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INGUINAL HERNIOPLASTY;
LAPAROSCOPIC TEP WITH & WITHOUT DISSECTION BALLOON

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ABSTRACT… Objective: To compare laparoscopic TEP Inguinal hernioplasty with & without dissection balloon. **Study Design:** Observational study. **Setting:** Minimal Invasive Surgical Centre Jamshoro and General Surgical Department at Dow University Hospital, Ojha Campus Karachi. **Period:** May 2011 and Dec 2012. **Subjects and methods:** Twenty (20) male patients with uncomplicated unilateral or bilateral inguinal hernia were prospectively randomized in two groups; group A Commercially available dissection balloon & group B. Telescopic dissection for creating TEP working space. **Results:** We had 20 male patients for this study. The average age was 43.6 & ranging between 17 to 64 years. Only 2 patients 10% had bilateral groin hernia, 4 patients 40% had direct inguinal hernia in group A & 5 patients 50% had direct hernia in group B. Peritoneum was breached in 5 (50%) patients with telescopic dissection. One patient (10%) with bilateral groin hernia in group B had large tear in peritoneum converted to TAPP while other group normal. The incidence of scrotal edema/seroma was greater in group B then group A. 40% patient in group B developed seroma while 0nly 1 (10%) patient with bilateral groin hernia in group A developed seroma. Pain was scored on VAS at 1 & 4 hours after surgery was higher in group B. The mean operation time was 55 min (45-100) in the group with the balloon and 73 min (50-120) in the group without the balloon (p = 0.004). **Conclusion:** TEP laparoscopic inguinal hernia repair is probably the best option amongst the two techniques used in laparoscopic inguinal hernia repair & dissection with balloon is though costly but more helpful in dissection & safer.

Key words: Inguinal hernia, laparoscopic repair, TAPP-Trans abdominal pre-peritoneal. TEP-Total extra peritoneal.

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INTRODUCTION

The debate over the inguinal hernia repair started in the surgical community from the time it was conceived.[1] Hernia surgery is most common operation performed in general surgery.[2] The post operative pain, discomfort , recovery period & return to normal daily life is long in open tension – free hernia surgery with mesh.[3] Quite a few different tension free techniques have been developed[4-8], & use of mesh is increasing.[9-11] Lichtenstein procedure is the most common tension – free mesh repair performed globally.[12] The laparoscopic procedure for inguinal hernia repair was first performed by Ger[13]. Total extra peritoneal (TEP) inguinal hernia repair was developed due to reports of bowel injuries, high recurrence rates in 1993 by McKernan and Laws.[14] The total extraperitoneal procedure (TEP) combines the advantages of tension free mesh reinforcement of groin with those of laparoscopic surgery, reduces post operative pain & recovery time, while avoiding the need for a trans abdominal preperitoneal (TAPP) approach.[15] In total extraperitoneal procedure (TEP) hernia repair, access to preperitoneal space is achieved with a disposable dissection balloon, telescope blunt dissection. The mechanisms of inguinal hernia recurrence after laparoscopic repair have been studied vastly and are related mostly to technique.[16-19] The cost of laparoscopic inguinal hernia repair is high mainly due to two main factors a) disposable dissection balloon b) mesh fixation device. We present a small comparative study for laparoscopic total extraperitoneal procedure

(TEP) inguinal hernia repair with disposable dissection balloon & without balloon for creation of extraperitoneal working space.

PATIENTS AND METHODS

This was observational study & was conducted at Minimal Invasive Surgical Centre Jamshoro and General Surgical Department at Dow University Hospital, Ojha Campus Karachi, from to May 2011 and Dec 2012.

This study consist on 20 patients admitted through the outpatient department, as well as from casualty department between May 2011 and Dec 2012 .Patient with congenital groin hernia were excluded in this study & also any patient with long standing scrotal hernia were excluded from this study. Patients with unfit for general anaesthesia & previous open surgery for prostate were also excluded. Twenty (20) male patients with uncomplicated unilateral or bilateral inguinal hernia were prospectively randomized in two groups; group A Commercially available dissection balloon & group B. Telescopic dissection for creating TEP working space. All patients had general anesthesia with propofol as induction agent. Position of the patient on the table was supine, urinary catheter placed & arm on the hernia side abducted, while opposite arm adducted. Surgeon standing on the opposite side of hernia. Two important land marks anatomically in the extra peritoneal space were the primary targets to achieve with dissection 1) Pubic bone as pearly white solid Structure in the mid line caudally & 2) inferior epigastric vessel of hernia side-as long tubular(somewhat Bluish/black) structure running cranially .

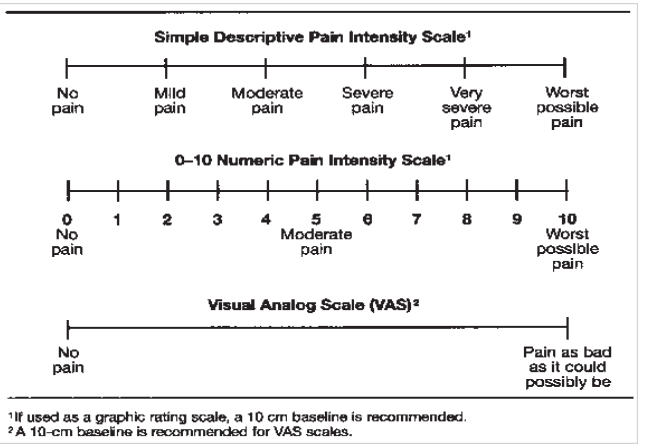
RESULTS

We had 20 male patients for this study. The average age was 43.6 & ranging between 17 to 64 years. Only 2 patients 10% had bilateral groin hernia, 4 patients 40% had direct inguinal hernia in group A & 5 patients 50% had direct hernia in group B. Working space creation in extra peritoneal area was very satisfactory in almost all cases with disposable balloon with clear anatomical delineation, while same is not correct for about 40% of cases where telescopic dissection was used. Peritoneum was breached in 5 (50%) patients with telescopic dissection. One patient (10%) with bilateral groin hernia in group B had large tear in peritoneum converted to TAPP. No patient in group A was converted into TAPP. The incidence of scrotal edema/seroma was greater in group B then group A. 40% patient in group B developed seroma while 0nly 1 (10%) patient with bilateral groin hernia in group A developed seroma. Pain was scored on VAS at 1 & 4 hours after surgery was higher in group B.

The mean operation time was 55 min (45-100) in the group with the balloon and 73 min (50-120) in the group without the balloon ($p = 0.004$). There was no difference between them in postoperative morbidity, and there were no major complications in either group.

Number of Patients	TEP With Balloon (n-10)	TEP Without Balloon (n-10)
Type of Hernia		
Direct	4	5
Indirect	6	5
Combined	3	1
Mean Hospital Stay	12hours	1.2 day
Number of Hernias	13	11

Table-I. Type of hernias



DISCUSSIONS

The groin swelling has been treated without surgery, by external compression (application of truss) before the surgery was started as treatment option for such swellings in the history & even in some instances today. Then came the modern era of medical science, which brought the scientific understanding of such conditions i.e. groin swelling classified according to the anatomical

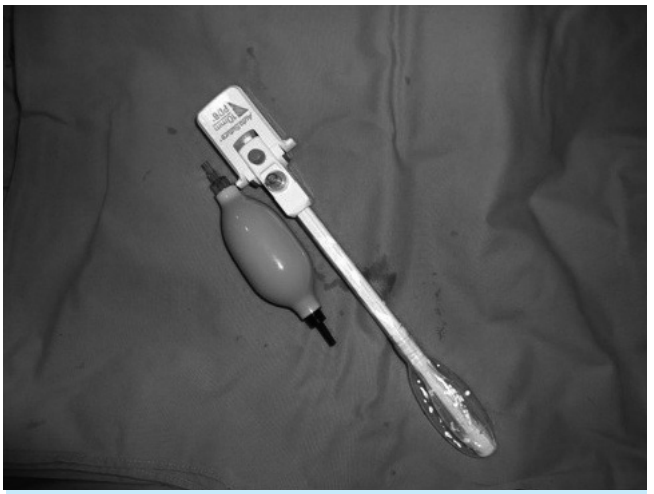


Fig-1. Dissection Balloon& pump without inflation

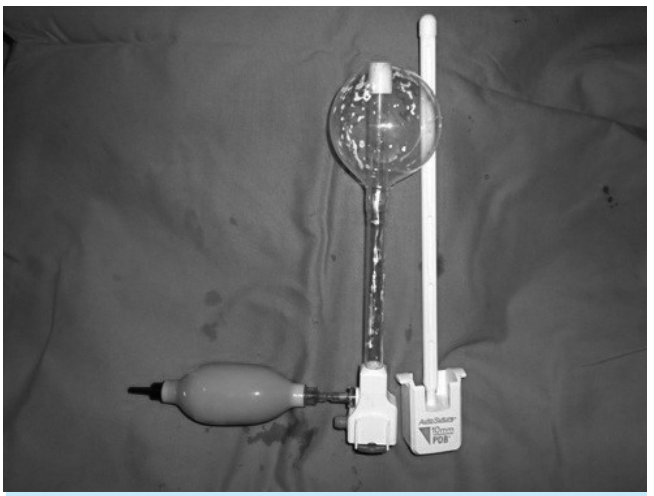


Fig-2. Dissection Balloon & pump with inflation

structures (lipoma, lymph node swelling, vessel aneurysm & hernia-direct/indirect/femoral/ obturator). This anatomical knowledge provided the bases for the development of historically renowned open techniques for inguinal hernia repair named after the surgeons who developed, practiced & taught them to the rest of the surgical community. The Darrning, Bassini & Shouldice are the three most common open inguinal hernia repair methods are being practiced still today both in developed & under developed world. The tension free repair of inguinal hernia with the use of synthetic mesh, Lichtenstein procedure most common in use now a day is still standard practice all over the world.[12] Laparoscopic inguinal herniorrhaphy was first described by Ger, Schultz, Corbitt, and Filipi in the early 1990s.[20-23] A learning curve of at least 40 cases is necessary to reduce the rate of complications & recurrences.[24] Inguinal hernias repair by laparoscopic method is one of the best methods available to treat this so common disease. TEP is also probably the best laparoscopic option. Laparoscopic hernioplasty has been criticized because of its technical complexity, cost & long learning curve.[25-28] Dissection in the extraperitoneal space in TEP repair was good with commercially available disposable dissection balloon. Pain was significantly low at 6 hour & 24 hours post operatively with balloon dissection then without balloon dissection in the extrperitoneal space for inguinal hernia laparoscopic repair. Balloon dissection was also associated with very low incidence of hematoma or seroma formation. There was no difference between balloon dissections or without balloon dissection in the extra peritoneal TEP repair at 1 month & 2 month interval fallow up. The cost of surgery for TEP laparoscopic inguinal hernia is higher with balloon & specially in under developed world. This can be reduced by developing in house balloon with two fingers of a sterile glove, but the disadvantage of this technique is the loss of visibility of dissection area. With commercially available dissection balloon the surgeon controls the dissection area and also visualizes the inferior epigastric vessel, which is important for two reasons a) demarcation for direct & indirect inguinal hernia b) main bleeding vessel during the dissection for creating working space in the extra peritoneal area. Balloon dissection is considered useful for the beginner. Balloon dissection is very useful in training the young surgeon. The use of a dissection balloon in TEP reduces the conversion rate and may be especially beneficial early in the learning curve. The use of a dissection balloon in TEP reduces the conversion rate.

CONCLUSION

Though the number of patients in this study is small to have real impact on decision making of TEP repair of inguinal hernia with balloon or without balloon, & use of commercially available disposable dissection balloon increases the operation cost of laparoscopic TEP inguinal hernia repair but it has suggested fallowing statements

a) reduces the operation time **b**) reduces the conversion rate to TAPP or open repair **c**) good for learning laparoscopic inguinal hernia repair **d**) beneficial for training young upcoming surgeons. **e**) less painful. We suggest that multicenter study is conducted and large scale results are published so that a standard procedure is adopted as protocol for laparoscopic TEP inguinal hernia repair is established.

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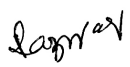
2	Prof. A. Razzak Shaikh	Critical revision of the article for important intellectual content	
3	Dr. Ahmed Khan Sangrasi	Critical revision of the article for important intellectual content	
4	Prof. Noshad A Shaikh	Drafting of the article	
5	Dr. Ubedullah Shaikh	design and Statistical expertise