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An Observational Study of Minimal Dissection Technique And Conventional Eversion of Sac in Primary Vaginal Hydrocele.

Dr. Sunny, Dr. R K Patra
Department of General Surgery,
Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha
Corresponding Author : Sunny

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ABSTRACT
Background: Hydrocele is one of commonest disease occurring worldwide.In India the highest incidence is seen along the coastal belt. Hydrocele is the most common benign scrotal swelling, and has been estimated to occur in 1% of the adult male population.[1] Aims of the study is to compare Jaboulay's procedure and Sharma and Jhawar technique in terms of duration of surgery, postoperative complications and duration of hospital stay.
Methods and Materials: A total of 108 adult patients with primary vaginal hydrocele admitted in KIMS Bhubaneswar were observed after due consideration of inclusion and exclusion criteria.Out of 108 patients, 54 patients were operated by Sharma and Jhawar technique and 54 operated by Jaboulay's procedure after taking due informed consent.
Result: In our Study most of the patient presented with complaint of scrotal swelling of 5years duration. The mean duration of surgery in Jaboulay's procedure was 38.2 minutes in unilateral cases and 66.3 minutes in bilateral cases and in Sharma and Jhawar technique it was 25.4 minutes and 53.6 minutes respectively, with a significant p value. Post operative complications are more common in Jaboulay's procedure. The mean post operative hospital stay was 4.65 among Jaboulay's procedure group and 4.0 in Sharma and Jhawar technique group (p value of 0.0006).
Conclusion: In our study the Sharma and Jhawar technique has a shorter duration of surgery in both unilateral and bilateral cases of hydrocele, less post operative pain and a significant shorter duration of post operative hospital stay as compared to Jaboulay's procedure.

I. INTRODUCTION

Hydrocoele is an abnormal collection of serous fluid in some part of the processus vaginalis, usually the tunica vaganalis[2]. Hydrocele is one of the chronic manifestations of lymphatic filariasis among men and there are about 27 million men with hydrocele worldwide. [3] In India the highest incidence is seen along the coastal belt. Hydrocele is the most common benign scrotal swelling, and has been estimated to occur in 1% of the adult male population.[1]There is a strong feeling of shame and embarrassment among hydrocele patients along with the problem of sexual disability[3]. In Odisha, surgeons are performing common surgical procedures for hydrocele i.e. Lord's plication, Jaboulay's procedure and the minimal dissection technique i.e. Sharma and Jhawar technique. Aims of the study is to compare Jaboulay's procedure and Sharma and Jhawar technique in terms of duration of surgery, postoperative complications and duration of hospital stay.

II. METHODS AND MATERIALS:

It is a hospital based prospective observational study conducted over a period of 2 years from September 2018 to August 2020. The sample size of 108 was calculated by adopting the post-operative complication proportion among the two surgical procedures.[5] A total of 108 adult patients with primary vaginal hydrocele admitted in KIMS Bhubaneswar were observed after due consideration of inclusion and exclusion criteria. 54 patients were operated by Sharma and Jhawar technique and 54 operated by Jaboulay's procedure after taking due informed consent.

Inclusion Criteria:

Unilateral and Bilateral Primary Vaginal Hydrocele.

ExclusionCriteria:

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

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iv. Patients who have immunocompromised status.

All the patients who underwent surgery, the relevant patient specifics preoperative clinical findings, complete physical examination; laboratory investigations and intra & postoperative results were noted in a master chart. All patients received 2 doses of Inj Amoxycillin & Clavulanic acid 1.2g, with exception of diabetic patients, who received 4 such doses.All patients were given the same post operative analgesia regime. They all received 2 doses of Inj Paracetamol 1g IV 8 hourly in their immediate post operative period. Inj Diclofenac 100 IV was kept as an SOS drug. Patients were followed up for 3months and further long term complications if any.

III. DATA ANALYSIS

Categorical variables are presented as frequency. Continual parameters are shown as mean. To compare any 2 categorical variables, chi-square test and Fishers end test was used.

To compare the mean level of continuous, normally distributed parameter between the 2 groups, independent t – test will be used. Skewed data are analyzed by Wilcoxon Rank Sum Test. A p value of < 0.05 is considered as statistically significant. All the analysis is carried out using the standard statistical software.

Conduction of operation

Jaboulays technique[6,7]

The scrotum is grasped firmly in one hand to stretch scrotal skin. 6-10 cm incision made on anterior surface of scrotum over most prominent part of hydrocoele, well away from testicle which lies posteroinferior. Skin, dartos and thin cremasteric fascia are incised and reflected together as a single layer from the underlying parietal layer of the tunica vaginalis which is the outer wall of the hydrocoele. When hydrocoele is well separated laterally and medially from overlying layers, it is grasped with 2 Allis forceps and a trocar is inserted to aspirate the fluid. With one finger inside the sac, we dissect it free from the overlying scrotum so that spermatic cord and testicle with attached hydrocoele lie free in operative field. Hydrocele sac is then opened completely. Testicle is then carefully inspected and palpated. Redundant wall sac is trimmed leaving a margin of 2cm. Great care must be taken with haemostasis. Sac is then everted behind testis with interrupted suture. The testis with its everted sac is put back into the new space into the scrotum very carefully. Wound closed in layers.

Minimal dissection technique by P. K. Jhawer and L.S. Sharma (1971)[8,9]

Incision: the scrotum is held by the assistant and 4cms incision made avoiding subcutaneous vessels. The sac with all the fascial layers together is picked up with 2 tissue forceps and emptied with a trocar and cannula. The same hole is then extended on either side avoiding visible blood vessels. Through the opening, upper pole of the testis is seen. To lodge the testis, with its everted sac back into the scrotum, a testis size space is created between the scrotal subcutaneous layer outside and the testicular fascial layers on the inside. This is easily done by introducing 2 index fingers to do blunt separation of tissues and make room just enough to allow a tight fit of testis when reloaded into the scrotum. The testis with its everted sac is put back into the new space into the scrotum very carefully. Wound closed in layers.

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Observation and Results

Age.

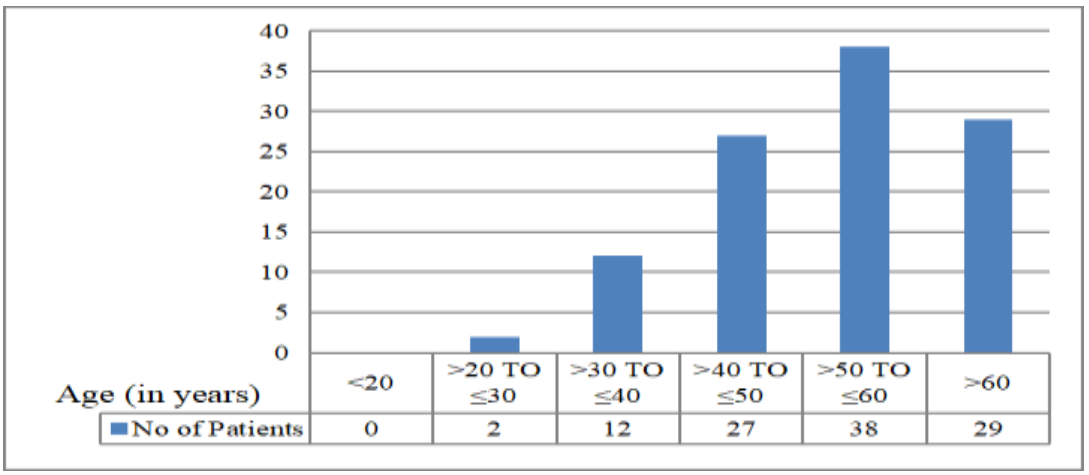

Chart 1 – Age distribution of patients in different age intervals.

	N	Minimum	Maximum	Mean	Std. deviation
Jaboulay's procedure	54	22	89	54.1	12.5
Sharma and Jhawar technique	54	33	84	53.5	11.6

Table 1 – Age distribution

Presenting Symptoms

	Frequency	Percentage
Swelling in left side of scrotum	43	39.8
Swelling in right side of scrotum	35	32.4
Swelling in both side of scrotum	30	27.8
Total	108	100

Table 2 – Presenting symptoms of patients

Duration of Symptoms

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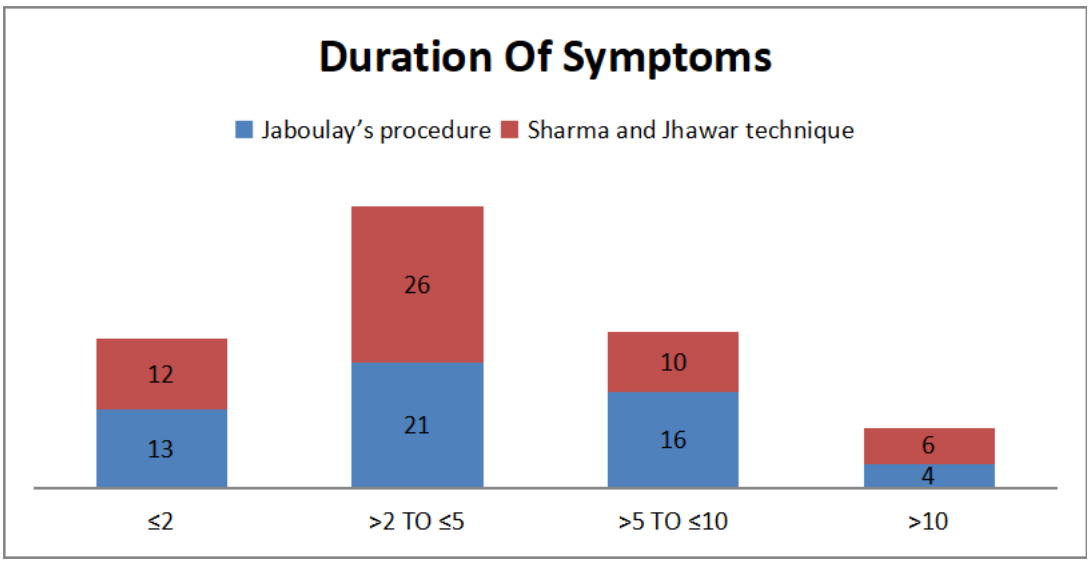

Chart 2 – Duration of symptoms of patients.

Maximum number of patients had symptoms for 2-5 years in both the groups.
Type of Hydrocele (Unilateral / Bilateral)

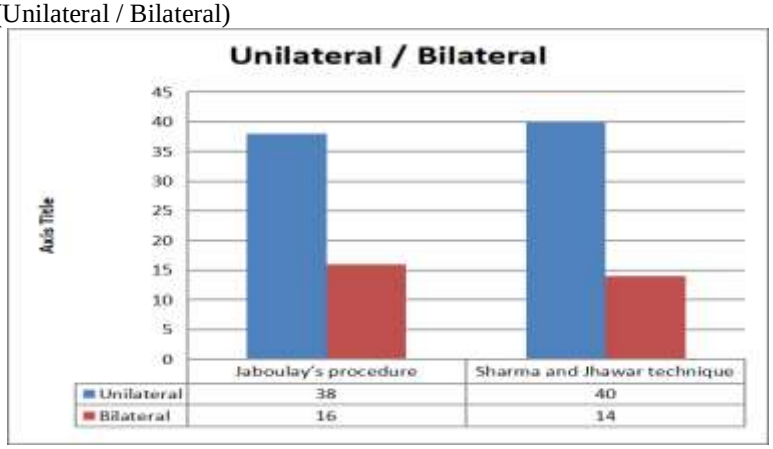

Chart 3 – Number of cases of unilateral and bilateral cases in two groups.

Duration of Surgery

	Unilateral case of hydrocele				Bilateral case of hydrocele			
Surgery	N	Minimum time(in mins)	Maximum time (in mins)	Mean	N	Minimum time(in mins)	Maximum time (in mins)	Mean
Jaboulay's procedure	38	20	60	38.2	16	45	80	66.3
Sharma and Jhawar technique	40	20	45	25.4	14	40	80	53.6

Table 3 – Duration of surgery in unilateral and bilateral case of hydrocele.

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Post-Operative Complications

Complications	Jaboulay's procedure	Sharma and Jhawar technique
Hematoma	2	0
Pain for more than 3 days	20	9
Fever after 3 days	3	2
Scrotal Oedema	16	10

Table 4– Post operative complications in two groups

Post-Operative Hospital Stay

Surgery	Minimum day of post operative hospital stay	Maximun day of post operative hospital stay	Mean duration of post operative hospital stay	Std Deviation
Jaboulay's procedure	3	7	4.65	1.0
Sharma and Jhawar technique	3	7	4.0	0.9

Table 5 – Duration of post operative hospital stay of patients.

Follow Up & Recurrences

The patients were followed up for a period 3 months. There were many dropouts in the early postoperative follow up period. No recurrences were noted in the postoperative follow up period.

Cost of surgery

There was no difference in both the procedure in terms of cost of surgery.

Attainment of Normal size of Scrotum

	N	Normal size of Scrotum not attained	Percentage
Jaboulay's procedure	48	5	10.4
Sharma and Jhawar technique	47	6	12.8

Table 6 – Patients who didn't had normal size of scrotum even during 3 months of follow up.

Attainment of Normal size of Scrotum was seen in most of the patients during the follow up period of 3 months. There were many dropouts in early postoperative period. 5 out of 48 followed up cases didn't have a normal size scrotum in Jaboulay's procedure group and 6 out of 47 in other group, however the size of scrotum was reduced.

IV. DISCUSSION

In the present study, hydrocele cases have a range of age from 22-89 years. The mean age of occurrence in the Sharma and Jhawar technique group was 53.5, while that in the Jaboulay's procedure group was 54.1, which is more or less the same.

Hydrocele is found in all ages. In this study majority of the patients belong to the age group of 50-60 years (38.2%). The youngest patient was 22 years old and the oldest was 89 years old. In Dr.S.Naga Muneiah et al study[5] to compare different surgical procedure of primary vaginal hydrocele, the youngest patient was 17 years old and the oldest was 78 years with approx 90% patients of age more than 20 years. In Ku JH et al[10]study, mean age was 54.36, youngest was 16 years and the oldest was 83 years. The findings in comparison are nearer to our study.

In our Study most of the patient presented with complaint of scrotal swelling of 5years duration. In Ku JH et al study, the duration of symptom 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 the patients were farmers, resident of rural area with a lack of knowledge about the disease and treatment available. They usually do not visit hospital till the size of scrotum is large enough to interfere in 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, there was more predilection of hydrocele to left side in our study.

The mean duration of surgery in Jaboulay's procedure was 38.2 minutes in unilateral cases and 66.3 minutes in bilateral cases which is more than that of Sharma and Jhawar technique which was 25.4 minutes and 53.6 minutes respectively. On statistical analysis p value was 0.0001 for unilateral case and 0.005 for bilateral case. The mean duration of surgery for Jaboulay's procedure in Aly Saber study was 31.5 mins.[12] This shows that operative time for Sharma and Jhawar technique is less than Jaboulay's procedure.

In our study 2 out of 54 i.e. 1.85% had hematoma in Jaboulay' procedure group and zero in other group. Hematoma was managed conservatively. In Dr.S.Naga Muneiah et al study, hematoma was present in 2 out of 18 cases i.e. 11.11% in Jaboulay's procedure group as compared to zero out of 18 cases in Sharma and Jhawar technique group. This is explained on the basis that minimum dissection can reduce the incidence of hematoma, which is apreclude to all other complications present with conventional method of treatment.

In our study 37 percent in Jaboulay's procedure group and 16.7 percent in Sharma and Jhawar technique group complaint of pain even after three days of surgery. Dr. P Kameshwari Prasad et al[11] carried study to compare Jaboulay's procedure with sclerotherapy in which 36 percent patients reported post operative pain. Dr.S.Naga Muneiah et al found post operative pain in 61.11 percent cases of Jaboulay's procedure group and 22.22 percent cases of Sharma and Jhawar technique group. Hence we concluded that Sharma and Jhawar technique has less post operative pain as compared to Jaboulay's procedure (p value – 0.01 i.e. less than 0.05, significant).

In our study post operatively 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. The p value was found to be not significant. This result is similar to the result of Dr.S.Naga Muneiah et al where fever was noted in only one case of Jaboulay's procedure and none in Sharma and Jhawar technique group.

In the present study, scrotal oedema developed in 29.6 % among Jaboulay's procedure group and 18.5% among the Sharma and Jhawar technique group. In Dr. S. Naga Muneiah et al study, scrotal oedema was more in Jaboulay's procedure 33.33% where as it was 11.11% in Sharma and Jhawar technique. It is comparable to our study. Scrotal oedema occurs not only due to infection but also due to dissection and breakage of lymphatics.

In the present study, the mean post operative hospital stay was 4.65 among Jaboulay's procedure group and 4.0 in Sharma and Jhawar technique group. With a p value of 0.0006 i.e. less than 0.05 significant, indicates excessive dissection leads to increased post operative hospital stay. This result is similar to Dr. S. Naga Muneiah et al study.

Attainment of normal size of scrotum was seen in most of the patients during the follow up period of 3 months. 5 out of 48 i.e.10.4% in Jaboulay's procedure group and 6 out of 47 i.e. 12.8% in Sharma and Jhawar technique group, didn't had a normal size scrotum; however the size of scrotum was reduced. With a p value of more than 0.05 we can say there is no significant difference among the two surgical procedures in relation to attainment of normal size of scrotum.

The differences in results in our study v/s that of Dr. S. Naga Muneiah et al study can be attributed to the difference in sample size and duration of follow up. In addition there were a lot of drop outs 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 , less post operative complications like hematoma, pain , fever and in turn a decreased post operative hospital stay than Jaboulay's procedure.

V. CONCLUSION

From our study it can be concluded that both the procedures are safe in both experienced and young surgeon hands. So far as post operative hematoma, fever, scrotal oedema and attainment of normal size of scrotum is concerned both the 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, less post operative pain and a significant shorter duration of post operative 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 on the secondary outcomes.

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Figure 1 - Hydrocele sac delivered out of scrotum in Jaboulay's procedure.

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Figure 2 - Everted sac sutured behind the testis in Jaboulay's procedure.

Figure 3 - Delivery of testis in Sharma and Jhawar technique.

Figure 4 - Creation of Sub dartos pouch in Sharma and Jhawar technique.