

## A STUDY ON EVALUATION OF ACUTE SCROTAL SWELLINGS

Umaakanth Soundar C.<sup>1</sup>, Ashwin Chand<sup>2</sup>, Authy<sup>3</sup>, Sharath Rajkumar<sup>4</sup>

<sup>1</sup>Assistant Professor, Department of General Surgery, Pondicherry Institute of Medical Sciences, Kalapet, Puducherry.

<sup>2</sup>Associate Professor, Department of General Surgery, Pondicherry Institute of Medical Sciences, Kalapet, Puducherry.

<sup>3</sup>Professor, Department of General Surgery, Pondicherry Institute of Medical Sciences, Kalapet, Puducherry.

<sup>4</sup>Postgraduate Student, Department of General Surgery, Pondicherry Institute of Medical Sciences, Kalapet, Puducherry.

### ABSTRACT

#### BACKGROUND

Acute scrotum is defined as "the acute onset of pain and swelling of the scrotum that requires either emergency surgical intervention or specific medical therapy." Several acute scrotal conditions can present in similar way. Testicular torsion is by far the most significant. Testicular torsion is a true surgical emergency because the likelihood of testicular salvage decreases as the duration of torsion increases.

#### MATERIALS AND METHODS

The study was conducted by a retrospective and a prospective analysis of the patients who were admitted with acute scrotum in all the surgical units of the Department of General Surgery, Sree Balaji Medical College and Hospital, Chennai, between May 2011 and October 2013. A total of 60 patients who presented with acute scrotum were included in the study.

#### RESULTS

In our study, acute epididymo-orchitis was to be the commonest cause for acute scrotum accounting for 40% of total cases. In this study of 60 cases, 24 cases (40%) were managed conservatively who were diagnosed to have epididymo-orchitis. All other cases (60%) needed surgical treatment.

#### CONCLUSION

Any young patient presenting with acute scrotum, torsion of testis must be considered and evaluated. All the cases of acute scrotum must be subjected for USG Doppler of the scrotum. In patients with torsion testis presenting within 6 hours of onset of symptoms, testis can be salvaged.

#### KEYWORDS

Acute Scrotum, Torsion Testis, Scrotal Pain.

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#### BACKGROUND

Acute scrotum is defined as "the acute onset of pain and swelling of the scrotum that requires either emergency surgical intervention or specific medical therapy." Acute scrotum is an emergency situation requiring prompt evaluation and urgent surgical intervention if required. There are many causes of acute scrotum important being epididymitis, epididymo-orchitis, pyocele, Fournier's gangrene, haematocele, scrotal wall infection, torsion of testis and torsion of appendix of testis. Though torsion of testis is more common in pubertal age group,<sup>1</sup> it must be considered as the first differential diagnosis and in case of doubt, a prompt surgical intervention is carried out to

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*Corresponding Author:*

*Dr. Ashwin Chand R,*

*Associate Professor, Department of General Surgery,  
Pondicherry Institute of Medical Sciences.*

*Kalapet, Puducherry-605014.*

*E-mail: ashwin.chand84@gmail.com*

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prevent further complications. Doppler USG of scrotum is an important diagnostic tool in acute scrotum.<sup>2</sup>

#### AIMS AND OBJECTIVES

1. To study the various causes for scrotal swellings and their pattern of incidence in and around suburban Chennai.
2. To study the various clinical presentations of patients with swelling of the scrotum particular to acute problems.
3. To analyse the diagnostic and therapeutic modalities adopted in the management of scrotal swellings in our hospital and their outcome.
4. To highlight on the recent trends in the diagnosis and management of the various scrotal pathologies.

#### MATERIALS AND METHODS

The study was conducted by a retrospective and a prospective analysis of the patients who were admitted with acute scrotum in all the surgical units of the Department of General Surgery, Sree Balaji Medical College and Hospital, Chennai, between May 2011 and October 2013. A total of 60 patients who presented with acute scrotum were included in the study.

**Inclusion Criteria**

All cases of acute scrotum admitted in all the surgical units of our hospital.

**Exclusion Criteria**

1. Patients not willing for getting the investigations.
2. Patients absconding before full clinical evaluation and treatment.
3. Patients with hydrocele and other cystic swellings.

All patients were explained about the study and were consented before participating. All patients are subjected to detailed history taking and physical examination. Patients underwent basic investigations like complete blood counts, bleeding time, clotting time and renal function tests, cardiac evaluation by ECG and echocardiography, if warranted and a chest x-ray. Then, the patients were subjected to USG scrotum with Doppler studies, if required. Based on the clinical diagnosis and the USG scrotum reports patients were subjected to appropriate surgery, if warranted. Cases of acute epididymo-orchitis<sup>1</sup> were managed conservatively. Patients followed up closely in the postoperative period for any complications.

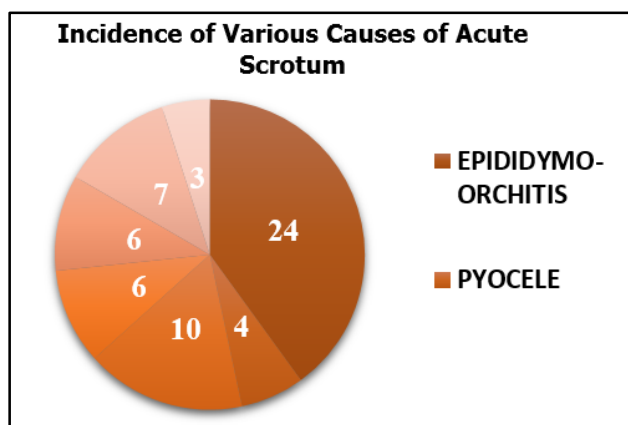
The findings are tabulated in the master chart.

**OBSERVATION AND RESULTS**

A total of 60 cases were included in the study group.

Sl. No.	Diagnosis	No. of Cases	%
1.	Epididymo-orchitis	24	40%
2.	Pyocele	4	6.66%
3.	Fournier's gangrene	10	16.66%
4.	Haematocele	6	10%
5.	Scrotal abscess	6	10%
6.	Torsion testis	7	11.66%
7.	Torsion of appendix of testis	3	5%

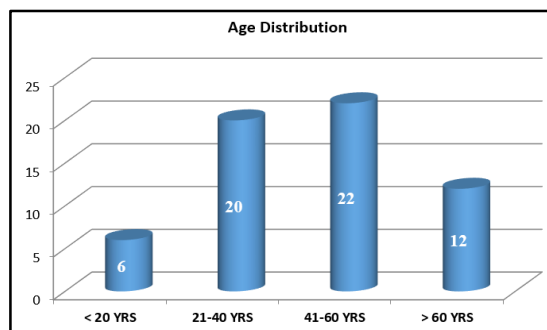
**Table 1. Incidence of Various Lesions**



**Figure 1. Incidence of Various Causes of Acute Scrotum**

Age	Number of Cases	Percentage
<20	6	10%
20-40	20	33.3%
41-60	22	36.7%
>60	12	20%

**Table 2. Age Distribution**

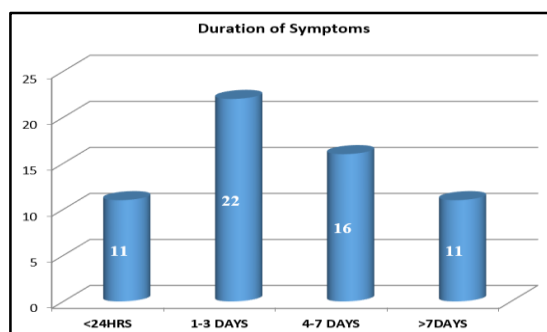


**Figure 2. Age Distribution**

Majority of the cases were in the age group of 41-60 yrs. (36.7%), followed by 21-40 yrs. (33.3%).

Duration	Number of Cases	Percentage
0-24 hrs.	11	18.3%
1-3 days	22	36.7%
4-7 days	16	26.7%
>7 days	11	18.3%

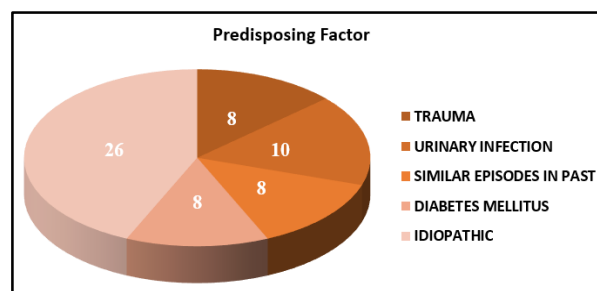
**Table 3. Duration of Symptoms**



**Figure 3. Duration of Symptoms**

Factor	No. of Cases	%
Trauma	8	13.3%
Urinary infection	10	16.7%
Similar episodes in past	8	13.3%
Diabetes mellitus	8	13.3%
Idiopathic	26	43.4%

**Table 4. Predisposing Factors**



**Figure 4. Predisposing Factor**

Symptoms	Number of Cases	Percentage
Swelling	44	73.3%
Pain	60	100%
Fever	38	63.3%
Urinary symptoms	10	16.6%
Trauma	8	13.3%
Nausea/vomiting	8	13.3%

**Table 5. Presenting Symptoms**

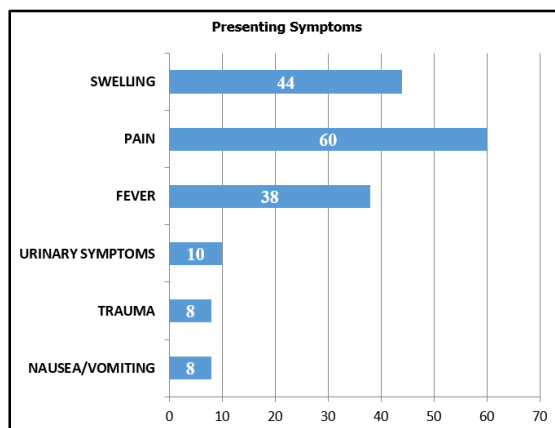


Figure 5. Presenting Symptoms

Side	Number of Cases	Percentage
Right	30	50%
Left	19	31.7%
Bilateral	11	18.3%

Table 6. Distribution of Symptoms

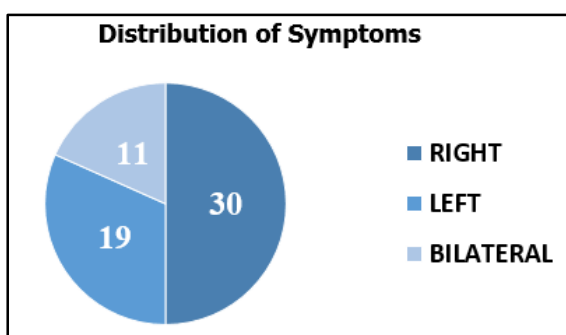


Figure 6. Distribution of Symptoms

Treatment Given	No. of Cases	%
Conservative	24	40%
Surgical	40	66.7%
Incision and drainage	6	10%
Debridement	10	16.7%
Excision of appendix of testis	3	5%
Bilateral orchidopexy	3	5%
Orchidectomy	24	40%

Table 7. Treatment Given

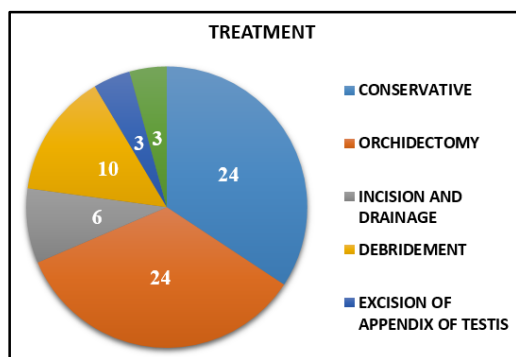


Figure 7. Treatment Given

**DISCUSSION**

The present study consisted of analysis of 60 patients who got admitted to Sree Balaji Hospital during the period of May 2011 to October 2013. The present study consisted of

analysis of 60 patients who got admitted to Sree Balaji Medical College and Hospital during the period of May 2011 to October 2013. In our study, acute epididymo-orchitis was to be the commonest cause for acute scrotum accounting for 40% of total cases followed by pyocele, which accounted for 6.60%, Fournier’s gangrene (16.66%), haematocele (10%), scrotal abscess (10%), torsion testis (11.66%) and torsion of appendix of testis (5%).<sup>3</sup>

**Epididymo-orchitis**

We encountered 24 cases of epididymo-orchitis in our study period, which accounted for 40% of cases. Mean age of presentation was 24-72 yrs. Majority of the cases (65%) had epididymo-orchitis on right side, while 35% was on left side. Mean duration of symptoms was 3-6 days. All the patients presented with unilateral pain in the scrotum associated with fever. Urinary symptoms was present in 10 cases, diabetes mellitus in 2 cases while history of previous episodes of epididymo-orchitis was present in 6 cases. Urine examination was done in all the cases, which showed traces of albumin in 2 cases, while there was presence of significant number of pus cells in 6 cases. Urine culture and sensitivity was done. USG scrotum was done in all the patients, which showed features of epididymo-orchitis, i.e. hypoechoic, diffusely enlarged testis with hyperechoic and swollen epididymis with increased blood flow. All the patients responded well for the conservative management (antibiotics + analgesics + anti-inflammatory + diethyl carbamazepine + scrotal support).

**Pyocele**

Pyocele accounted for 4 cases (6.6%) with one case associated with Fournier’s gangrene.

Mean age of presentation was 12-54 yrs. with mean duration of symptoms being 7-12 days.

History of diabetes mellitus was present in 2 cases. All the patients were subjected for USG scrotum followed by orchidectomy.

**Fournier’s Gangrene**

Fournier’s gangrene accounted for a total of 10 cases (16.6%) in the present study. Mean age of presentation was 45-75 yrs. Mean duration of symptoms was 5-11 days.

History of diabetes mellitus was present in 3 cases. All the patients were subjected to debridement initially followed by daily saline dressings. Based on the size of final defect, patients were treated conservatively or secondary suturing of split skin grafting. In our study, 3 patients were treated with debridement alone, 3 patients underwent secondary suturing and 2 patients were subjected to split skin grafting.

**Haematocele**

Total number of cases of haematocele encountered was 6 cases (10%). Mean age of presentation was 21-48 yrs. Duration of symptoms was shorter in haematocele with mean duration being 2-5 days.

History of trauma was done in all cases. USG scrotum showed features suggestive of haematocele.

Orchidectomy was done in all cases. In all 6 cases, testis architecture were found to be destroyed, so orchidectomy was done. Specimen sent for histopathology. Histopathology showed disrupted testis.

### Scrotal Wall Abscess

We encountered 6 cases of scrotal wall abscess (10%). Mean age of presentation was 41-60 yrs. with mean duration of presentation of 10 days. History of diabetes was present in one patient. Incision with drainage of abscess was present in both the cases and the patients improved well following the treatment.

### Torsion of Testis

Torsion of testis accounted for 11.66% of the cases in the present study as we encountered 7 cases with variable presentations. Patients had right-sided testicular torsion in 5 cases and left-sided torsion in 2 cases. On par with previous studies, most of the patients who presented with torsion testis were of young age group with an age of presentation of 13-31 yrs. The duration of presentation was anywhere from 3 hrs. to 3 days. There was history of trauma to the scrotum in 2 cases and there was history of similar episodes in the past in two patients. Constitutional symptoms like nausea and vomiting was present in 3 out of 7 patients. Out of the 7 patients, one patient torsion testis with undescended testis on the opposite side while one patient presented with acute pain in the inguinal region with history of absence of testis in the ipsilateral scrotum since birth. On examination, he was found to be having torsion of an undescended testis.

USG Doppler study of scrotum was done in all the patients.

Most of the patients were found to have testis without any vascular flow with twisting of the spermatic cord. One patient with undescended testis showed features of epididymo-orchitis on USG Doppler who was put on conservative management. Since the pain did not respond to conservative management, he was subjected to repeat USG scrotum, which showed features of torsion of testis. Patient was subjected to emergency scrotal exploration, which showed gangrenous testis with torsion at the upper pole. Scrotal exploration was done in all cases with orchidectomy followed by contralateral testis fixation was done in 7 cases. Exploration and manual detorsion with bilateral fixation of testis was done in 2 cases. All the patients in whom the testis was conserved presented to us within 6 hours of the symptom onset, thus exploration was done when the testis was still viable.

### Torsion of Appendix of Testis

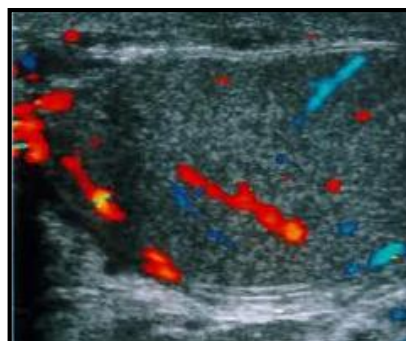
Torsion of appendix of testis is one of the important causes of acute scrotal pain in adolescent age group. We encountered three cases of torsion of appendix of testis accounting for 5% of total cases.

The patients presenting with torsion of appendix of testis were in the age group of 9-14 yrs. The duration of presentation was 6 hrs. 2 days. One patient presented with pain in the scrotum along with constitutional symptoms like

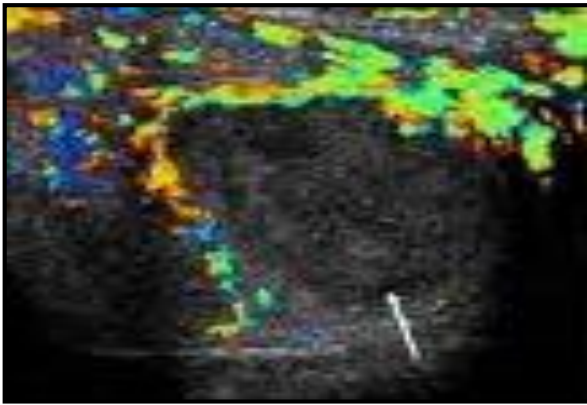
lower abdominal pain and vomiting. USG scrotum was done in all the three patients, which showed normal testis with adequate blood flow. All the patients were subjected to scrotal exploration, which showed small gangrenous appendix of testis, which was excised. Patients did not have complaints in the postoperative period. In a case study by Cass et al<sup>4</sup> showed the incidence of epididymitis of about 72.5% when compared to torsion of testis, which was about 20.67%. In a study conducted by AS Cass and BP Cass,<sup>4</sup> the maximum incidence of epididymo-orchitis was 62% in contrast to our study with 40% incidence. The mean age of occurrence of epididymo-orchitis in the present study was 51 yrs., whereas it was 21.3 yrs. according to the study done by NA Watkin.<sup>5</sup> In the present study, duration of symptoms varied from few hours to more than a week. The shortest duration being 3 hrs. and the longest duration being 12 days. In the study conducted by Thorsteinn,<sup>6</sup> the shortest duration of symptoms was 3 hrs. and the longest was 21 days. The average duration of pain from onset till presentation in case of epididymo-orchitis was 3.54 days, whereas it was 4 days in the study conducted by Ricardo et al.<sup>7</sup>

Barker and Paper in their study noted that none of their patients were below 14 yrs. But, in our study, we had 4 patients who were under the age of 14 yrs. with majority of the cases between 41-60 yrs. followed by 20-40 yrs. In the present study, all the patients underwent ultrasonography except for the cases of Fournier's gangrene and scrotal wall abscess. Another study conducted by N. H. Moharib et al<sup>8</sup> showed that testicular torsion (33.92%) was the most common cause for acute scrotal pathology followed by epididymitis, which accounted for 8.92%. The study by N. A. Watkin et al<sup>5</sup> showed that torsion of the testis was the most frequent cause (39.5%) followed by torsion of appendages of testis/epididymis, which was found to be 29% of the cases and 15% of the patients had epididymo-orchitis. The rest of the cases were haematocele and pyocele, which was about 16%. In this study of 60 cases, 24 cases (40%) were managed conservatively who were diagnosed to have epididymo-orchitis. All other cases (60%) needed surgical treatment. Patients who were treated conservatively responded well with complete recovery. All our patients who were treated surgically had uneventful postoperative period. All patients were followed up for a period of 1 month to 6 months. None of the patients had any complications.

### USG Doppler Scrotum



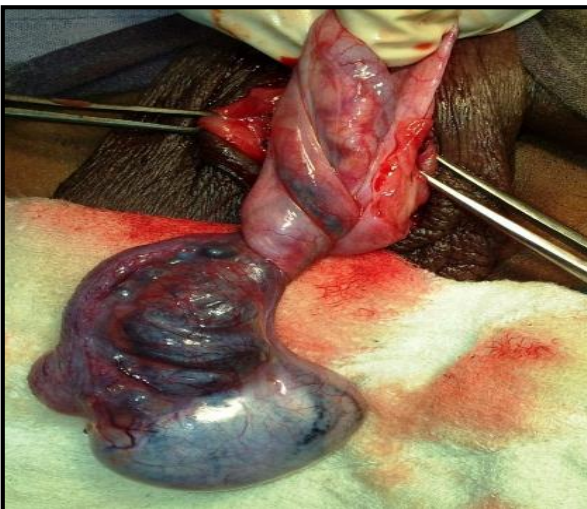
**Figure 1. Normal Flow**



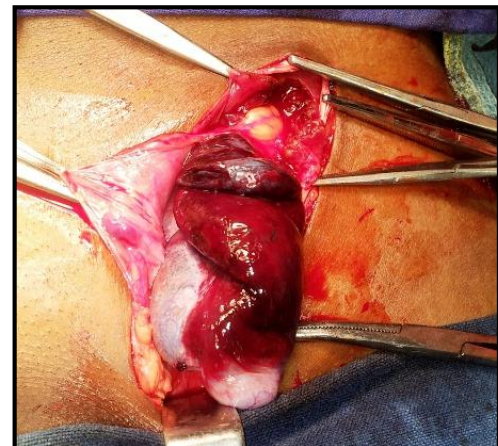
**Figure 2. Acute Infarction**



**Figure 6. Preoperative Picture of a Patient with Torsion of Undescended Testis**



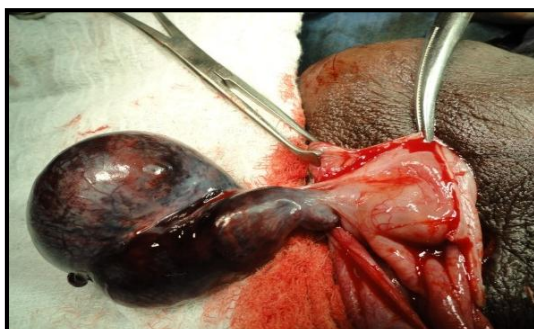
**Figure 3. Twisted Cord with Congested Testis**



**Figure 7. Intraoperative Picture Showing Twisted Cord with Gangrenous Testis in the Inguinal Canal**



**Figure 4. After Detorsion**



**Figure 5. Twisted Cord with Gangrenous Testis**

**CONCLUSION**

Acute scrotum is a common case seen in the outpatient department with considerable morbidity, which requires prompt evaluation. This is an observational study comprising of 60 cases of acute scrotum admitted at Sree Balaji Medical College and Hospital during the period of May 2011 to October 2013. Acute epididymo-orchitis was the commonest cause followed by acute scrotum. Most common age group involved was 41-60 yrs. followed by 21-40 yrs. Majority of the patients presented with complaints for about 1-3 days. Pain in the scrotum was the commonest presenting symptom followed by swelling of scrotum. Majority of the patients had right-sided involvement. Conservative management was followed in 40% patients, while the rest required surgical exploration. Torsion of testis is an important differential diagnosis in case of an acute scrotum, which requires emergency scrotal exploration. Any young patient presenting with acute scrotum, torsion of testis must be considered and evaluated. All the cases of acute scrotum must be subjected for USG Doppler of the scrotum. In patients with torsion testis, presenting within 6 hours of onset of symptoms, testis can be salvaged.

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