

# A Clinical Study of Different Modalities in Management of Hydrocele at Osmania General Hospital, Hyderabad, Telangana

Jithendhar P<sup>1</sup>, Shravankumar J<sup>2</sup>, Shirisha J<sup>3</sup>

<sup>1,3</sup> Assistant Professor  
Department of Surgery  
Kakatiya Medical College  
Warangal  
Telangana, India.

<sup>2</sup> Asst. Professor  
Department of  
General Medicine  
Prathima Institute of  
Medical Sciences  
Karimnagar-505001  
Telangana, India.

<sup>3</sup> Asst. Professor  
Department of Physiology  
Kakatiya Medical College  
Warangal, Telangana, India.

## CORRESPONDENCE:

Dr. Shravankumar,  
MD (Gen. Medicine)  
Asst. Professor  
Department of  
General Medicine  
Prathima Institute of Medical  
Sciences  
Karimnagar-505001  
Telangana, India.  
E mail: jannu.Shravan@gmail.com

## ABSTRACT

**Background:** Hydrocele is abnormal collection of serous fluid in some portion of the processes vaginalis commonly in the tunica vaginalis. There are several methods in the treatment of hydrocele and it is mainly surgical. Apart from surgery Sclerosant therapy is also available.

**Aims and Objectives:** 1. To analyze the age of occurrence, etiology and presentation of hydrocele. 2. To study the various modalities of management and complication associated with different modalities. 3. To analyze the simplicity, expenditure and effectiveness of different modalities.

**Materials and Methods:** Study group selected from the OPD of Osmania General Hospital of OMC, Hyderabad. A total of 60 patients will be selected after applying the various inclusion and exclusion criteria. The patients will subjected to various modalities of management like Lord's plication, Jaboulay's procedure, Radical excision of sac and tapping with sclero-therapy depending on the presentation.

**Results:** 60 patients were selected, 50 patients were subjected to open surgeries while the remaining 10 patients were subjected to Aspiration Sclero-therapy. The following study reveals that among open surgeries, techniques in which no dissection or excision of the tunica vaginalis is done are superior since they have less post-operative complications. Results of aspiration sclero-therapy reveal that complications are minimal than open surgeries.

**Conclusion:** Among open surgeries Lord's plication is better than Joboulay's procedure and Radical excision of sac with respect to effectiveness, complication and post-operative hospital stay. Aspiration sclero-therapy can be utilized as an effective alternative to open surgery in patients who are not fit for surgery or those who refuse surgery.

**Keywords:** Hydrocele, processes vaginalis, sclerotherapy

## INTRODUCTION

Hydrocele is one of the commonest diseases occurring worldwide. Since olden days surgical procedures have been described for the treatment of hydrocele. Anatomy of the hydrocele is the processes vaginalis which is obliterated in part or not at all. Processes vaginalis is an embryonic developmental out pouching of the parietal peritoneum. It is present from around the 12<sup>th</sup> week of gestation and commences as a peritoneal out pouching.

[1,2,3]

Tunica vaginalis testis is an invaginated serous sac and like any other serous cavity in the body it has a visceral and parietal layer. These two layers are separated by a potential cavity contains a thin layer of fluid to reduce friction.<sup>[4]</sup> The failure of closure of the processes vaginalis leads to the propensity to develop a number of abnormalities. Peritoneal fluid can travel down a patent vaginal process leading to formation of hydrocele.

Most authors are satisfied with a simple explanation such

as “an imbalance between formation and reabsorption of fluid within the tunica vaginalis”. Most probable underlying causes were a low grade inflammatory lesion of epididymis or may be trauma to scrotum. Persistent patent processes vaginalis is more common the right than the left.

A smaller hydrocele may tend to regress, but a majority of them gradually increase in size adding bulk and weight to the scrotum.<sup>[5]</sup> The size and bulk may hinder day to day work.

The Complications of hydrocele are Rupture may occur after trauma, Hemorrhage may occur (hematocele), Calcification may occur in long standing cases, Infection may lead to pyocele, Herniation may occur, Rarely at the sac secondary carcinoma usually site of primary mesothelioma and infertility-Phadka (1958) observed that a large hydrocele in which seminal fluid was thinner, the sperm count lower.

The surgical procedures commonly used for the treatment of hydrocele is the radical operation in which the parietal layer of the tunica vaginalis is completely removed and its cut edges are sutured posteriorly. The common complications observed during the surgery of hydrocele are bleeding, injury to the cord structures and epididymis, torsion of the testis after a faulty positioning post operatively.

Commonest among these is post-operative hematoma which is due to oozing from small vessels. Unless meticulous hemostasis is secured oozing from small vessels may continue into the layers of the loose scrotal tissue giving rise to a hematoma which cannot be prevented effectively by draining the scrotum.

Following are the procedures that have been tried to prevent scrotal hematoma. Young (1940) enclosed the scrotum with a tight gauze and adhesive bandage. Jerome (1953) advocated the use of elastic bandage and scrotal support.

Croot (1944) suggested that the scrotum be anchored to the abdominal wall at the end of operation. Burkett (1951) used plaster of Paris scrotal support to prevent post-operative scrotal hematoma. Peter Hernet Lord (1964) described a bloodless operation for the radical cure of hydrocele that has distinct advantages over the other conventional procedures.

### Aims and Objectives

1. To analyze the age of occurrence, etiology, presentation of hydrocele.
2. To study various modalities of management, morbidity associated with different modalities and

postoperative complications.

3. To analyze the simplicity, expenditure and effectiveness of different modalities.

### MATERIALS AND METHODS

The study was conducted on the OPD with a swelling in the scrotum were identified patients attending Osmania General Hospital attached to Osmania Medical College, Hyderabad.

#### Study Duration

The study duration from August 2015 to July 2017.

#### Inclusion Criteria

- Solitary swelling in the scrotum incorporating the testis
- The swelling should be positive for trans-illumination
- It should be possible to get above the swelling at the base of the scrotum

#### Exclusion Criteria

- Swelling arising from the skin of the scrotum
- Solitary swelling in the scrotum which is separate from the testis
- Diffuse swelling in the scrotum incorporating the testis but negative on trans-illumination
- Swelling in which there was associated impulse on coughing and reducibility
- All men with primary vaginal hydrocele with no signs of hernia or other scrotal disease will be selected

The total number 60 patients 50 patients were subjected to open surgeries like Lord's plication<sup>[6, 7]</sup> Jaboulay's procedure<sup>[8]</sup> Winkleman's<sup>[9]</sup> excision and eversion procedure and subtotal excision of the sac and Radical excision of the sac.<sup>[10]</sup> The patients were monitored for immediate and late complications, focusing on scrotal edema (loss of normal rugae), hematoma (any visible or palpable collection of blood), infection (any evidence of inflammation) and recurrence (persists 3 months post-operatively) using the criteria.

The remaining 10 patients who were either elderly above 60 years, or not fit for surgery, or who refused surgery were subjected to aspiration and sclerotherapy with 500mg of tetracycline<sup>[11, 12]</sup> diluted in 5ml of 0.9% saline as described by Bodker et.al<sup>[11]</sup> (1985). Recently, sclerosing agent polidocanol injection following aspiration 29 the procedure was performed on outpatient basis and the patients discharged after 1 hour of observation.

All patients were seen 2, 6, 12 weeks and 6 months after treatment. Both the groups of patients who underwent surgical procedure and Aspiration Sclero-therapy were compared with respect to patient satisfaction, complication and comparative costs.

### Symptoms

All the patients presented with swelling in the scrotum. Some complained of heaviness of scrotum or dull aching pain. Few had difficulty during walking/running or sexual act due to mechanical interference.

### Signs

Majority of patients presented with classical signs of hydrocele. Most of the swellings were oval or globular in shape. In most cases the median raphe was deviated to the opposite side. Scrotal rugosity lost in bigger hydroceles. Most hydroceles were tensely cystic and fluctuant.

### Investigations

In all the cases routine investigations were done which are as follows: Hb%, BT CT, Random Blood Sugar, Urine Albumin, sugar, microscopy Blood Urea, Chest X-Ray, Serum Creatinine, Electrocardiogram. Investigations specific for hydrocele were done in selected cases included: Blood for TC, DC, ESR, VDRL. Hydrocele fluid aspirate for microscopy, culture and sensitivity biopsy of the excised sac, Scrotal Ultra sound.

## RESULTS

The present study includes 60 patients of primary vaginal hydrocele who were treated at the Osmania General Hospitals from August 2015 to July 2017.

**Table 1: Age incidence in % age comparing with Campbell study**

| Age group in years | Present Study, N (%) | Campbell study (%) |
|--------------------|----------------------|--------------------|
| 0-9                | 0(0)                 | 2                  |
| 10-19              | 8(5)                 | 7                  |
| 20-29              | 30(18)               | 25                 |
| 30-39              | 28(17)               | 15                 |
| 40-49              | 12(7)                | 18                 |
| 50-59              | 10(6)                | 16                 |
| 60-69              | 6(4)                 | 6                  |
| 70-79              | 5(3)                 | 1                  |
| 80 Yrs & above     | 0(0)                 | 0                  |

This table shows that the hydrocele occurs in the 20-39 years age group 58% of 60 cases, a similar to that of the Campbell's study of 502 cases in the age group of 20-49 years is 58%.

**Table 2: Side of hydrocele in % age comparing with Campbell study**

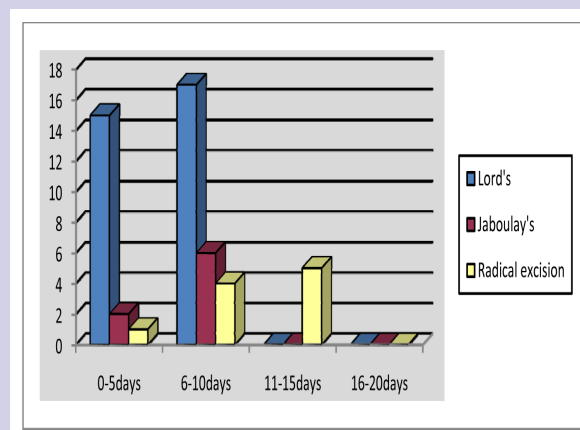
| Side      | Present Study (%) | Campbell study (%) |
|-----------|-------------------|--------------------|
| Right     | 67                | 50                 |
| Left      | 30                | 41                 |
| Bilateral | 3                 | 9                  |

Above table shows that in both the present study and Campbell study hydrocele occurs more on the right side than on the left side. It can be concluded that the hydrocele has predilection to affect the right side than the left side.

**Table 3. Types of operation performed**

| Types of operations     | Present Study | Rai et.al. study |
|-------------------------|---------------|------------------|
| Lord's plication        | 32            | 50               |
| Jaboulay's procedure    | 8             | 10               |
| Radical excision of sac | 10            | 10               |

The table shows maximum operation for hydrocele were by Lord's<sup>[7]</sup> operative procedure 64% (32/50) and Rai et.al.<sup>[8]</sup> study shows 71% (50/70) with the same procedure.



**Bar graph: 1. The post-operative hospital stay with type of operation**

The graph 1. shows the comparison average number of days of post-operative stay after the three types of operation.

In present study Lord's plication 6 days, Jaboulay's<sup>[9]</sup> procedure 8 days, Radical excision 10 days of postoperative stay. But Rai et.al.<sup>[8]</sup> study 4, 9 & 8 days for Lord's plication, Jaboulay's procedure & Radical excision of sac.

| Author                      | Year      | Lords Plication |            | Radical Excision/Eversion of Sac |          |
|-----------------------------|-----------|-----------------|------------|----------------------------------|----------|
|                             |           | No. of Cases    | Hematoma   | No. of Cases                     | Hematoma |
| Lord's <sup>[7]</sup>       | 1964      | 22              | -          | -                                | -        |
| Efran et.al <sup>[15]</sup> | 1967      | 29              | 1          | 30                               | 9        |
| Dahl et.al <sup>[16]</sup>  | 1972      | 25              | 1          | 23                               | 6        |
| Reddy et.al <sup>[13]</sup> | 1978      | 400             | Negligible | -                                | -        |
| Rai et.al <sup>[8]</sup>    | 1973      | 50              | -          | 20                               | 15       |
| Campbell <sup>[4]</sup>     | 1927      | -               | -          | 502                              | 12       |
| Present study               | 2015-2017 | 30              | -          | 20                               | 2        |

Above table shows Comparison among different authors report shows out of 556 Lord's plication 11 operation the incidence of hematoma was 0.35% (2/556 cases) where as radical excision/eversion of sac 7.39% (44/595) among these Erfon G, et.al<sup>[15]</sup> out of 29 lord's plication 1 case of

hematoma(3.4%) and Dahl et.al 21 1/25. In our study shows (0/30) i.e.; hematoma was nil in Lord's plication, and in Radical excision 2/20 (10%) of hematoma.

**Table 5: The Aspiration Sclero-therapy comparing the present study with Bodkar et.al study**

|                               | Present study                        | Bodkar et.al. Study                  |
|-------------------------------|--------------------------------------|--------------------------------------|
| No. of patients               | 10                                   | 10                                   |
| Median Age (range)            | 58 years (18 – 75 years)             | 72 years (63 – 89 years)             |
| Median duration (range)       | 1.5 years (2mths – 10 years)         | 1 year (5weeks – 6 years)            |
| Median-vol.of fluid aspirated | 250ml (50 – 500ml)                   | 180ml (22 – 400ml)                   |
| Sclerosant used               | 500mg of tetracycline In 0.9% saline | 500mg of tetracycline In 0.9% saline |

Above table shows in our present study total patient 10 median age 58 years, mean duration 1.5 years, mean volume of fluid aspirated 250ml sclerosant used 500mg of tetracycline in 0.9 saline. Similar study done by Bodkar et.al<sup>[11]</sup> In 10 patients median age 72 years mean duration 1 yrs, mean volume of fluid aspirated 180ml sclerosant used 500 mg of tetracycline in 0.9 saline.

## DISCUSSION

Vaginal hydrocele being a common condition the world over and various techniques has being evolved by various surgeons from time to time. The availability of such a large number of surgical options bears testimony to the fact that no technique is fool proof. The problematic postoperative complication is scrotal hematoma, which itself leads on to the other complications like infection abscess etc. As hematoma is a fertile problem for bacterial growth. Hence evolved many procedures to prevent hematoma.<sup>[12]</sup>

One such unique surgical procedure evolved decades ago

is Lords plication procedure. Recently sclerotherapy has become one of the better modality in the management of primary vaginal hydrocele, as it can be done as an outpatient procedure with better patient compliance, less complications, minimum hospital stay less cost expenditure and early return to work to earn livelihood.<sup>[13]</sup> Hydrocele is found in all age groups but young adults are most common affected as illustrated in our present study.

Table 1 show most of the patients in the present series belonged to the age group of 20-39 years with 58%. The reason why it is common in this particular age group is not established. The series of Undreet.al<sup>[17]</sup> (1965) 66.1% patients belong to the age group of 20-40 years. In the age group of 20-30 years. A similar of the Campbell's study of 502 cases in the age group of 20-49 years is 58%.

Most of the hydrocele presented with duration of 6-10 yrs. There were predilections of hydrocele on right side. Table 2 shows in our present study hydrocele was found

in majority on right side 67% and left 30% bilateral 3%. In the similar study of Campbell, <sup>[4]</sup> hydrocele occurs more on the right side 50%, on the left side 41% and bilateral 9%. It can be concluded that the hydrocele has predilection to affect the right side than the left side.

Management of hydroceles and Surgical procedures adopted majority were Lord's plication. Table 3 Shows in our study the maximum operation for hydrocele were done by Lord's operative procedure 64% (32/50) and Rai et.al study shows 71% (50/70) with the same procedure. Jaboulay's procedure 16% (8/50), and radical excision of the sac 20% (10/50).

Table 4 shows incidence of hematoma Comparison among different authors report shows that out of 556 Lord's plication operation the incidence of hematoma was 0.35% (2/556 cases) where as Radical excision/ eversion of sac 7.39% (44/595). In our study shows Lord's plication surgery hematoma was nil where as Radical excision/ eversion technique 2/20 (10%) of hematoma formation.

Post operatively few patients had complications like infection and scrotal edema, hematoma, of which hematoma was most problematic and difficult to convince the patients. Most of the patients were from poor socioeconomic strata and illiterates who had maintained poor perennial hygiene which led to infection rate in spite of thorough preoperative preparation

The graph 1 shows the comparison average number of post-operative days of stay after the three types of operation. In present study Lord's plication 6 days, Jaboulay's procedure 8 days, Radical excision 10 days of postoperative stay. But Rai et.al study Lord's plication Jaboulay's procedure 9 & 8 days for Radical excision of sac.

Table 5 shows the Aspiration sclerotherapy (in our present study) total patient 10 median age 58 years, mean duration 1.5 years, mean volume of fluid aspirated 250ml sclerosant used 500mg of tetracycline in 0.9 saline There was no infection probably due to the antibacterial property of the sclerosants. 8 patients got cured with single setting of sclerotherapy.

Few received multiple settings to cure the hydrocele. The cure rate of sclerotherapy was up to 80% in this study. 2 patients underwent surgery following sclerotherapy, as one refused third sitting and one had multilocular hydrocele probably due to sclerotherapy. As sclerosant cannot be injected into each loculi, hence surgery needs to be done. In 10 patients median age 72 years mean duration 1 years, mean volume of fluid aspirated 180ml sclerosant used 500mg of tetracycline in 0.9 saline.

## CONCLUSION

In the present study 2 patients developed a small recurrence compared to 1 patient in the Bodkaret.al <sup>[22]</sup> study. Though surgery is the gold standard and time honored modality for hydrocele, sclerotherapy provides the best alternative in the management of hydrocele. Two third of cases in this study underwent surgical management and one third cases went for sclerotherapy as per selection criteria.

**Ethical committee:** The study was reviewed and approved by Ethical Committee of K.M.C, Warangal. T.S

## CONFLICT OF INTEREST:

The authors declared no conflict of interest.

## FUNDING: None

## REFERENCES

1. Susan Standring. Gray's Anatomy. The Anatomy Basics of Clinical Practice. 41<sup>st</sup> edition, United Kingdom: Elsevier, 2017.
2. Robert McMinn. Last's Anatomy, Regional and Applied, 9<sup>th</sup> edition, Edinburgh, Churchill Livingstone, 2019.
3. Subhadra Devi V. Inderbir Singh's Text Book of Human Embryology. 11<sup>th</sup> edition, New Delhi: Jaypee Brothers Medical Publishers PVT Ltd, 2017.
4. Campbell MF. Hydrocele of tunica vaginalis: Study of 502 cases. *SGO*. 1927; 45:192-200.
5. Das S. A Practical Guide to Operative Surgery. 3rd edition, Kolkatta: SD Publishers, 1992.
6. Courtney MT, Daniel B, Mark Evers B, Mattox KL. Sabiston Text Book of Surgery. The Biological Basis of Modern Surgical Practice. 16<sup>th</sup> edition, London: WB Saunders Co Ltd, 2000:1499-1500.
7. Lord PH. A Bloodless operation for the radical cure of Idiopathic Hydrocele. *Br J Surg*. 1964; 51:914-16.
8. Rai S, Gayal SC et al. Plication operation for hydrocele. *Indian J Surg*. 1978; 40(9):481- 84.
9. Shah BR. An OPD operation for hydrocele of the tunica vaginalis in adults. *Lancet*. 1963; 2(7305):435-36.
10. Wilkinson JL. An operation for large scrotal hydrocele. *Br J Surg*. 1973; 60(6):450-52.
11. Bodker A, Sommer W, Anderson JT, Kristensen JK. Treatment of hydrocele of the testis with Aspiration and injection of Tetracycline. *Br J Surg*. 1985; 57(2):192-3.
12. Hu KN, Ali S Khan A, Gonder M. Sclerotherapy with tetracycline solution of hydrocele. *Urol*. 1984; 24(6):572-6.
13. Mohanty NK, Shah I, Kachroo SL. Aspiration sclerotherapy with tetracycline as an alternate to surgery in the management of primary hydroceles of testis. *Indian J Surg*. 1991; 53(1):35-37.
14. Lund L, Bartolin J. Treatment of hydrocele testis with aspiration and injection of povidocanol. *J Urol*. 1992; 147(4):1065-66.
15. Efron G, Sharkey GG. The Lord Operation for Hydrocele. *Surg Gynecol Obstet*. 1967; 125(3):603-6.
16. Dahl DS, Singh M, O'Connor Jr VJ, Sokol JK, Bulkley GJ. Lord's Operation for Hydrocele compared with conventional techniques. *Arch Surg*. 1972; 104(1):40-41.
17. Undre AR. Treatment of hydrocele and cysts of the epididymal Clinic. 1965; 60:303.