

## ORIGINAL ARTICLE

## OPEN PREPERITONEAL (POSTERIOR APPROACH) VS DARNING REPAIR (ANTERIOR APPROACH) FOR INGUINAL HERNIORRAPHY

Imran Sadiq, Liaqat Bhatti, Asad Ullah Malik and Mazhar Saeed Choudhary

**Background:** It is a single blind controlled prospective comparative study in which Open preperitoneal herniorrhaphy (OPH) is compared with conventional anterior approach i.e. Darning repair, regarding early complications (like pain, swelling, infection etc) and recurrence rate.

**Patients & Methods:** The study was conducted in Surgical Unit-I Services Hospital Lahore over the period of 3 years from Jan 2002 to Dec 2004. A total of 80 patients of Inguinal Hernia were selected randomly for OPH and Darning repair. Only males over the age of 12 years without any co-morbid disease, admitted through OPD were selected for study. The patients were operated on elective list under General or Spinal Anesthesia. Postoperatively patients were kept in ward for at least 24 hrs and they were routinely followed up for 2 years on out-door basis after discharge

**Results:** Mean operation time for OPH 30mins (20-60mins) was shorter than Darning repair 45mins (30-80mins). Most patients had mild pain after OPH (60%) as compared to Darning repair (40%). The median time to return to work after OPH (2 weeks) was less than after Darning repair (4 weeks). But the incidence of subcutaneous haematoma formation (5%) was same after both types of repairs and there was no recurrence (0%) seen after 2 years, on follow-up

**Conclusion:** In conclusion Open-preperitoneal herniorrhaphy is better than conventional Anterior approach in terms of less operative time, post-op pain, early return to work, although there was no recurrence seen after both types of repairs.

**Key words:** Inguinal Hernia, Preperitoneal Herniorrhaphy, Open-preperitoneal Herniorrhaphy.

### Introduction

Hernia is a common surgical problem throughout the world. Various techniques of herniorrhaphy have been used by different Surgeons like Bassini, McVay, Shouldice etc; but all these and many other modifications in procedure showed magnitude of unsuccessful results especially in terms of recurrence.<sup>1</sup> In our country, Darning still remains the most widely used technique though it is disappearing from modern literature.<sup>2</sup> In this study we used Posterior or Preperitoneal approach which is not new, it was first introduced in 1876 by Thomas Annandale of Edinburgh, and he repaired the hernial defect from this approach by using Transversalis Fascia.<sup>3</sup> In 1955 Nyhus again used this technique for Hernia repair.<sup>4</sup> He classified the Hernia as follows and matched the type of Hernia with specific operations, served as a technical guide to hernia repair:

**Type-I:** Indirect inguinal hernia in which internal ring is of normal size, configuration and structure.

**Type-II:** Indirect inguinal hernia in which internal ring is enlarged and distorted without impinging on the floor of inguinal canal i.e; Hesselbach triangle is normal.

**Type-III:** These are of 3 subtypes.

**A:** All direct hernias

**B:** Indirect inguinal hernia with a large dilated ring that has expanded medially encroaching on posterior inguinal wall to greater or lesser degree.

**C:** Femoral hernia.

**Type-IV:** All recurrent hernias.<sup>3</sup>

The purpose of this study is to compare the results of both types of repairs i.e.; OPH and Darning in terms of post operative pain, early return to work, scrotal/subcutaneous swelling, infection and recurrence.

### Patients & Methods

A total of 80 patients with unilateral Inguinal Hernia whether Direct, Indirect or Recurrent were selected for this study. All patients were male having reducible inguinal hernia and no serious medical illness like CCF, CLD or CRF. Patients were divided in two equal groups randomly with 40 patients in each group. 30 patients were operated under G/A and 50 under S\A. Perioperatively three doses of 1<sup>st</sup> generation cephalosporins were given I/V.

In case of OPH Transverse incision was made about 3 fingers breadth above the inguinal ligament.

External oblique aponeurosis incised in line of its fibers, internal oblique and Transversus splitted peritoneum reflected medially by blunt dissection till deep ring is visible. In case of Indirect Hernia, sac is pulled out of inguinal canal through deep ring but if sac is densely adherent then peritoneum was opened and contents reduced. Then proximally peritoneum was closed and distal sac left open after cauterizing the edges. In case of Type-I, Type-II and Type-IIIB hernia deep ring is narrowed by placing stitches of Prolene 2\0 medial or lateral to cord, while in case of Type-III A&Type-IV hernias iliopubictract repair is done by Prolene2\0 stitches, we did not use mesh for reinforcement of repair. After the repair abdomen was closed in layers. In case of darnning repair, inguinal canal was opened through groin incision, cord lifted and sac dissected out. After Herniotomy posterior wall of inguinal canal was strengthened by figure of eight Prolene 1/0 suture. External Oblique aponeurosis was closed anterior to cord with absorbable suture and then rest of the wound closed.

Postoperatively patients were kept in ward for at least 24hrs. Analgesia was given on patient's demand in order to estimate the severity of pain. After discharge patients were followed-up either in OPD or contacted at their places as one week, 2weeks, one month, 4months, 6months, 1year and then 2 years after surgery

**Table -1:** Type of repair.

	Type of Repairs		Total
	Preperitonea	Darning	
Hernia Direct	02	04	06
Ype	12	10	22
Bubonocle	12	16	28
Funicular	12	08	20
Complete	02	02	04
Total Recurrent	40	40	80

## Results

A total of 80 patients were included in this study over the period of 3 years. All patients were admitted through OPD having reducible inguinal hernia. All patients were male with mean age of 28 years (range 20-60y). 40 patients were operated by OPH and 40 underwent Darning repair. Among 40 patients of OPH, 6 patients were having Type-I, 18 pts Type-II, 2 pts had Type-III A, 12 pts had Type-B and 2 pts had Type-IV hernia, while among 40 patients of Darning repair 10 pts had Type-I, 16 pts had Type-II, 4 pts had

Type-III A, 8 pts had Type-IIIB, 2 pts had Type-IV hernia. Mean operation time in case of OPH was 30mins while in case of Darning repair was 45 mins. So the mean operation time for OPH was shorter than Darning repair.

As far as post operative pain is concerned during initial 24 hours, patient who were operated by OPH only 6 patients (15%) had severe pain, while 10 patients (25%) had moderate pain and 24 patients (60%) had mild pain. Among patients of darnning repair only 16 patients (40%) had mild pain, 14 patients (35%) had moderate and 10 patients (25%) severe pain. Median time to return to work after OPH was 2 weeks and after darnning repair was 4 weeks. So there was early return to work after OPH.

There were two cases of subcutaneous haematoma formation after OPH and two cases after darnning repair. So the incidence of haematoma formation (5%) was same after both types of repairs. But no scrotal swelling, no wound infection, no hydrocele and testicular neuralgia was seen after both types of repairs. On two years of follow-up no recurrence was observed after both types of repairs.

## Discussion

Inguinal hernia occurs whenever there is disturbance in anatomy or physiology or both of inguinal canal e.g. Direct hernia occurs whenever either there is weakness of Fascia Transversalis or failure of shutter mechanism due to denervation of conjoint muscle, as might occur in case of muscle cutting incision for Appendicectomy.<sup>5</sup> Similarly indirect hernia occurs either due to persistent processes vaginalis or due to failure of sphincter mechanism, leading to gradual widening of deep ring. So keeping in view the pathophysiology of inguinal hernia the best method of hernia repair is that in which we have direct access to the defect site with minimal anatomical disturbance. In conventional methods of herniorraphy inguinal canal is opened and hernial defect is approached anteriorly, which is not only having limited access but also disturbs the normal anatomy and physiology of inguinal canal by lifting up the cord. While in case of pre-operitoneal herniorraphy there is direct access to the hernial defect with minimal anatomical disturbance. That is the reason pre-peritoneal approach whether open or Laparoscopic has been used by many Surgeons.<sup>3, 6-17</sup> Some surgeons used this approach especially for recurrent inguinal hernia<sup>7-12</sup> that provides the virgin area, avoiding dissection of the scarred cord resulting in a low rate of recurrence and effectively eliminates testicular complications.<sup>12</sup> But most of the surgeons

either did not use mesh or used mesh or favoured the primary closure without mesh as in this study.<sup>15</sup> Preperitoneal mesh hernioplasty has its own complications like ileus, intrabdominal adhesions, pulmonary embolus in addition to wound infection, mesh rejection and haematoma formation.<sup>9,13</sup> Due to these reasons mesh was not used in this study and we have 0% recurrence after 2 years of follow-up. According to literature the recurrence rate is high in case of recurrent hernias but that might be due to technical shortcomings.<sup>17</sup>

OPH is better than traditional repairs not only in terms of recurrence but also there is less post operative pain and rapid return to ordinary daily activities.<sup>6,10</sup> Mean

operation time 30mins was also shorter than other methods of herniorraphy.<sup>9,17</sup>

In conclusion open pre-peritoneal approach is better than conventional anterior approach for inguinal hernias, especially for recurrence hernias in terms of less post operative pain, early return to work and less chances of recurrence. Moreover it is safe and easy to perform in short time.

*Department of Surgery,  
Services Hospital/SIMS Lahore.  
esculapio@sims.edu.pk  
www.sims.edu.pk/esculapio.html*

## REFERENCES

1. Andrew Kingsnorth and David H. Bennet. *Hernias. Umbilicus. Abdominal Wall.* R.C.G. Russel. N. S. Williams & Christopher J.K Bulstrode. Bailey & Loves Short Practise of Surgery 22<sup>nd</sup> ed. London: Champman & Hall; 1995:890.
2. Zafar-ullah-Khan and Gardezi JR. Lichtenstein Tension-Free Hernioplasty: An Audit. *PJS.* 2004 Jan-June; 20(1):16-19.
3. Nyhus L M; *The Pre-peritoneal Approach and Iliopubic Tract Repair of Inguinal Hernias.* Nyhus LM, Condon RE. *Hernia* 4<sup>th</sup> ed. Philadelphia: J.B Lippincott. 1995.p153.
4. Desarda MP. *Surgical Physiology of Inguinal Hernia Repair.* A study of 200 cases. *BMJ Surg* 2003 Apr; 16; 3(1):2.
5. R.M.H. Mc Minn. *Abdomen. Lasts Regional and Applied.* 9<sup>th</sup> ed. Churchill Livingstone 1994; 295-419.
6. Patino JF, Garcia-Herreros LG, Zundel N. *Pre-peritoneal Approach for Inguinal Herniorraphy.* *Amr J.* Dec 1998.
7. Kurzer M, Belsham PA, Kark AE. *Prospective study of Open preperitoneal mesh repair for recurrent inguinal hernia.* *BJS.* 2002 Jan; 89(1):90-3
8. Mahon D, Decadt B, Rhodes M. *Prospective randomized trial of Laparoscopic (Transabdominal Preperitoneal) Vs Open (mesh) Repair of Bilateral and Recurrent Inguinal Hernia.* *Surg Endosc.* 2003 Jun 17. PMID 12802653.
9. Beets GL, Dirksen CD, Go PM, Geisler FE, Baeten CG, Kootstra G. *Open or Laparoscopic Preperitoneal mesh repair for recurrent inguinal hernia. A randomized controlled trial.* *Surg Endosc.* 1999 Apr; 13(4):323-7.
10. Johanson B, Hallerback B, Glise H, Anesten B, Smedberg S, Roman J. *Laparoscopic mesh Vs Open mesh Vs Conventional technique for Inguinal Hernia Repair: A randomized multi centre trial.* *Hernia repair.* *Ann Surg.* 1999 Aug; 230(2):225-31.
11. Goodwin JS 2<sup>nd</sup>, Traverso LW. *A prospective cost and outcome comparison of Inguinal Hernia repairs. Laparoscopic Transabdominal preperitoneal Vs Open tension free preperitoneal.* *Surg Endosc.* 1995 Sep; 9(9): 981-3.
12. Beets GL, Van Geldere D, Barten CG, Go PM. *Long term results of giant prosthetic reinforcement of visceral sac for complex recurrent inguinal hernia.* *BJS* 1996 Feb; 83(2):203-6.
13. Gross E, Kofuncuo O. *Preperitoneal implantation of Dacron mesh for treatment of recurrent inguinal hernia and bilateral inguinal hernia.* *Zentralbl Chir* 1994; 119(4):207-13.
14. Mazingo DW, Walters MJ, Otchy DP, Rosentel D. *Preperitoneal Synthetic mesh repair of recurrent inguinal hernias.* *Surg Gynecol Obstet.* 1992 Jan; 174(1):33-35.
15. Schaap HM, Van de Pavoordt HD, Bast TJ. *The Preperitoneal Approach in the Repair of recurrent inguinal hernias.* *Surg Gynecol Obstet* 1992 Jun; 174(6): 460-4.
16. Van Damme JP. *A Preperitoneal Approach in the prosthetic repair of inguinal hernia.* *Int Surg.* 1985 Jul-Sep; 70(3):223-6.
17. Aitola P, Airo I, Matikainen M. *Laparoscopic Vs Open preperitoneal inguinal hernia repair: A prospective randomized trial.* *Ann Chir Gynaecol* 1998; 87:22-5.
18. Nyhus LM, *Iliopubic Tract Repair of inguinal and Femoral Hernia. The Posterior (Preperitoneal) Approach.* Nyhus LM, Baker RJ, Fischer JE. *Mastery of Surgery* 3<sup>rd</sup> ed. Vol 2. Boston Little Brown and Company 1997:p1849