

## Original Research Article

# Surgical sequale of transabdominal preperitoneal approach versus Lichtenstein open repair in a rural setting

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**Received:** 14 June 2021

**Revised:** 14 July 2021

**Accepted:** 16 July 2021

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### ABSTRACT

**Background:** The objective was to compare the perioperative outcomes of transabdominal preperitoneal approach (TAPP) versus Lichtenstein tension (open) free repair for adult unilateral uncomplicated inguinal hernia patients (including both direct and indirect hernias).

**Methods:** The prospective study was conducted between July 2018 to August 2020. A total of 60 patients, 30 in the Lichtenstein tension free repair group and 30 in the TAPP repair group data were collected and analysed.

**Results:** The mean age was 55 in our study. On comparing open versus TAPP, significant difference of p value  $\leq 0.05$  was observed in terms of surgical site infections, time to discharge, time to return to work and mesh related pain in TAPP. Operative time was shorter in open group.

**Conclusions:** Laparoscopic transabdominal preperitoneal repair is a valid alternative to open traditional method with lesser morbidity to the patients.

**Keywords:** Hernia, Laparoscopic repair, Open repair

### INTRODUCTION

Inguinal hernias are one of the most common conditions encountered by a general surgeon, owing to their high lifetime risk of 27% in men and a prevalence of 47% above the age of 75. Inguinal hernias have been identified and a wide variety of treatment modalities have been proposed and attempted dating back to the bronze age.<sup>1,2</sup> In the modern era, Lichtenstein tension free repair is considered to be the standard treatment modality. Laparoscopic methods such as the TAPP repair, have been proven to be safe, effective and reliable but have not been proven to be invariably better than the traditional Lichtenstein tension free repair.<sup>3</sup> The objective of the present study was to compare the outcomes (operating time, surgical site infections, time to discharge, time to return to work, mesh related pain and recurrence) of

TAPP and Lichtenstein tension free repair for adult unilateral uncomplicated inguinal hernia patients (including both direct and indirect hernias).

### METHODS

Adult patients presenting with inguinal hernia (including both direct and indirect hernias) to Vinayaka Mission's Kirupananda Variyar medical college and hospitals, Salem between July 2018 to August 2020. A total of 60 patients, 30 in the Lichtenstein tension free repair group and 30 in the TAPP repair group. It was a prospective COHORT study. The inclusion criteria was criteria men (18+ years) patients with unilateral inguinal hernia (including both direct and indirect inguinal hernias) Nyhus classification types I, II, IIIA and the exclusion criteria was patients with recurrent hernias, complicated

hernias (strangulation, obstruction), women, patients who were medically unfit or high risk for surgery (ASA class III and above) and patients with previous lower abdominal surgery or trauma.

The sample size was calculated using a formula that showed that 30 or more patients should be enrolled.

The following formula was used to calculate the sample size,

$$N = \frac{z^2 pq}{d^2},$$

where,

N=sample size,

Z=standard normal variate value=1.96 (95% confidence interval),

p=prevalence of VD deficiency in stone patients (33.7% according to Elkoushy et al),<sup>10</sup>

q=100-p,

d=allowable error (5-20% of p).

### RESULTS

All of the participants in our study were men. Our study population included 5 (8.3%) patients in the 18-34 year range, 6 (10%) patients in the 35-44 year range, 14 (23.3%) patients in the 45-54 year range, 20 (33.3%) patients in the 55-64 year range, 11 (18.3%) patients in the 65-74 year range and 4 (6.7%) above the age of 75 as shown in Table 1 and 2.

The average length of open surgery was 61 minutes. The average length of a TAPP repair was 77 minutes. P value for this finding is <0.001 as shown in Table 3.

In open surgeries, patients were discharged, on average, 7.6 days after the day of surgery. In TAPP surgeries, patients were discharged, on average, 3.9 days after surgery. P value for this finding is <0.001 as shown in Table 4.

**Table 1: Distribution of patients by age.**

Age (in years)	Number	Open	Lap
18-34	5	2	3
35-44	6	2	4
45-54	14	7	7
55-64	20	10	10
65-74	11	7	4
75+	4	2	2

**Table 2: Standard deviation, mean and median age.**

Mean	Median	Standard deviation
55.97	58	14.09

**Table 3: Average and median surgery time.**

Type	Average surgery time	Median surgery time
Open	61	59
TAPP	77	79

**Table 4: Average and median time to discharge.**

Type	Average time to discharge (in days)	Median time to discharge (in days)
Open	7.6	8
TAPP	3.9	4

**Table 5: Time to return to work (in days).**

Type	Time to work (in days)
Open	31.1
TAPP	20.3

**Table 6: Recurrence rates after 6 months.**

Type	Recurrence (%)
Open	0.00
TAPP	6.67

**Table 7: Variance of pain over time.**

Type	1 month	3 months	6 months
Open	1.43	1.23	0.9
TAPP	0.23	0.2	0.17
Overall	0.83	0.72	0.53

Patients took an average of 31.1 days after open surgery, and 20.3 days after TAPP to return to work. P value for this finding is <0.001 as shown in Table 5.

There were no recurrences in the open group while there were 2 (6.7%) in the TAPP group 6 months after surgery. P value for this finding is 0.16 as shown in Table 6.

Reports of chronic pain and their severity decreased over time. At 1 month post operatively, the open group had an average reported value of 1.43, TAPP group at 0.23. At 3 months, it was 1.23 for the open group and 0.2 for the TAPP group. At 6 months it was 0.9 for the open group and 0.17 for the TAPP group. This is a significant decrease for the open group with p=0.0002. The TAPP repair group also showed a decrease in pain from 0.83 to 0.53. However it is not a significant finding as the p value is 0.16 as shown in Table 7.

**DISCUSSION**

Inguinal hernias are one the most commonly encountered surgical cases. Lifetime prevalence of the disease goes up to 47% in elderly male patients above the age of 75.<sup>4,5</sup> Furthermore, management is almost always surgical in nature, with conservative management largely reserved for patients unfit for surgery.

Management of inguinal hernias has evolved significantly over the centuries, from the crude herniotomy with orchiectomy performed in ancient times, herniorrhaphies through most of the 20th century and finally to prosthetic mesh based repairs from the late 20th century to now.<sup>6-8</sup> Laparoscopic repair was popularized at the beginning of this century and is becoming more common.<sup>9</sup>

Lichtenstein tension free repair, the most popular open prosthetic repair can be performed under local or regional anesthesia, a significant advantage over laparoscopic procedures.<sup>10,11</sup> It is also a cheaper and shorter procedure than a laparoscopic procedure.<sup>12-14</sup> These factors are conducive to performing the procedure as a day care procedure, though we did not do so in our patients as they tend to be from rural areas at significant distances from

our hospital and tend not to be able to travel back to the hospital quickly if complications occur.

However, the open procedure increased the risk of hematomas and seromas.<sup>15-18</sup> Furthermore, patients undergoing the open procedure took longer to be discharged on average.<sup>19</sup> More disturbingly, a very significant portion of patients, up to 63%, developed chronic pain postoperatively.<sup>20</sup> This also probably explained the longer periods of rest that patients required postoperatively before they can return to their occupations. This of special interest to us gave the demographics of our patients, who happened to be poorer patients from rural areas and financially less secure.

The laparoscopic TAPP repair required general anesthesia and took longer to perform than an open surgery. This might be because of surgeon experience and might change as more surgeons were trained in the procedure but was borne out in current studies.<sup>21</sup> The need for laparoscopic instrumentation also increased the cost of the surgery but with falling costs of instruments, they were still viable alternatives to open surgeries even in cost sensitive environments like in our hospital and more generally, in the Indian scenario. Further, patients who underwent TAPP were able to return to work much earlier and this might offset at least part of the increased cost of surgery.<sup>22</sup>

In our own center, our patient population was typically rural, often performed physical labor and tended not to have disposable income. Many patients found a significant disruption in their occupations to put undue strain on their finances. Our own findings suggested that patients were able to return to work far sooner after TAPP repair when compared to open surgery. The present had its own limitations that included smaller sample size, entirely male patients and sample selection.

**CONCLUSION**

To conclude, TAPP repairs have been established as safe and effective. We cannot definitively declare one procedure to be better than the other as each procedure has its own advantages and disadvantages. However, an

individual patient might benefit more from one procedure than the other. Thus, we recommend that TAPP repair should be considered wherever possible and should be presented as an option to patients.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Nair CC, Karthikeyan EMJ, Dhyaneswaran KV, Selvaraj N. Surgical sequele of transabdominal preperitoneal approach versus Lichtenstein open repair in a rural setting. *Int Surg J* 2021;8:2341-4.