



## Evaluation of early post-operative pain and seroma formation in transabdominal pre-peritoneal (TAPP) repair of groin hernias with light weight mesh placement.

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**ABSTRACT... Objectives:** To share our experience with laparoscopic surgery using TAPP technique, for groin hernias using light weight parietene mesh, to find out early post operative pain and foreign body sensation as complications. **Study Design:** Cross sectional study. **Setting:** Department of Surgery Khyber Teaching Hospital Peshawar. **Period:** January 2018 till August 2018. **Material & Methods:** A sample of 100 patients was recruited into study. All patients underwent standard transabdominal preperitoneal repair with light weight Mesh. Data was collected by predesigned Performa and analyzed with SPSS 21. **Results:** Out of 100 patients 98% were male, 2% female, mean age was  $43.2 \pm 5.3$  years (minimum 17 years and maximum 64 years). Regarding frequency of type of hernia data showed 68% patients had indirect inguinal hernia while 32% patients had direct inguinal hernia. 65% patients had right sided inguinal hernia, 26% left sided while 9% had bilateral inguinal hernia. Post operative hospital stay showed hematoma in 5% patients, seroma in 12% patients, wound infection in 8% of patients while foreign body sensation in 4% patients. **Conclusion:** Most of the patients presented were of middle age. Indirect inguinal hernia was more frequent than direct inguinal hernia. Common complications apart from pain were seroma formation, hematoma, wound infection and foreign body sensation.

**Key word:** Inguinal Hernia, Light Weight Mesh, Seroma, TAPP Technique.

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## INTRODUCTON

Throughout the world more than 20 million patients in a year undergo inguinal hernia repair surgery, making hernia repair surgery as one of the most commonly performed surgery.<sup>1-3</sup> Incidence of inguinal hernia, visceral protrusions or adipose tissue protrusions through the inguinal or femoral canal is 27–43% in men and 3–6% in women.<sup>1</sup> Definitive and the only treatment of groin hernias is surgery for which multiple approaches and techniques are applied. Open and Laparoscopic mesh hernioplasty, both are the most widely practiced procedures. In the Laparoscopic techniques total extra-peritoneal (TEP), Trans abdominal pre-peritoneal repair (TAPP), Intraperitoneal onlay mesh (IPOM) repair, Single incision laparoscopic repair (SILS) and Robotic repair are being practiced commonly.

Laparoscopic inguinal hernia repair was first described in the 1990s, but it still finds resistance among surgeons today due to higher cost of the procedure, need for general anesthesia and higher rate of complications associated with learning curve of laparoscopic repair. Another difficulty faced by surgeons related to laparoscopic approach is the internal anatomy of inguinal canal to which general surgeons are not familiar.<sup>3,5</sup> In our setup, we mostly use Transabdominal pre-peritoneal approach for groin hernias, with placement of synthetic mesh in pre peritoneal space.<sup>5-7</sup> This concept of posterior approach to groin hernias was first introduced by Stoppa in 1975.<sup>8</sup> With Laparoscopy presence and type of hernia on the contralateral side can be identified before starting dissection of the hernia sac.<sup>3,5,6</sup> In Laparoscopic repair by Transabdominal preperitoneal (TAPP) approach a 3 ports

technique is used, First port at the umbilicus, and the other two at lateral border of Rectus muscle are placed at the level of umbilicus on both sides.<sup>9</sup> The repair initially started with a prolene 6x11cm mesh which was heavy weight. Reducing the density of polypropylene and creating a light weight mesh i.e, Parietene 10x15cms, theoretically induces less foreign-body response, which in turn results in improved abdominal wall compliance, leading to less contraction or shrinkage of the mesh, and eventually allows for better tissue incorporation.<sup>10,11</sup>

Studies comparing Transabdominal pre peritoneal repair (TAPP) and Total extra peritoneal repair (TEP) show similar complication rates for Seroma formation, scrotal edema, spermatic cord swelling, atrophy of testes, iatrogenic urinary bladder injury, inguinal nerve lesions, chronic inguinal pain and recurrence of hernia.<sup>12</sup> Access-related complications can differ with different approaches. With TAPP repair there is increased risk of visceral and gut injuries, while increased risk of vascular injuries during extra-peritoneal dissection in TEP repair. A meta-analysis of ten RCTs between TAPP and TEP was recently published which failed to show any significant differences in operative times of both surgeries, total complication rates, length of hospital stay of patients and patient's recovery time from anesthesia, post operative pain, recurrence rate or costs between both the procedures i.e TAPP and TEP.<sup>13</sup> TAPP on the other hand was more useful for identifying contra lateral hernia due to Laparoscopy which accounted for bilateral repair of groin hernias in the same surgical setting.<sup>14</sup>

In 23 comparative studies between TAPP and TEP, recurrence rate in TAPP was between 0-25 percent (median 2.3%). In 2005 a meta-analysis was conducted in which both TAPP and TEP techniques were combined to compare with the Lichtenstein open surgical procedure. It showed that laparo-endoscopic procedures showed a lower incidence of early post operative wound infection, reduction in hematoma formation and iatrogenic nerve injury, an earlier return to normal activities and resumption to work. With Laparo-Edoscopy fewer incidences were reported of

chronic pain syndrome as well.<sup>3,9</sup> No difference was found in total morbidity or incidence of gut injuries, urinary bladder injuries, major vascular lesions, acute urinary retention and problems of testicular atrophy between Laparo-Endoscopic techniques and open repair.<sup>15</sup> The operative cost was higher with Laparoscopy due to increased cost of the instruments used.<sup>9</sup>

In our study we share our experience with laparoscopic surgery using TAPP technique, for groin hernias using light weight parietene mesh, to find out early post operative pain and foreign body sensation as complications.

## MATERIAL & METHODS

This cross section study was conducted at surgical department of Khyber teaching hospital Peshawar, from January 2018 till August 2018. A sample of 100 patients was recruited into the study and all of the patients admitted for inguinal hernia repair surgery were more than 15years of age. All patients with no contraindications to surgical procedure were included in the study. All patients with any contra indications to general anesthesia were excluded from the study, patients with irreducible or recurrent hernia were also excluded from study. All 100 patients in our study underwent standard Transabdominal Pre-peritoneal Repair (TAPP) with Light weight parietene 10x15 cms Mesh. Approach for TAPP procedure was a 3 port technique, 1<sup>st</sup> 10mm port was placed at the umbilicus, and the other two 5mm ports at lateral border of Rectus muscle at the level of umbilicus on both sides. All procedures of Laparoscopic inguinal hernia repair were done by the same consultant. All patients were followed till the time of discharge from hospital. Data was collected by predesigned Performa and it analyzed with SPSS 21. Mean and standard deviation was calculated for continuous variables while frequency and percentages for categorical variables. Data presented in our study is in paragraphs and tables.

## RESULTS

Out of 100 patients 98(98%) were male, 2(2%) female, mean age was  $43.2 \pm 5.3$  years (minimum 17years and maximum 64years). Regarding

frequency of type of hernia data showed 68 (68%) patients had indirect inguinal hernia while 32 (32%) patients had direct inguinal hernia. 65 (65%) patients had right sided inguinal hernia, 26 (26%) left sided while 9 (9%) had bilateral inguinal hernia. Post operative hospital stay showed hematoma in 5 (5%) patients, seroma in 12 (12%) patients, foreign body sensation in 4 (4%) patients detail given in Table-I.

Complications		Frequency (n)	Percentages (%)
Pain	Mild	75	75
	Moderate	22	22
	Severe	3	3
Seroma	Yes	12	12
	No	88	88
Hematoma	Yes	5	5
	No	95	95
Wound infection	Yes	8	8
	No	92	92
Foreign body sensation	Yes	4	4
	No	96	96

**Table-I. Post-operative events.**

Average hospital stay was  $2.9 \pm 1.2$  days (minimum of 1 day, maximum of 7 days). All patients were discharged from hospital successfully.

## DISCUSSIONS

Transabdominal preperitoneal technique for inguinal hernia repair with mesh coverage for myopectineal defects is a minimally invasive approach with outcomes expected to be similar to the open repair techniques. Minimally invasive techniques require training and appropriate expertise to overcome the learning curve of surgeons. Studies have demonstrated lower chronic groin pain, post operative wound infection rate and other complications with minimally invasive procedures like TAPP and TEP.<sup>16,17</sup>

In our study regarding the type of hernia 68% of patients had indirect inguinal hernia while 32% of patients had direct inguinal hernia as compared to a study by Gatabi et al<sup>18</sup> in which 23.3% of patients in their study had direct where as 69.2% of patients had indirect hernia. In a study by

zaborowski et al<sup>22</sup> out of the 403 patients operated 85% had unilateral inguinal hernias with 64.5% of patients having indirect, 27% of patients having direct hernias. 0.5% of patients in the study were reported as having femoral and 8% as pantaloon hernias.

Inguinal pain is one of the most common complication after mesh hernioplasty in patients affecting daily life activities. Pain syndromes affecting inguinal region maybe the result of scar tissue, as a reaction to the prosthetic mesh or entrapment of the nerve in the suture during placement and fixation of the prosthetic parietene mesh.<sup>18,19</sup> Studies have shown that early postoperative pain in TAPP versus open procedure is in favour that in TAPP pain scores based upon VAS (visual analogue scale) patients complained of less post-operative pain.<sup>9,20,21</sup> Results of our study are also in favor to the studies showing 75% of patients having mild early post operative pain on the basis of VAS.

It is likely that technical skill and proficiency achieved over time has led to an overall improvement in perioperative outcomes, particularly seroma and hematoma formation. In our series 12% of patients encountered postoperative seromas. The majority of seromas resolved with conservative management with aspiration. Zaborowski<sup>22</sup> et al reported Seroma formation as the most common postoperative complication in their study in 4.2% of patients. In a number of studies Seroma following laparoscopic inguinal hernia repairs is reported as 3.6-7.2%.<sup>23-25</sup> In a study by Leibl<sup>26</sup> et al scrotal hernioplasty by TAPP approach resulted in seroma formation in 10.5% of patients. Rectus sheath hematoma was encountered in 5% of the patients. This is an uncommon complication due to injury to small perforating vessels in the subcutaneous tissue during port placement. Laparoscopic Hernioplasty results in a lower incidence of wound infection, hematoma formation and early recovery to normal activities with early resumption of work.

Meta-analysis of randomized controlled trials<sup>20,27-29</sup> reported time to return to work was longer in Lichtenstein repair compared

to patients undergoing TAPP repair for groin hernias. Patients undergoing Transabdominal pre-peritoneal Repair had longer operating time owing to intra abdominal conditions such as adhesions but were discharged early with average hospital stay of 3.5h to 5 days, making it a more preferable procedure as compared to open surgical procedures.

## CONCLUSION

Most of the patients presented were of middle age. Almost all of the patients with exceptions of two were male. Indirect inguinal hernia was more frequent than direct inguinal hernia. Common complications apart from pain were seroma formation, hematoma, wound infection and foreign body sensation.

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