



A STUDY OF COMPARISON BETWEEN TYPES OF SURGICAL TECHNIQUES FOR THE TREATMENT OF INGUINAL HERNIA BASED ON POST OPERATIVE PAIN.

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ABSTRACT

Objective: To compare the intensity of postoperative pain between the surgical techniques Lichtenstein and transabdominal pre-peritoneal laparoscopy for the treatment of unilateral primary inguinal hernia

Materials and Methods: Total of 60 patients were included of which 30 were operated through the Lichtenstein technique and 30 patients through the transabdominal pre-peritoneal laparoscopy. The pain levels were evaluated through the analogue visual scale for 2, 10 and 30 days after the surgery.

Results: The pain levels were significantly lower for the patients operated through the transabdominal pre-peritoneal laparoscopy technique compared to the Lichtenstein technique. Furthermore, despite no recurrent hernias for both surgical techniques, 32% of patients operated through the Lichtenstein technique reported chronic pain and paresthesia 12 months after the surgery, compared with 3.6% of patients operated through the transabdominal pre-peritoneal laparoscopy technique.

KEYWORDS : Pain, postoperative; Visual analog scale; Hernia

INTRODUCTION:

Inguinal hernia surgery is one of the most performed medical procedures, with more than 20 million surgeries around the world annually (1, 2)

Nowadays, several surgical techniques are available for the treatment of inguinal hernia (3, 4, 5). However, two techniques are generally accepted as the best treatment options for inguinal hernia repair: the tension-free open Lichtenstein and the laparoscopic procedures (4). The choice of the more appropriate surgery was based on the rate of recurrent hernia. However, with the technological advances in surgical techniques, the rate of recurrent hernia is now very low regardless of the surgical procedure (7, 12). Therefore, other postoperative complications have been used to determine which surgery is more appropriate.

Postoperative pain is now recognized as one of the major problems related to inguinal hernia repair, as it affects directly the quality of life of patients (8, 16). There is, however, a lack of agreement in the literature, as to which inguinal hernia repair technique is the optimum in regards to postoperative pain and complications. There are studies that reported higher postoperative and chronic pain following the open Lichtenstein technique. On the other hand, many studies have described the laparoscopic inguinal hernia repair resulting in a lower incidence of postoperative pain, edema formation and an earlier return to normal activities than the Lichtenstein technique (3).

Therefore, the objective of this study was to compare the intensity of postoperative pain between the open Lichtenstein (LC) and transabdominal pre-peritoneal laparoscopy (TAPP) techniques for the treatment of primary inguinal hernia.

MATERIALS AND METHODS:

This was a prospective clinical study carried out at a tertiary teaching hospital in Maharashtra from 1st January 2013 to 31st December 2016. Overall, 60 patients were enrolled. The choice of surgical procedure was randomized, with the first 30 patients operated through the open LC technique and the 30 following patients operated through the TAPP technique. The inclusion criteria were: age between 18-70 years, Goldman surgical risk level I or II and the diagnosis of unilateral primary inguinal hernia. The exclusion criteria were: previous abdominal surgeries, not completing the postoperative following at any stage, urgent surgeries and additional surgical procedures such as umbilical herniorrhaphy, prostatectomy, cholecystectomies and other surgical

procedures. Among all patients, two were excluded from the LC group as they did not complete the 12 months postoperative and two from the TAPP group for not completing the 30 days postoperative examination. Data concerning gender, age, body mass index (BMI) and Nyhus classification of the hernia, as well as duration of the surgery, edema occurrence and pain medication use, were recorded for each patient.

All surgical procedures were performed by the same surgeon. The patients underwent standard routine preoperative examination including. All patients were discharged one day after the surgical procedure, with the exception of one patient that remained in the hospital for two days to drain a scrotal sac seroma. The pain intensity was evaluated through the visual analogue scale (AVS) for three postoperative days: 2, 10 and 30 after the surgery. The recurrence of the hernia, presence of chronic pain and paresthesia were also evaluated 12 months after the surgical procedure.

The information about postoperative pain was recorded by the patient two days after the surgery, and the surgeon performed the 10 and 30 days and 12 months follow-up and the 12 months follow-up after the surgery.

All statistical analyses were performed using the IBM SPSS Statistics software version 20

RESULTS:

Overall, from the total number of 56 patients, 51 were male and five female aged between 26-69 years. There were no significant differences in gender, age, BMI, and duration of the surgery between the patient groups (Table 1). There were, however, significant differences in the occurrence of edema and use of analgesic pain medication, where the LC technique promoted a higher incidence of these variables (Table 1).

The ANOVA demonstrated that the patients operated through the TAPP had pain levels significantly lower than the patients operated through the LC procedure ($p < 0.05$, Table 2a). There was no significant difference in the pain levels two days postoperative between surgical procedures ($p > 0.05$, Table 2b). After 10 days postoperative, the pain levels were significantly lower for the TAPP procedure (1.4 ± 0.2) compared to the LC procedure (2.8 ± 0.4) ($p < 0.05$, b).

The mean AVS pain levels were 3 ± 0.4 for the TAPP and 4 ± 0.5 for the LC technique (Figure 1).

DISCUSSION:

As we know that Postoperative pain is one of the major factors concerning the choice of a surgical technique for the repair of inguinal hernia. This study determined that patients subjected to the TAPP procedure presented significantly lower levels of postoperative pain compared to the LC, for 10 and 30 days after the surgery. Chronic pain and paresthesia were also present in a lower percentage on patients that underwent the TAPP procedure (3.6%) compared to the LC (32%). Additionally, for the TAPP surgical procedure, the edema incidence and the use of analgesic medication was significantly lower. However, no cases of recurrent hernia were reported for both techniques 12 months after the surgery.

In addition to the low recurrence rate, the Lichtenstein procedure may be performed in a shorter operating time and cost compared to laparoscopic procedures (4). There are, however, complications related to the open repair procedures, with postoperative pain regarded as one of the most important. Previous studies reported higher pain level for patients surgically treated with open techniques such as Lichtenstein (13). However, a large number of studies evaluated pain 48 h after the surgery, a period which patients are still under the effects of analgesics used on the anesthetics. In this study, the pain levels were also evaluated 10 and 30 days after the surgery, showing higher pain levels on these periods for the LC techniques compared to the TAPP technique. Thus, patients undergoing the laparoscopic procedure, in this and other studies, have reported lower rates of postoperative pain compared to the open techniques.

Chronic pain is defined as an AVS score above zero which lasts for more than three months after a surgical procedure and is described by patients as an ongoing awareness of pain. Chronic pain may be caused by nerve damage during surgery. It may also be related to the positioning of the mesh in the inguinal canal (16). In addition to lower short-term postoperative pain, the laparoscopic procedure used in this study promoted significantly lower chronic pain 12 months after the surgery compared to the open LC procedure, 3.6% and 32% respectively. Similarly, in another study, the level of chronic pain was two-times higher for patients that underwent the open Lichtenstein compared to laparoscopic TAPP technique¹ and was also lower for different laparoscopic techniques such as the total extra-peritoneal repair and transinguinal pre-peritoneal repair (8,9). The recurrence rate was, for many years, the main factor used to determine the surgical technique to repair inguinal hernias. The incorporation of the tension-free prosthetic mesh by Lichtenstein was the sole responsible for the significant decrease in the rate of recurrent hernia (2). This technique is considered the "gold standard" for inguinal hernia repair and is currently the reference worldwide. The Lichtenstein method reduced the recurrence inguinal hernia to less than 1%, independently of the level of expertise of the surgeon (3). In this study, none of the patients presented recurrent hernia 12 months after the surgery. Although 12 months, is a short time for the measurement of recurrence rate, longer term studies have found that the risk of recurrence is similarly low for both techniques after five years of surgery when a proper mesh size is applied (8, 14)

Conclusion: The TAPP technique promoted less postoperative and chronic pain. The laparoscopic procedure TAPP hernia repair was safe and reliable, with a similar recurrence rate to the open Lichtenstein repair. Additionally, the laparoscopic procedure showed clear advantages such as less postoperative and chronic pain, paresthesia and lower incidence of edema and use of pain medication. Therefore, the laparoscopic TAPP procedure should be considered as an appropriate approach for the surgical treatment of unilateral primary inguinal hernia.

TABLES:

1. Characteristic of patients, surgery and postoperative complications

Characteristics	TAPP	Lichtenstein	p
Age (years)	50.5	59	>0.05
Body mass index (kg/m ²)	27.3	25.8	>0.05
Duration of surgery (min)	64	60	>0.05
Number of patients (%)			
Total	28 (100)	28 (100)	
Male	25 (89.3)	26 (92.9)	>0.05
Female	3 (10.7)	2 (7.1)	>0.05
Side of hernia			
Left	13 (46.4)	15 (53.6)	>0.05
Right	15 (53.6)	13 (46.4)	>0.05
Nyhus Classification			
Type I	1 (3.6)	1 (3.6)	>0.05
Type II	7 (25)	7 (25)	>0.05
Type III			
a	12 (42.8)	11 (39.3)	>0.05
b	8 (28.6)	9 (32.1)	>0.05
c	0	0	
Postoperative complications			
Edema occurrence	6 (8.3)	26 (92.9)	<0.001
Analgesic administration	14 (50)	20 (71.4)	<0.001
Outcomes at 12 months			
Recurrence rate	0	0	
Local paraesthesia	0	9 (32.1)	<0.003
Chronic pain	1 (3.6)	9 (32.1)	<0.003

2. Overall and duration wise statistical results of the repeated measure ANOVA for the pain levels of patients subjected to inguinal hernia repair through the Lichtenstein (LC) and laparoscopic (TAPP) techniques

a.

Source	df	MS	F	p
Treatment	1	52.952	8.428	0.005
Error	56	6.283		

b.

Source	df	MS	F	p
2 days	1	14.414	2.673	0.108
10 days	1	28.677	8.475	0.005
30 days	1	11.918	4.872	0.031

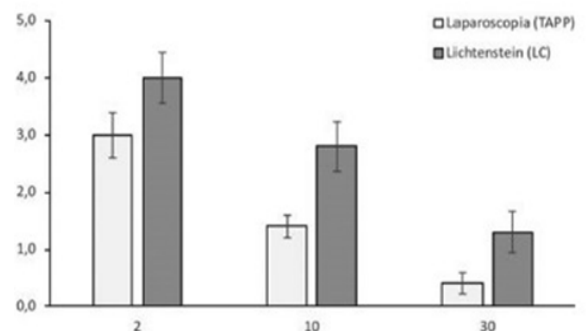


Fig.1: Pain level for LC and TAPP surgical techniques by VAS.

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