

Outpatient inguinal hernia surgery: A concept or a strategy

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Abstract

Introduction: An inguinal hernia is defined as the passage through the transversalis fascia of a peritoneal diverticulum (hernial sac) that may or may not contain visceral. Repairs for groin hernias are currently performed on an outpatient basis. This concept emerged at the beginning of the 20th century. Modern treatment should prioritise techniques that provide maximum post-operative comfort, a short recovery period, a low rate of recurrence or complications, and acceptable costs.

Methods: Descriptive retrospective study including 220 patients operated on for an inguinal hernia at our department, for surgical repair, using two surgical techniques: TEP Totally extraperitoneal repair of inguinal hernia under laparoscopy, Repair of inguinal hernia using the Lichtenstein technique via the classic inguinal approach.

Results: In our study, we note a clear male predominance (90%), due to the specific nature of our population. an average age of 39.5 years, risk factors are related to heavy lifting and physical exertion in 78% of patients. All patients who underwent (TEP) surgery were operated on under general anaesthesia, while all patients who underwent (Lichtenstein) surgery were operated on under spinal anaesthesia.

Discussion: Inguinal hernia is a complex surgical condition for which there is no consensus on certain aspects of repair, such as the optimal surgical approach, the type of mesh to use and the factors predisposing to post-operative pain. Minimally Invasive Surgery (MIS) has been shown to offer an equally safe and cost-effective option for inguinal hernia repair, even in cases of large defects, compared to open procedures. Numerous strategies aimed at reducing pain without altering recurrence rates have been described, with non-invasive fixation methods often considered the most feasible.

Conclusion: The treatment of inguinal hernias is evolving towards more sophisticated and less invasive techniques, tailored to the specific needs of patients. The future of hernia surgery involves continuous adaptation to technological advances and increased integration of outpatient surgery to optimise clinical and economic outcomes.

Received: Sep 16, 2025

Accepted: Oct 21, 2025

Published Online: Oct 28, 2025

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Cite this article: Boukhene M, Lamara A, Gadda M, Benyarbeh S, Medjahdi S, et al. Outpatient inguinal hernia surgery: A concept or a strategy. J Clin Med Images Case Rep. 2025; 5(5): 1813.

Introduction

An inguinal hernia is defined as the passage through the transversalis fascia of a peritoneal diverticulum (hernial sac) that may or may not contain visceral [1]. This fascia is weakened by congenital or acquired factors on the one hand, and by factors promoting abdominal hypertension on the other.

Repairs for groin hernias are currently performed on an outpatient basis. This concept emerged at the beginning of the 20th century, but it was not until the 1970s that it really began to develop, experiencing rapid growth in the 1980s, particularly in the United States and Great Britain [2]. Currently, this activity is expanding, reaching surgical treatment rates of 100% for certain conditions, particularly parietal pathology. In fact, some establishments have even chosen to eliminate dedicated inpatient services in order to operate on all of their patients on an outpatient basis.

Outpatient surgery is an organisational innovation with specific care requirements linked to a regulated length of stay of less than one working day.

Modern treatment should prioritise techniques that provide maximum post-operative comfort, a short recovery period, a low rate of recurrence or complications, and acceptable costs.

Methods

Descriptive retrospective study including 220 patients operated on for an inguinal hernia at our department between 1 January 2023 and 30 June 2025.

Patients diagnosed with unilateral inguinal hernia and eligible for surgical repair, using two surgical techniques:

- TEP and Lichtenstein
- TEP: Totally extraperitoneal repair of inguinal hernia under laparoscopy (100 patients).
- Lichtenstein: Repair of inguinal hernia using the Lichtenstein technique via the classic inguinal approach (120 patients).
- Patients were informed of the different phases of this treatment and of the possible complications that could require a change in surgical technique, a change in the mode of hospitalisation, or unscheduled hospitalisation.

Inclusion criteria

- Age: All patients over the age of 18.
- Diagnosis of uncomplicated primary inguinal hernia.
- Both sexes.
- ASA I, II, III, with stable medical condition.
- Informed consent of the patient for this type of treatment.
- Availability of a companion for the patient.
- Residence within one hour of the hospital (or 50 km).

Parameters evaluated

- Duration of the operation.
- Post-operative pain (assessed on a visual analogue scale).

- Recovery time and return to normal activities.
- Complication rate (infection, haematoma, seroma).
- Recurrence rate.
- Access to a telephone.

Results

In our study, we note a clear male predominance (90%), due to the specific nature of our population. An average age of 39.5 years, an average body mass index of 26.48 kg/m² in the majority of patients. Almost all of our patients (86.5%) have no particular medical conditions or history of illness. Risk factors are related to heavy lifting and physical exertion in 78% of patients, smoking in 61.5%, chronic constipation in 20% and chronic coughing in 15% of cases. Right-sided hernias were the most common (70%). All patients who underwent (TEP) surgery were operated on under general anaesthesia, while all patients who underwent (Lichtenstein) surgery were operated on under spinal anaesthesia. The external oblique form was more common in 139 patients (63%). The direct form was present in 49 patients (24.5%), and the mixed form in 32 patients (16%). The contents of the hernial sac consisted mainly of the omentum in 136 patients (68%). In contrast, the contents of the sac consisted of intestines in 84 patients (42%). The average duration of the surgical procedure for all patients was 48.36 minutes (53.5 min TEP versus 42.5 min Lichtenstein). 91 patients experienced postoperative nausea and vomiting (41.36%), which is related to the type of anaesthesia used. 59 patients experienced immediate post-operative pain, especially those who underwent laparoscopic surgery (30%). However, on day 15 post-operatively, pain was more common in patients who had undergone Lichtenstein repair (62%). Seven patients who underwent Lichtenstein surgery developed wall infections. Chronic pain three months after surgery was reported by 10 patients (8.33%) who underwent Lichtenstein repairs. 72 patients (32.72%) who underwent TEP surgery resumed physical activity on the third day after surgery, and 94% of patients who underwent TEP surgery resumed physical activity on the fifth day after surgery. In contrast, 92 patients (76.66%) in the second group resumed physical activity from the seventh day onwards. For the moment, there has been no recurrence and the overall satisfaction rate is at 84%.

Discussion

Inguinal hernia is a complex surgical condition for which there is no consensus on certain aspects of repair, such as the optimal surgical approach, the type of mesh to use and the factors predisposing to post-operative pain [3]. Minimally Invasive Surgery (MIS) has been shown to offer an equally safe and cost-effective option for inguinal hernia repair, even in cases of large defects, compared to open procedures [3]. Numerous strategies aimed at reducing pain without altering recurrence rates have been described, with non-invasive fixation methods often considered the most feasible.

In our series, the average age of patients was 39.5 years, which can be explained by the youthfulness of our population. This result has been observed in most series [4,6], where the average age varies between 42 and 59 years. As a general rule, there is no age limit for inguinal hernia repair, and age should not be a determining factor for outpatient surgery [5,7]. Work involving intense physical exertion increases the risk of inguinal hernia, as frequent exertion weakens the abdominal wall due to

repeated strain [8]. Risk factors that promote inguinal hernias, such as heavy lifting, coughing, prostatism and chronic constipation, are considered herniogenic and are recognised by most authors [9-11].

As observed in numerous randomised studies published to date, we found that the operating time for PET was longer than for open surgery [12,13]. Possible reasons for this increase include the complexity of the procedure and the need for general anaesthesia. According to Heikkinen et al. [14], the average operating time for patients undergoing inguinal hernia repair was 53.5 minutes for TEP versus 42.5 minutes for the Lichtenstein technique. The results of the various published series are very similar to ours, with an average operating time of 64.5 minutes for TEP versus 48.5 minutes for Lichtenstein.

Table 1: Duration of surgery.

Authors	TEP	Lichtenstein	P value
Lal et coll. [15]	75.7	54	<0.001
Heikkinen et coll. [14]	67.5	53	0,001
Bostanciet coll. [16]	58	35	<0.05
Liem et coll. [17]	45	40	<0.001
Vatanset et coll. [18]	58.6	54.7	/
Our study	53.5	42,5	0,683

Several studies indicate more complications after open surgery compared to laparoscopy, while other series show more complications after laparoscopic surgery than with conventional surgery [19]. A review of the literature revealed an overall rate of post-operative complications ranging from 3% to 39% [20]. Prevention of these complications relies mainly on careful dissection of the hernial sac, as well as respect for and a good understanding of the components of the spermatic cord and vessels in the region.

Neumayer et al. compared the results of repairs using the Lichtenstein technique with laparoscopic repair techniques and found that patients who underwent open surgery suffered significantly more often from early postoperative pain. In our study, the analysis of pre- and post-operative pain was refined by measuring pain intensity using a Visual Analogue Scale (VAS) assessment. A study of 10,008 patients undergoing outpatient surgery revealed an incidence of severe pain of 5.3% [21]. Some studies report up to 30% moderate to severe post-operative pain [22], which is similar to the results of our study with a rate of 29%.

Apfel [23] operated on 2,170 outpatients, identifying certain risk factors predictive of postoperative nausea and vomiting: female gender, age <50 years, history of nausea and vomiting, use of morphine derivatives, and operation duration >60 minutes. Some of these factors were also found in our study, which led to a 41.36% rate of postoperative nausea and vomiting. Compared with data in the literature, the rate of parietal infection varies between 2% and 6.9% [25-28]. Other authors have reported similar rates: KW Millikan [24], in the United States in 2003, observed 19 cases out of 1,056 (1.80%). According to a study conducted by A. Essah [29], a surgical site infection rate of 0.37% was observed in 13,627 patients who underwent outpatient surgery between 2012 and 2016 [30].

The rate of Unscheduled Consultations (USC), also known as unexpected consultations after discharge without readmis-

sion, varies in published series [20,31], with values ranging from 0% to 7.9%. In his study, Mattila K. [19] reported an incidence of postoperative nausea and vomiting of 23%, resulting in 2% of unscheduled consultations. The causes of UPSV in different series include pain, wall infections, nausea, vomiting, urinary retention and bleeding. These causes are similar to those found in our series.

Table 2: Unscheduled consultations.

Authors	Numbr of patients	USC %
AH. Engledow, 2007 [32]	31	0
A. Hanes 2016 [31]	113	0,8
K. Mattila 2011 [19]	45	7
M. Kurzer 2009 [20]	100	0
K. Fixot, 2013 [4]	42	5
Our study	100	4

Unplanned Hospitalisation (UH), also known as rehospitalisation after discharge, is defined as any unplanned hospitalisation within one month of surgery. The UH rate varies from 0% to 3.3% according to published series [31,33]. Causes of UAH include acute intestinal obstructions, severe abdominal pain, acute urinary retention, haematomas or surgical site infections, pulmonary embolisms, and various medical conditions such as myocardial infarction, atrial fibrillation, or Chronic Obstructive Pulmonary Disease (COPD) [35]. However, in the literature, the most common causes of NPH are haematomas [36,37], surgical site infections, bleeding (1.5% to 8%), and acute urinary retention (1.4% to 2%). These causes are similar to those found in our series.

Table 3: Unplanned hospitalisation

Authors	Numbr of patients	UPH %
KW. Millikan 2008 [87]	2038	1
A. Hanes 2016 [92]	113	0,8
K. Fixot, 2013 [55]	42	0
T.Callesen 2001 [74]	912 1,2	1,2
M.Gadda 2020 [65]	400	1
Our study	100	1

In several trials, TEP repair has been shown to result in significantly fewer days of work lost than open repair. Laparoscopic hernia surgery has also been shown to reduce post-operative pain, facilitating a rapid return to work. In our study, the average time to return to normal activity was 21 days, which is consistent with the data in the literature.

According to the International Association for Ambulatory Surgery (IAAS), patient satisfaction is an essential criterion for the overall effectiveness of outpatient surgery. It is essential to implement a questionnaire to assess patient satisfaction. Satisfaction generally varies between 89% and 96% [35,44]. According to S. Gaucher [46], between 89% and 96% of patients report being satisfied with their outpatient treatment. According to studies by Bain J [47] and Colin F [48], the patient satisfaction rate after day surgery is estimated at 95%. These results are consistent with those observed in our study, with a satisfaction rate of 84%. Outpatient care appears to be an excellent option. Patients mainly report discomfort on days 2 and 7 after outpatient surgery, as well as at 3 months, mainly due to pain and problems with surgical wounds [49].

Table 4: Recovery in activity.

Authors	TEP	Lichtenstein	P value
S.Zatir 2017 [39]	22(15-29)	/	/
Liem et coll 1997 [40]	14 (7 -21)	21(12–33)	0.001
Andersson et coll 2003 [41]	8 ± 5	11 ± 8	0.003
Merello et coll 1997 [42]	11^	26^	/
Heikkinen et coll [43]	12 (3–21)	17 (4–31)	0.01
Lal et coll 2003 [15]	12.8 ± 7.10	19.3 ± 4.30	<0.001
Our study	20,68	32,7	0,0001

Table 5: Satisfaction.

Authors	Number of patients	Satisfaction %
Dhumale R. 2010 [50]	1164	100%
Mattila K 2011 [19]	89	99%
Barros F 2008 [51]	160	89%
Callesen 2001 [33]	912	80,3%
Fixot. K, 2013 [4]	42	92%
Our study	100	87%

Conclusion

The treatment of inguinal hernias is evolving towards more sophisticated and less invasive techniques, tailored to the specific needs of patients. The future of hernia surgery involves continuous adaptation to technological advances and increased integration of outpatient surgery to optimise clinical and economic outcomes.

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