

A Prospective, comparative study between Hydrocele window operation vs Jaboulay's procedure

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Abstract

Introduction:

A hydrocele is an abnormal collection of serous fluid in a part of the processes vaginalis and the tunica vaginalis. Acquired hydroceles are primary or it is idiopathic, or it is secondary to epididymal or testicular diseases. The aim of this study is to compare post operative complications, hospital stay and duration of surgical procedure between

hydrocele window vs jaboulay procedure in a tertiary care hospital named SCB MEDICAL COLLEGE AND HOSPITAL CUTTACK, ODISHA.

Patients and Methods:

- Type- prospective observational study
- Time period of study: March 2021-October 2022.
- Place of study: Department of General Surgery S.C.B. medical college & Hospital, Cuttack.
- Sample size: Convenient sample

Results:- those who underwent the hydrocele window operation was 17.34 SD 1.81 minutes with a range of 15 to 20 minutes as compared to conventional hydrocelectomy i.e was 31.58 SD 2.05 minutes.

The mean time of hospital stay among the patients who underwent conventional hydrocelectomy (jaboulay's) was 71.82 SD 10.76 hours with a range of 48 to 88 hours and those who underwent window operation was 44.04 SD 13.59 hours with a range of 24 to 79 hours

Overall complication rate was less compared to conventional hydrocelectomy

Conclusion:

- From the present study, the post operative complications, hospital stay and duration of surgery is less in hydrocele window procedure with comparison to the Jaboulay's procedure.

Introduction

- Hydrocele is an abnormal accumulation of serous fluid in the tunica vaginalis.[1] Hydroceles are of two types congenital and acquired. Acquired hydroceles are further classified as Primary Vaginal Hydrocele (Idiopathic) and Secondary Hydrocele (Secondary to epididymal or testicular disease). [2,3]
- It is the most common benign swelling of the scrotum. The occurrences of hydrocele are estimated as 1% among the adult men. [4,5] It is a common disease in tropical countries especially where filariasis is common. In India the highest incidence is seen along the coastal belt. [6,7,8]
- Our study was designed to highlight on post-operative morbidity (pain, fever, and scrotal edema) and complications (hematoma, wound infection, wound disruption and recurrence) between Hydrocele window operation and Jaboulay's procedure conducted among 100 number of cases in SCB medical college Cuttack, Odisha.

Patients and methods

- A prospective observational study was done over a period of one and half years at SCB Medical college and Hospital, Cuttack.

Inclusion criteria

- All elective cases complaining of swelling at the scrotal region u/l or b/l with features of transillumination test positive & without any features of comorbidities or complications.

Exclusion criteria

- Other cases with hernia, pyocele, hematocele or h/o injury to scrotum and with comorbidities like DM, HTN, CAD.

Procedure:

Randomization

- The randomization technique was commenced before the start of the procedure. There were 100 sealed envelopes were made ready with sequential number from 1 to 100. Each envelope contained a computer-generated random number inside in it. Based on the last digit of the random number, the subjects were

allocated to respective interventional group. If the number was between 0 and 4, they were assigned to conventional hydrocelectomy and if the number was between 5 to 9 and they were subjected to minimal separation hydrocelectomy. The envelopes were opened by the investigator after getting the consent from the patient just prior to the surgery. Based on the random number, the subjects were allocated and the respective surgeries were done.

Conventional Hydrocelectomy (Jaboulay's Procedure):

The testis was delivered through an incision in the scrotum and the tunica was opened and everted and most of the hydrocele sac was resected with electrocautery and leaving a reasonable cuff along the borders of the testicle. Bleeding was controlled by a running suture closing the free edges of the hydrocele sac and hemostasis was secured by the aid of electrocautery. Standard 2-layer closure which was used to close the scrotum with small tube drain. Patients were followed up on second day for scrotal edema and hematoma and the drain was removed on third day.

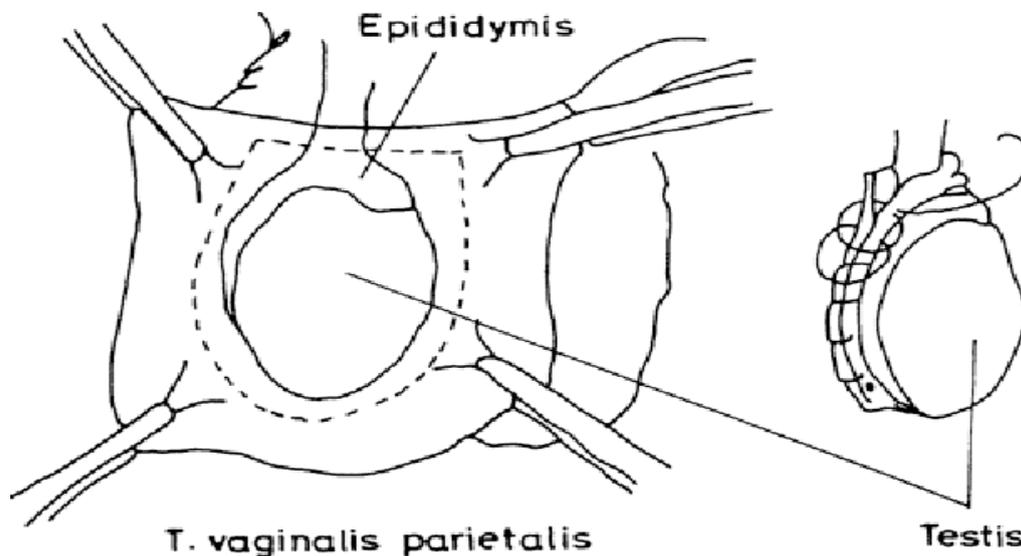


Fig. 1. Eversion procedure

Image. 1

Hydrocele Window operation

- A small scrotal incision of about 2cm long was made and incision of the Dartos muscles in the same line was made using with electro cautery. The parietal tunica vaginalis was identified grasped and minimal blunt dissection was made by the help of the index finger.
- A small hole was made for the aspiration of hydrocele fluid. Then a disc of tissue was excised of the parietal tunica vaginalis about double of the skin incision dimension using electrocautery to create a window.
- The edge of the visceral surface of the tunica vaginalis was sutured to the parietal layer of the tunica vaginalis and then to the Dartos muscle and all was sutured to scrotal skin in an everted manner aim to expose the visceral tunica toward scrotal skin. If the visceral surface of the tunica vaginalis was sutured to the Dartos, eversion was be created. Then when this everted structure was sutured to the scrotal skin, it comes in contact the sac with lymph-rich subcutaneous tissues.
- Patients were followed up on Post Operative second day (POD2) for scrotal edema and hematoma.

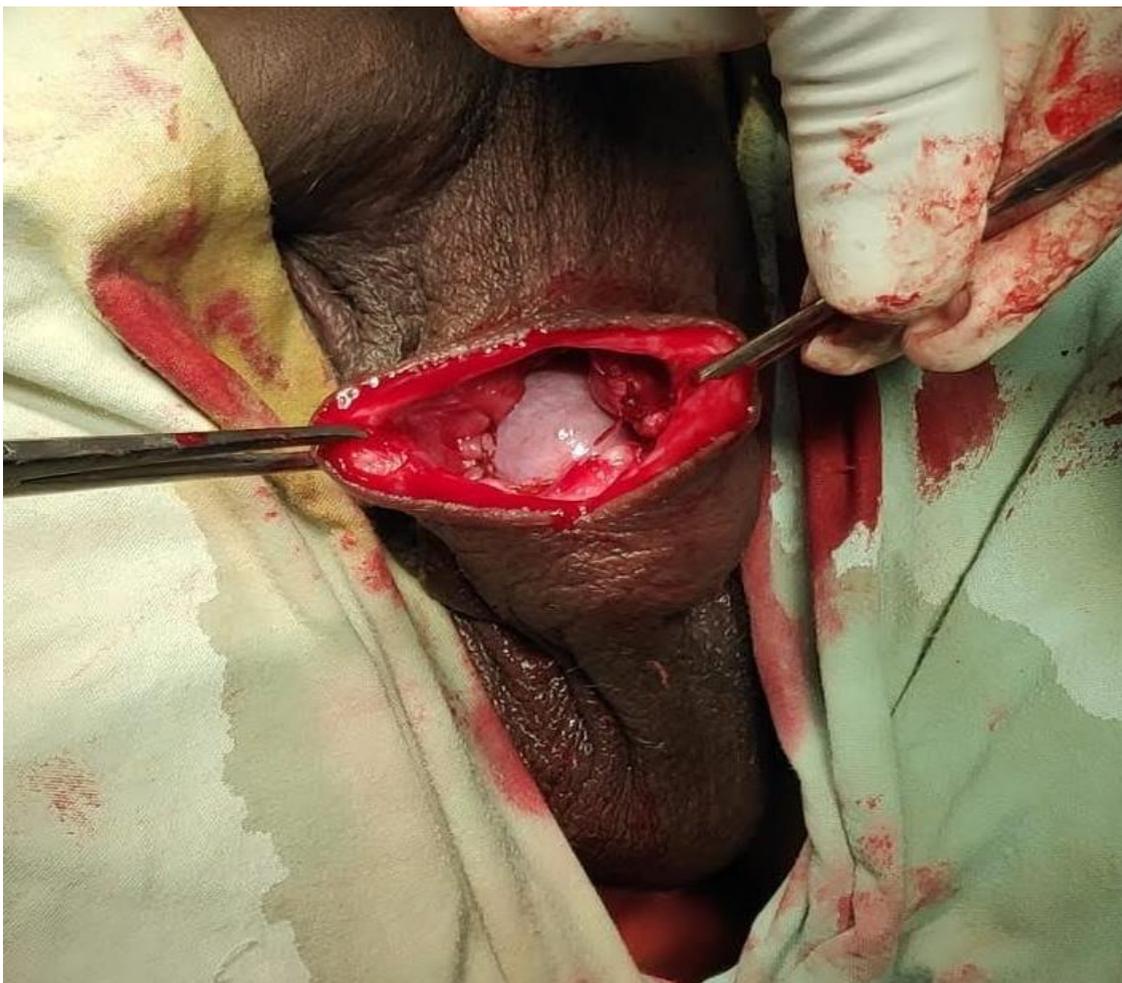


Image 2

Observation & Results

- Total 100 patients were taken and divided into 2 groups each 50 randomly. Group A underwent the conventional hydrocelectomy procedure i.e., Jaboulay's Procedure and Group B underwent the hydrocele window operation.
- Considering the baseline characteristics, there was no significant difference between the two groups.
- Complications was associated with 40% of the patients out of which 26% edema and hardening and 8% edema hardening with hematoma and 6% with only wound infection. 60% had no post-operative complications.
- Only 20% of the study participants underwent window procedure presented with complications out of which 10% developed oedema and hardening and only 6% presented with wound infection 4% edema, hardening, wound infection. Of total of 80% of the patients did not experience any post-operative complications.

Discussion

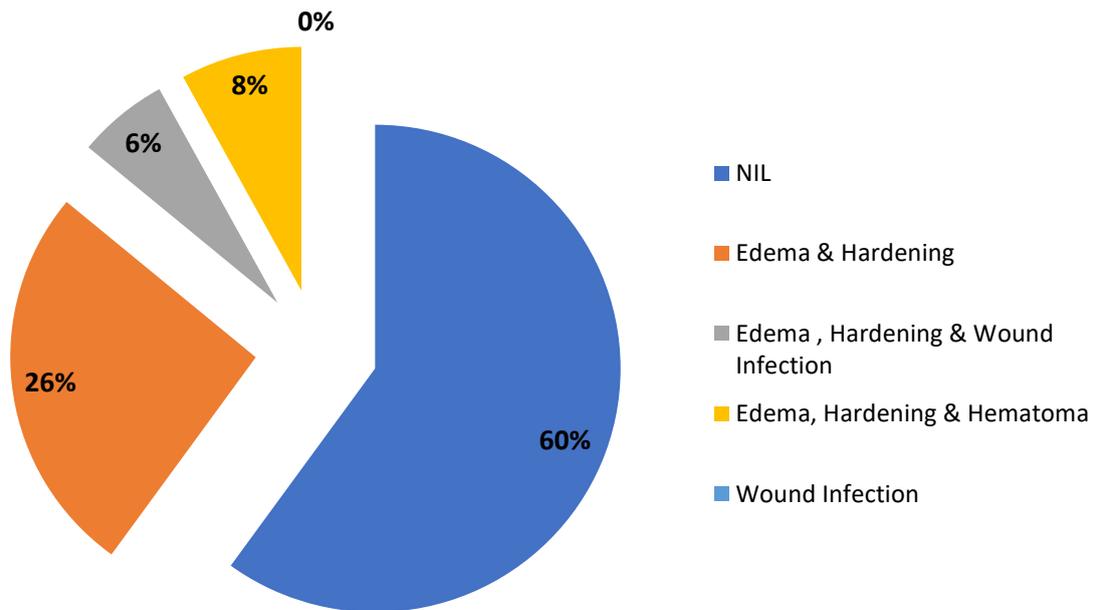
- The mean age of the participants in the study population was 45.10 ± 14.60 years with a minimum of 21 years to a maximum of 70 years.
- The mean operating time among those patients who underwent jaboulay's procedure was 31.58 SD 2.05

minutes with the range of 29 to 35 minutes and those who underwent the hydrocele window operation was 17.34 SD 1.81 minutes with a range of 15 to 20 minutes. The difference in the mean time between the two surgical procedures was statistically significant ($p < 0.001$).

- The mean time of hospital stay among the patients who underwent conventional hydrocelectomy (jaboulay's) was 71.82 SD 10.76 hours with a range of 48 to 88 hours and those who underwent window operation was 44.04 SD 13.59 hours with a range of 24 to 79 hours.
- The difference in the mean time between the two surgical procedures was statistically significant ($p < 0.001$).
- When compared to other studies the mean time of hospital stay for conventional hydrocelectomy was lower with mean of 21.19 SD 11.65 hours with a range of 12 to 48 hours and the mean time of hospital stay for minimal access hydrocelectomy was lower with mean of 13.48 SD 6.38 hours with a range of 10 to 30 hours. But the difference in the above mean time of hospital stay between two procedures was not statistically significant ($p > 0.05$). This could be attributed to the geographical differences in the protocol management of the cases in the hospital. The differences may be due to available resources and sufficient health care providers.⁹
- The overall complication rate (percentage of patients experienced any complication) among the patients underwent conventional hydrocelectomy was 40%, whereas it was low among patients underwent minimal separation hydrocelectomy of 20% and the difference in this distribution was statistically significant ($p < 0.05$). The low complication rate among the minimal separation group was supported by the Saber study which states an overall complication rate among patients underwent minimal access hydrocelectomy was 12.7% and showed a statistically significant difference from the complication rate among patients underwent conventional hydrocelectomy (37%).
- The most common complication of the patients undergoing hydrocelectomy was edema and hardening. In the present study, 26% of the patients who underwent conventional hydrocelectomy suffered from edema and hardening over the surgical site post-operatively compared to 10% incidence in the patients who underwent minimal separation hydrocelectomy.
- This difference in the distribution was also statistically significant. This is additive to the evidence produced by Saber study which also showed a significant difference in the distribution of edema and hardening among the patients between conventional hydrocelectomy (25%) and minimal access hydrocelectomy (5%).
- The next common complication following hydrocelectomy was hematoma over the surgical site. Only 8% of the patients who underwent conventional hydrocelectomy had incidence of hematoma whereas there was 4% incidence of hematoma in patients underwent minimal separation hydrocelectomy. In the Saber study also, there was zero incidence of the hematoma in patients who underwent minimal access hydrocelectomy.
- Edema and hematoma were the most common in excision and eversion technique (conventional hydrocelectomy). This is because of wide dissection and excessive handling of the hydrocele sac during the surgery. In the hydrocele window operation, a disc of the hydrocele sac is pulled and resected through a small scrotal incision with minimal dissection. The other complications following hydrocelectomy are edema hardening with wound infection which is 6% in Group A and 0% in group B.

Pie chart 1: Percentage of Post-operative complications of the study subjects in the Group A.

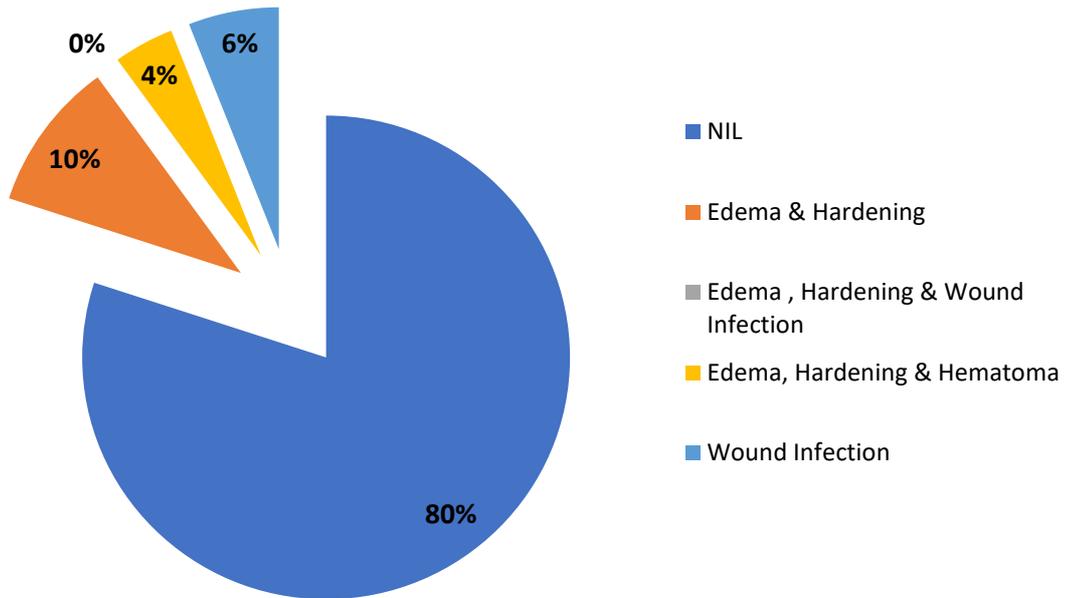
Complication Following Jaboulay Procedure



Pie chart 1

Pie chart 2: Percentage of Post-operative complications of the study subjects in the Group B.

Complication Following Hydrocele Window Operation



Pie chart 2

Table 1: Distribution of post-operative complications of the participants in the two groups of the study population

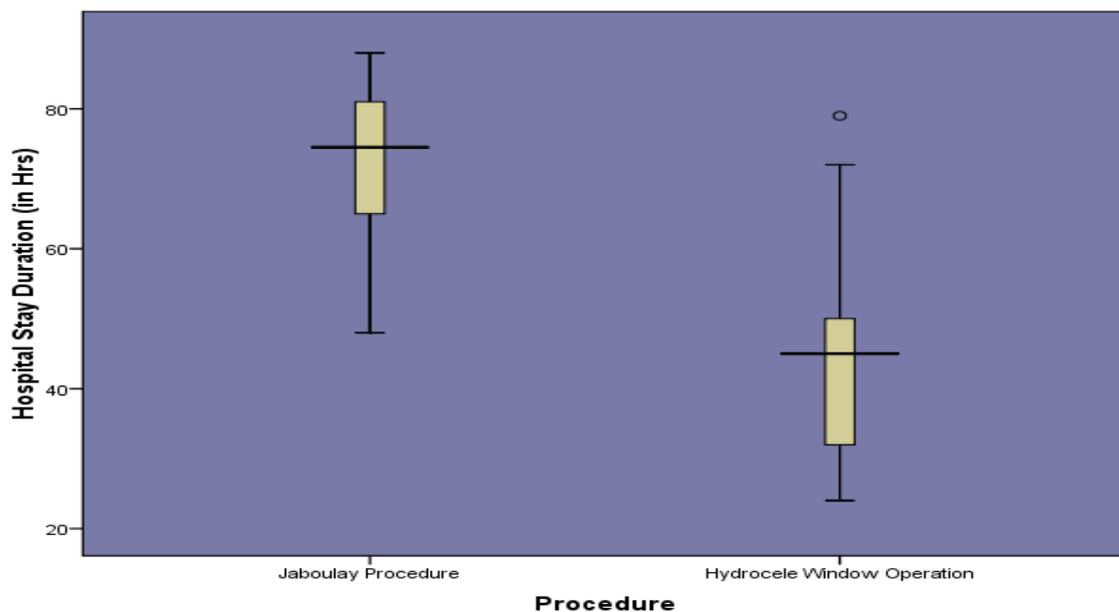
Post Operative Complications		Procedure		P Value	OR (CI)
		Jaboulay's procedure (Group A)	Hydrocele window operation (Group B)		
Absent		30 (60%)	40 (80%)	0.029	2.667 (1.090-6.524)
Present	Edema & Hardening	13 (26%)	5 (10%)		
	Edema, Hardening & Wound Infection	3 (6%)	0 (0%)		

	Edema, Hardening & Hematoma	4 (8%)	2 (4%)		
	Wound Infection	0 (0%)	3 (6%)		

Table 2: Distribution of time of hospital stay (in hours) of the patients in the two groups of the study population

Procedure	DURATION OF HOSPITAL STAY (in Hours)				
	Min	Max	Mean±SD	Median (IQR)	P value
Jaboulay's procedure	48	88	71.82±10.76	74.5 (16)	0.001
Hydrocele window operation	24	79	44.04±13.59	45 (18)	

Table 2 Box & Whisker plot 3: Showing overall hospital stay



**Mann Whitney U
Box & Whisker plot 3**

LIMITATIONS

- Due to availability of limited resources, the trial was single blinded and so there would have been a few chances of interviewer bias. If the study was done double or triple blinded, the results would have been much better.
- Due to availability of limited resources, the patients were followed up for only up to the post-operative period of hospital stay only. So that long term complications could not be evaluated.

CONCLUSION

- The overall complication rate among patients underwent hydrocele window operation procedure (20%) was very less compared to conventional hydrocelectomy i.e., Jaboulay's procedure (40%).
- The operating time of hydrocelectomy was around 15 minutes significantly lesser in hydrocele window operation (17.34 SD 1.81 minutes) compared to Jaboulay's procedure (31.58 SD 2.05 minutes).
- The patients underwent window procedure (44.04 SD 13.53 hours) had a significantly lesser hospital stay of around 30 hours compared to conventional hydrocelectomy (71.82 SD 10.76 hours).

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