

## Repair of inguinal hernia utilizing external oblique muscle sheath as posterior wall strengthening and placing spermatic cord subcutaneously

**<sup>1</sup>Dr. Babu Lal Sunkaria**

Associate Professor, Department of Surgery, Government Medical College, Amritsar, Punjab, India

**<sup>2</sup>Dr. Hitesh Bhatia**

Senior Resident, Department of Surgery, Government Medical College, Amritsar, Punjab, India

**<sup>3</sup>Dr. Priya Bharati**

Senior Resident, Department of Medicine, Government Medical College, Amritsar, Punjab, India

**<sup>4</sup>Dr. Sachreet Kaur**

Senior Resident, Department of Anaesthesia, Government Medical College, Amritsar, Punjab, India

**Corresponding author: Dr. Hitesh Bhatia<sup>2</sup>**

Corresponding address: House No. 64, Kabir Park, Amritsar-143001, Punjab, India.

E- mail: [dr.hiteshbhatia009@gmail.com](mailto:dr.hiteshbhatia009@gmail.com)

---

### Abstract

---

**Background-** Inguinal hernia can be repaired surgically in three ways: open sutured tissue repair, open mesh repair, and laparoscopic mesh repair. This prospective study aimed at comparing the efficacy of mesh and non mesh repair technique in terms of recurrence rate of inguinal hernia, foreign body reaction, hospital stay and early ambulation, complications. **Method-** This prospective study was carried out on 50 male patients with inguinal hernia. In 25 cases, after doing posterior wall strengthening of inguinal canal by conventional Bassini's repair, placement of external oblique sheath was done behind spermatic cord reinforcing the dorsal wall of inguinal canal and placing the spermatic cord in the subcutaneous plane. The control group comprised of 25 patients in whom hernioplasty was done using prolene mesh. **Results-** Most of the patients in study group; 16(64%) were discharged on second day following surgery with mean hospital stay of 2.16, while most of control group patients were discharged on day 3 following surgery with mean stay of 4.32 days. The p value was less than .0001 and the difference was statistically highly significant. **Conclusion-** Repair of inguinal hernia (Direct & Indirect) utilizing external oblique muscle sheath as posterior wall strengthening and placing spermatic cord subcutaneously as compared to mesh repair is physiological, mechanically reasonable, unsophisticated and results in greater patient's comfort, rapid rehabilitation, is cost effective and sort with lesser complications.

**Keywords:** Inguinal hernia repair, non mesh repair, external oblique sheath, Bassini's repair, prolene mesh.

---

## Introduction and Background

An inguinal hernia is a protrusion of contents of abdomen through inguinal canal via weakness in abdominal wall. The lifetime rate of inguinal hernia is 25 percent in males and 2 percent in females.<sup>1</sup> There are two types of inguinal hernia; direct and indirect. After appendectomy, repair of inguinal hernia is the most common (10-15%) surgical procedure performed all over the world.<sup>2</sup> The hernial surgery aims at preventing strangulation, repairing the abdominal wall weakness and reducing recurrence. Inguinal herniae can be repaired surgically in three ways: open sutured tissue repair, open mesh repair, and laparoscopic mesh repair. Most of groin hernia repairs involving the use of a mesh, use either a Lichtenstein method or plug of mesh to repair weakened posterior wall. In the Lichtenstein procedure mesh is sutured in front of the hernia defect. TAPP (Transabdominal preperitoneal) repair and TEP (totally extraperitoneal) are major laparoscopic methods of hernia repair.

### Repair techniques

The basic principles of modern inguinal hernia surgery are derived from 1884 when an Italian surgeon Edoardo Bassini (1844-1924) who introduced a new surgical technique.<sup>3</sup> Following extensive study of the anatomy of the inguinal region, he devised a revolutionary method for the surgical treatment of inguinal hernia.<sup>4</sup> In the modern literature, Edward Earle Shouldice (1890-1965) especially pointed out at the importance of the transversalis fascia for reconstruction of the posterior wall of the inguinal canal.

The earliest mesh augmented repair was performed by the American Surgeon Francis Usher (1908-1980) who used a piece of polypropylene mesh to create a cuff around the conjoined tendon before suturing it to the inguinal ligament.<sup>5</sup> With this technique, no anatomical reconstruction of the posterior wall was fabricated but the hernia defect was covered by mesh. The polypropylene mesh is still the mesh of choice nowadays. With this technique, the recurrence rates dropped significantly and excellent long-term results were obtained. In 1964, Lichtenstein

introduced performing the tension-free mesh repair under local anaesthetics and popularized this technique. In 1950s, French surgeon René Stoppa described open preperitoneal repair with mesh reconstruction.<sup>6</sup> In 1982, the South African surgeon Ralph Ger (1921-2012) was the first to describe the laparoscopic approach of the inguinal canal. Endeavours to find the ideal position led to the introduction of intra-abdominal placement of the mesh. An intraperitoneal onlay mesh was placed intra-abdominally, covering the hernia defect by fixating it to the peritoneum of the abdominal wall. This technique is generally perceived to be inferior as compared to other minimal invasive techniques.<sup>7</sup>

The recurrence rate after laparoscopic repair has been comparable to open repair and varies between 1-4%. Up till now, no technique seems to be superior towards the other.<sup>8</sup> Both techniques show equal advantages over open techniques, equal rates of complications and equal operative times. Successful inguinal hernia treatment without mesh can be achieved using Desarda repair, as it is effective as the standard Lichtenstein procedure.<sup>9</sup>

But for synthetic mesh repairs, many studies have noted their association with numerous complications including persistent pain, infection, adhesions, bowel erosion, shrinkage and inflammation.<sup>10</sup> Time taken to return to daily activities was higher may be because those patients who had mesh repair, experience more pain and for longer duration.<sup>11</sup>

### Aims & Objectives

To compare the efficacy of mesh and non-mesh repair technique in terms of recurrence rate of inguinal hernia, foreign body reaction, hospital stay, early ambulation & complications.

### Materials and Methods

This prospective study was done on 25 patients of uncomplicated inguinal hernia with their informed consent after duly explaining the procedures with approval of ethical committee.

The study group comprised 25 patients. In these cases, the indirect hernial sac was freed up, completely ligated and excised while direct hernia sacs were reduced back in to the preperitoneal space. The internal ring narrowing was done in all the patients. The control group comprised of 25 patients in whom hernioplasty was done using prolene mesh.

**Surgical technique of non-mesh hernia repair:**

After confirming and marking the correct surgical site preoperatively, patient was positioned supine following spinal anaesthesia. Closure of the defect and buttressing of the inguinal canal floor was then performed primarily with native tissue as in Bassini's repair i.e. suturing of medial part of inguinal ligament with conjoint tendon by few interrupted sutures of polypropylene 1-0 on round body needle. After doing posterior wall strengthening of inguinal canal by conventional Bassini's repair, placement of external oblique sheath was done behind spermatic cord reinforcing the dorsal wall of inguinal canal with vicryl 2-0 on round body needle and placing the spermatic cord in the subcutaneous plane. Skin and subcutaneous tissue was stitched using non absorbable sutures.

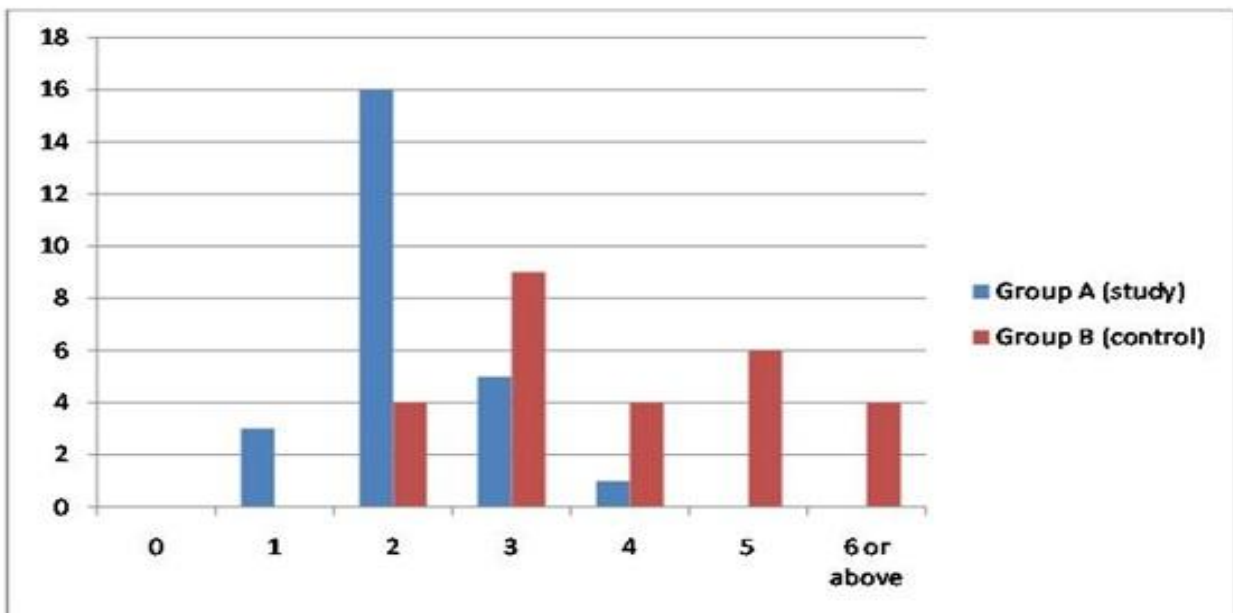
**Follow up:** Postoperatively patients were examined and compared for following complications:

Urinary retention, Hydrocoele & Wound haematoma, Wound infection, Testicular atrophy & pain, Scrotal ecchymosis, Secondary hydrocoele, Orchitis, Recurrence. The patients were followed up for 3 months following surgery. Each patient was re-examined at 1 week, 1 month and 3 months interval for complications and recurrence.

**Results**

The present study was planned to compare the results of Repair of inguinal hernia (Direct & Indirect) utilizing external oblique muscle sheath as posterior wall strengthening and placing spermatic cord subcutaneously with that of mesh repair. In the study, all patients were males. The control group comprised of 25 patients in whom hernioplasty was done using prolene mesh. The data collected in the study was analyzed using unpaired t-test to reach logical conclusions. Following observations were made-

Most of the patients in study group as shown in **Graph 1** and **Table 1**; 16(64%) were discharged on second day following surgery with mean hospital stay of 2.16; while most of control group patients were discharged on day 3 following surgery with mean stay of 4.32 days. The p value was less than .0001 and the difference was statistically highly significant.



**Graph 1: Showing Post- Operative Hospital stay in days**

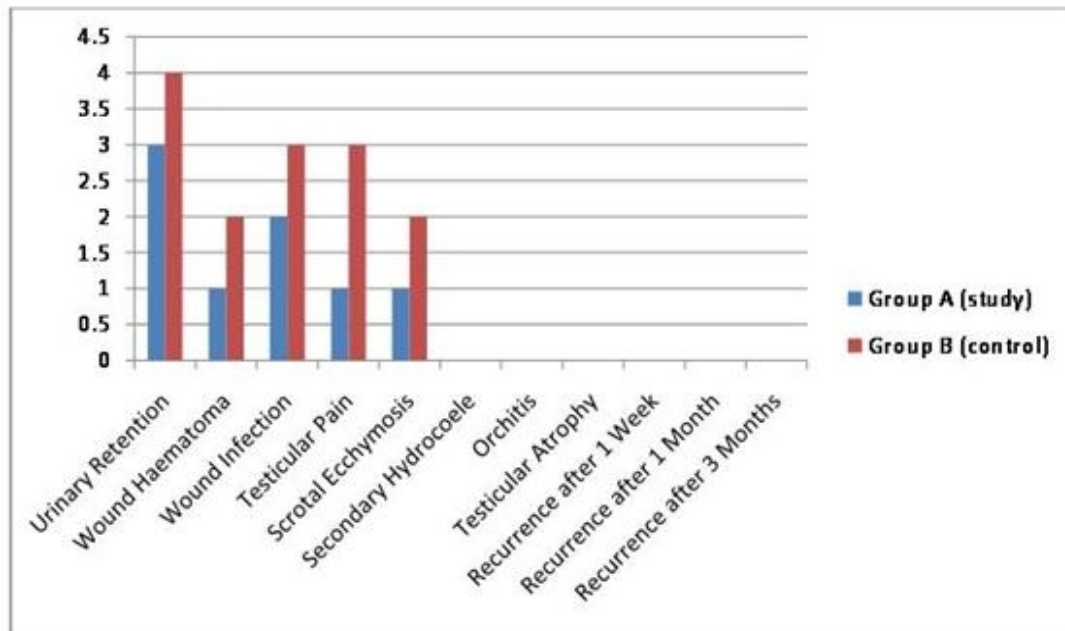
**Table 1: Showing Post Operative Hospital stay in days**

| Hospital stay in days | Group A (Study Group) |       | Group B (Control Group) |       |
|-----------------------|-----------------------|-------|-------------------------|-------|
|                       | No.of Days            | % Age | No.of Days              | % Age |
| 0                     | 0                     | 0%    | 0                       | 0%    |
| 1                     | 3                     | 12%   | 0                       | 0%    |
| 2                     | 16                    | 64%   | 4                       | 16%   |
| 3                     | 5                     | 20%   | 9                       | 36%   |
| 4                     | 1                     | 4%    | 4                       | 16%   |
| 5                     | 0                     | 0%    | 6                       | 24%   |
| 6 or above            | 0                     | 0%    | 4                       | 16%   |

Four (16%) cases in study group had voiding difficulty, but required no catheterisation and responded to measures like reassurance, providing privacy for micturition using bedside screen, hot water bottles while 4 patients (16%) in control group developed difficulty. Spinal anaesthesia was also considered for retention urine in both groups in addition to effect of surgery alone.

As shown in **Graph 2** and **Table 2** ;There was a single (4%) case of wound haematoma in study group as compared to 2(8%) in control group.

There were 2(8%) cases of wound infection treated by antibiotics and anti inflammatory drugs in study group while 3(12%) such cases in control group. Severe testicular pain requiring injectables was experienced by fewer 1(4%) in study group patients than control 3(12%) group cases. There was a single (4%) case of scrotal ecchymosis in study group compared to 2(8%) in control group. None of the patients in any group developed any secondary hydrocoele, orchitis or testicular atrophy.



**Graph 2: Showing Post – Operative Complications**

**Table 2: Showing Post – Operative Complications**

| Post – Operative Complications | Group A (Study Group) |       | Group B (Control Group) |       |
|--------------------------------|-----------------------|-------|-------------------------|-------|
|                                | No.                   | % Age | No.                     | % Age |
| Urinary retention              | 3                     |       | 4                       | 16%   |
| Wound haematoma                | 1                     | 12%   | 2                       | 8%    |
| Wound infection                | 2                     | 4%    | 3                       | 12%   |
| Testicular pain                | 1                     | 8%    | 3                       | 12%   |
| Scrotal ecchymosis             | 1                     | 4%    | 2                       | 8%    |
| Secondary hydrocoele           | 0                     | 4%    | 0                       | 0%    |
| Orchitis                       | 0                     | 0%    | 0                       | 0%    |
| Testicular atrophy             | 0                     | 0%    | 0                       | 0%    |
| Recurrence                     |                       |       |                         |       |
| 1 week                         | Nil                   | 0%    | Nil                     | 0%    |
| 1 month                        | Nil                   | 0%    | Nil                     | 0%    |
| 3 month                        | Nil                   | 0%    | Nil                     | 0%    |

**Recurrence at follow up:** All the patients were followed up for 3 months following surgery. Each patient was re-examined at 1 week, 1 month and 3 months interval for complications and recurrence and it was noted that none of the patient in either group had any recurrence.

## Discussion

Inguinal hernia is a very common condition encountered in general surgery practice. Most of open groin hernia repairs involving the placement of mesh use Lichtenstein method and its modifications throughout the world but their complications and failures are frequent in the hands of non consultant staff. Mesh repair, plug repair complicates what is best and makes it difficult to follow by the less experienced surgeons. This necessitates the use of a less complicated technique of hernia repair with fewer complications in the hands of general surgeons in smaller or general hospitals. In this present study

of 50 patients, the method of hernia repair described seems to be superior to the open mesh (Lichtenstein) method on many counts. Both the groups are statistically similar with regards to age, sex, and co morbid conditions. The cost involved, time taken to ambulate the patient, post operative stay, are all significantly less in the study method as compared to the mesh repair. Also the postoperative pain and rate of complications is lesser with the study method. In the study group there are no recurrences or resurgeries required. The mesh using control group poses potential for foreign body reaction of the mesh and groin pain, owing to the spermatic cord and nerve enmeshing in the strong fibrous tissue around the mesh. The study technique being a pure tissue repair will not cause extensive fibrosis as seen in mesh repair.

Using fixed surgical steps, this technique can be very effective with lesser complications even in the hand of junior surgeons as there is very less scope for modification by individual surgeon. The modifications may add to the failure rates in the mesh repair. Moreover in the non-mesh repair there is no need of any costly mesh or laparoscopic instruments. This makes this repair highly cost effective. The non-mesh technique of using external oblique muscle sheath as posterior wall strengthening is an efficient, safe but simple and affordable method, of inguinal hernia repair.

### Summary and Conclusion

Inguinal herniorrhaphy being one of the commonest general surgery procedure can be repaired using mesh or without use of mesh. As compared to mesh repair, the technique of repair of inguinal hernia (Direct & Indirect) utilizing external oblique muscle sheath as posterior wall strengthening and placing spermatic cord subcutaneously is equally effective in preventing the recurrence. The technique avoids the use and hence the foreign body reaction to synthetic mesh. The conventional technique requires lesser hospital stay than mesh repair and is effective in making the patient ambulatory at the earliest. The conventional technique is cost effective as it avoids the use of expensive mesh. Post operative pain, discomfort and other complications as Urinary retention, Wound haematoma, Wound infection, testicular pain and Scrotal ecchymosis are lesser than mesh repair. The conventional technique is easy to learn. Patient acceptance and appreciation of the procedure is gratifying.

Hence, we concluded that Repair of inguinal hernia (Direct & Indirect) utilizing external oblique muscle sheath as posterior wall strengthening and placing spermatic cord subcutaneously as compared to mesh repair is physiological, mechanically reasonable, unsophisticated and results in greater patient's comfort, rapid rehabilitation, is cost effective and sort with lesser complications for the treatment of all types of adult primary uncomplicated inguinal hernias.

### References

1. Nicks BA, Askew K. Hernias. In: eMedicine [database online]. Omaha (NE): eMedicine.com; 2010 Jan 25 [accessed 2014 Jul 14]. Available: <http://emedicine.medscape.com/article/775630-overview>.
2. Eker HH, Langeveld HR, Klitsie PJ, Van't Riet M, Stassen LP, Weidema WF et al. Randomized clinical trial of total extra peritoneal inguinal hernioplasty vs Lichtenstein repair: a long-term follow-up study. *Arch Surg.* 2012; 147(3):256-260.
3. Kingsnorth A, LeBlanc K. Hernias: inguinal and incisional. *Lancet* 2003; 362(9395):1561-71.
4. Jones B.D. Master Techniques in Surgery: Hernia. Philadelphia USA. Lippincott Williams & Wilkins. 2012. pp 47.
5. Jones B.D. Master Techniques in Surgery: Hernia. Philadelphia USA. Lippincott Williams & Wilkins. 2012. pp 17.
6. Williams N, O'Connell PR, editors, Bailey & Love's Short Practice of Surgery. 26<sup>th</sup> ed. London: Edward Arnold; 2013, pp.958.
7. Bittner R, Arregui ME, Bisgaard T. Guidelines for laparoscopic (TAPP) and endoscopic (TEP) treatment of inguinal Hernia [International Endohernia Society (IEHS)]. *Surg Endosc.* 2011; 25(9): 2773-2843.
8. McCormack K, Wake BL, Fraser C. Transabdominal pre-peritoneal (TAPP) versus totally extraperitoneal (TEP) laparoscopic techniques for inguinal hernia repair: a systematic review. *Hernia* 2005; 9(2):109-14.
9. Yossef T, El-Alfy Khaled, Farid Mohamed. Randomized clinical trial of Desarda versus Lichtenstein repair for treatment of primary inguinal hernia. *Int J Surg.* 2015; 20:28-34.
10. Breuing K, Butler CE, Ferzoco S, Franz M, Hultman CS, Kilbridge JF et al. Ventral Hernia Working Group. Incisional ventral hernias: review of the literature and recommendations regarding the grading and technique of repair. *Surgery.* 2010; 148(3):544-558.

12. Stephenson BM, Kingsnorth AN. Inguinal hernioplasty using mosquito net mesh in low income countries, an alternative and cost effective prosthesis. Christmas; Surgery. BMJ.2011; 18:1237-1247.

| Access this Article in Online   |  |
|---|--|
|  | Website:<br><a href="http://www.ijcrims.com">www.ijcrims.com</a> |
|   | Subject:<br><a href="#">Medical Sciences</a>                     |
| Quick Response Code   |  |

[How to cite this article:](#)

Babu Lal Sunkaria, Hitesh Bhatia, Priya Bharati, Sachreet Kaur. (2017). Repair of inguinal hernia utilizing external oblique muscle sheath as posterior wall strengthening and placing spermatic cord subcutaneously. Int. J. Curr. Res. Med. Sci. 3(11): 39-45.

DOI: <http://dx.doi.org/10.22192/ijcrms.2017.03.11.009>