

## Lichtenstein hernioplasty for inguinal hernia: An observational study

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### Abstract:

**Background:** Inguinal hernias are common problem in our setup and its surgery is amongst the most frequently performed procedures. Lichtenstein meshplasty hernioplasty has good results but recurrence after surgery can be distressing. The aim of this study is to assess short term post-operative complications of repair by Lichtenstein technique.

**Materials and Methods:** In this crosssectional study 120 patients were included. It was conducted in the department of surgery District Head Quarter, Abbottabad from June 2019 till June 2020. Patients were followed for complications. Temporary scrotal swelling and wound infection were amongst commonest problems.

**Results:** In this study the mean age of presentation was  $45.15 \pm 14.45$  years. Right sided inguinal hernias were common findings. Indirect inguinal hernia was found in 59.2 percent population and hence was the commonest type followed by direct inguinal hernia and pantaloon hernia respectively. Post-operative complication included wound infection (5%), seroma formation (3.3%). Transient scrotal swelling was the most commonest problem encountered.

**Conclusion:** This study indicated that lichtenstein meshplasty is safe, easy to learn, and can be performed in routine for inguinal hernia repair with low recurrence rate.

**Keywords:** Inguinal hernia, Lichtenstein meshplasty, hernioplasty, proline mesh.

### Introduction:

Inguinal hernia regardless of its type is amongst the most frequently encountered diseases in surgery.<sup>1</sup> Hernia is protrusion of a viscus or part of a viscus through an abnormal opening in wall of its containing cavity. Amongst abdominal wall hernias inguinal hernias are the most important. The incidence of inguinal hernia in general population is 1 to 5 percent. Inguinal hernias are usually found on one side, bilateral inguinal hernias are found in 20% of population. Inguinal hernias are of two types direct and indirect. Direct hernias are because of weakness of fibro muscular tissues of wall. Posterior wall strengthening is also main objective in inguinal hernia repair.<sup>2</sup> Inguinal hernias can present in emergency as irreducible, obstructed, or strangulated hernia necessitating urgent surgical intervention. The ratio of male to female is 10 ra-

tio 1.<sup>3</sup> Half of the groin hernias are indirect, 25% direct, 5% femoral.<sup>4</sup> Since posterior wall repair is an important component, defect in transversus muscle aponeurosis or fascia lead to occurrence of inguinal hernia. The aim should be repairing transversus fascia in tension free style. There are many open methods for inguinal hernia treatment like Bassini, Shouldice, Desarda and Lichtenstein tension free hernioplasty. Until 1980s most surgeries would depend on restoring anatomically with sutures that led to recurrence, excessive tension was the main factor responsible for recurrence. This was the main reason that led surgeons to create tension free Lichtenstein's hernioplasty in 1986.<sup>5,6</sup> Tension free repair has replaced suture repair in most part of the world. Tension free repair is however associated with complication like infection, pain, foreign body reaction, fistula formation, migration, shrink-

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Table 1: Characteristics of patient gender, site and type of hernia

Characteristics	Number of patients	Percentage
<b>Sex</b>		
Male	198	98.3
Female	2	1.7
<b>Site of hernia</b>		
Right	70	58.3
Left	50	41.7
<b>Type of hernia</b>		
Indirect	71	59.2
Direct	44	36.7
Pantaloon	5	4.2

age, recurrence.<sup>7</sup> Apart from that there are other complications like seroma formation, bruising, testicular atrophy, orchitis and hematoma formation.<sup>8</sup> The meshes made are mostly from polypropylene or polyester. Other synthetic prosthesis include Teflon, Polytetrafluoroethylene (PTFE), light weight polypropylene and polyester meshes.<sup>9</sup> The purpose of this study is to evaluate early post-operative complications with the use of polypropylene mesh in Lichtenstein hernioplasty.

#### Materials and Methods:

This cross sectional (observational) study was conducted in department of surgery District Head Quarter, Abbottabad in 2019. In this study 120 patients presenting with inguinal hernia to surgical outpatient department were included. Patients above 18 years of age with reducible inguinal were included in the study. Exclusion criteria included people with chronic cough, chronic constipation, benign prostatic hyperplasia, obstructed hernia, strangulated hernia, recurrent inguinal hernia, ASA grade 4 and 5 and diabetes mellitus. Following admission details history was taken followed by clinical examination. Routine blood investigations were done like complete blood count, screening, blood glucose and x-ray chest and echo-cardiogram advised according to age of patient. Patient were explained about participation in the study and informed consent taken. Patients were advised not to take orally six hours prior to surgery. All patients were given spinal anesthesia. Pre-operative prophylactic antibiotics were given at the time of

anesthesia. Following skin crease incision external oblique was incised in the line of incision exposing canal contents. Cord structures were dissected away from sac in case of indirect hernia. Sac was opened, contents reduced, transfixed at base near deep ring, herniotomy performed in all cases of indirect inguinal hernia. Space was created beneath external oblique creating adequate place for mesh. This was followed by placement of a polypropylene mesh of 6 x11 cm mesh beneath the external oblique aponeurosis and a slit was made to accommodate cord structures. Mesh was fixed using prolene 2-0. Apex of mesh was fixed to pubic tubercle initially and then to inguinal ligament either using interrupted or continuous stitches. Then it was superiorly fixed. The two end of mesh were overlapped and stitched with interrupted stitches so that cord was not constricted. After checking for homeostasis external oblique aponeurosis was closed using vicryl 1 and skin stitched with interrupted non absorbable sutures. Stitches were removed on 10<sup>th</sup> post-operative day. Drain was not placed in surgery. Patients were discharged on either on first or second post-operative day according to individual scenario. Antibiotics were given for 5 days. Pain killers were also given. SPSS 20 used for data collection and analysis.

#### Results:

120 patients of inguinal hernia were included in study out of which only 2 were female and 198 male. Mean age of presentation was 45.15±14.45 years. Mean post-operative hospital stay was 1.98±0.52 days. 70 patients (58.3%) had right inguinal hernia while 50 patients (41.7%) had left inguinal hernia. 71 patients (59.2%) had indirect inguinal hernia, 44 patients (36.7%) had direct inguinal hernia and pantaloon hernia was found in 5 cases (4.2%).

Post-operative complication included seroma, hematoma formation in 4 patients (3.3%). In only one patient hematoma needed re-exploration and hemostasis was secured. Transient scrotal swelling was found in 11 cases (9.2%) which resolved over few days. Urinary retention occurred in 4 cases (3.3%). In 3 patients it resolved with reassurance and use of bladder

Table 2: Post-operative complications

Complications	Number of patients	Percentage
Seroma/Hematoma	4	3.3%
Scrotal swelling(temporary)	11	9.2%
Urinary Retention	4	3.3%
Wound infection	6	5%
Post operative neuralgia	2	1.7%
Paralytic ileus	1	0.8%

stimulation with sound of tap water. Only one patient required catheterization. Wound infection was found in 6 cases(5%) and it was treated with antibiotics. Post-operative neuralgia was found in 2 cases(1.7%) settled with painkillers. Paralytic ileus occurred in one patient improved with replenishing deficient electrolyte.

### Discussion:

In spite of the fact that inguinal hernia repair are the most frequently encountered operations in surgical practice and many technique for repair have already been described, yet quest for finding new techniques in inguinal hernia surgery has not ended. The main purpose of which is to decrease the recurrence. Apart from that applicability, complications, cost effectiveness, hospital stay have also been subjected to analysis. Whether open or laparoscopic surgery, tension free repair with synthetic mesh has been superior to other methods.<sup>10</sup> Introduction of Lichtenstein repair about three decades ago gave birth to new era in hernia repair surgery.<sup>11</sup> It is an easy, effective procedure with very low recurrence rate (0-2%) in literature and has the ease of doing on local and regional anesthesia.<sup>12</sup> It causes less pain as the repair is without any tension.<sup>14</sup> Because of all these benefits it is chosen by most surgeon for reconstruction of inguinal canal. Surgeon can opt for variety of mesh. Characteristics of ideal mesh include resistance to anti-microbial infection, inertness, molecular permeability, biocompatibility, transparency, pliability. Absorbable mesh stay in wound for less time therefore does not allow sufficient collagen deposition while multifilament can provide good medium for bacteria. Mono-filament has gained enormous popularity recently with various types of polypropylene having various

characteristics and advantages.<sup>13,14</sup> Use of polypropylene mesh having pores allows enormous area for growth of connective tissue leading to permanent fixation in the abdominal wall. Complications relating to mesh placement are not so significant. For large hernia usually a drain is placed to avoid seroma or hematoma formation. To prevent recurrence mesh should enclose 2 to 4cm area beyond the boundary of hasselbach triangle.<sup>15</sup> This method of hernia repair is simple and can be performed with having simple expertise in surgery and is effective in preventing recurrence. Some surgeons have reported very low recurrence 0-0.7%.<sup>16</sup> Their is minimal incidence of complications in peri-operative and post-operative period. Majority of the patients return to normal day to day activities within 2 days. Nearly half of the labourers return to physical activity within 5 weeks. Apart from this there is a high chance of chronic groin pain following surgical repair and even chronic groin infection necessitating mesh removal.<sup>17</sup> In our study indirect inguinal hernias were the commonest finding, also hernia was more commonly found on right side. Such findings were also note by other authors.<sup>18</sup> In our study wound infection was found in 6(5%) patients comparable to Nateson et al.,<sup>5</sup> study. Transient scrotal swelling was the most common early complication found in (9.6%) patients. This was also found in another study.<sup>19</sup> In this study seroma and hematoma occurred in 4(3.3%) which was less than in other studies.<sup>20,21</sup>

### Conclusion:

This study shows that lichtenstein meshplasty has very few adverse effects. In Lichtenstein hernioplasty the recurrence rate after surgery is also less. Some of the complications that occurred post-operative can be avoided further and hence efficacy of the procedure can be improved further. Like seroma formation can be reduced by meticulous hemostasis, wound infection can be reduced by improving sterilization and post-operative care. Lichtenstein meshplasty is safe, reliable and gold standard procedure.

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**Role and contribution of authors:**

Sameeah Hanif, collected the data, references and initial wrote the article.

Soweba Hanif, collected the data and helped in introduction writing.

Musaddiq Jafri, collected the references and also helped in interpretation of results

Rizwan Ahmed Khan, collected the references and also helped in result writing.

Ulas Khan, collected the references and helped in discussion writing.

Muhammad Nawaz, critically review the article and made final changes.

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