



## SURGICAL TREATMENT OF INGUINAL HERNIA IN NORTH AFRICAN PATIENTS, EXPERIENCE OF MARRAKESH MOROCCO

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### ARTICLE INFO

#### Article History:

Received 12<sup>th</sup> October, 2019

Received in revised form 23<sup>rd</sup>

November, 2019

Accepted 7<sup>th</sup> December, 2019

Published online 28<sup>th</sup> January, 2020

#### Key words:

Laparoscopic, TAPP, TEP,  
Lichtenstein, cure, inguinal hernia,  
Africa.

### ABSTRACT

**Objective:** To compare the Lichtenstein hernioplasty with a laparoscopic technique totally extra peritoneal (TEP) and transabdominal preperitoneal (TAPP) in treatment of inguinal hernias.

**Summary Background Data:** Only a few studies have compared an open and laparoscopic approach in treatment of inguinal hernia in Africa.

**Methods:** 670 patients undergoing surgery for inguinal hernia were retrospectively randomized into having either open or laparoscopic mesh repair. Pre, peri and postoperative factors were recorded in addition to 3 months to 4years follow-up data at the surgery control department. The patients were interviewed for recurrent symptoms. The primary end-points chosen were postoperative and chronic pain, resumption of professional activity and hernia recurrence.

**Results:** the middle age was 52.2 years, SEX ratio: 14.56. Preoperative factors were the same for the 2 groups such as (practicing tasks load, chronic cough... etc). Recurrence rates were 34 (5.07%) in the Lichtenstein group and 06(0.89 %) in the laparoscopic group, statistically not significant. postoperative pain was more prevalent in the Lichtenstein group (33 cases) compared with the laparoscopic group (03cases). Postoperatively, the Lichtenstein group needed more pain medication. Resumption of professional activity was estimated to 20 days for the two groups.

**Conclusions:** The laparoscopic techniques in the treatment of inguinal hernia were proven superior to the open mesh repair in several clinical aspects such as pain, recurrent hernia and resumption of professional activity.

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### INTRODUCTION

One of the commonly performed operations around the world is hernia repair, studies concerning this subject still rare in Africa. Various open and laparoscopic procedures are now available for their repair, and they are judged primarily by the recurrence rate after the operation. From a patient's point of view, prevention of recurrence is the most important factor with a quick return to work [1]. After the introduction of laparoscopic techniques, it was evident that the Lichtenstein procedure and the laparoscopic approach of treating primary inguinal hernias were equal in the means of recurrence [2,3]. The laparoscopic approach has been associated with less postoperative pain, shorter hospital stays, less chronic pain, and increased patient satisfaction [4-9]. However, few studies thus far have compared these methods in treating recurrent inguinal hernias. No difference has been found with regard to recurrences between Lichtenstein procedure and laparoscopic techniques, whereas some differences have been seen in other factors like the postoperative consumption of analgesics and the incidence of chronic pain. The aim of this study was to compare the Lichtenstein hernioplasty with laparoscopic techniques, totally extra peritoneal (TEP), transabdominal preperitoneal (TAPP) in treating inguinal hernias.

### METHODS

From January 2012 to January 2019 in UHC Mohamed VI of Marrakech Morocco, 670 patients having primary or recurrent inguinal hernias were enrolled in this study. The inclusion criteria were a unilateral or bilateral, primary or recurrent symptomatic inguinal hernia requiring operative treatment outside the emergency context. There were not exclusion criteria except Patients with a noninguinal hernia detected during surgery or the patient had other surgical problems in the inguinal area that required treatment. The patients were preoperatively divided into one of the 2 groups: the Lichtenstein group (LC) and the laparoscopic group (LG). Both laparoscopic and Lichtenstein procedures were performed by a general surgeons. The Lichtenstein hernioplasty (LC) was performed according to the original description of the technique. The laparoscopic TEP procedure was performed as described by M.beck [10]. TAPP was performed as described by A.valverde [11]. The mesh used during surgery was a polypropylene nonadsorbable mesh. The mesh was attached with stitches in all Lichtenstein procedures. In the LG the mesh fixation was not systematic only 8 patients were concerned by mesh fixation (TAPP, TEP). all patients have benefited from prophylactic antibiotherapy. General

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anesthesia was used with the LG, and the Lichtenstein procedure was performed under spinal anesthesia. After the surgery, all patients were treated at the general surgery department. Patients were discharged from the hospital after being able to walk, eat, urinate, and their postoperative pain was treated by oral analgesic. The patients were summoned to surgical control 2 weeks after surgery. This visit was scheduled to the surgeon who operated the patient. In our study all patients were followed for period of 1 to for 4 years. During these visits, the primary points of interest were pain in the inguinal region and hernia recurrence. The patients were then examined by a different surgeon. The patients were interviewed about chronic pain and self-reported recurrence. The preoperative factors recorded included basic demographic data and comorbidities, previous abdominal and hernia surgery. The variants recorded perioperatively in the operating room included the type of procedure, operating time, type of anesthesia (spinal or general), and any problems occurring in anesthesia or surgery. Postoperative variants included duration of hospital stay, the consumption of analgesics, duration of sick-leave, and any postoperative problems or complications. Primary complications included infections and formation of hematomas or seromas. Late complications included recurrence and chronic pain. The prevalence of late complications was evaluated during the early visits at the surgery control department. The total follow-up time was calculated based on the last visit. The differences between laparoscopic and open approaches seemed very close based on the percentages presented in the literature. Therefore, we decided to include patients during a 7-year period. Ethical values were respected during our study by respecting confidential informations for all patients.

**Statistical Methods:** Data analysis was performed by excel 2010 software. All variables were expressed in standard deviation (SD).

## RESULTS

Our study included 670 cases; there were 629 patients in the Lichtenstein group (LC), 32 TAPP and 9 TEP in the Laparoscopic group (LG), which were analyzed (Table 1). The mean age of the patients was 52.2 years; SEX ratio: 14.56 with no statistically significant difference between the study groups. Patients with load tasks factors were 124 in LC and 9 in the LG, Medical and surgical Comorbidities were recorded as described in (Table2, 3), the number of recurrent hernia was estimated at 40 cases, six among these cases were treated by laparoscopic technique, operation duration was estimated at 60 min (55-71 min) in TAPP group, 75 min (62-89min) in TEP group and 45 min in Lichtenstein group. In the analysis of anesthesia form associated with the technique used is explained by the original study setting (see Methods). Problems with visibility or difficult dissection owing to peritoneal perforation led to conversion from laparoscopic to open approach in 8 operations, 6 among these operations were in TEP group and 2 in TAPP group. Mean duration of postoperative time at ward was 2.53 days in the LG and 3.6 days in the LC with short statistically difference between groups. During the hospital stay, in our series, most patients have gradually resumed their activity after about 20 days on average. One patient in the LG presented seroma which reabsorbed in 3 weeks, 2 others suffered from hematoma which been reabsorbed during 2 weeks after surgery; we reported Immediately postoperative pain as a mean visual analogical

scale (VAS) score, on a scale from 1 to 10, there no difference between the LG and the LC; VAS was equal to 2.75 (0.5 - 5). All the patients during our study benefited from prophylactic antibiotherapy and analgesic treatment; the most common reason for this was a prophylactic measurement against operatory site infections. Also, the need for pain medication during the hospital stay was smaller and statistically significant in the LG compared with the LC. The total follow-up time was 4 years with no difference between the groups. During the follow-up, 2 recurrent hernias were detected in the laparoscopic group the first one was in the TEP group after 2 months; the second one was in the TAPP group after 6 months, both of these patients were treated by open surgery (Lichtenstein cure); 8 recurrent hernias were observed in Lichtenstein group, all the patients from the last group were treated by open surgery. Chronic pain in the inguinal region was more prevalent in Lichtenstein group at 4 years follow-up compared with laparoscopic group (1.19% versus 0.44%, respectively).

## DISCUSSION

The results of our study show that the laparoscopic approach inguinal hernia is superior to the Lichtenstein hernioplasty in several important aspects affecting patient satisfaction. Patient characteristics were heterogeneous regarding both sex and age of 48 studies that reported the sex of the population, 23 included men only. Across the 48 studies, 97.6 % of the population were men in the laparoscopic group, and 97.8 % in the open group, in our study 93.6 per cent were men in the Lichtenstein group and it was equal to 90,2 % in the laparoscopic group. The mean or median age of study participants was reported in 51 studies, and ranged from 23.6 to 65.4 years [12], that median age rejoins our study which was equal to 52.2 years. In our series, the conversion from laparoscopic surgery to open surgery involved: 2 cases of accidental peritoneal rupture in the TEP group. 8 cases of conversion to open surgery according to the Lichtenstein technique among these cases, 6 belonged to the TEP group and 2 to the TAPP group. This conversion has always been related to a hernia bag very adherent to the wall and cord difficult to dissect. Moreover, no other intra-operative complication has been reported in our series, in particular, no haemorrhage, no visceral or vasculo-neural lesions. According to this comparison made between the series Romaine [13], Indian [14], French [15] and our series, it can be deduced that the conversion was higher in the TEP group. This also joins the results of the Felix *et al* [16], Cohen *et al* [17] and Khoury *et al* [18] series, thus the data from the Cochrane Database Review [19]. The patients in both groups were operated on by the same 5 experienced consultants in general surgery. The groups are also easily comparable to the general population because the study groups were consecutively patients referred from the consulting center of surgery. Laparoscopic hernia repair caused significantly less pain than open repair in the postoperative (0-2 weeks), acute (over 2 weeks and within 6 months), early chronic (6 months to 1 year) and later chronic (over 1 year) time intervals. Although the definition of chronic pain varies in the literature, this result correlates with findings of other meta-analyses comparing laparoscopic and open techniques[20,21]. Regarding postoperative pain, when VAS pain scores were compared, a significant advantage was found for the laparoscopic group. However, analysis of studies comparing dichotomous variables showed no significant

difference, in our study there no difference between the LG and the LC; VAS was equal to 2.75 (0.5 - 5). Pain or neuralgia has been difficult to define and, therefore, the aspect of chronic pain or neuralgia has been omitted in many studies. In our study, the patients in the laparoscopic group experienced the same postoperative pain as Lichtenstein group. Twenty-nine studies [12] (50 per cent) reported time taken to return to work; 5543 patients were enrolled in the open repair group and 5118 in the laparoscopic repair group. The crude mean time to return to work was 10.9 (range 2–27) days after laparoscopic repair and 16.8 (5–27) days after open repair, it was 20 days in our study. There were 8 recurrences in the Lichtenstein group and 2 in the laparoscopic group, comparing theses results to literature data, Forty-six studies [12] reported hernia recurrence as an outcome. There were 7991 hernias included in open repair and 7614 in laparoscopic hernia repair. The crude mean rate of recurrence was 3.9% in the open group and 4.4 % in the laparoscopic group, after a mean follow-up of 35.4(29.3) (range 1–120) months. Meta-analysis showed no significant difference in recurrence rates across all time points.

**Table 1** Laterality of hernia in laparoscopic group

Seat	laterality	TAPP	TEP
Unilateral inguinal hernia	Right	15	5
	Left	6	1
Bilateral inguinal hernia		4	1
Unilateral scrotal inguino hernia	Right	4	1
	Left	1	0
Bilateral scrotal inguino hernia		1	0
Femoral hernia	Right	0	1
	Left	1	0
<b>total</b>		<b>32</b>	<b>9</b>

**Table 2** medical comorbidities

Medical comorbidities	Laparoscopic group	Lichtenstein group
Chronic cough	2	24
Asthma	0	04
Chronic constipation	2	18
Prostatic hypertrophy	0	26
Diabetes	0	12
Smoking	0	31
Obesity	0	45
Dysuria	0	04
<b>TOTAL</b>	<b>4</b>	<b>164</b>

**Table 3** surgical comorbidities

Surgical comorbidities	Lichtenstein group	Laparoscopic group
Laparotomy	41	00
Obstetric surgery	15	00
Prostatic hypertrophy	02	01
Groin surgery same side	01	00
Groin surgery controlateral side	01	00
Cataract	01	01
Cholecystectomy	01	00
Umbilical hernia	01	01
Sciatica	01	01
Breast adenoma	01	01
Knee fracture	01	01
Chestbase lipoma	01	00
Lithiasis of the maxillary gland	01	00
<b>TOTAL</b>	<b>68</b>	<b>06</b>

The postoperative consumption of analgesics was also with no difference [12]. The authors feel, however, that an open approach may not be good enough when considering several important aspects affecting the patient’s satisfaction and performance in daily activities. The limitation of this study is

the small number of subjects in laparoscopy group comparing to Lichtenstein group.

**CONCLUSION**

These types of studies are still rare in our continent of Africa; we are in need of other studies in this direction to develop even more this question. In this study, there was a tendency towards fewer recurrences using the laparoscopic approach compared with the open Lichtenstein hernioplasty. Also, in the laparoscopic group, there was less chronic pain and discomfort in the inguinal region during follow-up. During the early postoperative period, the consumption of analgesics was lower. Therefore, in our opinion, laparoscopic hernia repair is the method of choice in treating inguinal hernias.

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**How to cite this article:**

Mohamed.Ghassane.Rachid, Taoufik.Sadok, Youssef.Narjiss and Ridouan.Benommar.Benelkhaiat (2020) 'Surgical Treatment of Inguinal Hernia In North African Patients, Experience of Marrakesh Morocco', *International Journal of Current Medical and Pharmaceutical Research*, 06(01), pp 4931-4934.

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