

## Original Article

### Comparison of various management modalities of inguinal hernia

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#### ABSTRACT:

**Background:** Inguinal hernias are seen in 3–8% of the population, comprising 80–83% of all hernias. The present study was conducted to compare various management modalities of inguinal hernia. **Materials & Methods:** 90 patients with inguinal hernia of both genders were divided into 3 groups of 30 each. Group I patients were managed with Gilbert, group II with Rutkow and group III with Lichtenstein method of hernia repair. Parameters such as hospitalization time, early complications, late complications etc. was recorded. **Results:** Group I had 20 males and 10 females, group II had 14 males and 6 females and group III had 15 males and 15 females. The mean age was 32.2 years in group I, 34.5 years in group II and 36.1 years in group III. BMI (Kg/m<sup>2</sup>) was 28.2, 28.4 and 29.1, hospital time (Days) was 2.04, 2.12 and 3.4, anesthesia used was local in 16, 17 and 13, spinal anesthesia in 12, 7 and 10, general in 2, 6 and 7. Early complications were seen in 4, 10 and 2 and late complications in 6, 5 and 6 in group I, II and III respectively. The mean VAS at 1 day was 2.34, 1.51 and 1.90, at 7 days was 1.05, 0.83 and 1.65 and at 30 days was 0.81, 0.07 and 0.18 in group I, II and III respectively. **Conclusion:** Authors found that Lichtenstein repair is still the most appropriate surgical option in patients diagnosed with inguinal hernia.

**Key words:** Lichtenstein repair, Inguinal hernia, Surgery

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#### INTRODUCTION

Inguinal hernias are seen in 3–8% of the population, comprising 80–83% of all hernias. Fifty percent of inguinal hernias are indirect, 25% are direct, and 5% are femoral.<sup>1</sup> Eighty-six percent of all inguinal hernias are found in men, while 84% of femoral hernias are found in women. Indirect inguinal hernia is the most frequent type in both genders.<sup>2</sup> Incidence of strangulation and need for hospitalization increase with aging.<sup>3</sup> The importance of the posterior wall of inguinal canal in etiology and repair has been realised lately. Defects of transverse muscle aponeurosis and fascia have been observed to play an important role in the occurrence of inguinal hernias. The aim of the procedure should be repairing the transverse fascia in a tension-free style.<sup>4</sup>

Hernia surgeries comprise 10–15 % of all general surgery procedures. In terms of recurrence and complication rates, tension-free repairs are the most

commonly preferred operative techniques.<sup>5</sup> Lichtenstein method and its modifications such as Gilbert and Rutkow–Robbins are known to be tension-free anterior approaches which have been found to produce considerably low recurrence and complication rates. Moreover, the fact that those operations can also be performed under local anesthesia instead of general or spinal anesthesia provides yet another advantage.<sup>6</sup> The present study was conducted to compare various management modalities of inguinal hernia.

#### MATERIALS & METHODS

This study consisted of 90 patients with inguinal hernia of both genders. All were enrolled with their written consent.

Data such as name, age, gender etc. was recorded. A thorough clinical examination was carried out. Patients were divided into 3 groups of 30 each. Group

I patients were managed with Gilbert, group II with Rutkow and group III with Lichtenstein method of hernia repair. Parameters such as hospitalization time, early complications, late complications etc. was recorded. Results were assessed statistically. P value less than 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

| Groups | Group I | Group II | Group III    |
|--------|---------|----------|--------------|
| Method | Gilbert | Rutkow   | Lichtenstein |
| M:F    | 20:10   | 14:16    | 15:15        |

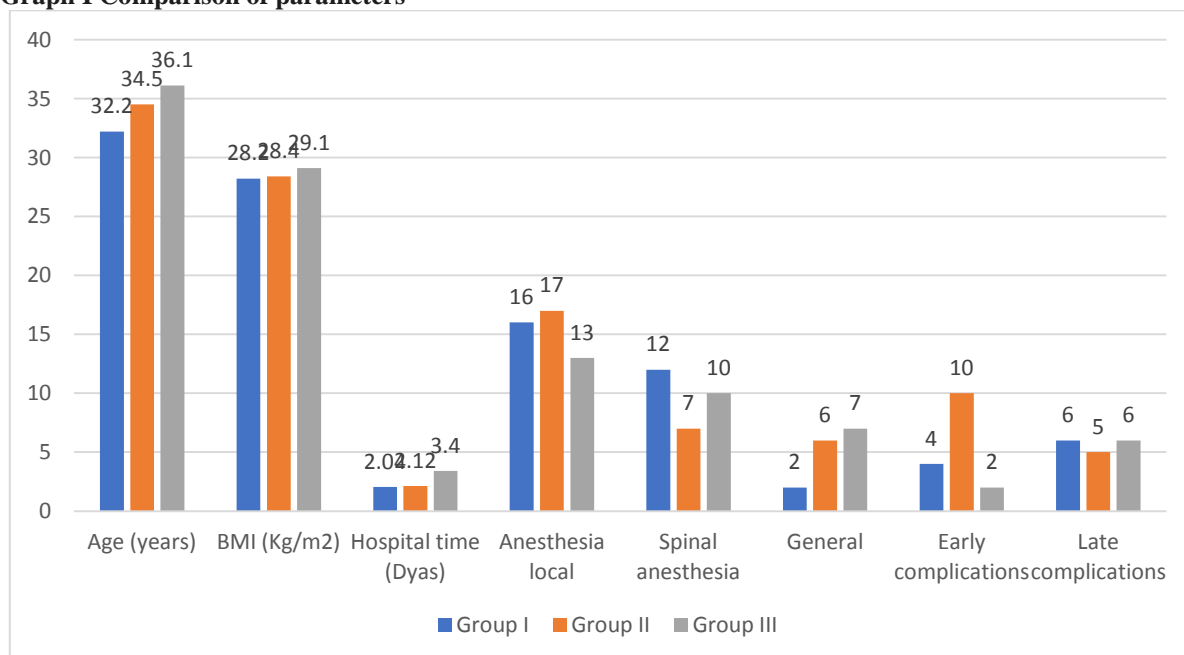
Table I shows that group I had 20 males and 10 females, group II had 14 males and 6 females and group III had 15 males and 15 females.

**Table II Comparison of parameters**

| Groups                   | Group I | Group II | Group III | P value |
|--------------------------|---------|----------|-----------|---------|
| Age (years)              | 32.2    | 34.5     | 36.1      | 0.82    |
| BMI (Kg/m <sup>2</sup> ) | 28.2    | 28.4     | 29.1      | 0.91    |
| Hospital time (Days)     | 2.04    | 2.12     | 3.4       | 0.12    |
| Anesthesia local         | 16      | 17       | 13        | 0.14    |
| Spinal anesthesia        | 12      | 7        | 10        |         |
| General                  | 2       | 6        | 7         |         |
| Early complications      | 4       | 10       | 2         | 0.05    |
| Late complications       | 6       | 5        | 6         | 0.91    |

Table II, graph I shows that mean age was 32.2 years in group I, 34.5 years in group II and 36.1 years in group III. BMI (Kg/m<sup>2</sup>) was 28.2, 28.4 and 29.1, hospital time (Days) was 2.04, 2.12 and 3.4, anesthesia used was local in 16, 17 and 13, spinal anesthesia in 12, 7 and 10, general in 2, 6 and 7. Early complications were seen in 4, 10 and 2 and late complications in 6, 5 and 6 in group I, II and III respectively. The difference was significant (P< 0.05).

**Graph I Comparison of parameters**



**Table III Comparison of pain in all groups**

| VAS     | Group I | Group II | Group III | P value |
|---------|---------|----------|-----------|---------|
| 1 day   | 2.34    | 1.51     | 1.90      | 0.98    |
| 7 days  | 1.05    | 0.83     | 1.65      | 0.12    |
| 30 days | 0.81    | 0.07     | 0.18      | 0.17    |
| P value | 0.01    | 0.02     | 0.05      |         |

Table III shows that mean VAS at 1 day was 2.34, 1.51 and 1.90, at 7 days was 1.05, 0.83 and 1.65 and at 30 days was 0.81, 0.07 and 0.18 in group I, II and III respectively. The difference was significant (P< 0.05).

## DISCUSSION

Inguinal hernia operations are still one of the most commonly encountered procedures in the lifetime of a general surgeon.<sup>7</sup> While it is seen frequently, it is generally considered as a simple operation, but its anatomical planes are complicated.<sup>8</sup> Although surgical treatment dates back to considerably old times, modern surgical treatment is recognized to begin with Bassini. Recurrences after inguinal hernia repairs are categorized in two groups as early (mechanic, within first postoperative 2 years) and late (metabolic, many years after the operation) period recurrences. While the tension in the reinforced line is held responsible for the early recurrences, disruptions in the collagen metabolism of transverse fascia and similar structures are held accountable for late recurrences.<sup>9</sup> The present study was conducted to compare various management modalities of inguinal hernia.

In present study, group I had 20 males and 10 females, group II had 14 males and 6 females and group III had 15 males and 15 females. Karaca et al<sup>10</sup> compare the outcomes of three different tension-free repair methods known as Lichtenstein, Rutkow–Robbins, and Gilbert double layer. One-hundred and fifty patients diagnosed with inguinal hernia were randomly split into three groups. The comparisons across groups were carried out in terms of operation length, post-operative pain, femoral vein flow velocity, early and late complications, recurrence rates, length of hospital stay, time required to return to work, and cost analysis. No difference was found between the groups regarding age, gender, type and classification of hernia, postoperative pain, and late complications ( $p>0.05$ ). Operation length was  $53.70\pm 12.32$  min in the Lichtenstein group,  $44.29\pm 12.37$  min in the Rutkow–Robbins group, and  $45.21\pm 14.36$  min in the Gilbert group ( $p<0.05$ ). Mean preoperative and postoperative femoral vein flow velocity values were  $13.88\pm 2.237$  and  $13.42\pm 2.239$  cm/s for Lichtenstein group,  $12.64\pm 2.98$  and  $12.16\pm 2.736$  cm/s for Rutkow–Robbins group, and  $16.02\pm 3.19$  and  $15.52\pm 3.358$  cm/s for the Gilbert group, respectively. Statistical difference was found between all the groups ( $p<0.001$ ). However, no difference was determined between the groups regarding the decrease rates ( $p=0.977$ ). Among early complications, hematoma was observed in one (2 %) patient of Lichtenstein group, five (10 %) patients of Rutkow–Robbins group, and three (6 %) patients of Gilbert group ( $p=0.033$ ). Cost analysis produced the following results for Lichtenstein, Rutkow–Robbins, and Gilbert groups: US \$157.94 $\pm$ 50.05, \$481.57 $\pm$ 11.32, and \$501.51 $\pm$  73.59, respectively ( $p<0.001$ ). Lichtenstein operation was found to be more advantageous compared with the other techniques in terms of cost analysis as well as having unaffected femoral blood flow.

We found that mean age was 32.2 years in group I, 34.5 years in group II and 36.1 years in group III. BMI (Kg/m<sup>2</sup>) was 28.2, 28.4 and 29.1, hospital time

(Days) was 2.04, 2.12 and 3.4, anesthesia used was local in 16, 17 and 13, spinal anesthesia in 12, 7 and 10, general in 2, 6 and 7. Early complications were seen in 4, 10 and 2 and late complications in 6, 5 and 6 in group I, II and III respectively. We found that mean VAS at 1 day was 2.34, 1.51 and 1.90, at 7 days was 1.05, 0.83 and 1.65 and at 30 days was 0.81, 0.07 and 0.18 in group I, II and III respectively. Ersoz et al<sup>11</sup> there were eighty-five patients between the ages of 18 and 75, diagnosed with inguinal hernia in our clinic. Lichtenstein procedure for hernia repair was performed under spinal anesthesia in all patients. Forty-two patients had the standard procedure and, in 43 patients, the polypropylene mesh was used without fixation. All patients were examined and questioned on the 7th day of the operation in terms of pain, scrotal edema, and the presence of seroma and later on in the 6th postoperative month in terms of paresthesia, neuropraxia, and recurrence by a single physician. Operative time and pain scores in the non-fixation group were significantly lower, without any increase in rates of recurrence.

## CONCLUSION

Authors found that Lichtenstein repair is still the most appropriate surgical option in patients diagnosed with inguinal hernia.

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