

A Clinical Study of Scrotal Swelling and its Various Treatment Modalities

Akshatha HS¹, Sachin Murukanahalli Basavaraju², Manjunath AP³

Author's Affiliation: ^{1,2}Assistant Professor, ³Junior Resident, Department of General surgery, Adichuchanagiri Institute of Medical Science, Karnataka 571432, India.

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Abstract

Aim: To study the etiology, clinical presentation, investigations, treatment modalities & their outcomes, post operative complications for scrotal swellings and follow up.

Materials and Methods: The cases admitted to the surgical wards over a period of one and a half years i.e., November 2018 to May 2020, formed the material for this study. During this period 100 cases with h/o scrotal swelling admitted in various surgical units, selected at random were studied in detail as per proforma.

Sampling Method: A Simple Random Sampling

Results: 100 cases of scrotal swellings were studied and compared based on age, occupational distribution, mode of presentation, duration of symptoms, predisposing factors, treatment modalities and post operative complications.

Conclusions: Scrotal swelling was commonest symptom. The other symptoms included pain/heaviness of scrotum, fever, etc.

- Definitive surgery was done in 90 cases.
- Various forms of hydrocele constituted a major portion of the study (50 cases).
- Varicocele was the second commonest cause comprising of 13 cases.

- A total of 9 cases of Fournier's gangrene, 6 cases of torsion of testis including one with scrotal abscess.
- There were 09 cases of epididymo-orchitis, 4 cases of testicular tumor, 3 cases each of sebaceous cyst and encysted hydrocele of cord and 2 cases of hydrocele with hernia.

Keywords: Treatment modalities; Scrotal swellings; Hydrocoele; Varicocele; Outcome.

Key Message: Scrotal swellings and early testicular tumours can be cured using different modalities.

Introduction

Scrotal swellings are one of the commonest clinical entities in surgical practice. Though the scrotum lies hanging down from the lower abdomen and is easily accessible for self examination. It is pitiable to note that even today we come across some late case of testicular tumor, which are curable if diagnosed early.

Scrotal swelling has got wide spectrum of conditions, varying from hydrocele to testicular tumours. Therefore there is a need to study the common conditions, so many benign scrotal swellings and early testicular tumours can be cured by using different modalities.

Need for the Study

The scrotum is a cutaneous bag containing the right and left testes, the epididymis and the lower parts of spermatic cords.¹ Scrotal swellings are one of the commonest clinical entities which one comes

Corresponding Author: Sachin Murukanahalli Basavaraju, Assistant Professor, Department of General surgery, Adichuchanagiri Institute of Medical Science, Karnataka 571432, India.

E-mail: drsachinmb@gmail.com

across in surgical practice. Though the scrotum lies hanging down from the lower abdomen and is easily accessible for self examination it is pitiable to note that even today, we come across some late cases of testicular tumor, which is a curable disease if we diagnose it early.

Hydrocele is an abnormal collection of serous fluid in a part of the processus vaginalis, usually tunica vaginalis.² Primary vaginal hydrocele is the commonest scrotal swelling. It remains painless and can attain very large size without causing much discomfort to the patient. The mortality from this (due to tapping as a mode of treatment) is unknown now-a-days. Because of its hanging down position and mobility, the scrotum is less liable to traumatic injury, resulting in collection of the blood in the loose areola tissue. The testis often escapes injury because it is withdrawn into the sub-inguinal pouch with a strong contraction of the cremasteric muscle.

There are many reasons for scrotum to swell ranging from hydrocele, the commonest cause, to some rare causes like gumma of the testis or malignant tumors of the epididymis.

The scrotum contains abundant quantity of sebaceous glands which can get infected and obstructed forming sebaceous cysts. Due to the presence of hair follicles, the scrotum is one of the sites for folliculate (Boil), etc.

Because of the close proximity of the testis and epididymis to the urinary system, urinary tract infections can involve them, as can sexually transmitted diseases causing epididymo-orchitis. Sometimes scrotum can become swollen without any apparent cause. This condition, known as idiopathic scrotal edema, is thought to be caused by streptococcus hemolyticus and Cl. Welchii.

Scrotum can become swollen due to systemic illnesses causing generalized edema, as in congestive cardiac failure (CCF), nephritic syndrome, cirrhosis of liver and hypoproteinaemic states. In the coastal areas, elephantiasis of the scrotum can occur by microfilarial infection, W. Bancrofti, having a complex treatment modality. Fournier's gangrene of scrotum is a condition thought to be caused by obliterative endarteritis of scrotal vessels with superinfection. Fournier's gangrene is usually a polymicrobial infection with microaerobes, anaerobes, and gram-positive and gram-negative organisms.³

Eventually testicular tumors occur predominantly in young population. About 99% of these tumours are malignant.⁴ With

the knowledge of specific tumor markers, the advances in the field of radiology and the advent of cisplatin combination chemotherapeutic agents, the treatment of testicular tumors has undergone a sea of change with complete remission (disease free state) possible in most of the early cases and good survival rates up to five years in late cases. Also self palpation of testis is being thought of as a screening procedure for early detection of testicular cancers, just like self examination of the breast, in females.

Patients expectation are very high. There is need to study the different modalities of treatment. Definitely it is rewarding. Different types of scrotal swelling in different age groups. Therefore there is a need to study the age wise distribution.

Scrotal swellings are managed according to type of scrotal swelling. There is a need to study correct treatment for different scrotal swellings.

The purpose of taking this dissertations

- Scrotal swellings are a common day to day clinical entity.
- They are of varied aetiology & easily accessible for clinical examination.
- Testicular tumours are today being considered as the hallmark for curable cancer, while considering other malignancies treatment.

Materials and Methods

The cases admitted to the surgical wards over a period of one and a half years i.e., November 2018 to May 2020, formed the material for this study. During this period 100 cases with h/o scrotal swelling admitted in various surgical units, selected at random were studied in detail as per proforma.

Sampling method : Simple Random Sampling

The method of study consists of;

- a. Detailed history taking and physical examination.
- b. Local examination of scrotum and its contents with relevant lymphatic and systemic examination.
- c. Routine laboratory investigations including examination of hydrocele fluid in some cases.
- d. Relevant special investigations.
- e. Surgical treatment according to the merits of the case as decided by the attending surgeon, under suitable anaesthesia.
- f. Operative findings, post operative course and treatment.

- g. Post operative complications, histopathological correlation (if any), duration of hospital stay and follow up was tabulated in a master chart.

Statistical Analysis

The data was analyzed using SPSS software version 16.3. Each variable in the MPI score along with other patient variables was analyzed using chi square analysis with various outcomes that were noted in the study. P value <0.05 was taken as significant in this study. The results were averaged (mean + standard deviation) for each parameter for continuous data and numbers and percentage for categorical data presented in table and figure. Proportions were compared using Chi-square test of significance

Results

100 cases of scrotal swellings admitted over a period of one and a half years i.e., November 2018 to May 2020 were studied.

Incidence

Scrotal swellings formed about 2.18% of the surgical admissions.

Age Incidence

The youngest patient was 12 years old (case no. 81), which was the minimum age for inclusion in the study who was diagnosed as a case of torsion testis and the oldest patient was 76 years old (case no. 74), which was a case of epididymo-orchitis. The highest incidence was in the third decade, i.e. 21-30 years (27%) followed by fourth decade, respectively (Table 1).

Table 1: Age Incidence of Scrotal Swellings.

Age in Years	Number of Cases	Percentage
12-20	15	15%
21-30	27	27%
31-40	25	25%
41-50	17	17%
51-60	08	08%
>60	08	08%

Occupational Distribution

Most of the patients in this study belonged to agricultural class (38%) followed by coolie (30%), students (19%), and private workers (5%).

Mode of Presentation

Scrotal swelling was the commonest presenting symptom (100%). Pain or heaviness of scrotum was seen in 30 patients (30%) and fever was seen in 12 patients(12%). One case of testicular tumor presented with weight loss.

Duration of Symptoms

The duration of symptoms ranged from as early as eight hours in a case of testicular torsion to 2 years in a case sebaceous cyst (case no.9). Majority of the patients presented within 1-3 months of onset of symptoms (Table 2).

Table 2: Duration of Symptoms.

Duration	Number of Cases	Percentage
0-7 days	25	25%
8-30days (upto 1 month)	17	17%
1month-3months	43	43%
4-6months	09	09%
7months-1year	04	04%
> 1 year	02	02%

Predisposing Factors

In a majority of patients in the study, in about 84 % of the cases the cause could not be ascertained, i.e. idiopathic. There was an overlap of more than one cause in three cases. Trauma was the predisposing factor in three patients. In two patients it was the immediate cause for presenting symptom (Table 3). Exposure to STD was the cause in two cases. Tuberculosis was present in two cases. Culture positive UTI was found in six patients and E.Coli was the commonest organism. Klebsiella was isolated 1 one case.

Table 3: Predisposing Factors (Aetiology).

Factors	Number of Cases	Percentage
Idiopathic	84	84%
Trauma	6	6%
Exposure to STD	2	2%
Tuberculosis	2	2%
UTI(culture positive)	6	6%

Side distribution of scrotal swelling

Scrotal swelling was common on left side, i.e. 49% and right side was affected in 31% of the patients. It was bilateral in 20% of patients.

Type of Lesion

Various types of hydrocele formed the majority of the cases (50) in this study, out of which primary vaginal hydrocele (45%) was the commonest followed by varicocele (13%). Epididymo-orchitis accounted for 9% of the cases out of which 7 were acute epididymo-orchitis due to UTI (E.Coli, Proteus, Klebsiella). Chronic epididymo-orchitis due to tuberculosis was seen in two. There were nine cases of Fournier's gangrene, out of which three cases had a h/o of trauma as a predisposing cause. There were six cases of torsion of testis out of which three cases underwent orchidectomy of the affected side. There were 4 cases of testicular tumors, All underwent high orchidectomy, and were subsequently diagnosed as seminomas. There were three cases of sebaceous cysts of scrotum and one case each of scrotal abscess with torsion and infertility (Table 4).

Table 4: Type of Lesion.

Diagnosis	Number of Cases	Percentage %
Hydrocele		
-Primary vaginal hydrocele	45	45
-Encysted hydrocele of cord	03	03
Epididymo-orchitis		
Acute	07	07
Chronic-tubercular	02	02
Varicocele	13	13
Torsion of testis	05	05
Testicular tumor	04	04
Fournier's gangrene	09	09
Hernia with hydrocele	02	02
Scrotal abscess	05	05
Scrotal abscess with torsion of testis	01	01
Sebaceous cyst of scrotum	03	03
Infertility	01	01

Treatment Modality

Out of the 100 cases in this study, definitive operation was done for 90 cases. For one case testicular biopsy was done for diagnosis of infertility. 09 cases were put on medical line of management line of management, 2 cases among these were diagnosed to be secondary to tuberculosis and were put on ATT (Table 5).

Type of Anaesthesia

84 cases were operated under spinal anaesthesia, 1 cases were operated under general anaesthesia and 6 cases (including biopsy) under local anaesthesia.

Table 5: Treatment Modality.

Nature of Treatment	Number of Cases	Percentage
Surgical treatment	90	90%
Definite operation	01	01%
Biopsy		
Medical treatment (conservative)	09	09%
Total	100	100

Emergency vs elective operation

A total of 20 cases were done on emergency basis. These were 5 cases of torsion testis, 9 cases of Fournier's gangrene, 5 cases of scrotal abscess and one case of scrotal abscess with torsion.

Nature of definitive operative treatment

Jaboulay procedure was the most common surgery done for hydrocele followed by Lord's plication and partial excision. Open varicocelectomy was done in 11 cases and laparoscopic in 2 cases. Orchidectomy was done in 7 cases, four for testicular tumor and 3 cases were for torsion testis. Orchidopexy was done in 3 cases of torsion where the affected testis was found viable. Debridement and Incision Drainage were done for Fourniers and Scrotal abscess respectively (Table 6).

Table 6: Nature of Definitive Operative Treatment.

Operation Done	Number of Cases	Percentage(%)
Jaboulay's Procedure	30	32.9
Lord's Plication	09	10.2
Partial excision and eversion of sac	06	6.88
Varicocelectomy	11	12.5
Open	02	2.2
Laparoscopic	07	8.45
Orchidectomy	03	3.4
Derotation and Orchi-	05	5.68
dopexy		
Incision and Drain-	09	11.2
age		
Debridement	06	6.7
Excision of cyst		
Excision of sac with hernioplasty	02	2.2
Biopsy	01	1.4

Post Operative Complications

The post operative complication rate in this study (39.5%) was quite high. The criteria were mild

edema of scrotum, haematoma of scrotum and wound infection. Edema/haematoma was seen in 20 cases and were treated conservatively. Wound infection cases responded to regular change of dressings with antibiotics (Table 7).

Table 7: Post Operative Complications.

Complication	Number of Cases	Percentage %
Hematoma/edema of scrotum	20	22.00
Wound infection	16	17.5
Uncomplicated	55	60.5

Distribution of complication according to mode of surgery

The above table shows the distribution of complications with various surgeries. The highest complication rate was seen with emergency surgeries mainly comprising of torsion testis, Fournier’s gangrene etc. In surgeries for hydrocele, the highest complication rate was seen with Jaboulay’s procedure (40%) and partial excision of sac (33.3%). Incidence of haematoma, edema and wound infection in various hydrocele surgeries.

The commonest complication following any surgery on the scrotum was edema of the scrotum. In this study which was seen in 11 cases, haematoma in 09cases, and wound infection in 16 cases (Table 8).

Table 8: Incidence of Haematoma , Edema and Wound.

Name of Surgery	No. of Cases	No. of Haematoma	No. of Edema	No. of Wound Infection
Jaboulay’s procedure	30	3	2	7
Lord’s plication	9	1	0	1
Orchidectomy	7	1	0	2
Partial exc./eversion of sac	6	0	0	2
Orchidopexy	3	0	1	0
Others	36	4	8	4

Duration of Hospital Stay

All of the 100 cases admitted received treatment. Most of the cases (76%) were discharged within 10 days of admission.¹⁷ cases were discharged between 11-20 days of admission. Only one case stayed for 34 days (Case no. 64).

The shortest duration of hospital stay was 3 day and the longest was the above case of 34 days. He was admitted for Fournier’s gangrene.

Discussion

Incidence of Haematoma in Various Series of Hydrocele Operations

The results of the present study are comparable to that of previous workers. Haematoma was seen in 1 case operated by Lords plication . In those treated by partial excision/ excision of sac haematoma was seen in 3 cases. This study shows that compared to conventional methods of treatment of hydrocele, i.e. excision/partial excision of sac, Lord’s plication gave rise to less complications and morbidity.

The plication procedure avoids the opening of the cleavage between the sac and surrounding tissue, thus reducing the oozing and subsequent haematoma formation. High incidence of complications by conventional methods have been reported by other workers, i.e. Campbell 12/502 (24%)⁷, Efron and Sharkey (1967) 9/30 (30%)⁹ (Table 9).

Table 9: Incidence of Haematoma in Various Hydrocele Operations.

Author and Year	Procedure Lord’s Plication No. of Haematoma Cases	Excision/eversion of Sac No. of Haematoma Cases
Present study	9	1
Peter lord (1964)	22	NIL
Efron , Sharkey (1967) ⁹	29	1
Dahl et. al. (1972)	25	-
Reddy , Srinivas (1973) ⁵	400	NEG.
Rai, Goyal , Singh (1979) ⁶	50	-
Campbell (1927) ⁷	-	-

Comparision of Hydrocele operation Results with the Recent Studies (O.P.Agarwal, 1983)⁸

The results of the present study are fairly comparable to that of Agarwal series, 8except the high rate of infection seen with Jaboulay’s/Excision of sac (Table 10).

Table 10: Comparison of Hydrocele Operation Results with the Recent Studies.

Nature of Operation	Number of Cases Agarwal Present		Post Operative Complications			
	Series	Study	Haematoma		Infection	
			Agarwal	Present	Agarwal	Present
Lord's Plication	50	9	Nil	1(11.1%)	Nil	1(11.1%)
Excision of Sac	50	39	14(28%)	3(7.7%)	8(16)	9(23%)

Conclusion

- The study was compared with available literature and other studies and scrotal swelling was found to be a common presentation accounting for about 2.18 % of surgical admissions.
- Scrotal swellings were common between the second and third decade, i.e. younger patients were affected more often.
- Agriculture related workers formed the majority occupation in this study. This is probably due to the fact that this hospital situated at B G Nagara caters to mainly rural population.
- Scrotal swelling was commonest symptom with which the patient presented. The other symptoms included pain/heaviness of scrotum, fever, etc. All the patients had scrotal swelling on examination.
- No cause could be detected in 84 cases (i.e. idiopathic).
- Predisposing factors included UTI, trauma, exposure to STD, and tuberculosis. Trivial trauma brought to notice a pre-existing swelling in some cases.
- Unilateral left side involvement of scrotum was common, accounting for 49% of cases.
- Relevant investigations were done. In this study there were thirteen cases of varicocele of which 9 had oligospermia. Post operative semen analysis could not be done in any of the patients because of poor follow up.

The patients were treated with surgery or conservative medical line. Definitive surgery was done in 90 cases. Penicillin /cephalosporins/ ampicillin/gentamicin were commonly used antibiotics.

- Most of the surgeries were done under spinal anaesthesia (84%).
- Various forms of hydrocele constituted a major portion of the study (50 cases), followed by varicocele.

- Jaboulay's procedure was the commonest operation done (30 cases) followed by lord's plication in 9 cases.
- Amongst the various operations for hydrocele, Lord's plication was associated with the least number of complications. Of the 9 cases treated by this procedure , one case had haematoma and 1 case had wound infection.
- The results of this study were compared with that of Peter Lord (1964), Effron and Sharky (1967), Dahl et al., (1972), Reddy and Srinivas (1973), Rai, Goyal and Singh (1978), Campbell (1927) and fair similarities were observed.
- When compared with Agrawal series (1983) this study showed increased incidence of wound infection. One of the contributory factors may be due to more trauma and tissue handling during surgery.
- Varicocele was the second commonest cause for scrotal swelling. There were 13 cases of varicocele of which 3 were bilateral ,07 cases were on left side and 03 were on right side.
- A total of 9 cases of Fournier's gangrene were seen in this study. Most of the patients were above 40 years and there was a h/o trivial trauma in three cases. All cases were surgically treated with debridement and antibiotics.
- There were 6 cases of torsion of testis including one associated with scrotal abscess. Orchidectomy was done in three cases and Orchidopexy was done in the remaining cases.
- There were 09 cases of epididymo-orchitis, out of which 7 were acute in onset and 2 were chronic secondary to tuberculosis. Most of the patients were treated with Antibiotics/ ATT analgesics and scrotal support.
- There were 4 cases of testicular tumor. All were subjected to high Orchidectomy and histopathology turned out to be Seminoma in 3 cases, one showed NHL. One patient

received adjuvant chemotherapy and rest were lost during the follow up period.

- There were 3 cases each of sebaceous cyst and encysted hydrocele of cord and two cases of hydrocele associated with hernia.
- There was 1 case of scrotal abscess with torsion testis.

There was one case of infertility for which testicular biopsy was done to detect defective sperm production, the report for which turned out to be normal.

Declaration

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