

## **Effect of Scrotal Hitching In Reducing Scrotal Edema after Inguinoscrotal Hernia Repair**

Alexander Kosternoy<sup>1</sup>, Emad K. Bayumi<sup>2</sup>

<sup>1</sup>*Head of surgical gastroenterology in Medical Academy named after S.I. Gergivesky of Crimea Federal University, Crimea, Russia*

<sup>2</sup>*Researcher PhD General Surgery, Medical Academy Named after S.I. Georgiesky of Crimea Federal University, Crimea, Russia*

### **I. Introduction**

Inguinal herniorrhaphy remains one of the most common general surgical operations and is considered the only acceptable method for treatment of inguinal hernias [1]. Inguinal hernia repair is associated with different possible complications such as infection, bleeding, recurrence, scrotal swelling and nerve damage [2].

Scrotal oedema and haematoma are cause of significant morbidity after various types' of inguinoscrotal surgeries. Various types of scrotal support have been in use, with varying degrees of success in preventing such complications [3]. Recent advances in surgical techniques and equipments claims to have less complications but cannot be completely avoided. Small penoscrotal hematoma is common complication and can be easily managed conservatively with rest and scrotal support [4].

The aim of this study was to study the occurrence of scrotal aedema and swelling in patients with scrotal hitching after hernioplasty in comparison with hernioplasty only.

### **II. Patient and methods**

#### **Patients**

This study represented parallel prospective randomized clinical trial where patients were divided randomly into two main groups; A and B. Group A patients were subjected to hernioplasty only and those of group B were subjected to hernioplasty with scrotal hitching. All of our patients were gentlemen with total number was 120 patients; 60 for each group, their ages ranged between 32–65 years. The study started from January 2012 to may 2015 in Crimean Medical Academy named after S.I. Georgievsky Crimean Federal University named after V.I. Vernadsk Russia in department of general and gastrointestinal surgery and included all patients having unilateral inguinal scrotal hernias. Patients with primary inguinal hernia, patients with marked obesity (BMI > 35) and ASA grade 3 and beyond were excluded.

#### **Randomization**

Randomization was performed prior to study commencement as follows: Opaque envelopes were numbered sequentially from 1 to 120. A computer-generated table of random numbers was used for group assignment; if the last digit of the random number was from 0 to 4, assignment was to Group A (hernioplasty only), and if the last digit was from 5 to 9, assignment was to Group B (hernioplasty with scrotal hitching). The assignments were then placed into the opaque envelopes and the envelopes sealed. As eligible participants were entered into the trial, these envelopes were opened in sequential order to give each patient his or her random group assignment. The envelopes were opened by the operating surgeon after patient consent and just prior to the surgery.

#### **Surgical teams & study sites**

Operations were performed in department of general and gastrointestinal surgery Crimean Medical Academy named after S.I. Georgievsky Crimean Federal University named after V.I. Vernadsk Russia by same surgical team

#### **Operative techniques**

- 1- The anterior tension-free repair, as defined by Lichtenstein et al. [1] was performed using 6 × 11 cm polypropylene mesh. Large pore-sized (1.6 mm), monofilament heavy-weight polypropylene meshes were used (Prolene®; Ethicon). Really our patients were oriented to the type of repair and the other observers were unaware to operative techniques of the study groups.
- 2- The same was done then use of silk or praline 1 to take stitch from bottom of the scrotum to the supra pubic area after dressing to the inguinal insecion approximating the scrotum to the lower abdominal wall to nearly close the side of scrotum .

**End points:**

The primary end point of the study was occurrence of scrotal aedema and swelling, The secondary end points were postoperative pain according to the Visual Analog Scale pain score and time off from work, defined as the number of days between the day of surgery and the first day a patient returned to work.

**Ethical consideration**

Written consents were obtained from all patients before the study. The steps of both operative interferences were explained to all patients. The local ethics committee had approved all operative procedures. Ethical approval for this study department of general and gastrointestinal surgery Crimean Medical Academy named after S.I. Georgievsky Crimean Federal University named after V.I. Vernadsk Russia

**Statistical analysis**

The statistical tests were run on a compatible personal computer using the Statistical Package for Social Scientists (SPSS) for windows 15. Chi-square distribution was used for studying the frequencies of recurrence, pain, hospital stay and postoperative complications. The values were expressed as means ± standard errors of deviation. The mean values of the groups were compared by one-way analysis of variance (ANOVA) and paired comparisons of the groups were done using the paired student t test. P < 0.05 was considered significant.

**III. Results**

There was no statistical difference between the two groups as regard age and body mass index (Table 1). Age ranged between 32 – 65 years with a mean age as 53.5 years. Follow-up assessment was at the 1st week after discharge then at 1st month and through regular visit of 6 months duration or by a telephone call thereafter. Follow up included patients’ complaint, if any, clinical examination and ultrasonography if needed. The maximum follow-up period was 48 months and the minimum was 14 months with a mean value as 37.11 ± 5.14 months. A complete follow-up was obtained in 56/60 (93.3%) of patients in group A and 54/60 (90%) of patients in group B.

**Table 1:** Showing subdivision of both groups regarding age and body mass index

Group	Age < 50	Age >50	BMI < 25	BMI < 30	BMI > 30
	42-----49	50----65	22---24.9	25---29.9	30---34.9
A	N=38	N=22	N=16	N=24	N=20
B	N=36	N=24	N=18	N=23	N=19

Regarding the scrotal aedema, the authors relied on proposed graded scrotal aedema system that was adopted by the authors as following:

- a- Mild scrotal aedema:
- b- Moderate scrotal aedema
- c- Severe scrotal aedema

In the present study, we observed that the total number of patients with scrotal aedema in group A was 6 / 60 ( 10%) and in group B was 3 / 60 (5%). Table 2 described the distribution of patients as regard to grades of scrotal aedema.

**Table 2 showed the distribution of patients regarding grades of scrotal aedema.**

Group	Mild	Moderate	Severe
A [ N = 6 ]	3	2	1
B [ N = 3 ]	2	1	-

value and statistical significance:

**The two-tailed P value equals 0.4971**

As regard postoperative pain due to scrotal aedema, the authors relied on the already documented Visual Analog Scale for scoring of pain in patients of both groups. The total reading is between 1–10; pain score of mild degree is (1–4) and was given one point, pain score of moderate degree moderate is (5–7) and was given two points, severe pain score is (8–10) and was given three points [ 5].

Despite the total pain score was higher in group A patients than in group B patients , but it did not reach the significant level { P ≥ 0.05 }.

**Table 3 demonstrated the postoperative pain score in relation to scrotal aedema**

Group	Mild	Moderate	Severe	Total
<b>A</b>	3	4	3	<b>10</b>
<b>B</b>	2	2	-	<b>4</b>

P value equals 0.1365

#### **IV. Discussion**

Inguinal hernia is the commonest of all of the hernias and operative repair is the only acceptable method for treatment of inguinal hernias where possible [2]. This is considered the most common operation and the operative procedure of choice for young training surgeons. As with any other surgical condition, hernia repair is also associated with different possible complications such as infection, bleeding, recurrence, scrotal swelling and nerve damage [1,2].

In the present study, our patients of both groups showed insignificant distribution as regards of age and body mass index. This insignificant distribution came in concordance with other data of studies of same interest [1,5].

Penoscrotal haematoma, one of the complications, is a very well documented complication following inguinal hernia repair, however, massive penoscrotal haematoma requiring surgical intervention, is very rare [2,6]. Regarding severe scrotal aedema, we observed that this finding was absent in our patients with scrotal hitching that providing self-compression of the scrotal compartment to the abdominal wall [7]. Scrotal elevation and compression for the prevention of postoperative scrotal hematoma in patients undergoing hydrocelectomy, spermatocelectomy or epididymectomy was tried. There have been no untoward effects associated with this technique and this technique is applicable to a wide variety of scrotal procedures [8].

Most of these complications are of mild to moderate degree and can be treated by a conservative approach. Recent advances in different surgical techniques and equipment claim to have less complications but none are completely devoid of them [1,7]. Penoscrotal haematoma is one of the most common complications, and usually responds to a conservative approach in the form of rest and scrotal support. In doubtful cases, ultrasound evaluation of the penoscrotal haematoma/swelling is a useful guide to confirm the diagnosis [7] but in cases of massive haematoma, clinical diagnosis is obvious and does not necessarily require ultrasound. In cases of huge scrotal haematoma or unresolving haematoma, surgical drainage may be necessary. Massive penoscrotal haematoma is not uncommon in patients with bleeding disorders such as haemophilia where trivial trauma can trigger severe bleeding in the scrotum [9].

Different techniques have been employed in practice such as scrotal support and the use of scrotal elevator of different types [10]. Unless properly managed, both scrotal hematoma and edema can lead to significant morbidity for the patient [11]. Compression can be assured by the following simple surgical method independent of the quality of the postoperative care: extending the scrotal sac over the abdominal wall and fixing it with skin sutures under tension at the lower abdominal wall over a pile of gauzes. This method was shown to be effective after hernia repair of scrotal hernias but also seems promising for other scrotal surgery [12]. This technique is similar to our method for scrotal hitching to the abdominal wall.

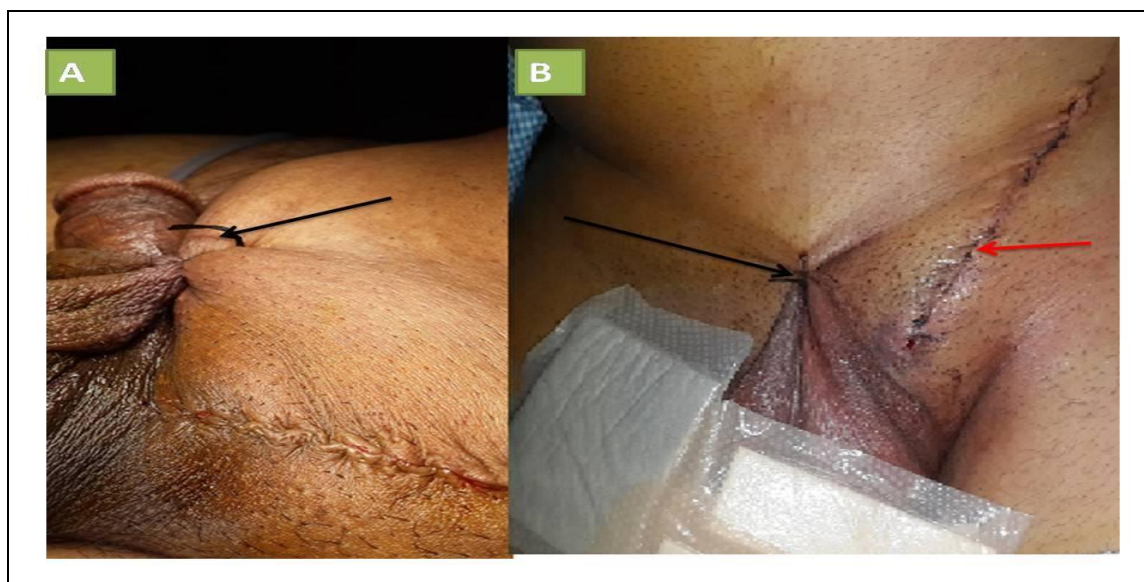
Purpose of scrotal support is to avoid stretching of spermatic and testis by antigravity suspension and also compressing the scrotal layers to decrease the incidence of haematoma and oedema of scrotum [13].

Incidence of scrotal haematoma and oedema are very high in case of complete sac inguinal hernia cases because sac has to separate from whole of spermatic cord starting from base of scrotum upto internal ring [14]. Swelling is more in unsupported scrotum due to hanging and stretching which result in increased leakage of veinules and of lymphatics. Most of time conventional gauge bandage (coconut bandage) is used but it is quiet cumbersome, dislodge easily and a learning curve is needed for a proper technique. By antigravity adhesive tape scrotal support, scrotum is only suspended but there is no compression of scrotal wall layers [13].

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**Figur 1 A and B showing scrotal hitching**



**Figur 2 A and B scrotal hitching**