP repair and 25 patients received the Open Lichtenstein repair.

Surgical Techniques: The Open Lichtenstein hernia repair involved an inguinal incision, identification and reduction of the hernia sac and placement of a polypropylene mesh over the posterior wall of the inguinal canal. The mesh was sutured to the surrounding tissues to reinforce the abdominal wall. In the TAPP repair, a laparoscopic approach was used to access the hernia site through the abdominal cavity. A transverse incision was made in the peritoneum above the hernia defect, followed by placement of a polypropylene mesh in the preperitoneal space. The peritoneum was then closed over the mesh.

Outcome Measures

Systemic Inflammatory Response: Inflammatory markers including C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), lymphocyte count and neutrophil count were measured preoperatively, 24 hours postoperatively and on the 10^{th} postoperative day. The CRP was assessed using a sandwich hemiluminescence immunoassay. This process involved binding FITC-labeled anti-CRP monoclonal antibodies to magnetic microbeads coated with anti-FITC polyclonal antibodies, followed by multiple wash cycles and the addition of ABEI-labeled anti-CRP monoclonal antibodies to initiate a flash chemiluminescent reaction. The resulting light signal was measured in relative light units (RLUs), proportional to the CRP concentration.

Pain Assessment: Pain levels were assessed using the Visual Analog Score (VAS) at multiple intervals - 24 hours, 10 days, 1 month, 3 months and 6 months postoperatively.

Complications: Both intraoperative and postoperative complications were monitored. Intraoperative complications included injury to vessels, viscera, cord and nerves. Postoperative complications included chronic pain, hematoma, seroma, infection and recurrence.

Statistical Analysis: Data related to patient demographics, intraoperative findings and postoperative outcomes were collected prospectively. Statistical analysis was conducted using appropriate tests such as the t-test and chi-square test to compare outcomes between the two groups. A p-value of less than 0.05 was considered statistically significant.

Results

This prospective randomized study evaluated the outcomes of 50 patients undergoing inguinal hernia repair with 25 patients in the Open Lichtenstein hernia repair group and 25 in the Transabdominal Preperitoneal (TAPP) repair group.

The data collected included demographic characteristics, inflammatory markers (CRP, ESR, lymphocytes, neutrophils), pain scores using the Visual Analog Scale (VAS) and complications. The results demonstrate distinct patterns in the systemic inflammatory response and pain experiences between the two surgical techniques, while highlighting similarities in safety profiles.

Table 1: Demographic and Clinical Characteristics of Study Participants

Characteristic	Open Lichtenstein hernia repair (n=25)	Transabdominal preperitoneal repair (n=25)	p-value
Age (years), Mean ± SD	44.16 ± 12.39	44.80 ± 10.34	0.84
Age distribution, n (%)			
≤30 years	4 (16.0%)	4 (16.0%)	0.45
31-40 years	6 (24.0%)	2 (8.0%)	
41-50 years	7 (28.0%)	12 (48.0%)	
51-60 years	6 (24.0%)	6 (24.0%)	
≥61 years	2 (8.0%)	1 (4.0%)	
Gender, n (%)			
Male	24 (96.0%)	24 (96.0%)	1.00
Female	1 (4.0%)	1 (4.0%)	
Hospital discharge time (days), Mean ± SD	2.48 ± 0.51	2.20 ± 0.40	0.03*

***Statistically significant (p<0.05)**

The study analyzed 50 patients equally divided between the two intervention groups. The mean age was similar in both groups: 44.16 ± 12.39 years for the Open Lichtenstein hernia repair group and 44.80 ± 10.34 years for the Transabdominal preperitoneal repair group (p = 0.84). The age distribution across age categories showed no significant difference between the groups (p = 0.45) with the 41-50 years category being the most represented overall (38.0%). Gender distribution was identical in both groups with 24 males (96.0%) and 1 female (4.0%) in each intervention group (p = 1.00). The hospital discharge time showed a statistically significant difference (p = 0.03) with patients in the Transabdominal preperitoneal repair group having a shorter average stay (2.20 ± 0.40 days) compared to those in the Open Lichtenstein hernia repair group (2.48 ± 0.51 days).

Table 2: Comparison of CRP levels (mg/dl) at different follow-ups between groups

Time point	Open Lichtenstein hernia repair	Transabdominal preperitoneal repair	Total	p-value
Pre-operative	0.13 ± 0.18	0.13 ± 0.10	0.13 ± 0.14	0.99
24 hours post-operative	6.81 ± 2.36	5.76 ± 2.40	6.28 ± 2.41	0.126
10th day post-operative	1.15 ± 1.21	0.40 ± 0.31	0.77 ± 0.95	0.004*

***Statistically significant (p < 0.05)**

Pre-operatively, both groups exhibited similar CRP levels at 0.13 ± 0.18 mg/dl for Open Lichtenstein and 0.13 ± 0.10 mg/dl for Transabdominal Preperitoneal Repair with no significant difference (p = 0.99).

At 24 hours post-surgery, CRP levels were notably higher in both groups with Open Lichtenstein Repair showing 6.81 ± 2.36 mg/dl and Transabdominal Preperitoneal Repair at 5.76 ± 2.40 mg/dl, but this difference was not statistically significant (p = 0.126).

By the 10th day, a significant difference emerged with Open Lichtenstein Repair showing a CRP level of 1.15 ± 1.21 mg/dl compared to 0.40 ± 0.31 mg/dl for Transabdominal Preperitoneal Repair (p = 0.004), indicating a notable reduction in CRP levels in the latter group, suggesting a potentially more favorable inflammatory response.

Table 3: Comparison of ESR (mm/hr) at different follow-ups between groups

Time point	Open Lichtenstein hernia repair	Transabdominal preperitoneal repair	Total	p-value
Pre-operative	16.28 ± 4.48	16.56 ± 4.98	16.42 ± 4.69	0.835
24 hours post-operative	26.76 ± 6.52	28.52 ± 6.40	27.64 ± 6.46	0.34
10th day post-operative	17.20 ± 5.20	18.44 ± 4.82	17.82 ± 5.00	0.386

Before surgery, the ESR levels were comparable between Open Lichtenstein hernia Repair (16.28 ± 4.48 mm/hr) and Transabdominal preperitoneal Repair (16.56 ± 4.98 mm/hr) with a total average of 16.42 ± 4.69 mm/hr (p = 0.835). At 24 hours post-surgery, the ESR levels showed an increase in both groups: Open Lichtenstein hernia Repair (26.76 ± 6.52 mm/hr) and Transabdominal preperitoneal Repair (28.52 ± 6.40 mm/hr), resulting in a total average of 27.64 ± 6.46 mm/hr (p = 0.34). By the 10th day after surgery, the ESR levels decreased in both groups but remained slightly higher in the Transabdominal preperitoneal Repair group (18.44 ± 4.82 mm/hr) compared to the Open Lichtenstein

hernia Repair group (17.20 ± 5.20 mm/hr) with a total average of 17.82 ± 5.00 mm/hr (p = 0.386). No significant differences in ESR levels were found between the two surgical techniques at any time point.

Table 4: Comparison of Lymphocyte counts (cells/mm³) at different follow-ups between groups

Time point	Open Lichtenstein hernia repair	Transabdominal preperitoneal repair	Total	p-value
Pre-operative	1796.00 ± 599.88	1980.00 ± 409.28	1888.00 ± 516.66	0.211
24 hours post-operative	1311.60 ± 357.18	1346.00 ± 487.71	1328.80 ± 423.43	0.777
10th day post-operative	1842.00 ± 260.45	2563.28 ± 733.14	2202.64 ± 655.13	<0.001*

***Statistically significant (p < 0.05)**

Before surgery, the Lymphocyte counts were 1796.00 ± 599.88 cells/mm³ for Open Lichtenstein hernia Repair and 1980.00 ± 409.28 cells/mm³ for Transabdominal preperitoneal Repair with a total average of 1888.00 ± 516.66 cells/mm³ (p = 0.211). At 24 hours post-surgery, the Lymphocyte counts decreased slightly to 1311.60 ± 357.18 cells/mm³ for Open Lichtenstein hernia Repair and 1346.00 ± 487.71 cells/mm³ for Transabdominal preperitoneal Repair, resulting in a total average of 1328.80 ± 423.43 cells/mm³ (p = 0.777). By the 10th day after surgery, the Lymphocyte counts increased, particularly in the Transabdominal preperitoneal Repair group (2563.28 ± 733.14 cells/mm³) compared to the Open Lichtenstein hernia Repair group (1842.00 ± 260.45 cells/mm³) with a total average of 2202.64 ± 655.13 cells/mm³ (p < 0.001).

This statistically significant difference indicates a potentially different inflammatory response or recovery trajectory between the two surgical approaches.

Table 5: Comparison of Neutrophil counts (cells/mm³) at different follow-ups between groups

Time point	Open Lichtenstein hernia repair	Transabdominal preperitoneal repair	Total	p-value
Pre-operative	5750.00 ± 1732.44	5780.20 ± 1907.98	5765.10 ± 1803.70	0.954
24 hours post-operative	9331.20 ± 2078.62	8834.40 ± 1329.46	9082.80 ± 1744.96	0.319
10th day post-operative	6555.20 ± 1617.49	6399.60 ± 1305.79	6477.40 ± 1456.97	0.71

Neutrophil counts were comparable between the two surgical techniques before surgery with Open Lichtenstein Hernia Repair at 5750.00 ± 1732.44 cells/mm³ and Transabdominal Preperitoneal Repair at 5780.20 ± 1907.98 cells/mm³ (total average 5765.10 ± 1803.70 cells/mm³, p = 0.954).

At 24 hours post-surgery, counts increased to 9331.20 ± 2078.62 cells/mm³ for Open Lichtenstein and 8834.40 ± 1329.46 cells/mm³ for Transabdominal Preperitoneal Repair (total average 9082.80 ± 1744.96 cells/mm³, p = 0.319). By the 10th day, counts decreased to 6555.20 ± 1617.49 cells/mm³ and 6399.60 ± 1305.79 cells/mm³, respectively with a total average of 6477.40 ± 1456.97 cells/mm³ (p = 0.71).

No statistically significant differences in neutrophil counts were observed between the two groups at any time point.

Table 6: Comparison of VAS pain scores at different follow-ups between groups

Time point	Open Lichtenstein hernia repair	Transabdominal preperitoneal repair	Total	p-value
24 hours post-operative	7.16 ± 0.94	5.64 ± 0.76	6.40 ± 1.14	<0.001*
10th day post-operative	3.68 ± 0.99	3.32 ± 0.85	3.50 ± 0.93	0.174
1 month post-operative	2.12 ± 0.97	1.72 ± 0.84	1.92 ± 0.92	0.126
3 months post-operative	0.68 ± 0.75	0.52 ± 0.82	0.60 ± 0.78	0.475
6 months post-operative	0.40 ± 0.71	0.16 ± 0.37	0.28 ± 0.57	0.140

***Statistically significant (p < 0.05)**

At 24 hours post-surgery, the VAS scores were significantly higher for Open Lichtenstein hernia Repair (7.16 ± 0.94) compared to Transabdominal preperitoneal Repair (5.64 ± 0.76), resulting in a total average of 6.40 ± 1.14 (p < 0.001). This indicates that patients who underwent Open Lichtenstein repair experienced more severe pain immediately after surgery. By the 10th day post-surgery, the VAS scores decreased to 3.68 ± 0.99 for Open Lichtenstein hernia Repair and 3.32 ± 0.85 for Transabdominal preperitoneal Repair with a total average of 3.50 ± 0.93 (p = 0.174). At 1 month post-surgery, the VAS scores were 2.12 ± 0.97 for Open Lichtenstein hernia Repair and 1.72 ± 0.84 for Transabdominal preperitoneal Repair, resulting in a total average of 1.92 ± 0.92 (p =

0.126). At 3 months post-surgery, the VAS scores further decreased to 0.68 ± 0.75 for Open Lichtenstein hernia Repair and 0.52 ± 0.82 for Transabdominal preperitoneal Repair with a total average of 0.60 ± 0.78 (p = 0.475). Finally, at 6 months post-surgery, the VAS scores were 0.40 ± 0.71 for Open Lichtenstein hernia Repair and 0.16 ± 0.37 for Transabdominal preperitoneal Repair, resulting in a total average of 0.28 ± 0.57 (p = 0.140). These findings indicate statistically significant differences in VAS scores between Open Lichtenstein hernia Repair and Transabdominal preperitoneal Repair at 24 hours post-surgery (p<0.001) with higher scores reported for Open Lichtenstein hernia Repair. However, at subsequent time points (10th day, 1st month, 3rd month and 6th month), there were no statistically significant differences in pain intensity between the two surgical techniques (p>0.05). A more detailed analysis of the VAS scores at 24 hours post-surgery revealed that the distribution of pain intensity scores across specific score categories was significantly different between the two groups (p < 0.001). Specifically, higher scores (6, 7, 8, 9) were more common in Open Lichtenstein repair patients, while lower scores (4, 5) were more prevalent in Transabdominal Preperitoneal Repair (TAPP) recipients.

Table 7: Comparison of intraoperative and early postoperative complications between groups

Complication	Open Lichtenstein hernia repair (n=25)	Transabdominal preperitoneal repair (n=25)	p-value
Injuries to vessels and viscera	0 (0%)	0 (0%)	-
Injuries to cord and nerves	0 (0%)	0 (0%)	-
Hematoma	0 (0%)	0 (0%)	-
Seroma	3 (12.0%)	1 (4.0%)	0.29
Infection	1 (4.0%)	0 (0%)	0.31
Recurrence	0 (0%)	0 (0%)	-

In both intervention groups, no cases of injuries to vessels, viscera, cord, or nerves were reported. Similarly, no instances of hematoma formation or hernia recurrence were observed during the follow-up period. Seroma formation was reported in 3 patients (12.0%) in the Open Lichtenstein hernia repair group and in 1 patient (4.0%) in the Transabdominal preperitoneal repair group. This difference was not statistically significant (p = 0.29). Only one case of infection (4.0%) was reported in the Open Lichtenstein hernia repair group, while no infections occurred in the Transabdominal preperitoneal repair group. This difference was also not statistically significant (p = 0.31).

Discussion

In our study comparing Open Lichtenstein Hernia Repair and Transabdominal Preperitoneal Repair (TAPP), we observed variability in the age distribution across the intervention groups. The majority of patients (38%) were in the 41-50 age range and the mean ages were found to be similar between the Open Lichtenstein Hernia Repair (44.16 ± 12.39 years) and TAPP (44.80 ± 10.34 years) with no statistically significant difference in age distribution (χ^2 = 3.6, p = 0.45). When comparing our findings with those of Sultan A et al., we noted that our study had a higher mean age in both groups, highlighting potential demographic differences across the study populations [7]. Similarly, in comparison with the study by Pereira C et al., our study showed a slightly higher mean age for the TAPP group and a lower mean age for the Lichtenstein group [8]. This difference further emphasizes variations in the patient populations across studies. Regarding hospital discharge times, patients in the Lichtenstein repair group had an average discharge time of 2.48 ± 0.51 days, while those undergoing TAPP had a shorter average discharge time of 2.20 ± 0.40 days. This resulted in a combined average discharge time of 2.34 ± 0.48 days. A statistically significant difference was found (p = 0.03), indicating that TAPP may be associated with a slightly shorter hospitalization period compared to Lichtenstein repair. This finding is important as it suggests that TAPP could potentially lead to faster recovery and earlier discharge from the hospital.

Our study also revealed a strong male predominance with 96% of patients being male in both groups. This is consistent with findings from other studies, such as Pereira C et al., who also observed a male predominance but noted a higher number of females in both groups [8]. Additionally, Quispe M et al. observed a similar trend with 81.4% male participants, though our study showed an even stronger male preponderance in comparison [9].

In terms of the systemic inflammatory response, both groups had similar preoperative CRP levels with Open Lichtenstein Repair at 0.13 ± 0.18 mg/dl and TAPP at 0.13 ± 0.10 mg/dl (p = 0.99). However, significant differences emerged 24 hours post-surgery with CRP levels increasing substantially in both groups. At 24 hours, CRP levels were 6.81 ± 2.36 mg/dl for Open Lichtenstein and 5.76 ± 2.40 mg/dl for TAPP, though this difference was not statistically

significant (p = 0.126). By the 10th postoperative day, a significant difference in CRP levels was observed with Open Lichtenstein Repair at 1.15 ± 1.21 mg/dl compared to 0.40 ± 0.31 mg/dl for TAPP (p = 0.004*). This indicates a more favorable inflammatory response for TAPP, aligning with the findings of Quispe M et al., who observed no significant differences in CRP at 24 hours post-surgery, but lower CRP levels for Lichtenstein repair by the 8th day [9]. Furthermore, our study found significant differences in lymphocyte counts at the 10th day with the TAPP group showing significantly higher lymphocyte counts (2563.28 ± 733.14 cells/mm³) compared to the Open Lichtenstein repair group (1842.00 ± 260.45 cells/mm³, p < 0.001*). Quispe M et al. reported increased leukocyte counts post-surgery but found no significant differences between the two groups at any time point [9]. Additionally, our study revealed no significant differences in neutrophil counts between the groups, which is consistent with Quispe M et al.'s findings, where no significant differences were observed at 24 hours post-surgery [9].

Regarding postoperative pain, the study revealed significant differences in pain levels at 24 hours post-surgery. The VAS scores were significantly higher for Lichtenstein repair (7.16 ± 0.94) compared to TAPP (5.64 ± 0.76, p<0.001). However, by the 10th day, the VAS scores were similar for both groups with Lichtenstein repair at 3.68 ± 0.99 and TAPP at 3.32 ± 0.85, showing no significant difference (p = 0.174). Over the long term, at 1 month, 3 months and 6 months post-surgery, there were no statistically significant differences in VAS scores between the two groups (p>0.05), suggesting that both techniques result in comparable long-term pain outcomes. These results align with the findings of Shah M et al., who reported that postoperative pain was more severe for Lichtenstein repair on the first postoperative day with a significant number of patients reporting moderate to severe pain [10]. Sultan A et al. also found significantly lower VAS scores for TAPP at 24 hours post-surgery [7], while Pereira C et al. observed significantly lower pain scores for TAPP at 24 hours post-operation [8].

Both groups showed similar safety profiles in terms of intraoperative and postoperative complications. There were no incidents of injury to vessels, viscera, or nerves in any patient. This aligns with findings from Scheuermann U et al., who reported low incidences of intraoperative hemorrhage and injury in both techniques [11]. Similarly, our study found no cases of hematoma in either group, which is consistent with studies by Quispe M et al. and others [9, 12]. Regarding seroma formation, both groups had comparable rates with 8.0% of Lichtenstein repair cases and 4.0% of TAPP cases reporting seroma. These findings are consistent with the findings of Quispe M et al., who reported varying rates of seroma formation across different studies and techniques [9]. Additionally, our study found low infection rates with only 2.0% of patients in the Lichtenstein repair group experiencing infection, which is consistent with other studies reporting similarly low infection rates [9, 13]. Furthermore, there were no cases of hernia recurrence in either group, which mirrors the results from other studies that report low recurrence rates for both Open Lichtenstein and TAPP repairs [9,14,15]. This suggests that both techniques are effective in preventing recurrence, further supporting their comparable outcomes.

Conclusion

In our prospective randomized study comparing Open Lichtenstein Hernia Repair and Transabdominal Preperitoneal Repair (TAPP), both techniques were found to be comparably effective and safe. While patients undergoing Open Lichtenstein repair reported significantly higher pain levels at 24 hours post-surgery compared to those in the TAPP group, this pain difference diminished over time with no significant disparities at 10 days, 1 month, 3 months, or 6 months post-operation, suggesting similar long-term pain outcomes for both techniques. Both methods demonstrated excellent safety profiles with no reported injuries to vessels, viscera, nerves, or cord and low, comparable incidences of complications such as seroma and infection. Statistical analyses showed similar patient demographics between the two groups, reinforcing the equivalence of the surgical approaches. TAPP repair had a more favorable inflammatory response with significantly lower CRP levels by the 10th postoperative day and higher lymphocyte counts, suggesting enhanced recovery. Additionally, TAPP was associated with a significantly shorter hospital stay, which may have implications for healthcare costs and resource utilization. In conclusion, both Open Lichtenstein and TAPP repairs offer safe, effective options for hernia management with the choice between them depending on patient-specific factors and surgeon expertise. TAPP may offer advantages in terms of postoperative pain management, hospital stay length and inflammatory response, though both techniques provide satisfactory long-term outcomes with minimal risk of complications.

References

1. Gudigopuram SV, Raguthu CC, Gajjela H, Kela I, Kakarala CL, Hassan M, Belavadi R, Sange I. Inguinal hernia mesh repair: the factors to consider when deciding between open versus laparoscopic repair. Cureus. 2021 Nov 16;13(11). https://doi.org/10.7759/CUREUS.19628.

2. Svetanoff WJ, Oyetunji TA. Inguinal Hernia. Fundamentals of Pediatric Surgery, Third Edition 2023:781–7. https://doi.org/10.1007/978-3-031-07524-7_81.
3. Pereira C, Rai R. Open Lichtenstein hernioplasty versus laparoscopic transabdominal preperitoneal mesh repair: the pain factor. Cureus. 2021 Sep 25;13(9). https://doi.org/10.7759/CUREUS.18282.
4. Kokotovic D, Burcharth J, Helgstrand F, Gögenur I. Systemic inflammatory response after hernia repair: a systematic review. Langenbecks Arch Surg 2017;402:1023–37. https://doi.org/10.1007/ S00423-017-1618-1.
5. Paladini A, Rawal N, Martinez MC, Trifa M, Montero A, Joseph Pergolizzi Jr, et al. Advances in the Management of Acute Postsurgical Pain: A Review. Cureus 2023;15. https:// doi.org /10.7759/ CUREUS. 42974.
6. Olanrewaju OA, Saleem A, Owusu FA, Pavani P, Ram R, Varrassi G. Contemporary approaches to hernia repair: a narrative review in general surgery. Cureus. 2023 Dec 31;15(12). https://doi.org/10.7759/ CUREUS. 51421.
7. Sultan AAEA, Abo Elazm HA, Omran H. Lichtenstein versus transabdominal preperitoneal (TAPP) inguinal hernia repair for unilateral non recurrent hernia: A multicenter short term randomized comparative study of clinical outcomes. Annals of Medicine and Surgery 2022;76:103428.https://doi.org/10.1016/J.AMSU.2022.103428
8. Pereira C, Rai R. Open Lichtenstein Hernioplasty Versus Laparoscopic Transabdominal Preperitoneal Mesh Repair: The Pain Factor. Cureus 2021;13. https://doi.org/10.7759/CUREUS.18282.
9. Quispe MRF, Salgado W. Transabdominal preperitoneal (TAPP) versus open Lichtenstein hernia repair. Comparison of the systemic inflammatory response and the postoperative pain. Acta Cir Bras 2019;34. https://doi.org/10.1590/S0102-86502019002 06.
10. Shah MY, Raut P, Wilkinson TRV, Agrawal V. Surgical outcomes of laparoscopic total extraperitoneal (TEP) inguinal hernia repair compared with Lichtenstein tension-free open mesh inguinal hernia repair: A prospective randomized study. Medicine 2022;101:E2974 6. https://doi.org/10.1097/MD.000000000002 9746.
11. Scheuermann U, Niebisch S, Lyros O, Jansen-Winkeln B, Gockel I. Transabdominal Preperitoneal (TAPP) versus Lichtenstein operation for primary inguinal hernia repair - A systematic review and meta-analysis of randomized controlled trials. BMC Surg 2017;17. https://doi.org/10.1186/S12893-017-0253-7.
12. Pokorny H, Klingler A, Schmid T, Fortelny R, Hollinsky C, Kawji R, Steiner E, Pernthaler H, Függer R, Scheyer M. Recurrence and complications after laparoscopic versus open inguinal hernia repair: results of a prospective randomized multicenter trial. Hernia. 2008 Aug;12:385-9. https://doi.org/10.1007/S10029-008-0357-1.
13. Basiouny AA, Ragheb RA, Elsharkawy AE. Comparative Study between Unilateral Inguinal Hernia by Open Technique versus TAPP Repair. Med J Cairo Univ2020;88: 1673–8. https://doi.org/10.21608/ MJCU.2020.116261
14. Abbas AE, Abd Ellatif ME, Noaman N, Negm A, El-Morsy G, Amin M, Moatamed A. Patient-perspective quality of life after laparoscopic and open hernia repair: a controlled randomized trial. Surgical endoscopy. 2012 Sep;26:2465-70. https://doi.org/10.1007/S00464-012-2212-9/METRICS.
15. Rather AA, Salati SA. Transabdominal Preperitoneal Patch Plasty versus Open Lichtenstein Hernia Repair–A Study. Journal of Health Science Research. 2021 Jun 4;6(1):18-23. https://doi.org/10.7324/ JHSR.2021.613.