

## Original Article

## Frequency of Seroma with or without Drain after Totally Extra-Peritoneal Laparoscopic Hernioplasty

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### Abstract

**Objective:** To compare the frequency of seroma with or without drain after totally extra-peritoneal laparoscopic hernioplasty

**Methods:** This Randomized Controlled Trial was done at Department of Surgery, Jinnah hospital, Lahore. Total 90 patients fulfilling the inclusion criteria were selected from outpatients Department. Then patients were divided in two groups by using lottery method. In group A, drain was placed after TEP. In group B, no drain was placed after TEP. All surgeries were performed by a single surgical team under general anesthesia with assistance of researcher. Then patients were shifted in post-surgical wards for 24 hours. After 24 hours, patients were discharged and followed-up in OPD for 7 days. After 7 days, wound site was evaluated and if blood or pus was present at wound or port site, then seroma was labeled. Patients who developed seroma were managed as per hospital protocol.

**Results:** Mean age of patients was 41.20±12.21 and 41.15±12.33 years. Seroma formation was significantly higher in Group-B patients i.e. Group-A: 6.7% & Group-B: 24.4%, p-value=0.020. Frequency of seroma was less in Group-A patients as compared to Group-B in all age group of patients but it was not statistically significant. Frequency of seroma was less in Group-A patients as compared to Group-B in all BMI groups of the patients i.e. Normal, Overweight and Obese and it was not statistically significant for all three groups.

**Conclusion:** It is concluded that seroma formation was lower in drain group than with no drain after totally extra-peritoneal laparoscopic hernioplasty. This technique was proved safe, as it was not associated with major morbidity or recurrence.

**Key words:** Seroma, Drain, Totally extra peritoneal, Laparoscopic Hernioplasty

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### Introduction

A complex spectrum of weakness is formed due to bilateral inguinal hernia in myopectineal orifice region.<sup>1</sup> Inguinal hernia is the most common type of hernia. More than 70% of all hernias are inguinal type.<sup>2</sup> The main sign of inguinal hernia is presence of hump in scrotum or inguinal region that persistently exacerbates during strains and exercise. Almost 15% of adult population suffers from inguinal hernia and its repair is most frequently preferred method globally.<sup>3</sup> The internal oblique fascia should be repaired with an open on-lay mesh, according to Lichtenstein in 1986. This was said during the age of mesh repairs without tension.<sup>2</sup>

Laparoscopy has been considered the standard method to repair hernia.<sup>4</sup> Endoscopic totally extra-peritoneal

(TEP) is the perfect method and can be perfectly conceded with least problems with minimal rate of recurrence.<sup>5</sup> Seromas following endoscopic TPE are still common to observe in inguinal hernia repair. This limiting factor restrains endoscopic TPE technique particularly in difficult inguinal hernia cases.<sup>6</sup> Fluid drainage during hernia repair is mostly performed using surgical drains purposely to avoid complications. Use of drains following hernia repairs are taught traditionally. More than half of the inguinal hernia repair cases are inserted with drains. Though, element of uncertainty is there on beneficence or harms of drains to the patients.<sup>7</sup>

Seroma formation was lower significantly in the drain group (0.75%) compared with the non-drain group (15.1%) (p<0.001).<sup>7</sup> Another trial also showed that

incidence of seroma in draining vs. non-draining group of general hernia was 2.87% vs. 9.85 % ( $P < 0.05$ ).<sup>8</sup> Without drain, 5.7% patients developed seroma after laparoscopic TEP. While with drain, seroma was developed on 0.67% cases after laparoscopic TEP.<sup>9</sup>

The rationale of the study to compare the frequency of seroma with or without drain after TEP laparoscopic hernioplasty. Through literature, it has been observed that drain can help in reduction of seroma after TEP. But there is no local evidence available in this regard, which could help us in determining the reliability of drain after TEP. Thus, this study to get local evidence so that in future we will be able to implement the results of this study in local setting and know whether to apply drain after TEP in patients of inguinal hernia or not. This will help to improve our practice and also reduce the burden of hospital by reducing number of seroma and complications.

## Methods

This randomized controlled trial was conducted 26-6-2018 to 26-12-2018 from Surgery Department, Jinnah Hospital Lahore. Sample size of 90 cases; 45 cases in each group is calculated with 80% power of study, 95% confidence interval & taking expected percentage of seroma i.e. 0.75% with drain and 15.5% without drain after TEP for inguinal hernia repair. Male patients of age 20-60 years undergoing TEP for inguinal hernia (confirmed cases of inguinal hernia diagnosed on basis of ultrasound findings) as a bulge in groin, the cough reflex and findings confirmed on ultrasonography) were included. Patients with recurrent inguinal hernia or with diabetes, hypertension, renal disease, liver disease, anemia, Obstructed or strangulated hernias were excluded from the study.

The demographic information like age, BMI and duration of hernia was obtained. Then patients were divided randomly in two groups by using lottery method. Drain was added after TEP in Group-A. In group B, no drain was placed after TEP. All surgeries were performed by a single surgical team under general anesthesia with assistance of researcher. Then patients were shifted in post-surgical wards for 24 hours. After 24 hours, patients were discharged and followed-up in OPD for 7 days. After 7 days, wound site was evaluated and if blood or pus was present at wound or port site, then seroma was labeled (as per operational definition). Patients who developed seroma were managed as per hospital protocol. All the data was through a pre-designed proforma (attached).

Data was entered in SPSS version 20. Age, BMI and duration of hernia was calculated as mean & SD. Seroma was calculated as frequency & percentage. Chi-square test was applied to compare seroma in both groups taking

$p$ -value  $\leq 0.05$  as significant. Data was stratified for age, BMI & duration of hernia. Following stratification, the chi-square test was used to compare the two groups in each stratum, with a  $p$ -value of 0.05 being considered significant.

## Result

Total 90 cases were involved in the study and underwent surgery. The mean age of patients in drain group  $41.20 \pm 12.21$  and in no drain group was  $41.15 \pm 12.33$  years. The mean duration of Hernia in drain group was  $10.16 \pm 4.11$  and in no drain group was  $11.96 \pm 4.84$  months. In drain group, 11(24.4%) cases & in no drain group, 9 (20%) cases had normal BMI. In drain group, 15(33.3%) cases & in no drain group, 23 (51.1%) cases were overweight. In drain group, 19 (42.2%) cases & in no drain group, 13 (28.9%) cases were obese. Table: 1 Seroma formation was significantly higher in Group-B patients i.e. Group-A: 6.7% & Group-B: 24.4%,  $p$ -value=0.020. Table: 2

**Table 1:** Descriptive of Age, Duration of Hernia & BMI in Treatment Group

		Drain	No Drain
<b>Age</b>	In years	$41.20 \pm 12.21$	$41.15 \pm 12.33$
	<b>Duration of Hernia</b>		
	In months	$10.16 \pm 4.11$	$11.96 \pm 4.84$
<b>BMI</b>	Normal	11 (24.4%)	9 (20%)
	Overweight	15 (33.3%)	23 (51.1%)
	Obese	19 (42.2%)	13 (28.9%)

**Table 2:** Comparison of Seroma Formation in Treatment Group

		Drain	No Drain	P value
<b>Seroma</b>	<b>Present</b>	3 (6.7%)	11 (24.4%)	0.020
	<b>Absent</b>	42 (93.3%)	34 (75.6%)	

## Discussion

Laparoscopic inguinal hernia procedure was associated with a less incidence of wound infection, a fast return to regular activities or job as well as a lower prevalence of chronic pain following surgery.<sup>10,11</sup> The dissection of a direct hernia sac is a fairly straightforward procedure, however seroma following laparoscopic surgery occurs frequently, and the risk of recurrence is larger when the defect is large.<sup>10,12</sup> Seroma formation during a laparoscopic operation is difficult to prevent, especially with huge defects. An exudate forms between the fascia and the subcutaneous fat layer as a result of the inflammatory reaction, which is a step in the healing of a lesion. The majority of seromas are asymptomatic and go away after 3–6 months.

Al Campenelli et al.<sup>13</sup> pointed out that the size of the

area occupied by the hernia determines seroma production rather than the type of mesh and fastening techniques. The main cause of seroma formation after the hernia sac is reduced is fluid, that is still trapped between the prosthetic mesh & the transversalis fascia. Even while most seromas have no effect on recovery, they can occasionally leave surgeons unsure of whether they are dealing with a seroma or a recurrence; in addition, some seromas are large and uncomfortable and may take longer to be absorbed.<sup>14</sup> The most common causes of conversion in TEP is peritoneal tears, which also put patients at risk for developing small intestinal adhesions. If preperitoneal space is lost, it could be necessary to use a different method. With no increase in the risk of infection, seroma formation can be prevented by using a closed suction drain.<sup>15</sup>

Infected superficial wound (5 %). Seroma & scrotal edoema are common side effects following inguinal hernia laparoscopic treatment, with a reported frequency ranging from 1.9 - 11.7%.<sup>16</sup> Where as in our study frequency of Seroma in drain group was 6.7% while in no drain group it was 24.4% which is higher as compared to the above mentioned study. A closed-suction drain can be used to reduce the risk of seroma formation without increased risk of infection. Hisham 2017 indicates that suction drain 14F has always been utilised to reduce hematoma collection and to remove any excess gas from the scrotum & preperitoneal area.<sup>17</sup>

Kockerling et al., reported in their study Seroma accounted for the maximum proportion of post-operative complications a highly difference significantly was detected in relation to Drain & no drain group. These findings are similar to our study, there was Significant difference in relation to drain and no drain group as the p-value was significant. (p-value=0.020).<sup>18</sup> The results discussed above also show the potential value of drain insertion in seroma prevention.(5) Multivariable analysis results show a trend for a drain to play a protective function in lowering seroma production after TAPP.

Shehla et al.,<sup>19</sup> after TEP repair, a closed suction drain was employed in the preperitoneal space & the drainage was subsequently removed 24 hours later, additionally, they stated that the drain might significantly lower seroma frequency while lowering infection risk. They significant difference in the drain and no drain their findings were similar to the findings of our study.

Inversion & staple fixation of the Cooper's ligament's lax fascia transversalis was described by Li, Junsheng et al. as a technique that decreased the frequency of seroma formation following direct inguinal hernia surgery performed laparoscopically.<sup>20</sup> When the staple is inserted

in Cooper's ligament, there is a risk of probable vascular or nerve injury, which could result in chronic pubic bone pain.<sup>21</sup>

## Conclusion

The conclusion of the study that seroma formation was lower in drain group than with no drain after totally extra-peritoneal laparoscopic hernioplasty. This procedure was shown to be safe because there were no side effects or recurrences associated with it.

**Conflict of Interest:** *None*

**Funding Source:** *None*

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