

Laparoscopic Versus Conventional Open Surgery for the Treatment of Bilateral Inguinal Hernias

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ABSTRACT

Objective: To evaluate and compare laparoscopic and conventional open procedures for bilateral inguinal hernia surgical repair, using clinical, intraoperative, and postoperative criteria.

Methods: Forty-three patients with bilateral inguinal hernia were included in a retrospective study, between 2014–2017. All patients underwent conventional open or laparoscopic bilateral hernioplasty, and were divided into two groups: a conventional open group (COG) and a laparoscopy group (LG). Clinical, intraoperative, and postoperative outcomes were reviewed.

Results: In the laparoscopic hernioplasty group, there was a significantly shorter hospitalization period ($p = 0.026$), less postoperative pain ($p = 0.03$), and a prompt return to work ($p = 0.043$) compared to the conventional open procedure. On the other hand, patients who underwent hernioplasty with the ProGrip-type synthetic mesh developed a lower pain score, an earlier return to work, and a quick start to normal physical activities in comparison with other mesh types used for the treatment of bilateral inguinal hernias. For patients who underwent conventional open procedure, there was a significantly shorter operating time ($p = 0.042$).

Conclusion: Laparoscopic bilateral inguinal hernioplasty is a time-consuming and technically demanding procedure. However, the current study underlines the benefits of this type of surgery. This technique presents comparable clinical, intraoperative, and postoperative results with the conventional open surgery.

Keywords: bilateral inguinal hernia, laparoscopic, hernioplasty, ProGrip, chronic pain

INTRODUCTION

Nowadays, despite the rare occurrence of bilateral inguinal hernias in medical practice, they are encountered in about 15–20% of patients with inguinal hernia. There are still discussions regarding the treatment of bilateral hernias, whether surgery should be performed in one, or two stages. A simultaneous surgical intervention seems to be more beneficial from every point of view, requir-

ing only one hospital admission, as well as fast anesthesia and postoperative recovery. In the medical literature, only sporadic studies have compared laparoscopic surgery with conventional open procedures for the treatment of bilateral inguinal hernias. Recent studies have shown that the laparoscopic procedure can be a feasible alternative to conventional open surgery.¹⁻¹⁰ The aim of this study was to compare the open conventional procedure with laparoscopic surgery in patients diagnosed with bilateral inguinal hernia.

MATERIAL AND METHODS

This retrospective study was conducted between 2014 and 2017, and followed 43 patients diagnosed with bilateral inguinal hernia at the Second Surgery Clinic of the Emergency Clinical County Hospital from Tîrgu Mureş. All study subjects underwent bilateral inguinal hernia surgical repair. Based on the surgical approach, patients were selected and divided in two groups: a laparoscopy group (LG), which included 16 patients, and a conventional open group (COG) with 27 patients. In patients belonging to the LG, the surgery was performed according to the trans-abdominal preperitoneal procedure (TAPP) in all cases. Conventional open surgery was performed following the Lichtenstein or tension-free mesh plug techniques. In order to compare the two types of surgeries, clinical, intra-operative, and postoperative criteria were evaluated. From the clinical perspective, the patient groups were analyzed and compared based on gender, age, and type of hernia. For surgical assessment, the type of surgical procedure, type of applied mesh, duration of surgery and hospitaliza-

tion period, complications, and hernia recurrence were analyzed. Postoperatively, the acquired pain score, the existence of chronic postoperative pain syndrome, the time until returning to work and to normal physical activities were compared. Furthermore, the correlations between the type of surgical mesh and postoperative outcomes following the mentioned criteria: pain score, return to work, restart of physical activities were evaluated. The chronic postoperative pain syndrome and pain score were assessed applying the PainDetect Questionnaire. Data assembled from existing medical records for all patients included in this study was introduced and organized in Microsoft Excel. Statistical analysis of the parameters was performed using GraphPad InStat software, and the statistical significance of the study was set at a value of $p < 0.05$ with a 95% confidence.

RESULTS

The study followed 43 patients with bilateral inguinal hernia hospitalized in the Second Surgery Clinic of Tîrgu Mureş, between 2014 and 2017. The assessed clinical and surgical criteria are presented in Table 1 and Figure 1.

The distribution of patients by gender showed a majority of male patients for both study groups, 93.75% for the LG and 92.5% for the COG. The mean age in the LG was 43.8 years, while in the COG it was 63.4 years. A total of 16 patients underwent laparoscopic hernioplasty, while 27 patients benefited from a conventional open approach.

Laparoscopic surgery was performed using the TAPP procedure for all patients, while for open hernioplasty mostly the Lichtenstein (63%), but also tension-free mesh

TABLE 1. Clinical and surgical assessment

	Laparoscopy Group (LG)	Conventional Open Group (COG)
Number of patients	16 (37.20%)	27 (62.97%)
Gender		
Male	15 (93.75%)	25 (92.5%)
Female	1 (6.25%)	2 (7.5%)
Average age (years)	43.8	63.4
Surgical procedure		
Lichtenstein procedure	—	17 (63%)
Tension-free mesh plug procedure	—	10 (37%)
TAPP procedure	16 (100%)	—
Mesh type		
Prolene mesh	—	27 (100%)
Parietex mesh	9 (56.25%)	—
ProGrip mesh	7 (43.75%)	—

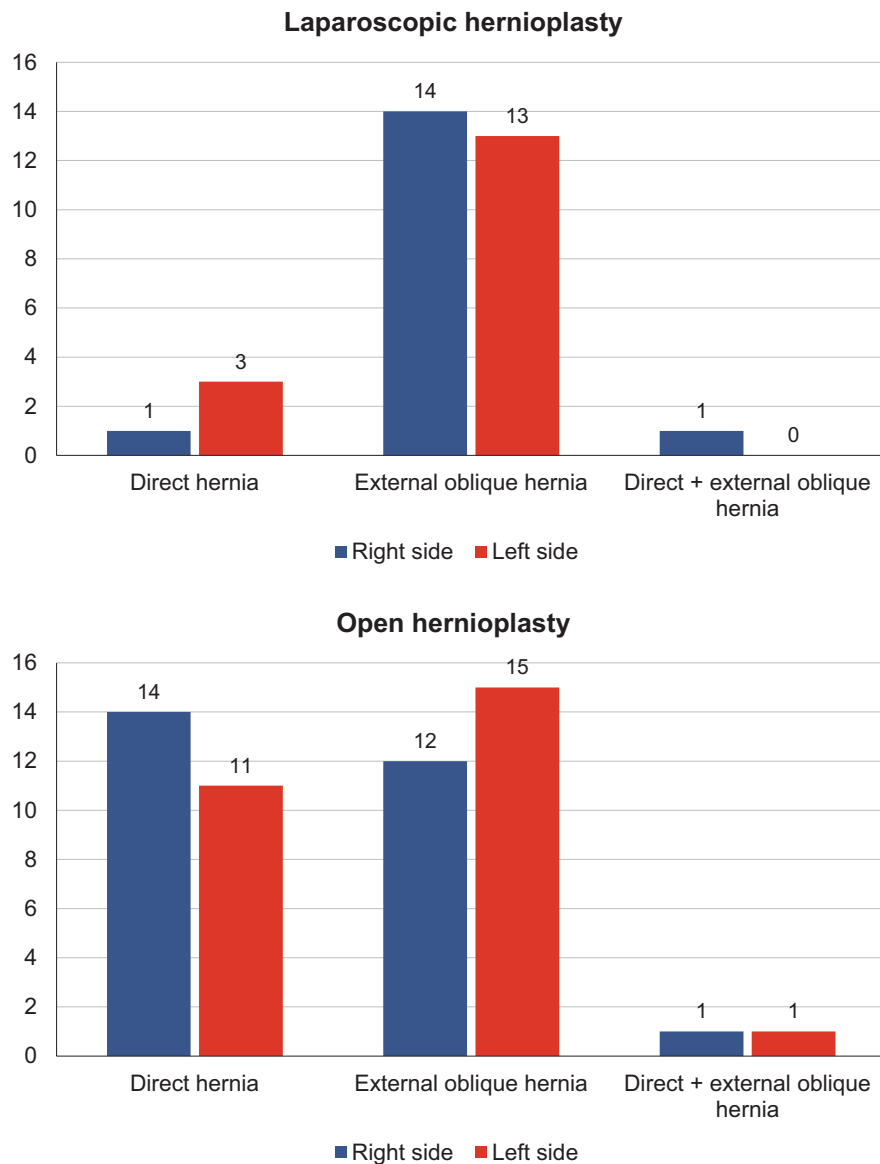


FIGURE 1. Types of hernias and surgical approach

plug (37%) techniques were used. Different mesh types were used to perform inguinal hernia repair: Prolene, Parietex, and ProGrip synthetic mesh. For open surgery, Prolene surgical meshes were used in all 27 cases. During laparoscopic hernioplasties, Parietex meshes were used in 9 (56.25%) cases and ProGrip meshes in 7 (43.75%) cases.

Regarding the types of hernias, we found a majority of external oblique hernias in both groups, totaling 54 hernias, followed by direct hernias in 29 cases. Complex hernias (simultaneous external oblique and direct hernia) occurred in only 3 cases.

The statistical analysis of data regarding intraoperative and postoperative outcomes in the two groups is presented in Table 2.

We observed that the duration of surgery was significantly longer for patients who underwent laparoscopic hernioplasty compared to the open procedure ($p = 0.017$). The average hospital stay was significantly shorter for the LG (3.43 days) compared to the COG (4.29 days) ($p = 0.030$). Postoperative complications existed in 2 cases from the LG (one case of surgical wound infection, and in one patient we observed a remaining palpable nodule in the surgical wound area), while in the COG there was a single complication, paresthesia surrounding the surgical wound in 1 case. Recurrence occurred in only 1 case for each type of procedure. Postoperative pain was significantly higher in patients in the COG ($p = 0.035$). Chronic postoperative pain syndrome was present in 2 cases in the COG and in

TABLE 2. Intraoperative and postoperative outcomes

	Laparoscopy Group (LG) n = 16	Conventional Open Group (COG) n=27	p value
Surgical intervention and immediate postoperative recovery			
Duration of surgery (minutes)	83.12	73.14	0.017
Hospital stay (days)	3.43	4.29	0.030
Complications	2	1	NS
Recurrence and postoperative pain			
Number of recurrences	1	1	NS
Pain score (mean)	4.87	7.03	0.035
Chronic postoperative pain syndrome	1	2	NS
Time until return to normal activity			
Return to work (weeks)	2.43	3.85	0.036
Restart of physical activities (weeks)	5.3	6.2	NS

only 1 patient in the LG. Patients who underwent laparoscopic bilateral inguinal hernia repair returned to work significantly earlier than patients in which the surgery was performed through a conventional procedure ($p = 0.036$). Furthermore, patients undergoing laparoscopic surgery resumed their physical activities earlier (5.3 weeks) compared to patients who were submitted to open surgery (6.2 weeks).

Table 3 presents the influence of mesh type on postoperative outcomes. The ProGrip mesh resulted in a lower pain score, an earlier return to work, and a quicker start of physical activity, in comparison with other mesh types used in the treatment of bilateral inguinal hernia.

DISCUSSIONS

The surgical treatment of bilateral inguinal hernias remains a matter of debate in many studies, the main questions being whether to carry out a single- or a two-staged operation, or if the surgical intervention should be through a conventional open approach or a minimally invasive procedure. This study focuses on the evaluation of the two surgical strategies, the major objective being a re-

flection on the advantages of minimally invasive surgery. When evaluating the duration of surgery, we observed that there was a significantly longer operation time for patients in the laparoscopic group, other authors reporting similar results.^{3,7,10-12} Furthermore, we observed a significantly shorter hospital stay in case of patients who underwent laparoscopic hernioplasty. These data are in accordance with other authors' reports.^{1,2,5,10,12,13} Data concerning postoperative complications and recurrence showed similar results for conventional open and laparoscopic procedures, recent studies publishing close results.^{1-3,5,8,10,12,13,15} Postoperative pain was significantly lower for patients in the laparoscopic group, similar results being found in other studies.^{1-3, 7,10,11,12,14} Also, we observed that patients who underwent laparoscopic surgery returned earlier to work and started physical activity (sports) earlier. Other studies reported comparable results.^{10-12,14} Comparing the surgical mesh types used for hernioplasty showed clear benefits for the ProGrip mesh appliance. The self-fixating mesh produced lower postoperative pain, earlier return to work, and earlier start of physical activity. Recent studies showed similar results.¹⁶

TABLE 3. The influence of mesh type on postoperative outcomes

Mesh type	Number	Pain Score	Start of work (weeks)	Start of sports/ physical activity (weeks)
Prolene	27 (62.79%)	6.92	3.7	6.22
Parietex	9 (20.93%)	5.33	2.44	5.55
ProGrip	7 (16.27%)	4.28	2.42	5.14

CONCLUSIONS

Although the minimally invasive technique requires a longer learning curve and a significant number of cases in order to achieve the maximum potential in repairing a bilateral inguinal hernia, the laparoscopic approach has proven major benefits for this type of surgical cases. The procedure allows a single surgical repair of both defects without additional incisions and offers better or at least similar results in comparison to the conventional open procedure. The present study shows that laparoscopic repair is a feasible choice for bilateral inguinal hernia, resulting in less postoperative pain, shorter hospital stay, earlier return to work and physical activities, and also similar recurrence rates with the conventional open procedure.

CONFLICT OF INTEREST

The authors declare no conflict of interests.

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