POLY-PROPHYLENE MESH OR ULTRA PRO MESH IS BETTER? IN TERMS OF EFFECTIVENESS AND POST-OPERATIVE COMPLICATIONS. A RANDOMIZED CONTROL STUDY

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ABSTRACT

Study design: randomized control study in which 60 patients were divided into PHS and UHS groups.

Material and Method: sixty patients were included in the study after informed consent into two groups PHS and UHS. This study was conducted from 1st august 2015 to 1st September 2016.

Selection criteria: Male patients above 25 years of age with unilateral uncomplicated inguinal hernia were included. Recurrent inguinal hernia, irreducible hernia, BPH and Diabetic patients were excluded from the study.

Surgical Procedure: all surgeries were done under general anesthesia or spinal anesthesia according to anesthesia indications.

Results: total of sixty patients data was collected in standardized proforma. Age range was 25-70 years with mean age of 44 years. 45 patients were between 25 and 50 years and 15 were between 51 and 70 years of age. Right inguinal hernia was present in 22 patients while left inguinal hernia in 38 patients. 48 patients having indirect inguinal hernia while 12 patients having direct inguinal hernia.

ASA Score: mild pain was common in both groups (33.3-40%), moderate pain (66.6-60%). VAS was almost same in both groups.

Scrotal heamatoma was slightly more in PHS group (13.3%) while seroma was more in UHS group (10%). Other complication were similar in both groups.

Key words: PHS (Polyprophylene mesh hernia system), UHS (Ultra Pro Mesh hernia system)

INTRODUCTION

Inguinal hernia repair is the most common surgical procedure worldwide[1]. About one million hernia repair are done every year[2]. 15% of adult men undergo hernia repair[3]. Initially hernia repair was done with absorbable interrupted sutures. The incidence of hernia recurrence has been the primary end point for many years[4]. With introduction of tension free mesh repair the recurrence rate has dropped down to 2-3%[5]. However chronic groin pain, foreign body sensation, impaired quality of life (QoL) are important issues with mesh repair[1,5].

The frequency of chronic pain with inguinal hernia repair varies significantly (10-30%) which is partially explained by lack of definition[1,6]. Functional limitations of daily activities are experienced by 2-20% of the patients[7]. Suggested possible mechanism of such side effects include excessive remaining, fixation of mesh material causing nerve injury or scar tissue[8,9]. New mesh systems are introduced with the aim to reduce complications likeprolene hernia system (PHS) and bilayer poly prophylene mesh (Ultra Pro)[s].

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Procedure

The prolene hernia system (PHS) is used over the floor (Fascia transversalis) while Ultra Pro mesh is used pre-peritoneal behind the fascia transversalis after blunt dissection by covering the inguinal floor or pre-peritoneally hence reduces post-operative pain and discomfort because of few fixation stiches while PHS needs fixation to inguinal ligament and conjoint tendon hence chances of entrapment of the nerves leading to pain and discomfort post-operatively. The results of PHS and Ultra Pro are not yet been clearly demonstrated[11,12].

The aim of present study was to compare the outcome of inguinal hernia repair (PHS) and Ultra Pro (UHS) with respect to effectiveness and post-operative complication.

MATERIAL AND METHODS

This study was conducted in department of surgery Khyber Teaching Hospital, Peshawar from 1st August, 2015 to 1st September, 2016.

Total of sixty patients were included in this study.

All patients gave their written informed consent after being informed about the nature and purpose of this study. Male patients older than 25 years were included with uncomplicated unilateral inguinal hernia both direct and indirect.

Exclusion criteria

Recurrent inguinal hernia, irreducible hernia, BPH and Diabetic patients were excluded.

Inclusion criteria

Male patients above 25 years with unilateral uncomplicated inguinal hernia were included. Patients were divided in two groups. PHS and UHS groups. Patients were blind to the type of procedure to avoid bias. Mesh type was not mentioned in OT notes.

Surgical Procedure

All surgeries were done under spinal anesthesia and general anesthesia according to anesthesia indications. Prophylaxis was done with cefoperazone+sulbactum2gm intravenous 1 hour before surgery.

PHS Technique: Inguinal canal was opened through inguinal incision. Through the anterior rectus sheath spermatic cord was dissected from inguinal nerves, identified and safeguarded. Sac was dissected and herniotomy was done. While direct hernia sacs were inverted.Polyprophylene (PHS) mesh was secured to lateral border of rectus sheath and to the pubic tubercle and inguinal ligament with 2/0 prolene suture. Internal ring was created in mesh to strengthen internal ring. The external oblique, scarpa's fascia and skin were closed with vicryl suture.

Ultra Pro (UHS) technique: Inguinal canal was opened through same technique as for PHS. Pre-peritoneal space was dissected by dividing fascia transversalis and after creating enoughspace through blunt dissection. Ultra Pro mesh was placed and fixed with single absorbable vicryl suture. Inguinal canal was closed the same way as for PHS.

Pain of the patients was assessed on visual analog scale score and were advised to start their normal activities post-operatively. Patients were given a scale of 100mm length and were ask to mark the scale according to the intensity of their pain where 0 is no pain and 100 is pain as bad as it could be. Pain was graded as

0mm ---------- no pain

5-44mm ---------- mild pain

45-74mm ---------- moderate pain

75-100mm---------- severe pain

Data collection

Patient's data was collected on standardized performa. Patients were given analgesia on every four hours of the surgery. Patients were discharged on second post-operative day without analgesia

RESULTS

Total of sixty patients were operated, divided in two groups of 30 patients each in UHS group and PHS group. Age range was 25-70years with mean age was 44 years. 45 pateints were between 25 to 50 years and 15 were between 51 to 70 years of age.38 patients had right inguinal hernia and 22 had left inguinal hernia. 48 patients had indirect inguinal hernia and 12 had direct inguinal hernia.

DISCUSSION

Ideal inguinal hernia mesh repair should provide effective covering of the myopectineal orifices. All the procedures done for hernia repair should be applicable to all the hernias[13]. The results of inguinal hernia repair are compared in term of recurrence, complications and rehabilitation[3]. The two approaches we used as PHS and UHS differ not only in anatomic view but also in mechanism because UHS ispre-peritoneal mesh placement while in PHS mesh is placed superficially. The recurrence and long term results of both were comparable[14,15]. In our study the post-operative complications slightly differed as severe pain was almost nil in UHS while 2 (6.6%) patients with PHS had severe pain. Orchitis was negligible in UHS while 2 (6.6%)patients

ASA score:

	PHS	UHS
I Mild Pain	10 (33.3%)	12(40%)
II Moderate Pain	20 (66.6%)	18 (60%)
III Severe Pain	0	0

VAS score:

	PHS	UHS
Mild Pain	20 (73.3%)	25(83.3%)
Moderate Pain	8 (26.6%)	4 (13.3%)
Severe Pain	2 (6.66%)	1 (3.3%)

Comparison of complications in both groups:

	PHS	UHS
Scrotal Hematoma	4 (13.3%)	1 (3.3%)
Seroma	2 (6.6%)	3 (10%)
Orchitis	2 (6.6%)	0
Foreign body sensatition	4 (13.3%)	2 (6.6%)
Groin discomfirt	6 (20%)	2 (6.6%)
Neuralgia	2 (6.6%)	2 (6.6%)

with PHS developed orchitis. Foreign body sensation was more with PHS i.e.4 patients(13.3%). Scrotal hematoma in PHS was observed in 4patients (13.3%) while less with UHS (3.3%).

The recent studies have shown that PHS mesh is associated with increased risk of peri-operative complications compared to UHS[16]. Another comparison is weight of the mesh. PHS is heavy mesh as compared to UHS. Some studies have shown less post-operative discomfort with UHS (light mesh) than PHS (heavy mesh)[17]. UHS provide less chronic discomfort and foreign body sensation as compared to PHS. Thus was also observed in our study.

In present study we observed no significant difference between PHS and UHS regarding peri-operative course, intra operative complications, post-operative rehabilitation or recurrence. But theoretically UHS is light mesh bilayer so should have cause less discomfort and recurrence though none of this theory is yet clinically proven.The UHS needs longer operative time than PHS and needs significant dissection so for the trainee doctor is much difficult procedure than PHS.

CONCLUSION

The results of PHS and UHS are almost comparable and have a very low advantage over PHS. Operative time is longer and the dissection is significant in UHS. So it is recommended to the trainee doctors to continue with PHS. UHS needs more studies for proving its significance over PHS.

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