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LAPAROSCOPIC HERNIOPLASTY;

LAPAROSCOPIC TRANSABDOMINAL PREPERITONEAL MESH HERNIOPLASTY AN INITIAL EXPERIENCE AT KHYBER TEACHING HOSPITAL.

Mohammad Zarin[1], Maryam Alam Khan[2], Muhammad Asim Khan[3], Syed Asad Maroof Shah[4]

1. MBBS, FCPS
Associate Professor
Department of General Surgery
MTI, Khyber Teaching Hospital,
Peshawar.
2. MBBS, FCPS
Senior Fellowship
Queen Elizabeth Hospital,
Birmingham University, UK.
3. MBBS
Resident General Surgery
Department of Surgery,
MTI, Khyber Teaching Hospital,
Peshawar.
4. MBBS, FCPS
Assistant Professor
Department of General Surgery
MTI, Khyber Teaching Hospital,
Peshawar.

Correspondence Address:
Dr. Mohammad Zarin
General Surgery Department
MTI, Khyber Teaching Hospital,
Peshawar.
drmzareen@yahoo.com.uk

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ABSTRACT… Objectives: To study the outcome of Laparoscopic Transabdominal Pre Peritoneal Mesh Repair in our local setup. **Design:** Observational study. **Place & Duration of Study:** Surgical E Ward, Khyber Teaching Hospital, Peshawar. **Patients & Methods:** One year from June 2014 to June 2015; both male and female were included in the study. Initial 50 cases were included in this study. All the data was entered and analyzed by SPSS version 20.0. **Results:** There was only one female (2%) and 49 males (98%). With mean age of 36.46 ±14.53 years, right sided hernia was more common than left, indirect hernia was more common than direct. The mean duration of surgery was 62.05± 15.42 minutes. The mean length of hospital stay was 3.34 ± 0.5days. Mean VAS at 24 hours post operatively was 2.70 ±1.05 which was reduced to 1.24 ± 0.43 at 1 week follow up. Wound complications were negligible and there was zero recurrence at 3 month follow up. **Conclusion:** Due to its excellent post-operative profile and patient satisfaction TAPP procedure for inguinal hernia repair is an ideal intervention in expert hands.

Key words: Endotacker, Inguinal Hernia, Laparoscopy, Trans-abdominal Pre Peritoneal Mesh Hernioplasty.

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INTRODUCTION

Inguinal hernia is by far the most common pathology encountered in surgical practice, it is also the most vastly researched surgical procedure with countless methods of repair. Approximately 75% of all abdominal wall hernias are seen in the groin.[1]

Inguinal hernia is much more common in men than women. Indirect hernia is more common in young while direct hernia in the elderly.[2]

Historically speaking, the main treatment for inguinal hernias consisted of repositioning the hernia with trusses or using 'softening agents' such as warm herbal baths and moist bandages. Surgical resection or cauterization, often combined with hemi-castration, was only considered for cases of strangulated hernia. Bassini is acknowledged for laying the foundations of modern inguinal hernia operation in 1888.[3]

Bassini's repair was a gold standard for a long time but due to excessive tension on the tissues and suture line; further tissue techniques namely the Mc Vay, Darning repair, Shouldice repair, Desarda etc were developed over time.4[1] As synthetic mesh repairs are now considered superior over "non-mesh" repairs due to lower recurrence rate thus Lichtenstein's tension free mesh hernioplasty developed in 1984[5,6] is the current gold standard method as declared by the American College of Surgeons, National Institute of Clinical Excellence [NICE] from UK and the National Agency for Accreditation and Evaluation in Health [ANAES] from France.[7,8,9]

With the advent of minimal invasive laparoscopic surgery, based on the concept introduced by Stoppas's posterior pre peritoneal repair, surgeons began using laparoscopy for hernia repair. Three techniques are currently in practice including the transabdominal preperitoneal repair (TAPP), the intraperitoneal onlay mesh repair

(IPOM) and the totally extra-peritoneal repair (TEPP).[10] The Transabdominal Pre Peritoneal Mesh Repair was first introduced by Ralph Ger in the 1990's[11]; being a minimally invasive procedure, TAPP repair is being gradually adopted globally for better patient outcome. Although currently the percentage of laparoscopic repairs is very low as compared to open surgery even in developed countries like Japan, UK, Canada and Germany and Japan ranging from 1 %, 4.1%, 15% and 30% respectively[12,13,14,15] due to its promising prospects it will soon be "the gold standard" in herniology.

Most randomized studies comparing TAPP to Lichtenstein's open repair have mentioned the advantages (reduced postoperative pain, earlier return to work) and disadvantages (increased cost, lengthier operation, steeper learning curve, higher recurrence and complication rates early in a surgeon's experience).[16,17]

TAPP has also established some ground in Pakistan, studies by Mehmood et al and Nadim et al. showed superiority of TAPP over Lichtenstein's repair with lesser post operative pain, wound infection and hospital stay.[18,19]

The aim of our study is to determine the early outcome of TAPP as a new minimal invasive procedure in our setup in terms of postoperative pain, length of hospital stay, complications, recurrence and establish its usage as an acceptable alternate to open inguinal hernia surgery.

METHODS AND MATERIALS

This was prospective study conducted on patients who presented to Surgical OPD of Khyber Teaching Hospital symptoms of inguinal hernia subsequently confirmed by clinical examination and ultrasonography. This study was conducted over a period of one year from June 2014 to June 2015; both male and females were included in the study. Initial 50 cases were included in this study. Informed Consent was taken from all the patients. The study was approved by the ethics committee of the hospital.

The inclusion criteria was patients with primary inguinal hernia (unilateral/bilateral) (direct/indirect), American Society of Anesthesiologist's class I (ASA I) and those willing to participate in the study after a written informed consent. Patients with irreducible or obstructed hernia, those with previous history of abdominal surgery, those with recurrent hernias and those unfit for pneumoperitoneum due to cardiac or pulmonary causes were excluded from the study.

The procedure was performed by consultant surgeons with a case experience of at least 100 laparoscopic repairs. All patients were operated under General anesthesia using 3 ports technique, a 4th or 5th port was inserted in cases with difficult dissection. The 10 mm optical port was inserted below or through the umbilicus. Two working 5 mm ports were inserted in the mid clavicular line at the level of the umbilicus with slight alteration according to the side of hernia. Pneumoperitoneum was created with carbon dioxide up to a pressure of 12 mmHg. Two types of meshes were used i.e. Prolene mesh or light weight ultra pro meshes (15x15mm). The Mesh was fixed in the preperitoneal space using endotacker (Covidien ProTack™ 5 mm Fixation Device) and peritoneum was closed using either vicryl 2/0 or endotacker. Drains were not placed in any patient.

All patients were given pre operative prophylactic antibiotics upon induction. The duration of surgery and any intra-operative complications were noted. Post operatively patients were assessed for wound site pain using the Visual Analogue Scoring system. The inguino-scrotal area was specifically examined for any swelling etc. All patients received adequate analgesia and were discharged once stable. The length of hospital stay was thus noted. The patients were called for follow up after 10 days for removal of stitches and to look for late wound problems. The patients were then followed up for at least 3 months to look for any recurrence of hernia. The last patient was followed up to September 2015.

All data was entered and analyzed by SPSS version 20.0. Qualitative data like gender, side of hernia, type of hernia, wound complications,

recurrence etc were measure in frequencies and percentages and presented as n (%). While quantitative/ numerical variables like age, duration of symptoms, length of hospital stay, duration of surgery, VAS were presented as Mean ±SD. All data was calculated with 95% confidence interval.

RESULTS

Many cases of inguinal hernia presented to our OPD over a year's span but TAPP is a least known procedure to patients and most despite being counselled do not agree to undergo minimally invasive procedures and prefer conventional open surgery therefore a total of 50 patients were enrolled in the surgery after fully informed consent.

Among these 50 there was only one female (2%) rest of 49 were males (98%).

Age (years)	36.46 ±14.53
Duration of Symptoms (Months)	10.99 ±12.72
Side of Hernia Right Left	 n = 28 (56%) n = 22 (44%)
Type of Hernia Direct Indirect	 n = 18(36%) n = 32(64%)

Table-I. Preoperative characteristics

Number of Ports 3 ports 4 ports 5 ports	 n = 44 (88%) n = 3 (6%) n = 1 (2%)
Duration of Surgery (minutes)	62.05± 15.42
Peritoneal Closure With endotacker With endo-suturing	 n = 37 (74%) n = 13 (26%)

Table-II. Intraoperative characteristics

Length of Hospital Stay (days)	3.34 ± 0.5
Vas at 24 Hours	2.70 ±1.05
Vas at 1 Week Follow Up	1.24 ± 0.43
Wound Normal Seroma Hematoma	 n = 44 (88%) n = 02 (6 %) n = 02 (6%)
Recurrence at 3 Months Yes No	 Zero n = 50(100%)

Table-III. Post operative characteristics

VAS was valued as low when it was <3 and high when >3, it was found that VAS at 24 hours was high in the group where peritoneum was closed using endotacker as compared to when Vicryl 2/0 was used to close the peritoneum but this difference was not statistically significant (p=0.008).

In 2/50 cases the surgeon began with TEP but converted it to TAPP due to either large size of hernia with difficult sac dissection or due to damage to sac. We faced some minor complications in 3/50 cases, these were Port site bleed= 1 case, injury to inferior epigastric vessels =1 case and post operative urinary retention= 1 case. While in one case the patient expired after 24 hours due to sudden cardiac arrest.

DISCUSSION

Our study points to an important fact in the epidemiology of inguinal hernias showing that it is most commonly seen in males and very rare in females, in our study over a year we only received one female patient who had a small incipient inguinal hernia with non-specific clinical signs which was only diagnosed by laparoscopy and subsequently repaired. Thus since TAPP can be preceded by a diagnostic laparoscopy so all intra-abdominal pathologies can easily be evaluated as opposed to TEPP in which this is not possible.

In our study one elderly patient with normal pre-operative cardiovascular and pulmonary status expired on 1st post-operative day following TAPP; this points to the fact that pneumoperitoneum is slightly unsafe in elderly patients with poor cardiac reserve and poor venous return so pressures should be kept low in this group.

In TAPP the number of ports is not fixed. In our study in most cases the surgeon used 3 ports. In 3 cases the surgeon used a 4th port; while in one case a 5th port was used in a case which was converted from TEP.

We faced a few complications like injury to inferior epigastric vessels in one case, port site bleed and urinary retention needing catheterization post operatively. These are acceptable complications

and were successfully managed. On the other hand, some TAPP procedures were actually converted from TEP, after failure to dissect large sacs and peritoneal breaches, this indicates that TEPP once complicated cannot be managed straight forwardly while intra-abdominal complication with TAPP are relatively easy to manage.

While comparing TAPP to Lichtenstein mesh hernioplasty in a Pakistani study by Khan N and Babar TS; they found that TAPP was associated with shorter hospital stay (2.78 vs 3.5), lesser post-operative pain on 1st day (6.6 vs 8.83) but longer operative time (87.04 vs 55.4 mins) and more cost as compared to open repair.[19]

Our patients experienced less post-operative pain, but the LOHS and operative time in our setup is slightly higher due to local customs and factors like patients coming from far flung areas requiring more time in pre operative preparation and not willing to be discharged earlier. The operative time is also higher in cases of suture used for peritoneal closure. Kapiris SA has advocated TAPP procedure as a day case surgery after his research of over 7 years showed mean hospital stay of 0.9 nights and mean operating time of 40 mins.[20]

In our study we used two methods of mesh fixation, i.e. either tacker or suturing, the suture group patients experienced lesser post-operative pain in our study but further studies need to be done to evaluate other aspects like recurrence in both groups. Future study are also suggested to compare light weight and absorbable meshes as well as fixation of meshes vs non fixation.

CONCLUSION

Due to its excellent post-operative profile and patient satisfaction TAPP procedure for inguinal hernia repair is an ideal intervention in expert hands.

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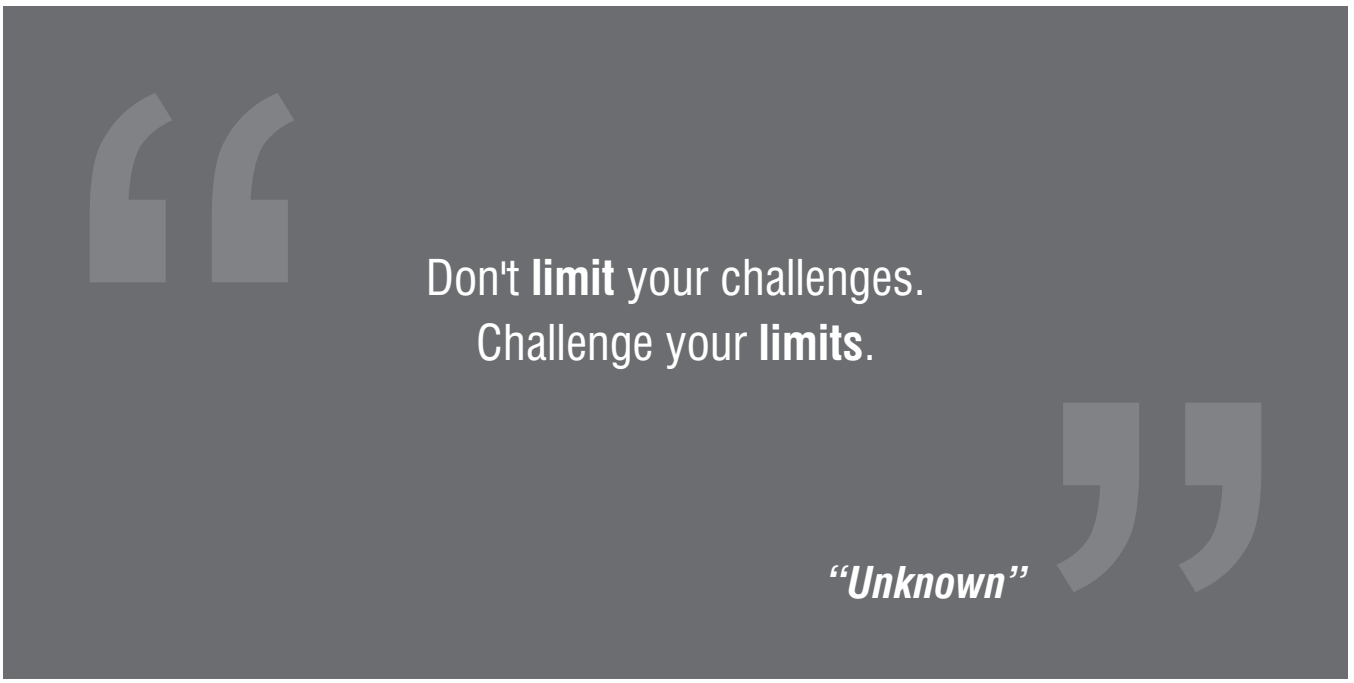

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Mohammad Zarin	Study design, Concept.	
2	Maryam Alam Khan	Concept, Writing manuscript.	
3	M. Asim Khan	Concept, Writing manuscript, Data collection, analysis.	
4	Syed Asad Maroof Shah	Final proof reading.	