Effective Position of Closed Suction Drain in Inguinal Hernia Surgery: A Retrospective Study

Y V Narayanswamy Chetty¹, S V Kulkarni², Sam Koruth³, Arjun Nagaraj³, Sajith Krishnan³

¹Associate Professor, Department of General Surgery, M. S. Ramaiah Medical College, Bengaluru, Karnataka, India,
²Professor, Department of General Surgery, M. S. Ramaiah Medical College, Bengaluru, Karnataka, India,
³Post-graduate, Department of General Surgery, M. S. Ramaiah Medical College, Bengaluru, Karnataka, India

Abstract

Background: The aim of this study was to assess the efficacy of closed suction drains in inguinal hernia surgery inserted up to the base of the scrotum as compared to those in which the drain is limited to the inguinal region.

Methods: Data of all lichtenstein hernioplasty from January 2012 to December 2014 in M. S. Ramaiah Medical Hospital were collected retrospectively. A total of 992 patients underwent hernia repair and only 133 patients were subjected to closed suction drain. In 133 patients data were collected regarding the type of presentation, age, gender, presence of coexisting diseases, type of hernia, type of anesthesia, postoperative general complications, data was collected regarding the presentation of the hernia, type of sac encountered, amount of dissection, location of the inserted drain, complications, and length of hospital stay. These patients were followed up for 6 months. Local wound complications, duration of operation, and length of hospitalization, recurrence and mortality were compared between the groups of patients with drains versus without drains.

Results: Average amount of drain fluid was higher (58.5 ml) in the group where the drain was inserted to the bottom of the scrotum as compared to (22.4 ml) the group with the drain limited to the inguinal region. Furthermore, there was significant difference in the incidence of scrotal edema in the two groups (6 vs. 23). Hence, by positioning the drain to reach the bottom of the scrotum; it will lead to a better drainage of the collection and in turn lead to fewer associated complications such as scrotal hematomas, infections, and scrotal edema.

Conclusion: In our study, placement of drain extending into the bottom of scrotum significantly reduced scrotal edemas a result alleviates immediate post-operative patient anxiety and morbidity in the reduction of scrotal size to normal. However, it requires a larger series to confirm our early observations.

Keywords: Inguinal hernia, Retrospective study, Suction drain

INTRODUCTION

 Hernias particularly inguinal hernias are one of the most common surgical conditions where hernioplasty/herniorrhaphy is the mainstay of treatment. They are associated with many complications like other surgical procedures which include urinary retention, superficial wound hematoma, superficial wound infection, scrotal edema, recurrence of hernia, persistent inguinal neuralgia, local hypoesthesia, ischemic orchitis, and penoscrotal hematoma. Recent advances in different surgical techniques claim to have fewer complications, but none is devoid of them. It was noted that a suction drainage can reduce the problems caused by a fluid collection in the inguinoscrotal area. These may include wound seroma, scrotal edema and scrotal hematomas, or infection of the same.

It is proved that drains during hernia repair are more common used in patients on anticoagulants who have had a long duration of surgery and in recurrent hernias. In 1887, Bassini advised that after the closure of the external oblique aponeurosis after a hernia surgery, a surgeon should place a tube drain and bring it out of the lateral side of the wound. However, there is no consensus on the location of the suction drain in inguinal hernia surgery.¹
Older studies conducted on 301 adult males undergoing inguinal herniorrhaphy to assess the value of postoperative suction drainage (prospective randomized trial). In that study, hernias was classified into two groups “complicated” and “simple.” In the “complicated” group suction drainage for 24 h significantly reduced the incidence of wound hematoma, seroma or infection from 48.7% to 17.6% (P < 0.01); there was also a noticeable effect on the post-operative morbidity in the “simple” hernias, although this just failed to achieve significance (4.5% in the suction group compared with 9.8% in the controls). It was concluded that suction drainage should be employed postoperatively following repair of hernias where dissection may be difficult or where other complicating factors are present.²

Hemostasis is paramount in any surgical procedure irrespective of the nature of the surgery. We also concluded that drains should be used in huge inguinal and inguinoscrotal hernias to avoid hematoma and scrotal swelling.³

In a study by Peiper C et al, on the first post operative day there was significant fluid production in the group of patients with the drain as compared to the group without drains. There was wound infection in two patients in the drain group. Percutaneous serum puncture was done in seven patients with drain and eight patients without drains. The drain group was slightly affected with personal impairment (25.6% Vs. 21.4%), visual analogue score.⁴

Joseph MG and O’Boyle introduced a method to prevent inguinoscrotal hematoma following a hernia and hydrocele. The technique of inserting a drain had been used in 34 consecutive patients, none of whom developed a significant postoperative hematoma or complications.⁵

Bodo and Chioso in 1993 developed the technique of scrotal elevation and compression for the prevention of postoperative scrotal hematoma. It was used in 30 patients undergoing hydrocelectomy, spermatocelectomy or epididymectomy. There was no untoward effects associated with the technique and was applied to a wide variety of scrotal procedures. The method described was very simple, rapid to perform and comfortable for the patients and the most effective to prevent postoperative complications in patients undergoing a scrotal operation.⁶

In a study using drains following laparoscopic TEP repair, out of 929 patients (1753 hernias), a drain was put in 849 patients (1607 hernias) and no drain was put in 80 patients (146 hernias). The follow-up ranged from 9 to 45 months. Seroma formation was significantly lower in the drain group (12/1607; 0.75%) compared with the non-drain group (22/146; 15.1%) (P < 0.0001). There was no infection in either group.⁷

In a prospective randomized study by Graupe et al., (1992). 80 patients undergoing elective hernia repair were included to assess whether a new slit-suction drainage is less painful than a Redon-suction drainage. The main endpoint of the study was the traction power to remove the drain. Other endpoints were the pain at the time of removal of the drain and the effectiveness to draw off secretion. To remove Redon drain the average traction power was 226 pond and to remove slit drain the average traction power was only 25 pond. The difference was significant (P < 0.01). The slit drain group rarely complained about pain at the time of removal (P < 0.01). On the contrary, patients with Redon drain always complained about pain. Clotting were seldom shown in slit drains and were frequently shown in Redon drains. Both slit drains and Redon drains were effective to drain secretion. As the new slit, drain was more comfortable for patients following hernia repair slit; they concluded that drain should always be used as subcutaneous suction drainage.⁸

The aim of this study was to assess the efficacy of closed suction drains inserted up to the base of the scrotum as compared to those limited to the inguinal region in inguinal hernia surgery.

**METHODS**

A retrospective study was performed investigating 133 patients who fulfilled the inclusion and exclusion criteria seen in the general surgery department at M. S. Ramaiah Hospital, Bengaluru, Karnataka, India. The inclusion criteria were large unilateral inguinal hernia and recurrent inguinal hernia. The exclusion criteria was Patients with – bilateral inguinal hernia, patients on anticoagulation therapy, female patients, and strangulated hernia.

**Procedure**

Patients were seen during routine visits to the outpatient clinic and were informed of the research protocol. When they agreed to participate, information was collected regarding the inclusion and exclusion criteria. All patients underwent unilateral Lichenstein’s mesh repair. They were divided into two groups.

A - The suction drain was inserted up to the bottom of the scrotum.

B - The suction drain was kept at the inguinal region.

Out of 133 patients 71 patients were included in Group A (53%), and 67 patients were included in Group B (47%). Data were collected regarding the presentation of hernia,
RESULTS

With all male patients being considered, the mean age of the selected groups was 47.10 (34-72 years).

Table 1 shows treatment statistics includes the total number of patients, time of surgery, sac encountered, and drain amounts in both the groups.

Figure 2 shows pictorial representation of the treatment Statistics of the two groups, Group A notifies the drain placed to the bottom of scrotum, and Group B signifies drain placed in the inguinal region.

Table 2 shows complications such as scrotal edema, wound seroma, and other complications are included in this table.

DISCUSSION

There have been many studies that debate the need for drains in complicated inguinal hernia surgery. Putting drains is subjective and surgeon dependent, depending on the case and on table decisions. However, there are no studies that compare the position of the drain limited to the inguinal region or extended up to the bottom of the scrotum.

In our study out of 992 surgeries of inguinal hernia repair we included only 133 patients in which suction drain was used, especially in case of huge long standing hernias or patients who are undergoing transurethral resection of prostate (TURP) procedure also during hernia surgery, old patients and those who required significant dissection due to adherent sac and then we evaluated the effectiveness of the position of a closed suction drain following repair. Usage of the drain was left to the discretion of the operating surgeon. The demographic data, the type of cases selected, the pre-operative and intraoperative parameters were similar in the two groups. The notable factor was that the average amount of drain fluid was higher (58.5 ml) in the group where the drain was inserted to the bottom of the scrotum as compared to (22.4 ml) the group with the drain limited to the inguinal region, which was statistically significant.

Hence, by positioning the drain to reach the bottom of the scrotum, it will lead to a better drainage of the collection and in turn lead to fewer complications associated with scrotal edema, as scrotal hematomas and infections, scrotal edema, etc.

Figure 3 shows drain amount in both groups (the amount of drain per day in both the groups).

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of patients</td>
<td>71</td>
<td>62</td>
</tr>
<tr>
<td>Time of surgery</td>
<td>50 min</td>
<td>1 h</td>
</tr>
<tr>
<td>Sac encountered</td>
<td>Complete - 66</td>
<td>Complete - 58</td>
</tr>
<tr>
<td>Amount of dissection</td>
<td>Simple - 52</td>
<td>Simple - 52</td>
</tr>
<tr>
<td>Drain amounts (avg)</td>
<td>58.5 ml</td>
<td>22.4 ml</td>
</tr>
<tr>
<td>Length of hospital stay</td>
<td>4-7 days</td>
<td>3-4 days</td>
</tr>
<tr>
<td>Drain removal (post-operative day)</td>
<td>3-5 days</td>
<td>4 days</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrotal edema</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>Wound seroma</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
There was a statistically significant difference in the incidence of scrotal edema in the two groups as shown (6 vs. 23). The length the hospital stay and duration of the drain kept was higher in Group A as compared but no statistical significance was noted.

Figure 4 shows scrotal edema noted in both groups (the presence or absence of scrotal edema in both the groups).

There was no statistical difference in all the patients compared between the left and right sided inguinal hernia. There were 5 cases of recurrent hernia in Group A and 2 cases in Group B, which followed the same trend as illustrated.

In the group with the drain inserted into the scrotum, it was found that the incidence of scrotal edema was lesser as compared to the group with the drain inserted in the inguinal region showing the significance of the position of the drain in complicated inguinal hernia surgery.

CONCLUSION

The significant reduction of scrotal edema alleviates immediate post-operative patient anxiety and morbidity in reduction of scrotal size to normal, also to note the point that drains were not used in all the patients undergoing inguinal hernia repair, it was only included in those patients with huge long standing hernias, patients undergoing TURP procedure also during hernia surgery, old patients those who required significant dissection due to adherent sac. There is no added economic burden or necessity of added skill required for performing this manoeuvre. However, it requires a larger series to confirm our early observations.

REFERENCES