

Comparison of Scrotal Hitch Technique and Conventional Scrotal Dressing in Reducing the Postoperative Scrotal Oedema in Inguinoscrotal Surgeries: A Non Randomised Clinical Study

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ABSTRACT

Introduction: Inguinoscrotal swellings, including hernias and hydroceles, are the most common complaints in the surgical outpatient department. Hernioplasty and eversion of the sac are the most common elective procedures for inguinoscrotal swellings. Scrotal oedema is one of the complications following the surgery, which increases the patient's morbidity.

Aim: To evaluate the effectiveness of the scrotal hitch technique in preventing scrotal oedema and postoperative pain after inguinal and scrotal surgeries compared to conventional scrotal dressing.

Materials and Methods: This is a non randomised clinical study conducted in the Department of General Surgery at Melmaruvathur Adhiparasakhti Institute of Medical Sciences and Research, Melmaruvathur, Tamil Nadu, India, from September 2021 to December 2023, among 60 patients undergoing inguinoscrotal surgeries. Group-A consists of 30 patients who were given scrotal hitch and 30 patients in Group-B were given conventional scrotal dressing. The outcomes were compared

between both groups for scrotal oedema and postoperative pain. Descriptive statistics were presented as mean±Standard Deviation (SD) for continuous variables and frequencies and percentages for categorical variables. Fisher's-exact test was used as a test of significance for categorical data. Student's t-test and Mann-Whitney U test were used as tests of significance for continuous data.

Results: The mean age of patients in Group-A was 51.7±13.87 years and in Group-B was 53.03±14.22 years. In Group-A, two patients developed scrotal oedema with the scrotal hitch, while in Group-B with scrotal dressing, 11 patients developed scrotal oedema 72 hours postsurgery. In Group-A, the median Visual Analogue Scale (VAS) score at 6, 24, 48 and 72 hours was 6, 3, 1 and 0. In Group-B, the median VAS score was 7, 4, 1 and 0 at 6, 24, 48 and 72 hours.

Conclusion: Postoperative pain was found to be lower in the scrotal hitch group compared to patients with conventional scrotal dressing.

Keywords: Hernioplasty, Hypnotic stitch, Scrotal bandaging, Scrotal hydrocele

INTRODUCTION

Throughout the world, approximately 20 million inguinal hernia repairs are performed every year. Therefore, inguinal hernia repair is one of the most frequently performed surgeries worldwide [1]. Similarly, in India, inguinoscrotal surgeries are common procedures performed by general surgeons. These surgeries include inguinal hernia repair and eversion of the sac for inguinal hernia and hydrocele, respectively [2]. As complications are quite common with every surgical procedure, the complications of hernia repair include infection, recurrence, bleeding, nerve damage, scrotal swelling and pain [3,4]. One significant complication in inguinal surgeries that causes considerable morbidity to the patient is scrotal oedema, which is believed to be due to excessive handling of the cord structures [1]. Eversion of the sac, also known as Jaboulay's procedure, is most useful for recent-onset hydrocele, where the sac is opened, everted and the edges sutured behind the testis. Scrotal surgery, although generally considered to be technically easy and routine, has a considerable incidence of complications as this procedure is associated with an increased risk of haematoma [5]. In scrotal surgeries, scrotal haematoma causes significant morbidity to the patients when haemostasis is not meticulously performed. Therefore, scrotal oedema is a common complication in both inguinal hernia repair and scrotal surgery. Scrotal support is used to prevent the stretching of the spermatic cord and the associated structures such as vessels and testes.

Scrotal support prevents oedema by providing antigravity support and compressing the layers of the scrotum to reduce the risk of haematoma and scrotal oedema [4]. Over the years, various methods of scrotal dressings have been used to reduce scrotal oedema and haematoma. These methods include a surgical face mask with Elastoplast by Mandler, circumferential pressure dressing using the roll bandage technique and turban scrotal dressing by Manson and MacDonald, where a 2-inch-wide roll of gauze is wrapped around the scrotum in a turban style. Other methods include simple scrotal compression dressing and tight V undergarment [6,7]. In the present study, the authors aimed to compare the effectiveness of scrotal hitching against conventional scrotal dressing in preventing scrotal oedema.

MATERIALS AND METHODS

A non randomised clinical study was conducted in the Department of General Surgery at Melmaruvathur Adhiparasakhti Institute of Medical Sciences and Research, Melmaruvathur, Tamil Nadu, India, from September 2021 to December 2023. Approval was obtained from the Institutional Ethical Committee (Serial Number: MAPIMS/IEC/52/2021) and registered with the Clinical Trial Registry, India (CTRI/2022/02/040472). Written informed consent was obtained from all study participants.

Sample size calculation: The sample size was calculated using open epi software for two proportions. The proportion of scrotal

oedema in subjects in Group-A (scrotal hitch) was 6.7% and the clinically significant difference between the two proportions was 10% [8]. In this study, a sample size of 45 was required at a 95% confidence interval and a power of 80%. To account for potential loss to follow-up or a dropout rate of 20%, the final sample size was 60, with 30 patients in each group in a 1:1 ratio.

Inclusion and Exclusion criteria: A total of 60 male patients aged over 18 years who presented with inguinal, inguinoscrotal and scrotal swellings were included in the study. Patients with recurrent inguinoscrotal swellings and those unfit for surgery were excluded. Patients who were unwilling to participate in the study were also excluded.

Study Procedure

A total of 30 eligible study participants were assigned to Group-A, who underwent the scrotal hitch technique and 30 eligible participants were assigned to Group-B, who underwent conventional scrotal dressing. The allocation was based on the investigators' or surgeons' preference. There were no losses to follow-up. In Group-A, patients underwent scrotal hitch, where the scrotum was pulled up over a gauze roll onto the abdomen lateral to the penis and sutured to the lower abdomen and upper thigh with 2-3 monofilament sutures. In Group-B, patients underwent conventional scrotal support with gauze dressing, provided in the form of a bandage immediately postsurgery and the use of tight undergarments the following day.

Patients were followed-up at 6, 24, 48 and 72 hours for various parameters, such as complications (cord oedema, seroma, or haematoma) and postoperative pain. Postoperative pain was measured by the VAS [9]. The scrotal hitch was removed on the 3rd postoperative day. The incidence of scrotal oedema and postoperative pain were compared between the scrotal hitch Group and conventional scrotal support group.

STATISTICAL ANALYSIS

The data were analysed using Statistical Package for the Social Sciences (SPSS) version 22.0 software. Categorical data were expressed as frequencies and proportions, while continuous data were presented using means and standard deviations and medians for discrete variables. The Fisher's-exact test was used as a test of significance for categorical data. Student's t-test and Mann-Whitney U test were used as tests of significance for continuous data. A p-value of <0.05 was considered statistically significant at a 95% confidence interval.

RESULTS

The mean age was 51.7±13.87 years in the scrotal hitch group and 53.03±14.22 years in the conventional scrotal dressing group, with no statistically significant difference between the two groups (Student's t-test, p=0.715). The majority of the study participants (71.5%) underwent hernioplasty. In Group-A, most participants had a right inguinal hernia, while in Group-B, the majority had bilateral inguinal hernia [Table/Fig-1].

Diagnosis	Group-A n (%)	Group-B n (%)
Bilateral inguinal hernia	6 (20)	8 (26.7)
Right inguinal hernia	8 (26.7)	6 (23.3)
Left inguinal hernia	6 (20)	9 (25)
Right hydrocele	5 (16.7)	3 (10)
Left hydrocele	5 (16.7)	4 (13.3)

[Table/Fig-1]: Distribution of study participants based on diagnosis.

At 24 hours, two patients in Group-A and eight patients in Group-B developed scrotal oedema. By 72 hours postoperatively, 2 patients (6.7%) in Group-A and 11 patients (36.7%) in Group-B

had developed scrotal oedema. These differences were statistically significant (p-value <0.05) [Table/Fig-2].

The VAS scores between the two groups were not statistically significant at six hours (p=0.078), 24 hours (p=0.404) and 48 hours (p=0.674), but were statistically significant at 72 hours (p=0.035) [Table/Fig-3].

Scrotal oedema		Group-A n (%)	Group-B n (%)	p-value
24 hours	Present	2 (6.7)	8 (26.7)	0.028*
	Absent	28 (93.3)	22 (73.3)	
72 hours	Present	2 (6.7)	11 (36.7)	0.005*
	Absent	28 (93.3)	19 (63.3)	

[Table/Fig-2]: Comparison of postoperative scrotal oedema among study participants (N=30).
*Fischer's-exact test

Postoperative pain	Group-A median (n=30)	Group-B median (n=30)	p-value
6 hours	6	7	0.078
24 hours	3	4	0.404
48 hours	1	1	0.674
72 hours	0	0	0.035*

[Table/Fig-3]: Comparison of postoperative pain among study participants (N=30).
*Mann-Whitney U test- p<0.05, statistically significant at 95% confidence interval

DISCUSSION

In the present study, we performed a scrotal hitch technique where a simple suture was done by lifting the skin from the bottom of the scrotum and stitching it to the skin near the pubic symphysis and pubic tubercle using a non absorbable suture material. Elevating the scrotum in this way prevents excessive fluid collection. There were no complaints or side effects among the patients due to this procedure. In a study conducted by Griffin JH and Canning JR, 46 cases were treated with scrotal hitching and no patients developed scrotal oedema. Scrotal hitching is not only used after inguinoscrotal surgeries but also in other urological procedures [10]. In the present study, the incidence of postoperative scrotal oedema and pain was significantly lower in patients who underwent scrotal hitching.

A recent pilot study conducted by Raja R et al., showed that scrotal hitching, as a novel technique, reduced the incidence of postoperative scrotal oedema and pain compared to conventional scrotal support in inguinal hernia repair [8]. The mean age of the participants in their study was 45.63±21.745 years in Group-A and 41.43±24.579 years in Group-B. In the scrotal hitch group, 6.7% of patients developed scrotal oedema, while 20% of those who underwent coconut bandage as scrotal support developed scrotal oedema, significantly higher than the scrotal hitch group. The median VAS scores at 6, 12, 48 and 72 hours in the scrotal hitch group were 3, 2, 1 and 1, respectively and 4, 4, 2 and 2 in the scrotal support group, showing significantly lower pain scores which support the findings of the present study.

Another study by Sadre DA et al., showed that 7.6% and 12.3% developed scrotal oedema in the scrotal hitch and scrotal support groups on postoperative day 1, respectively. By the end of 72 hours, 1.5% and 6.5% developed scrotal oedema in the scrotal hitch and scrotal support groups, respectively. The increase in scrotal oedema could be explained by increased movement in the scrotal position with scrotal support, whereas in the technique where the scrotum is hitched close to the lower abdomen skin, scrotum movement is restricted, thereby reducing oedema [11]. In 4.6% of the scrotal hitch patients in the Sadre DA et al., study, stitch failure and infection at the hitch site were seen. In the same study, the median VAS score in the scrotal hitch group was four at six hours, two at 24 hours and one each at 48 and 72 hours. In the scrotal support group, the median VAS score was nine at six hours, five at 24 hours and three

and two at 48 and 72 hours, respectively. The study showed that the pain score in the scrotal hitch group significantly improved [11]. In a study conducted by Kosternoy A and Bayumi EK 5% and 10% developed scrotal oedema in the scrotal hitch and scrotal support groups, respectively, which was statistically significant [12]. The total pain score was higher in scrotal support patients than in scrotal hitch patients; however, it was not significant, which supports the findings of the present study.

Limitation(s)

The study was a single-centre study and only limited variables were analysed; therefore, the findings cannot be generalised to the entire population. Further randomised studies can be planned with determinant variables and long-term follow-up to quantify the outcomes following the scrotal hitch procedure.

CONCLUSION(S)

The scrotal hitch has been found to result in less postoperative scrotal oedema and pain compared to conventional scrotal support. This effective technique could be adopted by surgeons in common inguinoscrotal surgeries to prevent these complications.

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