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# Pathological Evaluation of scrotal masses: A prospective study in central India

# Nilima Lodha, Sneha R. Hingway, Kiran S. Bharti, Snehal Jumnake

<sup>1</sup>Associate professor, Department of Pathology, Shri Vasantrao Naik Government Medical College, Yavatmal, Maharashtra, India- 445001

#### \*Corresponding Author: Dr. Nilima Lodha

Associate Professor, Department of Pathology, Shri Vasantrao Naik Government Medical College, Yavatmal, Maharashtra, India- 445001

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#### Abstract

**Background:** Scrotal masses can represent a wide range of conditions from benign to life-threatening malignancies to acute surgical emergencies. The pathology department receives a different range of specimens of hydrocele sac and scrotal wall, the scrotal wall with a testis, and torsion testis to testicular tumours. Hence the present study was undertaken to analyse the data and study the histomorphology of scrotal masses. **Method:** Total of 108 scrotal specimens was studied in the pathology department for three years from 1 January 2015 to 31 December 2017. **Results:** We have found the most common lesions were hydrocele (54.62%) and torsion of the testis (26.16%) second common most lesions presented as a surgical emergency involving all age group from infancy to older age. The complete testicular atrophy found mostly secondary to infective cause (25.92%); partial testicular atrophy also seen in few cases. Twelve testicular tumours, either seminomatous or non-seminomatous reported. Seminoma and mixed germ cell tumour reported in equal frequency (33.33%). During the study, one new and rare case of non-healing scrotal ulcer in a 13-year-old boy diagnosed as juvenile gangrenous vasculitis on histopathology. **Conclusion:** Scrotal masses present a diagnostic dilemma on clinical examination. Understanding the presentation, histomorphology and differences among scrotal masses can help clinicians achieve correct diagnoses and provide optimal patient care.

#### Keywords: Scrotal masses, Hydrocele, Testis, Atrophy, Histopathology INTRODUCTION

A scrotal mass is a lump or bulge that can be felt in the scrotum and are common complaints in primary care and account for 1% of estimated visits annually.<sup>[1]</sup> They may present at any age, although some types of scrotal masses are more common at certain ages, with the various causes distributed widely across the age spectrum. The causes range from incidental findings of little clinical significance to conditions that can cause permanent disability or death.<sup>[2]</sup> Symptoms include enlarged scrotum and painless or painful testicle lump. The most common types of scrotal masses that present with pain are testicular torsion, epididymitis/orchitis, torsion of the testicular appendage, hematocele or testicular rupture, and

inguinal hernias. Scrotal masses that present without pain include early-stage testicular cancer, hydrocele, spermatocele, and epididymal cyst.<sup>[3]</sup>

Furthermore, scrotal masses can be noncancerous (benign) or cancerous (malignant). Clinicians must be able to distinguish a benign scrotal mass from more significant types because of the risk of infertility and testicular loss caused by the latter.<sup>[4]</sup> The scrotal masses are best categorized by their anatomic origin as shown in table 1. Having a clear understanding of scrotal anatomy allows the examiner to accurately identify most lesions.<sup>[2]</sup>

Anatomic origin	Lesion	Onset	Pain/Tenderness		
	Sebaceous cyst	Acute/ chronic	No		
Skin	Squamous cell carcinoma	Chronic, progressive	No		
Tunica vaginalis testis	Hydrocele	Acute /chronic stable	No		
	Haematocele	Acute caused by trauma	Yes		
Processes vaginalis testis	Indirect inguinal hernia	-	No/yes if strangulated		
	Hydrocele	-	No		
Pampiniform plexus	Varicocele	Chronic, stable	No		
Epididymis	Epididymitis	Acute, progressive	Yes		
	Spermatocele	Chronic, stable	No		
Testis	Testicular torsion	Acute, progressive	Yes		
	Appendix testis	Acute, stable	Yes		
	Orchitis	Acute self-limited	Yes		
	Testicular cancer	Chronic, progressive	No		

**Table 1: Scrotal lesions by Anatomic Origin** 

With a careful history and physical examination, physicians can usually identify those patients with potentially serious conditions. Because of the possibility of emergent and life-threatening causes, and because a swollen scrotum is usually of great concern to patients, immediate evaluation is always required.<sup>[2]</sup> Establishing when the patient first noticed the mass, the rate of growth, documentation of trauma, infectious conditions, and other relevant symptoms may each be important in diagnosing the problem. Diagnosis of scrotal pathology is challenging because of the multiple anatomic structures found within the confined space of the scrotum.<sup>[5]</sup> The present study was undertaken to analyse the data and study the histomorphology of scrotal masses and also reported the rare and interesting case of juvenile gangrenous vasculitis.

# **Materials and Methods**

This was a prospective study of all scrotal masses received in Department of Pathology of Tertiary Care Centre from 1<sup>st</sup> January 2015 to 31<sup>st</sup> December 2017.

During the study period of 3 years, total 108 scrotal specimens were studied. Clinical data such as age and laterality noted. During gross examination external surface, condition of scrotal skin and tunica albuginea, consistency, size, appearance of cut surface, colour, necrosis or haemorrhage, condition of surrounding testicular tissue, epididymis and spermatic cord were recorded. After careful examination, dimensions were noted. Multiple representive tissue bits were taken and processed. Tissue sections were stained by haematoxylin and eosin. The sections were examined microscopically. Histological features were studied in detail. Reports were analysed.

# **Observations and Results**

In the present study, most common lesions found were hydrocele (59; 54.62%) and second most common lesions was torsion of testis (28; 25.92%) of which 16 (57.14%) were left sided torsion while 12 (42.85%) were right sided. Total 19 cases of torsion testis out of 28cases (67.86%) were observed in age group of 11-30 years. The age ranged was wide from <1year to 70year-old patients but mostly reported in younger age group i.e. in 11 to 20 years (39.28) and 21 to 30 years (28.57%) as shown in table 2.

Age (in Years)	No. of Patients	Percentage			
<1	1	3.57			
1-10	1	3.57			
11-20	11	39.28			
21-30	8	28.57			
31-40	1	3.57			
41-50	2	7.14			
51-60	2	7.14			
61-70	3	10.71			
Total	28	100			

 Table 2: Age-Wise Distribution of Torsion Testis

For clinical diagnosis of hydrocele varied histopathological diagnosis was archived as shown in table 3. Inflammatory conditions like acute and chronic orchitis (32.20%), epididymo orchitis (15.25%) and pyocele (16.94%), total 29 cases were found of 59 cases of hydrocele including one case of tuberculous epidydimoorchitis. Testicular atrophy was the second in frequency 15 cases (25.42%). In association of hydrocele 2cases of organised hematoma, 2 cases of calcified scrotal sac (Figure 1) and one case each of varicocele and hernia sacs was detected.

Histopathological diagnosis	No. of Cases	Percentage		
Acute orchitis	2	3.38		
Chronic orchitis	8	13.55		
Periorchitis	9	15.25		
Epididymitis	9	15.25		
Pyocele	10	16.94		
Varicocele	1	1.69		
Oragnised hematoma	2	3.38		
Caicified sac	2	3.38		
Testicular atrophy	15	25.42		
Hernial sac	1	1.69		
Total	59	100		

Table 3: Distribution of Hydrocele Cases According to Histopathological Diagnosis

#### Figure 1: Scrotal calcinosis histology



Seminoma and mixed germ cell tumour accounted equal percentage in current study, (4 cases of each 33.33%), 2 cases of yolk sac tumour of which one was reported in undecended testis of 40 years male presented as abdominal lump, (16.66%). Also reported one cases of Leyding's tumour and rhadomyosarcoma each (8.33%), (Table 4).

Histologic type	Total cases Right		Age distribution in years							
		Right	Left	0- 10	11- 20	21- 30	31- 40	41- 50	51- 60	61- 70
Seminoma	4	2	2	-	1	1	-	2	-	-
Mixed germ cell tumour	4	2	2	-	1	1	1	1	-	-
Yolk sac tumour	2	1	1	1	-	-	-	1	-	-
Leydig'tumour	1	-	1	-	-	-	-	-	-	1
Rhadomyosarcoma	1	1	-	-	-	-	-	-	1	-

Table 4: Frequency of testicular tumour according to histopathology type with age distribution

### Figure 2: Small vessels in dermis showing fibrinoid necrosis and vasculitis



During the study period, one rare case of non-healing scrotal ulcer in a 13-year-old boy diagnosed as juvenile gangrenous vasculitis on histopathology. Stratified squamous epithelium, subepithelial tissue showing many small vessels are shown in figure 3 and 4.

Figure 3: a) Scrotal ulcer on the slice removed from scrotal wall, b) Photomicrograph showing epidermolysis (10x), c) Small and medium sized vessels showing endothelial cell proliferation, fibrinoid necrosis and vascutlitis (40x)



Figure 4: Stratified squamous epithelium, subepithelial tissue showing many small vessels (10XH&E) a) Proliferated vessels in subepithelial tissue showing fibrinoid necrosis and polymorphs in wall of vessel (40XH & E), b) Scrotal wall calcinosis- stratified squamous epithelium and subepithelial tissue showing calcified material (H&E stain X)



#### Discussion

The scrotal complaints can be challenging to diagnose because of overlapping signs and symptoms among various presentations. Most of the subjects in this study were in the age group of 11 to 20 years (39.28%) followed by 21 to 30 years (28.57%) which is correlated with the study done by Chaurasia et al.<sup>[6]</sup> Thus the incidence was more in younger age group, it is possibly because of repeated minor trauma to the testes due to strenuous activity performed by the persons in this age group and also because, both inflammatory and neoplastic diseases of the scrotum are more common in this age group.

There was higher incidence of hydrocele was noted (54.63%). Various similar studies show that the incidence of hydrocele is 19% to 28%<sup>[7-9]</sup> but Biswas and De<sup>[10]</sup> found high incidence of hydrocele in their study (78%). For clinical diagnosis of hydrocele varied histopathological diagnosis was archived. Among the inflammatory pathologies acute orchitis was noted in 2 cases (3.38%) which are similar to the other studies <sup>[11, 12]</sup>. Chronic orchitis noted in 8 cases

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(13.55%) and epididymitis was seen in 9 cases (15.25%) which are similar to the study done by Patil and Shetty.<sup>[13]</sup> Ten cases (16.94%) of pyocele were seen, where there was complex, heterogeneous fluid collection with septae in the ipsilateral scrotal sac. This is comparable to finding by Melkundi et al.<sup>[8]</sup> Periorchitis was noted in 9 (15.25%) cases which are in accordance with the study conducted by Williams and Banerjee<sup>[14]</sup>. Total 29 cases were found of 59 cases of hydrocele including one case of tuberculous epidydimoorchitis. Testicular atrophy was the second in frequency (25.42%). In association of hydrocele 2cases of organised hematoma, 2 cases of calcified scrotal sac and one case each of varicocele and hernia sacs was detected. These findings are correlated well with the previous studies.<sup>[10,15]</sup>

The torsion of testis (28; 25.92%) was second most common lesions, out of which left sided torsion (57.14%) were relatively more common than right sided (42.85%). This is because the anatomy of left testicle is slightly different from that of right i.e. the left testicle in particular is more vulnerable to a number of conditions, such as varicoceles, caused by vein problems, and testicular torsion. Most of the testicular tumors were seen in the 4th decades of life, (4 cases). The seminoma and mixed germ cell tumour accounted equal percentage i.e. out of total 12 testicular tumors, 33.33% cases each which are in accordance with the study conducted by Karki and Bhatta.<sup>[16]</sup>. Two solitary cases of yolk sac tumor were found, one case in >10-year-old and another one in 41-50 years age group which is correlated with other studies.<sup>[17,18]</sup> There was one case of Testicular Levdig cell tumor (LCT) located in the left testis occurring in a 61-70-year age group and also one case of right testicular rhadomyosarcoma in 51-60 years age group; this is comparable with the earlier studies.<sup>[19,20]</sup>

Juvenile gangrenous vasculitis of the scrotum (JGVS) is a particular form of scrotal gangrene that has been rarely reported since its first description in 1973.<sup>[21]</sup> In present study, juvenile gangrenous vasculitis was found in one case. JGVS is characterized by the sudden onset of scrotal gangrene in young healthy patients, the majority under 18 years old,<sup>[22]</sup> like our case having age 13 years. Fever is a common feature before the development of the lesions <sup>[23]</sup> and although our patient was apyretic, he was unaware of the presence of fever in the previous days. VDRL was negative in our patient and laboratory tests for herpes

simplex virus (HSV) were not performed, the diagnosis was excluded because clinical lesion did not match the classic presentation due to the absence of prodrome and vesicular lesions. With morphology and taking into consideration various serological tests, ruling out the differential, a diagnosis of juvenile gangrenous Vascultitis was made.

As several testicular pathologies have characteristic ultrasonographic appearances, ultrasonography is able to appropriately guide patient management and potentially prevent unnecessary surgical intervention. Scrotal masses often pose a diagnostic dilemma in the mind of treating physician. Clinical findings of these lesions may be corroborated through radiological, cytological, and microbiological assessment in an endeavour to arrive at a definitive diagnosis with a defined etiology.

### Conclusion

In the present study, hydrocele was the commonest and torsion of testis was second most common lesions found among all age groups. The complete testicular atrophy was found mostly secondary to infective cause. Germ cell tumours with a commonest subtype of seminoma and mixed germ cell tumour were reported in equal frequency. Scrotal masses present a diagnostic dilemma on clinical examination. Understanding the presentation and differences among scrotal masses can help clinicians achieve correct diagnoses and provide optimal patient care.

However, juvenile gangrenous vasculitis resolves spontaneously in less than a month. Thus, despite being rare, awareness of this entity in the differential diagnosis of scrotal ulcers is necessary to avoid an excess of diagnostic and therapeutic tests because of its self-limiting and benign nature.

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