

**A Retrospective Study Assessing the Outcome and Complications of
Emergency Inguinal Hernia Repair**Abhijit Kumar¹, Sujeet Kumar²¹Assistant Professor, Department of General Surgery, Lord Buddha Koshi Medical College & Hospital, Saharsa, Bihar, India²Assistant Professor, Department of General Surgery, Lord Buddha Koshi Medical College & Hospital, Saharsa, Bihar, India

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Conflict of interest: Nil

Abstract**Aim:** The aim of the present study was to assess the morbidity of Lichtenstein mesh hernioplasty in treating obstructed inguinal hernias.**Material & Methods:** It was a retrospective study undertaken in the Department of General Surgery for the duration of 2 years. 100 patients were operated & included in the study.**Results:** Age of the studied patients ranged from 18 to 86 years with mean age 49.61 ± 16.024 years. About 70% of the studied patients had no comorbidity. 70 of the studied patients had no postoperative complications. There was statistically significant decrease in postoperative VAS pain score over time, which decreased two hours postop to 1 in the first postoperative week.**Conclusion:** Standard lichtenstein mesh hernioplasty for obstructed inguinal hernia is a safe operation with acceptable risks of complications. However, patient selection and surgeon experience are important factors for the outcome.**Keywords:** Obstructed inguinal hernia, Lichtenstein mesh hernioplasty, Morbidity.

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Introduction

Inguinal hernia is much more frequent in males than in females. Possible aetiological factors include an open processus vaginalis (found in all children with indirect hernia) and conditions which can raise intra-abdominal pressure, such as chronic bronchitis or hyperplasia of the prostate. [1] While some elderly people, particularly women, may be unaware of their hernia until it strangulates, most of the cases are easily diagnosed. An early referral to the surgeon should mean short waiting times and elective surgery. Hernias are among the oldest recorded afflictions of humans, and inguinal hernia repair is one of the most common general surgical procedures. [2] Inguinal hernias comprise 70% to 75% of all abdominal wall hernias and are more common in men. [3] In 1984 Lichtenstein addressed the issue of tension by popularizing the routine use of mesh, coining the term 'tension free hernioplasty'.

Many suture-based hernia repairs have been described (e.g. Bassini and Shouldice) and in expert hands the Shouldice repair has equivalence to a mesh repair, but in a more general surgical

practice it is associated with recurrence rates of up to 15%. A meta-analysis from the EU Hernia Trialists Collaboration compared mesh repair with sutured techniques. [4] Recurrence was less common after a mesh repair. Mesh implantation works by inducing progressive ingrowth of fibrous tissue that begins within two weeks and continues up to twelve weeks, giving strength to the weakened tissue. A repair using mesh is therefore always indicated unless there is a significant risk of mesh infection, such as the requirement for a bowel resection during a strangulated hernia repair. In recent years, Lichtenstein tension-free mesh-based repair has become the criterion standard for elective hernia repair. [5]

The incidence of postoperative complications in emergency repair of IGH is 21–39%, along with a mortality rate of 4–5%. [6-9] In 1984 Lichtenstein addressed the issue of tension by popularizing the routine use of mesh, coining the term 'tension free hernioplasty'. Many suture-based hernia repairs have been described (e.g. Bassini and Shouldice) and in expert hands the Shouldice repair has equivalence to a mesh repair, but in a more general

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The application of synthetic mesh in emergency surgery for hernia remains controversial, especially when the presence of bowel necrosis, contaminated or infected surgical field is clinically validated. [11] The gold standard treatment for inguinal hernia is a tension-free repair. However, in emergency surgeries, tissue repair has been used for strangulated hernia when there is concomitant bowel resection or field contamination. [12] Mesh is used to reduce the incidence of recurrence [13]; however, due to the mesh related complications and the life expectancy, the advantages of mesh reinforcement are questionable.

The main aim of this study was to assess the morbidity of Lichtenstein mesh hernioplasty in treating obstructed inguinal hernias. Primary outcome measures were postoperative wound site infection, seroma formation, length of hospital stay, hanging testis, inguinodynia, testicular infarct and recurrence.

Material & Methods

It was a retrospective study undertaken in the Department of General Surgery, Lord Buddha Koshi Medical College & Hospital, Saharsa, Bihar, India for the duration of 2 years. 100 patients were operated & included in the study.

Inclusion Criteria

- All obstructed inguinal hernia patients which was presented with acute symptoms and operated in emergency.
- People between the ages of 18 and 80 years old who had been diagnosed clinically with incarcerated, or strangulated inguinal hernias.

Exclusion Criteria

- Age: < 18 years,
- Complicated recurrent hernia,
- Class 4 and 5 according to physical status classification of the American Society of Anesthesiologists
- Patients who were unfit for the operation.

Methodology

The patient's age, sex, gender, risk factors, history were all recorded in a thorough medical history. Routine preoperative investigations as full laboratory workup (including CBC, PT, PTT, INR, liver function tests and kidney function tests). Evaluations of the operative time, hospital stay and any intraoperative complications. All these patients underwent standard Lichtenstein mesh hernioplasty for obstructed inguinal hernia in emergency operating room under spinal anaesthesia. Post-operative wound site infection, seroma formation, hanging testis, inguinodynia, testicular infarct and recurrence within 1 year was observed. 15 × 7.5 cm² poly-propylene mesh was used in all cases.

After surgeries, complete postoperative treatment was started. Patients received injection ceftriaxone antibiotic preoperatively and (amoxicillin + clavulanic acid) continued for 5-6 days post-operatively. Postoperative pain was assessed using visual analogue scale (VAS) with 0-30 mm signifying mild pain, 31-60 mm moderate pain, 61-90 severe pain and 91-100 excruciating pain. All the patients were discharged on stabled conditions and all the postoperative complications were noted.

Postoperative follow-up was given twice hourly just after the operation and on first, second and third postoperative days, and then on seventh postoperative day. In each follow-up, pain was scored and gait was assessed.

Postoperative Follows Up:

They were followed up for 14 days for early postoperative complication until the sutures were removed and for one year for late postoperative complication as chronic pain and recurrence. In the obstructed cases, when resection anastomosis was not done, were return to home the next morning, while in strangulated cases, they remained for 6-8 days until they take fluid and food without complications.

Statistical Analysis:

Quantitative data were presented as mean ± standard deviation (SD), median, and range. The independent t-test (t) and the Mann-Whitney (MW) tests were employed to compare parametric and nonparametric quantitative data, respectively. Qualitative data were presented as frequency and proportions and were compared using Fisher's exact test (X²). P value 0.05 was considered statistically significant. It was judged highly significant when the P value was 0.001.

Results

Table 1: Demographic and clinical data of the studied patients

| Gender | N | % |
|---------------------------|--------------------|----------|
| Male | 85 | 85 |
| Female | 15 | 15 |
| Age (year): | | |
| Mean \pm SD | 49.61 \pm 16.024 | |
| Range | 18 – 86 | |
| Comorbidity: | | |
| NAD | 70 | 70 |
| COPD | 3 | 3 |
| IHD | 5 | 5 |
| Diabetes | 9 | 9 |
| Hypertension | 14 | 14 |
| Diabetes and hypertension | 7 | 7 |

Age of the studied patients ranged from 18 to 86 years with mean age 49.61 \pm 16.024 years. About 70% of the studied patients had no comorbidity.

Table 2: Distribution of the studied patients according to postoperative complications

| Complications | N | % |
|----------------------|----------|----------|
| No | 70 | 70 |
| Wound infection | 12 | 12 |
| Seroma | 15 | 15 |
| Scrotal edema | 5 | 5 |

70 of the studied patients had no postoperative complications.

Table 3: Postoperative VAS score of the studied patients

| 2 hours postoperatively | N=100 |
|--|-------------------|
| Mean \pm SD | 4.288 \pm 1.034 |
| Median | 4 |
| (Range) | 43 – 7 |
| 1st postoperative day: | |
| Mean \pm SD | 3.5 \pm 1.055 |
| Median | 3 |
| Range | 2 – 6 |
| 2nd postoperative day: | |
| Mean \pm SD | 2.668 \pm 0.790 |
| Median | 3 |
| Range | 1 – 4 |
| 3rd postoperative day: | |
| Mean \pm SD | 1.680 \pm 0.73 |
| Median | 2 |
| Range | 1 – 3 |
| Seventh day | |
| Mean \pm SD | 0.68 \pm 0.632 |
| Median | 1 |
| Range | 0 – 2 |
| P (F) | <0.00 |

There was statistically significant decrease in postoperative VAS pain score over time, which decreased two hours postop to 1 in the first postoperative week.

Discussion

Inguinal hernia is much more frequent in males than in females. Possible aetiological factors include an open processus vaginalis (found in all children with indirect hernia) and conditions which can raise intra-abdominal pressure, such as chronic

bronchitis or hyperplasia of the prostate. [14] While some elderly people, particularly women, may be unaware of their hernia until it strangulates, most of the cases are easily diagnosed. An early referral to the surgeon should mean short waiting times and elective surgery. Elective surgery for inguinal hernia has a very low mortality (said to be <1 death per 10 000 operations). By contrast, the risks of postoperative complications following an emergency operation are high, and in elderly patients mortality can be as high as 5%. [15]

Age of the studied patients ranged from 18 to 86 years with mean age 49.61 ± 16.024 years. Krishna et al [16] found that the entire average age was 49 ± 14.9 years. A patient's age ranged from 18 to 82, and the mean age of those in groups I and II was 47.8 ± 16.0 years and 51.3 ± 13.8 years, respectively. In terms of age distribution, there was no statistically significant difference between the two groups ($p = 0.414$). About 70% of the studied patients had no comorbidity. There was statistically significant decrease in postoperative VAS pain score over time, which decreased two hours postop to 1 in the first postoperative week. Gurgendize and Datuashvili [17] found the VAS (Mean \pm SD) postoperative pain on day one was 31.27 ± 0.86 . Day 3 saw a considerable decrease in pain, with the exception of one patient whose small intestine was also removed at the same time, who reported moderate pain. This procedure resulted in no more than 15 days of discomfort for any of the patients. Opioid analgesics weren't even needed once. The Visual Analogue Scale (VAS) was used by Khairy et al [18] to assess postoperative pain. On the second postoperative day, the mean VAS score was 3.12. One-week postoperatively, mean VAS was 1.28 and mean VAS at one month was 0.12. Only 12 patients had pain at the end of one month. The impact of pain was obvious on the patient's return to them daily activity and work.

70 of the studied patients had no postoperative complications. Complications related to open inguinal hernia repair are related to underlying diseases, operating techniques and the effects of anaesthesia. These vary by patient population, operating surgeon's experience and risk. In addition, there are technical complications that are directly related to the repair. Rather et al [19] reported 15.38% incidence of seroma formation, while Faridi et al [20] reported 12.7% incidence of seroma formation.

Conclusion

Standard lichtenstein mesh hernioplasty for obstructed inguinal hernia is a safe operation with acceptable risks of complications. However, patient selection and surgeon experience are important factors for the outcome.

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