ORIGINAL ARTICLE

Comparison of Seroma Formation With and Without Drain in patients Undergoing Laparoscopic Totally Extraperitoneal Mesh Hernioplasty

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ABSTRACT

Aim: To comparing the frequency of Seroma formation with and without drain placement in patients undergoing laparoscopic totally extraperitoneal mesh hernioplasty for inguinal hernia.
Methodology: A Randomized Controlled study conducted at Surgical unit III, Services hospital Lahore from Jan 2014 to Jan 2018 after approval from hospital ethical committee. A total of 74 patients who fulfilled the selection criteria were enrolled in the study. Patients were randomly divided in two groups by using lottery method. In group A, patients underwent totally extraperitoneal mesh hernioplasty with drain placement and in group B, patients underwent totally extraperitoneal mesh hernioplasty without placing a drain. Follow up of patients was done in OPD for 4 weeks post operatively for the clinical evaluation of seroma formation at surgical site. All the data was entered and analyzed through SPSS 26.
Results: Over all there were 73 (98.64%) male and 1(1.35%) female cases with higher male to female ratio. In group A there were 37(100%) male and no female cases while in group B there were 36(97.29%) male and 1(2.70%) female cases. Among patients in group A, 2(5.7%) had seroma and in group B 14(37.83%) had seroma. In group A 35(94.59%) cases and in group B 23(62.16%) cases had no seroma formation..
Conclusion: We concluded drain placement at surgical site significantly reduces postoperative seroma formation after laparoscopic totally extraperitoneal mesh placement in inguinal hernia.
Keywords: Inguinal Hernia, Laparoscopic Hernia Repair, Mesh, Seroma

INTRODUCTION

Inguinal hernia is a common surgical problem. Hernioplasty is considered as one of the best procedure for inguinal hernia repair. Mesh hernioplasty for inguinal hernia is one of the commonest procedures performed in general surgical wards. Use of mesh increases the wound related complications[1]. Inguinal canal is a potentially weak area of abdominal wall favoring the development of hernia and one who has sound knowledge of anatomy of this region can do a perfect repair[2]. Hernioplasty for inguinal hernia is one of the commonly performed procedure in general surgical wards. More recently, the world has moved wards minimally invasive approaches towards the management of inguinal hernias. Laparoscopic and robotic approaches are being increasingly used these days with at least similar results[3]. Totally extra-peritoneal (TEP) mesh repair is a recent and safe technique for hernioplasty with acceptable rates of morbidity and now it is procedure of choice for management of recurrent and bilateral inguinal hernias in expert hands and also use as alternative to open mesh hernioplasty for uncomplicated (incomplete and reducible) inguinal hernia[3].

These days, the main goals of inguinal hernia repair are maximum postoperative comfort and minimal rate of postoperative complications along with minimal recurrence[4]. Among laparoscopic mesh hernioplasties, TEP is an effective alternative to open surgery, providing less postoperative pain, hospital length of stay and early return to work[4]. Generally TEP requires three skin incisions for placement of three trocars in the midline or in triangulation. The role of drain placement is controversial[5].

Incidence of seroma after laparoscopic mesh hernioplasty is around 5%-25%. It commonly occurs after repair of large indirect hernias and most of them resolve within 4-6 weeks[6]. Seroma formation can be avoided by minimizing dissection of the hernial sac from the cord structures, fixation of the direct sac to pubic bone and fenestration of transversalis fascia in direct hernia[6]. Placement of drain can be considered in case of excessive bleeding or extensive dissection. One international study showed that incidence of seroma formation in drain group was 2.87% and in no drain group was 9.85%[7].
Current study was designed to compare the frequency of seroma formation with and without drain in patients undergoing TEP in local setup. Literature has shown that seroma may form without drain placement and its incidence can be decreased with the placement of drain. This study can help to improve our practice and we can get local evidence and that can be implementing the more appropriate method in future.

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MATERIAL AND METHODS

This randomized Controlled Trial was conducted in the Department of General Surgery, Services hospital, Lahore from January 2014 to January 2018. Sample size was74 cases; 37 cases in each group (Drain vs No Drain). Sampling technique
Used was non-probability, consecutive sampling

Inclusion criteria

Patients of age 30-70 years of either gender presenting with inguinal hernia of size of >2cm undergoing TEP under general anesthesia with ASA I & II.

Exclusion criteria

- Morbidly obese patients having BMI >35kg/m^2
- Patients with systemic problems like DM (BSR>200mg/dl), HTN (BP≥140/90mmHg), deranged LFTs (AST>40IU, ALT>40IU), deranged RFTs (creatinine>2gm/dl).
- Obstructed (incarcerated hernia can cut off blood flow to part of intestine on USG) or strangulated hernias (can lead to the death of the affected bowel tissue on USG)
- Patients with abnormal bleeding profile (PT>15sec, aPTT>20sec, INR>2)

Data collection Procedure: After approval from hospital ethical committee, patients who fulfilled the selection criteria were enrolled in the study from floor of General Surgery, Services Hospital, Lahore. Informed consent was taken from each patient. Demographic details (name, age, gender, BMI and type of hernia) were also obtained. Then patients were randomly divided in two groups by using lottery method. In group A, patients underwent TEP with drain and in group B, patients underwent TEP without drain. All surgeries were done under general anesthesia. After surgery, patients were shifted in surgical wards and were discharged from there. Then patients were followed-up in OPD for 4 weeks. Wound site was evaluated and seroma formation was labeled if present (Seroma formation was labeled if there was accumulation of fluid below the wound incision within 4 weeks after surgery assessed clinically). All the data was entered and analyzed through SPSS for MAC version 26. Mean and standard deviation was calculated for the quantitative variables like age, weight, height and BMI. Frequency and percentage were calculated for the qualitative variables like gender and seroma formation. Both groups were compared using Chi-square test. Data was stratified for age, gender and BMI to control effect modifiers. Post-stratification, chi-square test was applied with p-value ≤ 0.05 was taken as significant.

RESULTS

The mean age in drain and without drain group was 46.59 ± 11.08 years and 50.05 ± 12.15 years with minimum and maximum ages as 30 and 70 years respectively. Over all there were 73 (98.64%) male and 1(1.35%) female cases with higher male to female ratio. In drain group there were 37(100%) male and no female cases while in without drain group there were 36(97.29%) male and 1(2.70%) female cases. The mean weight, height and BMI in drain group was 84.22±9.8kg, 1.68 ± 0.09 m and 29.85 ± 2.27 while in no drain group was 81.49 ± 11.13 kg, 1.69 ± 0.08 m and 28.48±3.91 respectively. In patients with drain there were 2(5.7%) patients with seroma and in patients without drain, 14(37.83%) had seroma formation. Thirty-five(94.59%) cases with drain and 23(62.16%) cases without drain had no seroma formation. The frequency of seroma formation was significantly lower in group A as compared to group B, p-value 0.0007

Table -1: Descriptive Statistics of Age, weight, Height and BMI in both study groups

		Mean	S.D	Min.	Max.
Age (years)	With drain	46.59	11.08	30.00	70.00
	Without drain	50.05	12.15	30.00	70.00
	Total	48.32	11.61	30.00	70.00
Weight	With drain	84.22	09.80	68.00	108.00
	Without drain	81.49	11.13	58.00	105.00
	Total	82.85	10.46	63.00	106.50
Height	With drain	1.67	0.09	1.53	1.90
	Without drain	1.69	0.08	1.56	1.90
	Total	1.68	0.085	1.54	1.90
BMI	With drain	29.85	2.27	25.53	34.91
	Without drain	28.48	4.21	20.33	34.92
	Total	29.16	3.24	22.93	34.91

Table -2: Comparison of Seroma formation in drain and no drain group

Seroma	Study groups		P-value
	With drain	Without drain	
Yes	2(5.4%)	14(37.8%)	0.0007
No	35(94.6%)	23(62.2%)	

DISCUSSION

Laparoscopic hernia repair has all the benefits of a tension free hernia repair surgery. Laparoscopic Total Extraperitoneal Hernioplasty is one of the most common procedure now performed for inguinl hernia with lesser risk of comorbidity and is recommended by European Hernia society Guidelines. [8-9]

Seroma is one of major concern after total extraperitoneal repair (TEP) laparoscopic inguinal hernia repair. In literature reviews, the reported range of seroma formation after TEP repair is 0.5 -12.2%[10] commonly encountered in early postoperative time; in the first week postoperatively the incidence is as high as 37.9%[11]. Around 80% of the seromas spontaneously disappear within 3 months[12]. The dissection of preperitoneal space, presence of mesh, existence of remaining fluid in hernial sac during surgery and presence of potential dead space behind the mesh are the possible factors that act together leading to a seroma formation after laparoscopic mesh hernioplasty[13]. The reported incidence of seroma formation after TEP is around 15%[14].

Fluid collection at the inguinal region may mimic early hernia recurrence and cause psychological distress to patients[14]. Many techniques in literature have been described to minimize the incidence of seroma formation in perioperative period like use of drains, pressure dressings, use of sutures and fibrin glue but none have been shown to

be 100% effective[15]. In most situations, seromas subside spontaneously or with conservative management, until or unless patient complaints about it[15].

A study published in 1980, first reported the drainage after inguinal hernioplasty and it was shown to be highly effective in a randomized controlled trial, particularly in cases of complicated open hernia repair[16]. Contrary to this Rodrigues and his collegues came out with the results that drainage was not useful after Stoppa procedures, but the sample size of study was too small to draw some valid results out of it[17]. Another study also failed in proving the importance of drain placement in their randomized controlled trial. So placement of drain was never considered to be a routine practice for open inguinal hernioplasty[18].

A recent randomized controlled trial evaluated the outcomes of preperitoneal closed-system suction drainage in laparoscopic totally extraperitoneal (TEP) hernioplasty for inguinal hernia. The overall incidence of clinical seroma formation was 25.6% on postoperative day 1, 60.3% on postoperative day 6, 13.2% on day 28 days and 0% on day 196 postoperatively[19]. Preperitoneal drainage after TEP can be considered as an option to improve patient satisfaction and recovery specially in patients with extensive dissection or in those with excessive bleeding during procedure which may associate with higher chance of seroma formation. In current study, in the drain arm 2(5.7%) had seroma and in patients without drain 14(37.83%) had seroma. 35(94.59%) cases with drain and 23(62.16%) cases without drain had no seroma formation. The frequency of seroma formation was significantly lower in group A (with drain) as compared to group B (without drain), p-value 0.0007.

In year 2014, a retrospective research carried out on 478 cases of inguinal hernia in which TEP was done was undertaken from March 2009 to March 2014, including 321 cases with drain and 157 without drain. The results demonstrated that the incidence of seroma was observed in 8.79 % patients out of 478 cases. Seroma formation was seen in 13 and 29 in drain group and no drain group respectively (4.05 vs. 18.47 %, $P<0.05$[20]. These findings are almost similar to findings of current study.

Similarly, another study conducted to assess the effects of closed suction drain in preperitoneal space on seroma formation after laparoscopic totally extraperitoneal repair[21]. A closed suction drain-12G was put through the midline incision and removed within 24 hours of operation in TEP. The results were compared with a group with TEP without any drain. The results showed that seroma formation was significantly lower in the drain group (12/1607; 0.75%) compared with the no drain group (22/146; 15.1%) ($P< 0.0001$)[21]. These findings are also in favor of using the drain.

Guidelines by International Endo-hernia Society (IEHS) and the European Association of Endoscopic Surgery (EAES) seroma formation is a common occurrence after laparoscopic groin hernia repair. It is advisable that patients should be explained before surgery for possibility of seroma formation to prevent anxiety in perceiving it as recurrence generally.[22, 23]

CONCLUSION

Through the findings of this study we can conclude that using drain can reduce wound related complications such as seroma formation. So, preperitoneal drainage after TEP can be considered as an option to improve patient outcomes.

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