



## CLINICAL STUDY OF ETIOPATHOGENESIS AND MANAGEMENT OF VAGINAL HYDROCELE

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**ABSTRACT** **Background:** Hydrocele is one of the most common disease of the male, with incidence of 10 in 1000 cases. Primary hydrocele is of idiopathic origin and secondary hydrocele are caused by infection or tumors. Surgery is the gold standard treatment. Study was conducted to determine the incidence among various age group, etiology and efficacy of the surgery and its complication. **Methods and Materials:** First 100 cases of Hydrocele were taken into study, after workup, and were taken up for surgical. Fluid sent for culture and analysis; Sac sent for histopathology. Post-operative complications noted. Categorical data were statistically analyzed. **Results:** Hydrocele occurs mainly between the age group of 35 to 55years (51%). Amongst all the retrieved cases, hydrocele fluid were sterile, which concluded that all cases were of primary hydrocele. **Conclusion:** Most common type of hydrocele are of primary type. Jaboulay's procedure is better in comparison with the eversion of sac.

**KEYWORDS :** Primary Hydrocele, Scrotal Swelling, Jaboulay's Procedure

### INTRODUCTION

Hydrocele is fluid contained within the tunica vaginalis surrounding the testis with or without proximal communication.

Hydrocele is one of the common disease occurring worldwide. The incidence of hydrocele is particularly high in coastal part of Karnataka. Incidence rate worldwide is 10-60cases per 1000 new born in full term male and 10 per 1000 in adult men. More commonly in the infancy but can present at any age group. Rarely seen in females as a hydrocele of canal of NUCK or meconium hydrocele of labia.

Hydrocele can be congenital or acquired. Acquired hydrocele are further divided into Primary and secondary hydrocele.

Aetiology in congenital hydrocele is patent processus vaginalis extending beyond the internal inguinal ring containing peritoneal fluid alone, which extends to the testis, with fluid within the tunica vaginalis. Aetiology in Acquired primary hydrocele is the defective absorption of fluid by the tunica vaginalis, due to any cause and excessive production of fluid in secondary hydrocele.

Secondary due to TB epididymis, filariasis, syphilitic orchitis or testicular tumors. Diagnosis of hydrocele is usually clinical.

*Primary hydrocele* occur in middle age, common in tropics, clinically testis is not palpable as it usually attains large size; clinical signs such as Fluctuant, transillumination, can get above the swelling, testicular sensation are present.

*Communicating hydrocele:* a patent processus vaginalis extending beyond the internal inguinal ring containing peritoneal fluid alone, which extends to the testis, with fluid within the tunica vaginalis.

*Hydrocele of the spermatic cord:* fluid contained within a segment of patent processus vaginalis with obliterated processus distally and proximally.

*Scrotal hydrocele:* fluid contained within the tunica vaginalis surrounding the testis without communication proximally.

*Abdomino-scrotal hydrocele:* a large scrotal hydrocele that extends proximally across the internal inguinal ring into the abdomen without communication with the peritoneum.

Secondary hydrocele are usually small, lax and testis usually palpable. Surgery is considered to be the gold standard of hydrocele treatment. The procedures commonly used are Lord's plication, Jaboulay's procedure, subtotal excision of sac and eversion of the sac.

The common complications observed during the surgery of hydrocele are bleeding, hematoma, injury to the cord structures, pyocele, epididymitis, wound infections and torsion of the testis after a faulty positioning.

According to Sivam et al among 100 sample studied filarial etiology was proved in 57% of hydrocele cases using clinical, parasitological, histopathological and immunological parameters.

According to Ku et al 132 patients underwent repair for idiopathic hydrocele using one of three techniques (excision, eversion/plication or internal drainage) and concluded that the internal drainage technique has a high recurrence rate and also suggest that plication is better than excision, causing fewer complications, and better than internal drainage.

Verdejo et al performed 167 hydrocelectomies as ambulatory surgery in 152 patients. He concluded hydrocele patients undergoing ambulatory surgery, significantly improving the cost-efficacy rate, without diminishing the quality of care or patient satisfaction.

A comparison has been made between a series of hydroceles and cysts of epididymis treated by surgery with a complication rate of at least 17% haematoma and 10% sepsis, an average hospital stay of five days, and a much longer time off work, and a series treated by tapping and injection requiring one to three visits to outpatients, an almost negligible complication rate, and no failures in those completing treatment.

Study conducted by Norões and Dreyer et al on a total of 968 patients with unilateral or bilateral filarial hydrocele and a comparison Group of 218 patients from the same area who already had undergone hydrocele-sac-sparing hydrocelectomy elsewhere concluded that Lymph fluid from ruptured dilated lymphatic vessels is an important component of chronic filarial hydrocele fluid that threatens the integrity of the testis in an adult population living in bancroftian filariasis endemic areas.

### MATERIALS AND METHOD

This study was conducted at YENEPOYA Medical College Hospital, Mangalore from October 2014 to October 2016. 100 male cases of hydrocele were taken into the study.

- After institutional ethical committee approval and written informed consent from patients for surgery were taken. The particulars of the patient along with his place of residence and socioeconomic status were noted. The history of present illness, its duration, and mode of onset and rate of progression were recorded.
- A complete physical examination and routine investigations were

done for all patients.

- The sizes of the hydrocele measured and volume assessed by USG scrotum were graded as follows:
  - a) <100ml- small size hydrocele (Planned for Lord's Plication)
  - b) 100-400ml- moderate size hydrocele (Planned for Eversion of sac)
  - c) >400ml- large size hydrocele (Planned for Jaboulay's procedure)

Post operatively Hydrocele fluid were sent for analysis and culture; sac was sent for histopathology.

**Pre-operative preparation:**

All cases were subjected to a standard pre-operative preparation as under said:

- a) A thorough scrub bath with soap and water, a day prior to surgery giving particular attention towards the perineal region
- b) Wearing of a properly washed and clean underwear after the bath
- c) Patient kept nil per oral for 4 hours prior to surgery
- d) Shaving of the region. Extending from umbilicus to mid-thigh, avoiding any scratches, cuts and abrasions over the skin on the day of surgery and thorough savlon soap bath
- e) Preoperative prophylaxis of since dose of cefuroxime 1.5g IV given 30minutes before incision
- f) Skin preparation - On the operation table the scrotum was scrubbed well with a solution of povidone iodine
- g) Following parameters were taken to compare the different surgical procedures – Wound infection, Edema, Hematoma, Duration of the hospital stay, Recurrences
- h) Categorical data was analysed by : Chi-square test; Fischer's test and SPSSV22 software

**RESULTS**

In this study 100 cases of hydrocele (only large and medium sized hydrocele included since there was no small hydrocele admitted at our institution) treated surgically in our department between October 2014 to October 2016 were analysed.

- a. Socio-economic status and Occupation – No relation noted
- b. Age wise distribution

Present study shows majority of the patients were in the age group of 45 to 55years of age (28%). In decreasing order, next most number of cases were between 35-45years (23%), followed by age group of 55-65 (18%).

c. Etiology – None of hydrocele fluid showed any evidence of filariasis, malignancy nor infection. Among all the retrieved cases hydrocele fluid were sterile, which concluded that all cases were primary hydrocele.

**d. Clinical Manifestations**

- i. Symptoms – Most common chief complaints were scrotal swelling (81cases), followed by pain in 21 cases, discomfort in 13 cases, heaviness in 12cases
- ii. Duration of symptoms – 71% of patients has symptoms for less than 5years, 16% of patients has symptoms between 5-10yrs
- iii. Comorbidities – None of the cases admitted had any complications preoperatively.

**e. Side of Hydrocele**

Left sided hydrocele in 44 cases, right sided in 43cases and bilateral in 13 cases

**f. Different methods of surgical treatment**

Jaboulay's procedure was done in 76cases with large hydrocele as per standard treatment, Eversion of sac in 24cases with medium hydrocele.

Drain Placement - Out of 100 cases operated, drains were placed in 39 cases. Out of which 27 cases were Jaboulay's.

**g. Complications**

Procedure	Total cases	Scrotal edema	Hematoma	Infection
Eversion of sac	24	2	1	5
Jaboulay's procedure	76	5	4	16

**h. Duration of hospital stay**

Type of operation	<7 days	>15 days	8-14 day	Total
Eversion of sac	12(50 %)	0 (0%)	12(50%)	24(100%)
Jaboulay's procedure	36(47.4%)	1 (1.3%)	39(51.3%)	76(100%)
Total	48	1	51	100

**DISCUSSION**

In our present study, majority of the patients were in the age group of 45 to 55years (28%) and least number were in the age group of 65-85years (4%). The findings of our study were closer to Campbell and Ku JH et al study with most of the cases in the age group of 30-39 and 41-50 respectively.

It was noticed that hydrocele had no relation to patient's religion. However occupation of the patient were noted to know his socioeconomic strata. Most of the patients admitted to our hospital were of low and middle socioeconomic class.

Histopathology nor culture of 100 samples sent post operatively didn't show any evidence of Tuberculosis, filariasis nor malignancy. All 100 Hydrocele fluid sample were sterile which concluded that all 100 cases were primary hydrocele.

60% cases of the hydrocele cases presented with scrotal swelling as their main symptom, second most common presentation were pain which constituted of 21.5% of the cases. In Campbell study, dragging type of discomfort was most common type of presentation. Other symptoms like difficulty in walking, difficulty in performing the sexual act and tenderness were not found in our series in contrast to Campbell study.

Majority of the cases presented within 5years since the onset of the disease. The results of our study is comparable with the Campbell study with an average duration of 1-2 years since the onset.

Among the 100 cases in our study, difference in number of cases between right and left side were minimal. We had 44 cases presenting with hydrocele on left side; while 43 were on the right side. We had a total of 13 cases presenting bilaterally. In Campbell study there is predilection for right side which is not comparable with our study.

Since our study had primary hydrocele with medium and large volume hydrocele as per ultrasound scrotum, Jaboulay's procedure were done for large hydrocele and eversion of sac for medium sized hydrocele. We had 76cases of large hydrocele which were taken up for Jaboulay's procedure and 24cases of medium hydrocele which were taken up for eversion of sac. Lord's plication was not done in any of our study since we did not have any case of small hydrocele.

Out of the 100 cases operated, drains were placed in 39 patients. Drains were placed based on intraoperative ooze and extent of dissection. In Jaboulay's procedure, drains were placed in 27 (35.5%) cases out of 76 cases. Whenever drain were placed, it was removed within 48 hours in majority of the cases.

Among the 100 cases that were operated, 33% of the cases had complications. Most common complication in our study were surgical site infection, which we noted in 21 cases out of total 33 cases with complication i.e. 63.6%. Edema was noted in 21% and 15.2% had hematoma. In Campbell study, postoperative infection was 15%, hematoma was 2.3%. Study of Rai et al showed haematoma in 15 cases out of 50 cases and there was no infection noted, In our series incidence of post-operative infection were higher. 33 patients had post-operative complications, out of which 21 cases had infection which accounted for 63.6% of complications, 7 cases had oedema which 21.2 % of the complications, 5 cases had hematoma.

Minimum duration of hospital stay were 2 days and maximum duration of hospital stay was 23 days for a patient with post-operative wound infection. Duration of stay in our study is comparable with studies mentioned below, which is on an average of 7 days.

In this study, comparison were done between Jaboulay's procedure and eversion of sac, complication rates and duration of the hospital stay were found to be as follows.

In 24 Patients who underwent eversion of sac, 5 cases had wound infection, 2 had scrotal oedema and 1 patient developed hematoma. Those who underwent Jaboulay's procedure i.e. in 76 cases 16 patients had wound infection, 5 patients had scrotal edema and 4 had hematoma. Majority of patients who underwent Eversion of sac were discharged within one week period compared to Jaboulay's procedure. Rate of complications observed in different surgical technique were found to be statistically significant. There is no significant difference in

the duration of hospital stay.

All patients were given scrotal support, antibiotics and analgesics. Corrugated drains were placed for selected cases which was removed after 48 hrs in most of the patients. Absorbable sutures were used for cases with least bleeding intraoperatively and drains were not placed in such cases. In cases who had significant bleeding, non-absorbable sutures were used and corrugated drains were placed. Skin closure was done using non-absorbable sutures and they were removed between 6 and 10 days.

No intra-operative complication were noted. Postoperatively infection, scrotal edema, and haematoma were common, which were in 21, 7 and 5 cases respectively. Patients were followed up for a period of 6 months, there were no recurrence or delayed complications in any of the 100 cases.

## SUMMARY

The study titled Clinical study of Etiopathogenesis and Management of Vaginal Hydrocele consists of a total of 100 male patients of hydrocele presented to YMCH surgery department from October 2014 to September 2106.

The cases were selected after applying inclusion and exclusion criteria for the study. Effort was made to study the age distribution, clinical presentation, etiology, evaluation of surgical procedure and its outcome of hydrocele treatment.

In the first part of this study, theoretical background with literature of hydrocele were presented. It starts with brief historical review, anatomy, physiology, etiopathology and treatment of hydrocele emphasizing various modalities of management. The second part includes analysis of materials and methods of the present study.

The results were analysed from the present study and summarized.

1. Total number of 100 cases of vaginal hydrocele were included in this study. Maximum numbers of cases were in the age group of 45-55 yrs.
2. Occupation was not related to etiology of hydrocele.
3. Majority of patients presented within 5 yrs. of onset of disease.
4. Majority of the patients presented with painless scrotal swelling.
5. There was no significant or comparable predilection for side of hydrocele, 13 % of patients had bilateral hydrocele.
6. Case selection for different surgical modalities was done based on size of hydrocele according to USG and thickness of sac intraoperatively.
7. Jaboulay's procedure done for large size and thick sac, Eversion of sac was done for thin sac and medium sized hydrocele.
8. In this study, all cases were primary vaginal hydrocele where the etiology was not found.
9. The common procedure was Jaboulay's procedure (76 cases). This was adopted in large thick walled hydrocele. Infection (62.5%) was common complications observed in postoperative period, 25% had oedema and 12.5% had hematoma.
10. In case of medium sized hydrocele Eversion of sac was done. Out of these 24 cases, 64% had infection, 20% had oedema and 16% had hematoma.
11. There was no small sized hydrocele admitted hence lords plication was not done.
12. Patients were followed up for a period of 6 months and no recurrence were observed.
13. Among eversion of sac and Jaboulay's procedure, we approve Jaboulay's procedure to be best in terms of minimal postoperative complication and postoperative stay and hence less cost incurred by the patient.
14. Surgical modality for treatment of primary vaginal hydrocele involves selection of cases based on size of swelling, presence and absence of sac thickening. Surgical procedures have their own merits and demerits. Careful selection of cases is necessary for better outcome in the management of primary vaginal hydrocele.

## CONCLUSION

Most common variant of hydrocele among the 100 cases present to Yenepoya medical college, Mangalore, between October 2014 to October 2016 is Acquired primary vaginal hydrocele. Incidence is most common at 45 to 55 years of age. Unilateral hydrocele is more common (with no particular predilection to side) compared to bilateral. Most common symptom is Painless swelling of scrotum. Jaboulay's

procedure is best in comparison with eversion of sac with minimal post-operative complications and shorter duration of stay. Hence cost incurred by the patient is less. However to draw a definite conclusion, larger group of studies has to be conducted. Aim of this study was partly successful, further study is required to determine the cause of secondary hydrocele in the costal Karnataka.

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