



## RESEARCH ARTICLE

# PROSPECTIVE ANALYSIS OF POSTOPERATIVE OUTCOMES – IMMEDIATE / DELAYED IN PATIENTS UNDERGOING LICHTENSTEIN'S OPEN INGUINAL HERNIOPLASTY USING VYPRO® VS PROLENE® MESH

**\*Dr. Kaundinya Kiran Bharatam**

Department General Surgery, Sri Ramachandra Medical College and Hospital, Chennai, India

### ARTICLE INFO

#### Article History:

Received 29<sup>th</sup> June 2015

Received in revised form

13<sup>th</sup> July, 2015

Accepted 27<sup>th</sup> August, 2015

Published online 30<sup>th</sup> September, 2015

#### Keywords:

Vypro®, Prolene®,

Inguinal hernia,

Open lichtenstein's repair,

Seroma, Post-operative pain.

### ABSTRACT

As we advance towards improving inguinal hernia repair our goals remain to decrease the immediate post-operative complications like pain and seroma formation; and at the same time preventing long term complications like chronic groin pain and hernia recurrence. We present in our study comparison of outcomes in the immediate and late post-operative phase of 50 patients [25 - prolene® and 25 - vypro®] who underwent lichtenstein's inguinal hernia. Our results did encourage the lightweight mesh like vypro® in the immediate post operative phase but did not give any major difference between the meshes in the long term complications or outcomes of hernia repair. Our observations were similar to other studies done comparing the various mesh used for hernia repair.

### INTRODUCTION

Inguinal hernias are one of the most commonly encountered general surgical problems. Their repairs have evolved from tension repairs to tension free repairs using appropriate mesh to reinforce the posterior wall of the inguinal canal. European hernia guidelines for open hernias emphasize grade a recommendation for synthetic non absorbable mesh or composites mesh with non absorbable components. (Paajanen *et al.*, 2012) though most of the meshes used are optimal in the treatment of the hernias, the present trend is towards use of more lighter mesh to decrease the rate of complications associated with the repair. We present in the present article a prospective analysis of 50 cases in which 25 cases each underwent lichtenstein open inguinal hernioplasty using different meshes –prolene® and vypro®. We would like to highlight the efficacy of newer and lighter meshes like vypro in the open lichtenstein repair of inguinal hernias especially in the immediate postoperative period.

### MATERIALS AND METHODS

For the period of observation following patients were selected for hernioplasty:

-All patients having inguinal hernia – direct / indirect - unilateral / bilateral in all age groups

-Patients consenting for surgery – open lichtenstein hernioplasty

**\*Corresponding author: Dr. Kaundinya Kiran Bharatam**

Department General surgery, Sri ramachandra medical college and hospital, Chennai, India

Following patients were not selected for the study:

- Complicated inguinal hernia
- Female inguinal hernia
- Patients who did not consent for open lichtenstein hernioplasty

The open inguinal hernioplasty included mesh repair using either of the two mesh:

- Prolene® hernia mesh – ethicon® johnson and johnson division [ purely polypropylene mesh ]
- Vypro® - ethicon® johnson and johnson division [ mix of polygalactin and polypropylene mesh ]

The selection of the patient and type of mesh to be used was in alternative fashion and random. There was no selection criteria for the type of mesh used and patients who requested for a particular type of mesh were excluded from the study to prevent bias.

### Observations

Following were the observations seen in the patients groups:

- Total nos of cases – 50 [ vypro® for 25 patients and prolene for 25 patients ]
- Duration – 2012 to 2015
- Study – prospective analysis
- Center – single center and same team of surgeon, co-surgeon, and anesthetist
- Age of patients – all age groups
- Sex of patients – only males

- Period of follow-up – 1 year

The patients once diagnosed were asked to undergo anesthesia fitness evaluation prior to surgery. Once fit for surgery the procedure was performed under spinal anesthesia. The lichtenstein open inguinal hernioplasty was done in the routine fashion and strengthening of the posterior wall was fashioned using either vypro® or prolene® mesh and fixed using prolene 3-0 suture material. The patients were given a prophylactic antibiotic preoperatively - ceftriaxone and postoperatively for 3 doses. They were advised to use appropriate undergarments allowing enough scrotal support and were ambulated as early as possible. Diet was initiated within 6 hours of surgery. The patients were discharged based on pain relief and after assessing for seroma formation, wound infection, and any other complications.

#### Following were the postoperative findings

Complications	Vypro® mesh	Prolene® mesh
Postoperative pain score > 4	3	5
Seroma formation	0	3
Wound infection / gaping	0	0
Mesh rejection	0	0
Scrotal swelling / collection	0	1
Pain on discharge	0	0
Chronic groin pain	0	0
Foreign body sensation	0	0
Recurrence	0	0

Pain assessment was made postoperatively and during discharge using standard pain scale. Seroma formation, wound infection, mesh rejection, scrotal swelling, etc were judged based on clinical examination of the surgical wound and operative site. Patient was asked to come for follow up after 7 days of discharge for suture removal and assessed for any local / scrotal swelling. He was assessed for chronic groin pain and any immediate recurrence of hernia during the 1 month; 6 month and 1 year follow up visit. Our observations indicated that vypro® mesh had less immediate postoperative pain, seroma formation and foreign body sensation as compared to the prolene mesh used for the hernioplasty. We did not encounter any hernia recurrence or chronic groin pain in our patients.

## DISCUSSION

Vypro® consists of polypropylene and polyglactin multifilaments as contrast to prolene® which is polypropylene alone. The mesh mainly represent the lichtenstein open inguinal hernioplasty which is a tension free repair depending on the inflammatory foreign body reaction for the reinforcement of the posterior wall of inguinal canal. The inflammation leads to neovascularisation and connective / fat tissue ingrowth leading to fibrosis and entrapment of the surrounding structures along with marked diminution of the abdominal wall movement (Junge *et al.*, 2002; Goldenberg *et al.*, 2005). There lie a myriad of complications representing this response of the mesh like pain – immediate and chronic, nerve entrapment, vas entrapment, seroma formation, mesh rejection, wound infection, testicular atrophy along with hernia recurrence (Paajanen *et al.*, 2012; Peeters *et al.*, 2010; Gao *et al.*, 2010; Hakeem and Shanmugam, 2011; Bay-Nielsen *et al.*, 2001; Poobalan *et al.*, 2001; Paajanen *et al.*, 2010). Vypro, timesh, prolene, marlex, etc are the various mesh types used for

the surgery today. Though hernia recurrence and chronic groin pain rates equalled in most of the studies done to understand the efficacy of the meshes, immediate complications like seroma formation, improved abdominal movement, and decreased foreign body feeling, etc were less in the lighter mesh like vypro® versus the standard prolene® mesh (O'Dwyer *et al.*, 2005; Nikkolo *et al.*, 2010; Post *et al.*, 2004).

#### Following were the studies of interest that compared the vypro® and prolene® mesh:

Study	Nos of cases	Result
Goldenberg a et al / 2005	14 rabbits	Vypro had better fibrosis Both mesh had similar adhesions
Puccio f et al / 2005	45	Both mesh were similar for pain and discomfort
Bringman s et al / 2005	600	Results and complications seem to be similar
Gao m et al / 2010	2027	Results and complications seem to be similar
Peeters e et al / 2010	59	High incidence of poor sperm motility in prolene vs vypro
Hannu paajanen et al / 2013	312	Results and complications seem to be similar

in our study, we sought to find a better mesh for the open inguinal hernioplasty and compared vypro® and prolene® in 25 cases each in a random fashion for approximate period of 3 years. patients who received vypro® mesh had decreased tissue inflammation and reaction and thus decreased post-operative pain, seroma formation, etc. patients who received prolene® had seroma formation in a few and more post-operative pain. pain both immediate and delayed was mainly due to irritation of the inguinal nerves by sutures/mesh; inflammatory reaction against mesh or simply scar tissue (Heise *et al.*, 1998; Di Vita *et al.* 2010; Nahabedian *et al.*, 2007; Morris-Stiff, 1998; Grant, 2000) the patients after 1 month, 6 months and 1 year had similar presentation with no complaints of chronic groin pain or recurrence of hernia. We felt that lighter and mixed mesh material like the vypro® had better acceptance by the patient in the immediate post operative phase of the surgery but mesh type and material did not affect the late post operative period. Hernia recurrence and chronic groin pain was not seen in any mesh group. There was a definite liking towards the use of such light weight / mixed mesh by the surgeon and patient as it made the surgery less painful and eventful than the prolene mesh. Ultimately a good mesh is one which has negligible foreign body reaction and no pathologic fibrosis (Bringman *et al.*, 2010).

#### Conclusion

Vypro® mesh is better than prolene® mesh in the immediate post operative complication rates in open inguinal hernioplasty. Long term outcomes remain unaffected in our study. Long term and larger patient volume can be used to study the results of such mesh in prospective fashion and we encourage the same.

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