

A Randomized Control Study of Minimal Dissection Technique and Conventional Eversion of Sac in Primary Vaginal Hydrocele

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Abstract

Background: Tunica vaginalis is an invaginated serous sac with a visceral and parietal layer, separated by a potential cavity. A thin fluid layer is present in the cavity to lessen friction. The single layer of flattened endothelial cells that make up the lining membrane is supported by thin areolar tissue. By creating a shiny, smooth surface, it protects the testicles from damage caused by repeated contact with the medial thigh. The osmotic pressure, also known as the colloid oncotic pressure of the blood, maintains the proper equilibrium of the thick fluid in the tunica vaginalis. The volume of fluid, which is of a transudate character, increases in response to an increase in intracapillary blood pressure or injury to the capillary endothelium. The current research is a comparison of Jaboulay's procedure and Sharma and Jhawar technique for primary hydrocele of tunica vaginalis testis. The purpose of the study was to examine the efficacy of various surgical procedures for treating primary tunica vaginalis testis hydrocele and any potential postoperative consequences. In the initial postoperative period, every patient was closely watched, and any problems were documented.

Aim: A Randomized Control Investigation of Minimal Dissection Technique and Conventional Sac Eversion in Primary Vaginal Hydrocele is the purpose of the current study.

Material and Method: In the present study, all clinically diagnosed and admitted cases of hydrocele, were enrolled for study after considering inclusion and exclusion criteria. In the current study, both unilateral and bilateral hydrocele are considered as a single case. The sample size was calculated by adopting the post operative complication proportion among the two surgical procedures. An exploratory calculation of sample was done for all the post operative complication where the maximum sample size was associated with the prevalence of scrotal oedema indifferent surgical procedures. Patient age, symptoms and their duration, prior medical history, full physical examination, laboratory and radiographic tests, and length of hospital stay. Patient were observed from the date of admission, pre-operatively, intra-operatively and postoperatively till the date of discharge. Data was collected from case sheets and medical records.

Results: Most of the patients in both groups did not have any co-morbidity. The only 2 comorbidities noted in a few of the patients were diabetes and hypertension, either isolated or combined. The maximum number of patients in both groups had unilateral hydrocele i.e., 38 and 40 in Jaboulay's procedure and Sharma and Jhawar technique cases respectively. 9 With the exception of diabetic patients, who received 4 such doses, patients only received 2 injections of amoxicillin and clavulanic acid, which totaled 1.2g. The same postoperative analgesia protocol was used for all patients. They all received 2 doses of Inj Paracetamol 1gIV8hourly in their immediate post-operative period. Inj Diclofenac 100 IV was kept as an SOS drug.

Conclusion: Thus, it can be concluded that both procedures have comparable outcomes and can be well performed in our patient population. However, Sharma and Jhawar's technique had a short duration of surgery, less post-operative pain, and short post-operative hospital stay than its counterpart Jaboulay's procedure, without any added benefit with respect to the incidence of hematoma, fever, and scrotal edema, attainment of Normal size of Scrotum and cost of surgery.

Keywords: Vaganalis, Lymphatic Filariasis, Septula Testis, Postoperative Pain, Sharma and Jhawar Technique.

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Introduction

Scrotal cystic swellings are a common surgical issue. A cystic swelling of the scrotum not only affects the patient's state of health physically but also is mental agony for him. Along with the issue of sexual incapacity, hydrocele sufferers have a tremendous sense of humiliation and embarrassment. [1] Men who have hydroceles require social and psychological assistance. A hydrocele is an aberrant accumulation of serous fluid in the tunica vaginalis, which is often the process us vaginalis. [2] Hydrocele is one of commonest diseases occurring worldwide. It is a common disease in tropical countries, especially where filariasis is common. Hydrocele is one of the chronic manifestations of lymphatic filariasis among men and there are about 27 million men with hydrocele worldwide. [1]

In India, the highest incidence is seen along the coastal belt. The most prevalent benign scrotal enlargement, known as a hydrocele, is thought to affect 1% of adult males. [3] Traditional therapies include surgery, aspiration and sclerosant injection, or recurrent aspiration. Sclerosant aspiration and injection can both result in excruciating discomfort, and simple aspiration requires repeated procedures and involves a risk of infection and the development of hemorrhoids. [4] The majority of these persons are aware of surgery as a treatment for hydrocele. The majority of hydrocele patients, however,

have not undergone a hydrocelectomy because of the associated expenses, the loss of working days and pay while in the hospital and recovering after surgery, and the absence of a surgical facility in remote public health facilities. Hence it is the demand of society that Hydrocele surgery should be performed even in the most remote and basic peripheral setup alongside a world-class tertiary institution. In the Indian scenario, it is not only expected but necessary for even the youngest lot of surgeons to perform this procedure with both fluency and expertise.

It is used to the tunica vasculosa, the vascular layer of the testis, which is composed of a plexus of blood vessels held together by fragile areolar tissue and is pushed into the interior of the gland to create the mediastinum testis, an incomplete vertical septum. Numerous defective septa (septula testis) are released from its sides and front and radiate towards the testis' surface, where they are linked to the tunica albuginea's deeper side. [4]

Tunica vaginalis is an invaginated serous sac with a visceral and parietal layer, separated by a potential cavity. The cavity contains a thin layer of fluid to reduce friction. The lining membrane is composed of a single layer of flattened endothelial cells supported by delicate areolar tissue. It forms a smooth glistening surface, preventing injury to the testis by constant rubbing with the medial aspect of the

thigh. The thick fluid in the tunica vaginalis is kept in balance by the osmotic pressure, the colloid oncotic pressure of the blood. Normally, the fluid from the sac is drained by lymphatics in the parietal layer of the sac as there are few or no lymphatics in the subserosa over the testis and the epididymis.

However, still, surgery for hydrocele has a significant morbidity rate. The common complications observed during the surgery of hydrocele are bleeding, injury to the cord structures and epididymis, and torsion of the testis after a faulty positioning postoperatively. The commonest among these is post-operative hematoma which is due to oozing from small vessels. [5] Unless meticulous hemostasis is secured oozing from small vessels may continue into the layers of the loose scrotal tissue giving rise to a hematoma. Infection may develop as a result of a hematoma acting as fertile pabulum for bacteria, which is frequently aided by drainage tubes. Given the size and weight, it is appropriate to remark that a patient who has surgery for a tennis ball leaves with a cricket ball.

This study seeks to compare the benefits and drawbacks, postoperative pain, and duration of hospital stay between Jaboulay's procedure and Sharma and Jhawar's technique

Material and Methods

Sample Collection:

All patients with inguinal hernias were admitted to the hospital's Department of General Surgery, after due consideration of inclusion and exclusion criteria.

Methodology:

All clinically diagnosed and admitted cases of hydrocele were enrolled in the study after considering inclusion and exclusion criteria. In the current study, both unilateral and bilateral hydroceles are considered as a single case. Out of 50 patients who were studied 25 patients had unilateral and 25 patients had a bilateral

hydrocele, so the total number of hydrocele cases was 50. Randomization was done. 25 with unilateral hydrocele and 25 with bilateral hydrocele, so a total 25 were operated by Jaboulay's procedure. 25 with unilateral hydrocele and 25 with bilateral hydrocele, so a total 50 were operated by Sharma and Jhawar technique. All the patients who underwent surgery, the pertinent patient information A master chart was used to record preoperative clinical observations as well as intra- and postoperative outcomes. Patients were monitored for three months, and any further long-term issues were recorded in the master chart. The outcomes between Jaboulay's procedure group and Sharma and Jhawar technique group were compared and the results were analyzed.

Preoperative Preparation

No solid food on the day of surgery. Clear liquids in any amount up to 3 hours before surgery

- Use of H₂ receptor antagonists such as Ranitidine.
- Relief of anxiety with pre-operative sedatives.
- All patients in both groups received 1 preoperative dose of Inj Amoxicillin – Clavulanic acid (1.2g)
- Skin Preparation Shaving from the umbilicus to mid-thigh.
- Anesthesia - All cases were operated under Spinal anesthesia

Postoperative Management

All the patients were given scrotal support for 48 – 72hrs. All patients in both groups received 2 doses of Inj Amoxicillin–Clavulanic acid (1.2g) except diabetic patients who received 4 doses each. All patients received Inj Paracetamol 1g IV 8 hourly for the first 24 hours, then Tab Paracetamol 650mgTDS for 3 days. Inj Diclofenac, was kept for breakthrough pain. The sutures were removed in most cases between 6-9 days.

Type of Study: A hospital-based Randomized Controlled Trail.

Sample Size and Sample Technique:

The sample size was calculated by adopting the post-operative complication proportion among the two surgical procedures. An exploratory calculation of the sample was done for all the post-operative complications where the maximum sample size was associated with the prevalence of scrotal edema in different surgical procedures. By adopting the scrotal edema proportion among Jaboulay's procedure at 33% and in Sharma and Jhawar technique at 11%, the required sample size at 80% of minimum study power and 5% level of significance was 25 for each surgical group. So, the total sample size was 50.

Data Collection: Patient age, symptoms and their duration, prior medical history, full physical examination, laboratory, and radiographic tests, and length of hospital stay. Patients were observed from the date of admission, pre-operatively, intra-operatively, and postoperatively till the date of discharge. Data were collected from case sheets and medical records.

Inclusion Criteria:

- Bidirectional and unilateral Primary Vaginal Hydrocele.

Exclusion Criteria:

- i. All Hydroceles other than Primary Vaginal Hydrocele.
 - Congenital Hydrocele.
 - Secondary Hydrocele.
 - Filarial Scrotum.
 - Encysted Hydrocele of the cord.
- ii. Patients with bleeding diathesis.
- iii. Patients who are not willing for surgery.
- iv. Patients who have immunocompromised status.

Statistical analyses: In categorical variables, frequency is shown. The mean of continuous parameters is displayed. To compare any 2 categorical variables, the chi-square test and Fisher's end test were used. To compare the mean level of continuous, normally distributed parameters between the 2 groups, an independent t-test will be used. Skewed data are analyzed by Wilcoxon Rank Sum Test.

Result:

Table 1: Duration of surgery in unilateral and bilateral cases of hydrocele

Surgery	N		Mean ±SD		N	Mean ±SD
Jaboulay's procedure	10	Unilateral Case	38.2 ±9.8	Bilateral case	15	66.3 ±11.0
Sharma and Jhawar technique	15		25.4 ±6.1		10	53.6 ±12.3

Table 2: Post-operative hematoma, post-operative pain after 3 days, post-operative fever even after 3 days, post-operative scrotal edema of surgery in patients.

Surgery	N	Hematoma	Pain for > 3 days	Fever after 3 days	Scrotal Oedema
Jaboulay's procedure	50	1	10	2	12
Sharma and Jhawar technique	50	0	5	1	8

Discussion

Hydrocele is found in all ages. In this study majority of the patients belong to the age group of 50-60 years. The youngest patient was 22 years old and the oldest was 89 years old. In Dr. S. Naga Muneiah et al study [7] to compare different surgical

procedures of primary vaginal hydrocele, the youngest patient was 17 years old and the oldest was 78 years with approx. 90% of patients of age more than 20 years. In Meredith F Campbell study [7] author has quoted 90% of his patients were over 21 years of age, the youngest was 6 years of

age, and the eldest in his study was 81 years of age. In Ku J Het al [8] study, the mean age was 54.36, the youngest was 16 years and the oldest was 83 years. The findings in comparison are nearer to our study.

Dr. P Kameshwari Prasad et al [6] carried study to compare Jaboulay's procedure with sclerotherapy in which 36 percent of patients reported post-operative pain. Dr. S. Naga Muneiah et al [7] found post-operative pain in 61.11 percent of cases of Jaboulay's procedure group and 22.22 percent of cases of the Sharma and Jhawar technique group.

In our study, most of the hydroceles were presented within 5 years of first noticing the presenting complaints. In Ku JH et al [8] study, the duration of symptoms was less than one year for most of the cases. So comparatively there was an early presentation of symptoms to the hospital in the Korean study population. In our study, most of the patients were farmers and residents of rural areas with a lack of knowledge about the disease and treatment available. They usually do not visit the hospital till the size of the scrotum is large enough to interfere with their daily activities. 85 percent of patients in our study presented with a scrotum of size equal to or more than 10 cm in the largest dimension.

In our study post-operative fever after 3 days was noted in only 3 cases among the Jaboulay's procedure group and in 2 cases among the Sharma and Jhawar technique group. This result is similar to the result of Dr. S. Naga Muneiah et al [7] where the fever was noted in only one case of Jaboulay's procedure and none in the Sharma and Jhawar technique group. In the present study, scrotal edema developed in 29.6 % of Jaboulay's procedure group and 18.5% among the Sharma and Jhawar technique group. In Dr. S. Naga Muneiah et al [7] study, scrotal edema was more in Jaboulay's procedure 33.33% whereas it was 11.11% in Sharma and Jhawar

technique. It is comparable to our study. Scrotal edema occurs not only due to infection but also due to dissection and breakage of lymphatics.

The differences in results in our study v/s that of Dr. S. Naga Muneiah et al [7] study can be attributed to the difference in sample size and duration of follow-up. In addition, there were a lot of dropouts in our study. However, in both studies, it is clearly seen that both Jaboulay's procedure and Sharma and Jhawar technique are comparable. However, Sharma and Jhawar technique has lesser operative time, fewer post-operative complications like hematoma, pain, and fever and in turn a decreased post-operative hospital stay than Jaboulay's procedure. [9]

From our analysis, it has been determined that both the procedures are safe in both experienced and young surgeons' hands. So far as post-operative hematoma, fever, scrotal edema, and attainment of the normal size of the scrotum is concerned both procedures are comparable. However, compared to Jaboulay's procedure, the Sharma and Jhawar technique has a shorter duration of surgery in both unilateral and bilateral cases of hydrocele. [10] Sharma and Jhawar techniques have less post-operative pain and a significantly shorter duration of postoperative hospital stay. So far as secondary outcomes are concerned, no difference was observed in recurrences between either of the groups. However, there were a lot of dropouts in the present study, to conclude the secondary outcome. [11,12]

Conclusion

Thus, it can be concluded that both procedures have comparable outcomes and can be well performed in our patient population. However, Sharma and Jhawar technique had a short duration of surgery, less post-operative pain, and short post-operative hospital stay than its counterpart Jaboulay's procedure, without any added benefit with respect to the incidence of

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