



## Surgery

## COMPARATIVE STUDY OF SHOULDICE'S AND LICHTENSTEIN'S METHOD OF INGUINAL HERNIA REPAIR IN AGE GROUPS LESS THAN AND MORE THAN 50 YEARS

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**ABSTRACT**

**Introduction:** Lichtenstein introduced the “tension free repair,” with primary repair of the floor of inguinal canal using a polypropylene mesh and has become gold standard of inguinal hernia repair today. However, in a developing country like ours, affordability of mesh repair is difficult for many poor patients. In good hands, Shouldice's anatomical repair has a very low recurrence rate. Therefore, a study was done at a tertiary hospital to compare both the techniques in term of their recurrence, efficacy, post op pain, complications in age group less than and more than 50 years.

**Material and methods:** This was a prospective, longitudinal, cohort study of 100 cases of inguinal hernia, which were randomly distributed into two groups of Shouldice's repair and Lichtenstein's repair in the age groups of 18-50 years and more than 50 years. This study was carried out on patients attending a tertiary care hospital for a period for 2 years. Data was collected in regarding ease to perform the surgery, postoperative pain, intra operative complications and bleeding, immediate postoperative complication.

**Results:** In Shouldice's repair group, two patients had injury to the epigastric vessels while incising the transversalis fascia in the posterior wall of inguinal canal. One patient had injury to the ilioinguinal nerve in Lichtenstein's group while fixing the mesh to the inguinal ligament. The average difficulty of performing the surgery in Shouldice's repair group was 4.28 and in Lichtenstein's repair group was 3.46. In this study most patients were followed up for assessing recurrence over 08 months to 18 months. This study showed recurrence of 2 cases (8%) in Shouldice's repair group in age group more than 50 yrs and nil cases in Lichtenstein's repair group. Among the 2 cases, one patient had irreducible hernia, in whom anatomical dissection was difficult and repair was under tension. Overall recurrence in all age group in Sholudice's was 4% and nil in Lichtenstein's group.

**Discussion:** The Shouldice technique required considerable time to learn and difficulties were sometimes met when trying to accomplish repair at the inguinal floor without tension. The recurrence rate in Shouldice's group was 4% in all age group, while Lichtenstein's had none.

To conclude, in ever evolving era of inguinal hernia repair, Lichtenstein inguinal hernia repair has now become a gold standard in all age group with lesser morbidity and excellent patient outcome. However, it can be emphasized that Shouldice's repair still holds good in a developing country like India, due to its cost effectiveness

**KEYWORDS :** Inguinal hernia, Lichtenstein's repair, Shouldice's repair

**INTRODUCTION:**

The outcome of hernia surgery is highly surgeon-dependent, and Astley Cooper's often quoted statement of 1804, is still pertinent and stands as an appropriate introduction to this chapter “No disease of the human body, belonging to the province of the surgeon, requires in its treatment a better combination of accurate anatomical knowledge and surgical skill than Hernia in all its varieties.”<sup>1</sup>

In 1989 Lichtenstein and associates introduced the “tension free repair,” with primary repair of the floor of inguinal canal using a polypropylene mesh and has become gold standard of inguinal hernia repair today. However, in a developing country like ours, affordability of mesh repair is difficult for many poor patients. In good hands, Shouldice's anatomical repair has a very low recurrence rate. Therefore, a study was done at a tertiary hospital to compare both the techniques in term of their recurrence, efficacy, post op pain, complications in age group less than and more than 50 years.

**MATERIAL AND METHODS:**

This was a prospective, longitudinal, cohort study of 100 cases of inguinal hernia, which were randomly distributed into two groups of Shouldice's repair and Lichtenstein's repair in the age groups of 18-50 years and more than 50 years. This study was carried out on patients attending a tertiary care hospital for a period for 2 years. Among 100 cases of inguinal hernia, 50 cases were operated by Shouldice's repair and 50 cases were operated by Lichtenstein's repair. Qualified surgeons and surgery residents operated on all cases. Data was collected in regarding ease to perform the surgery, postoperative pain, intra operative complications and bleeding, immediate postoperative complication.

All patients were worked up for surgery on an OPD basis, anesthesia fitness taken and admitted to the hospital one-day prior to surgery.

**RESULTS:**

In Shouldice and Lichtenstein group, age group distribution, type of inguinal hernia, duration of surgery, amount of bleeding, severity of pain, and, recurrence rates were studied as shown in table 1.

Age Group (Years)	Shouldice's Group	Lichtenstein's Group
18-50	25 (50%)	25 (50%)
>50	25 (50%)	25 (50%)
<b>Type of Hernia</b>		
Irreducible	3(3%)	2(2%)
Complete	5(5%)	7(7%)
Incomplete	42(42%)	41(41%)
Direct	29(29%)	33(33%)
Indirect	19(19%)	13(13%)
Pantaloon	2(2%)	4(4%)
<b>Duration (Years)</b>		
0-30	00	01
31-45	02	16
46-60	09	24
61-75	20	07
76-90	15	02
>90	04	00
<b>Amount of bleeding</b>		
0 – 50 ml	38	43
51 – 100 ml	10	07
101 – 150 ml	02	00
<b>Severity of pain (Numerical Rating Scale)</b>		
18-50 years	3.5	3.1
>50 years	3.8	3.0
<b>Recurrence</b>		
18-50 years	NIL	NIL
>50 years	02	NIL

**Intra Operative Complications:** In Shouldice's repair group, two patients had injury to the epigastric vessels while incising the transversalis fascia in the posterior wall of inguinal canal. One patient had injury to the ilioinguinal nerve in Lichtenstein's group while fixing the mesh to the inguinal ligament. No other major intra operative complications, no visceral injury in both the groups were seen.

**Ease of Surgery:** The surgeon decided ease of surgery, and gave his comment about the difficulty in performing the operation as a

numerical scale rating from 01 to 10. Rating of 01 for the easiest surgery he performed, and a rating of 10 for the most difficult one. The average difficulty of performing the surgery in Shouldice's repair group was 4.28 and in Lichtenstein's repair group was 3.46.

**Postoperative Complications:** Postoperative complication was assessed in all the cases. In Shouldice's repair group, 01 case had surgical site infection which was managed by dressing and antibiotics, which recovered well. In Lichtenstein's repair group, 01 patient had inguinodynia, possibly due to entrapment of nerve while fixing the mesh. In 03 cases of Shouldice's repair and 01 case of Lichtenstein's repair group, surgical drains were kept postoperatively. However, there was postoperative haematoma at surgical site, in 02 patients of Shouldice's repair group and in 01 patient of Lichtenstein's group. In 01 patient in Shouldice's repair group, the haematoma was managed with aspiration percutaneously, while others were observed conservatively.

**Hospital stay:** In both the groups the average hospital stay was 7 days. In 5 out of 100 cases the hospital stay was more than 10 days due to complications

**Recurrence:** In this study most patients were followed up for assessing recurrence over 08 months to 18 months. This study showed recurrence of 2 cases (8%) in Shouldice's repair group in age group more than 50 yrs and nil cases in Lichtenstein's repair group. Among the 2 cases, one patient had irreducible hernia, in whom anatomical dissection was difficult and repair was under tension. The second patient had weak repair of posterior wall due to thinned out fascia transversalis.

**DISCUSSION:** Epidemiological data and data from the Swedish Hernia Register suggests that recurrence occurs after as many as 12±18 per cent of all conventionally repaired inguinal hernias<sup>2,3</sup>. The technique as practised in the Shouldice Hospital has given better results with a recurrence rate of less than 1 percent<sup>4</sup>. A few other specialist hernia surgeons have been able to reproduce these achievements<sup>5,6</sup>.

In the Lichtenstein repair group, the recurrence rate was nil in our study in both the age groups, over a follow up period of 08 months to 18 months. The difference between specialist and non-specialist units appears to be less marked and the present results were in accordance with an earlier survey<sup>7</sup>. Because of the small differences in the rate of complications, no conclusions regarding which is the better procedure could be drawn. These results were consistent with randomized trial conducted by James E. McGillicuddy<sup>8</sup>.

When comparing both the age groups (18-50 years and more than 50 years), the average time taken for surgery in Shouldice's repair group was 72 minutes, and in Lichtenstein's repair group was 60 minutes. The average time taken was calculated by tabulating the data and by calculating the mode from the table. Most of the patients lie in 46-60 minutes in Lichtenstein's and in 61-75 minutes in Shouldice's repair group. In this study, the average duration of surgery for Shouldice's repair group was greater than Lichtenstein's group. This finding was comparable with studies carried in other hospitals.<sup>9</sup> The Lichtenstein method, on average, takes 7-10 minutes less to perform than the Shouldice procedure, but takes 1-4 minutes longer than other non-mesh methods<sup>10</sup>.

The average difficulty of performing the surgery in both the age groups in Shouldice's and Lichtenstein's repair group were 4.28 and 3.46 respectively,  $p < 0.05$ . The Shouldice's procedure is slightly difficult to start with and therefore had a steeper learning curve. The result suggests that Lichtenstein's repair was easier to perform in both the age groups. The present study was in keeping with those of earlier trials comparing the same techniques<sup>8,11</sup> and also with a report from the EU Hernia Trialists Collaboration<sup>12</sup>.

These studies conclude that Shouldice repair had more recurrences compared to Lichtenstein repair but there was no difference in the number of patients complaining of long term pain.<sup>13,14,15</sup> Patients in Lichtenstein's repair group had less pain so the patients were ambulant earlier than the Shouldice's repair group. Most of the patients in Shouldice's repair group were back to their normal work within 3 weeks and in Lichtenstein's repair group patients returned to work in 2 weeks. Lichtenstein's hernia surgery has led to early ambulation, painless life and patient return to the work earlier.

Recurrence was assessed in this study for all patients. Follow up between 08 to 18 months, show recurrence of 2 cases (8%) in Shouldice's and nil case in Lichtenstein's repair group in age more than 50 years. There were no recurrences in age group of 18-50 years [ref table 1]. However, in all age groups, the recurrence rate in Shouldice's group was 4% in our study. Breakdown according to type of hernia suggested that weak transversalis fascia and difficult dissection in elderly population were mainly responsible for the difference in recurrence rate between the two treatment groups ( $p < 0.05$ )<sup>10</sup>.

Both types of hernia repair are comparable and effective in both age groups, but long-term results favor the **Lichtenstein** technique for reducing recurrences (to a  $P$  value of  $< 0.05$ ) and ease of technical mastery<sup>7</sup>. The above results were consistent with our study. There is evidence that the use of Lichtenstein's repair is associated with a reduction in the risk of recurrence of between 50% and 75%.<sup>9</sup> Of the two procedures, the Lichtenstein repair was easier to learn and perform, and coupled with the short-term recurrence advantage, it is not surprising more hernia centers are using prosthetics.<sup>16,17</sup>

**Conclusion:** When a method is easy to learn, a high standard is quickly acquired and the results of general surgical units will tend to approach those obtained by specialists. The Shouldice technique required considerable time to learn and difficulties were sometimes met when trying to accomplish repair at the inguinal floor without tension. The recurrence rate in Shouldice's group was 4% in all age group, while Lichtenstein's had none.

To conclude, in ever evolving era of inguinal hernia repair, Lichtenstein inguinal hernia repair has now become a gold standard in all age group with lesser morbidity and excellent patient outcome. However, it can be emphasized that Shouldice's repair still holds good in a developing country like India, due to its cost effectiveness.

**Conflict of interest:** Nil to declare

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