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Original Research Article

Clinicopathological Spectrum of Paratesticular Lesions in a Tertiary Care Hospital

Ankitha Patil[1], S.M. Choukimath[2]

[1]Assistant Professor, Department of Pathology, RIMS, Raichur

[2]Associate Professor, Department of Pathology, Karnataka Institute of Medical Sciences. Hubballi

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Corresponding author: Dr Ankitha Patil

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Abstract

Background: Paratesticular lesions comprise a diverse group of disorders involving the epididymis, spermatic cord, tunica vaginalis, and adjacent soft tissues. They range from benign non-neoplastic lesions to rare malignant neoplasms. Accurate clinicopathological evaluation is essential to differentiate these entities and guide management.

Objectives: To study the spectrum, incidence, and histomorphological features of paratesticular lesions; to evaluate their clinical presentation and age distribution; and to analyze neoplastic and non-neoplastic patterns encountered over a five-year period in a tertiary care hospital.

Methods: A retrospective and prospective descriptive study was conducted in the Department of Pathology, KIMS, Hubballi, over five years (April 2014–March 2019). Fifty-two paratesticular specimens were examined grossly and microscopically after routine processing and Hematoxylin–Eosin staining. Relevant clinical data were retrieved from hospital records. Cases were classified according to the WHO 2016 classification of testicular and paratesticular tumors.

Results: Out of 52 paratesticular lesions, 45 (86.5%) were non-neoplastic and 7 (13.5%) were neoplastic. Hydrocele was the most common non-neoplastic lesion (71.1%), followed by scrotal wall abscess (11.1%) and epididymal cyst (8.8%). Among neoplasms, leiomyoma and fibrous pseudotumor each accounted for two cases (28.5%), while squamous cell carcinoma of scrotal skin was seen in two cases, and one case of embryonal rhabdomyosarcoma represented the sole malignant neoplasm. The mean age of presentation was 42.6 years, with most patients presenting with scrotal swelling (72%) and pain (40%). Right-sided involvement predominated (43%).

Conclusion: Paratesticular lesions are predominantly benign, with hydrocele being the most frequent pathology. Malignant neoplasms are rare but clinically important. Histopathology remains the cornerstone for accurate diagnosis, differentiation, and treatment planning.

Keywords: Paratesticular lesions, Hydrocele, Leiomyoma, Rhabdomyosarcoma, Histopathology.

Introduction

The paratesticular region encompasses structures such as the epididymis, spermatic cord, tunica vaginalis, and scrotal coverings, which may give rise to a wide variety of pathological conditions [1]. These include developmental abnormalities, inflammatory processes, benign proliferations, and rare malignant neoplasms. Clinically, such lesions often present as scrotal swelling, pain, or palpable masses, frequently mimicking testicular pathology [2].

Although paratesticular lesions are less common than testicular ones, their correct diagnosis is crucial because management and prognosis vary widely depending on the underlying cause [3]. The majority are benign, including hydrocele, adenomatoid tumor, fibrous pseudotumor, and leiomyoma, while malignant tumors such as rhabdomyosarcoma, liposarcoma, and mesothelioma are distinctly uncommon but potentially aggressive [4,5].

Paratesticular malignancies constitute less than 30% of all intrascrotal tumors and show a bimodal age distribution, with rhabdomyosarcoma affecting children and sarcomas or carcinomas seen in adults [6,7]. Inflammatory and cystic lesions such as epididymal cysts and abscesses are frequent in tropical regions due to high infection rates and trauma [8].

Despite advancements in imaging, histopathology remains the gold standard for confirming diagnosis,

determining tumor type, and assessing prognostic factors [9]. The present study aims to describe the clinicopathological spectrum of paratesticular lesions encountered in a tertiary care hospital, correlating clinical and histological findings to improve diagnostic accuracy.

Materials and Methods

Study Design and Setting: This was a retrospective and prospective descriptive study carried out over five years (April 2014–March 2019) in the Department of Pathology, Karnataka Institute of Medical Sciences (KIMS), Hubballi.

Sample Selection: All formalin-fixed surgical specimens diagnosed as paratesticular lesions were included. Poorly fixed or autolyzed tissues and inadequate specimens were excluded [10].

Data Collection and Processing: Demographic and clinical details, including age, symptoms, and laterality, were obtained from hospital records. Each specimen was grossly examined, sectioned, processed by paraffin embedding, and stained with Hematoxylin and Eosin. Microscopic evaluation was performed, and lesions were classified according to the WHO 2016 classification of testicular and paratesticular tumors [11].

Statistical Analysis: All observations were analyzed using descriptive statistics. Data were expressed as frequencies and percentages. Results were presented through tables and graphs.

Results

Overall Distribution: Out of 52 paratesticular lesions, 45 (86.5%) were non-neoplastic and 7 (13.5%) were neoplastic (Table 1, Figure 1).

Table 1: Distribution of Paratesticular Lesions

Lesion Type	Number of Cases	Percentage (%)
Non-neoplastic	45	86.5
Neoplastic	7	13.5

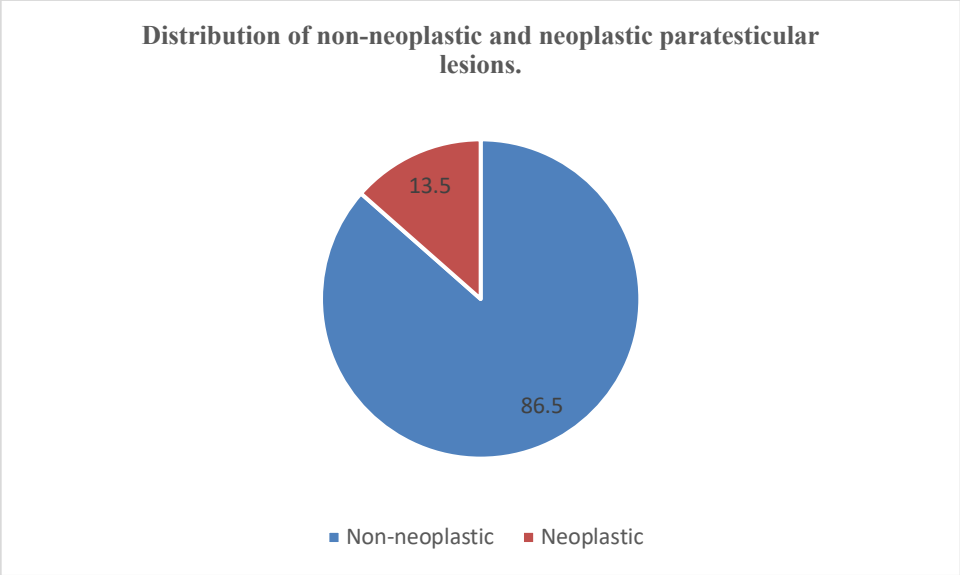

Figure 1: Distribution of non-neoplastic (86.5%) and neoplastic (13.5%) paratesticular lesions.

Clinical Presentation: The most common presentation was scrotal swelling (72%), followed by pain (40%) and fever (10%). Tenderness and empty scrotum were observed less frequently.

Table 2: Clinical Presentation

Clinical Feature	Number of Cases	Percentage (%)
Scrotal swelling	37	72.1
Pain	21	40.4
Fever	5	9.6
Tenderness	4	7.7
Empty scrotum	3	5.8

Laterality: Right-sided lesions were most frequent (43%), followed by left (36%) and bilateral involvement (21%) (Figure 2).

Table 3: Laterality of Paratesticular Lesions

Laterality	Number of Cases	Percentage (%)
Right	22	43
Left	19	36
Bilateral	11	21

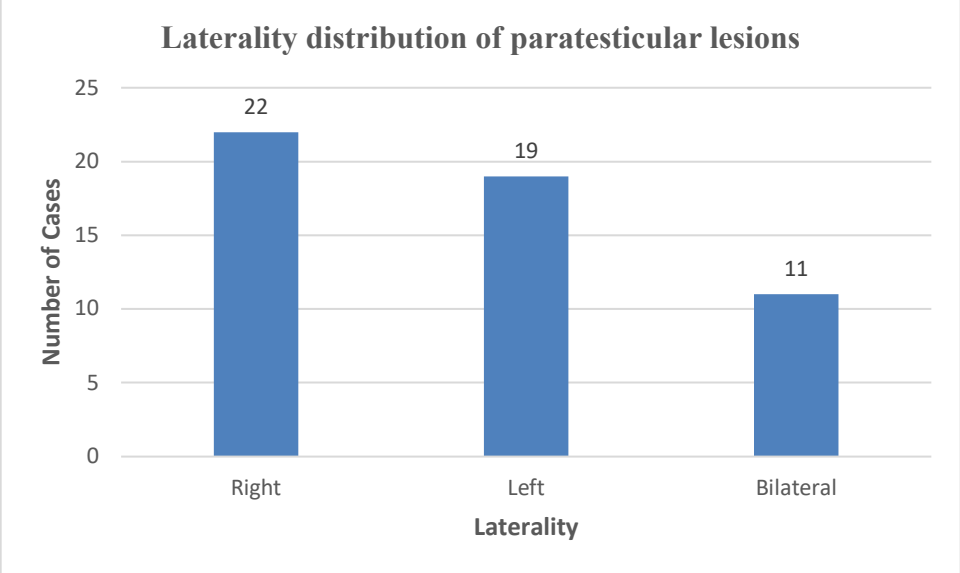

Figure 2: ***laterality distribution of paratesticular lesions***

Age Distribution: Patients' ages ranged from 6 months to 75 years, with the maximum incidence in the 31–40 years age group (21%), followed by 61–70 years (14%) (Figure 3).

Table 4: Age-Wise Distribution of Cases

Age Group (Years)	Number of Cases	Percentage (%)
0–10	2	3.8
11–20	5	9.6
21–30	8	15.3
31–40	11	21.1
41–50	7	13.4
51–60	5	9.6
61–70	8	15.3
71–80	6	11.9

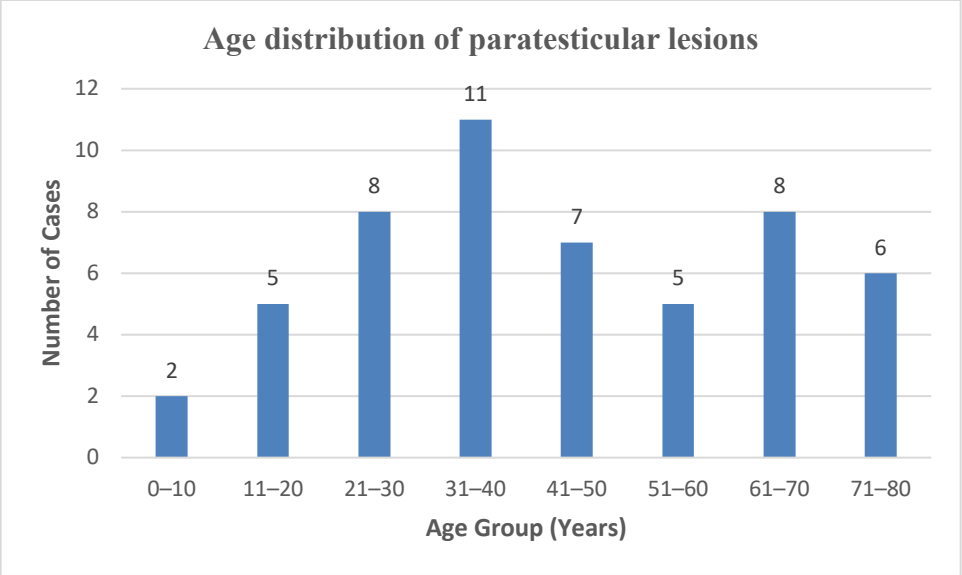

Figure 3: ***age distribution of paratesticular lesions***.

Non-Neoplastic Paratesticular Lesions: The most common non-neoplastic lesion was hydrocele (32 cases, 71.1%), followed by scrotal wall abscess (11.1%) and epididymal cyst (8.8%) (Table 5).

Table 5: Spectrum of Non-Neoplastic Paratesticular Lesions

Diagnosis	Number of Cases	Percentage (%)
Hydrocele	32	71.1
Scrotal wall abscess	5	11.1
Epididymal cyst	4	8.8
Chronic epididymitis	3	6.6
Hematocele	1	2.2

Neoplastic Paratesticular Lesions: Among seven neoplastic cases, leiomyoma and fibrous pseudotumor each accounted for two (28.5%), while squamous cell carcinoma (SCC) and embryonal rhabdomyosarcoma represented the malignant entities (Table 6).

Table 6: Spectrum of Paratesticular Neoplasms

Lesion Type	Benign/Malignant	Number of Cases	Percentage (%)
Leiomyoma	Benign	2	28.5
Fibrous pseudotumor	Benign	2	28.5
Squamous cell carcinoma	Malignant	2	28.5
Embryonal rhabdomyosarcoma	Malignant	1	14.5

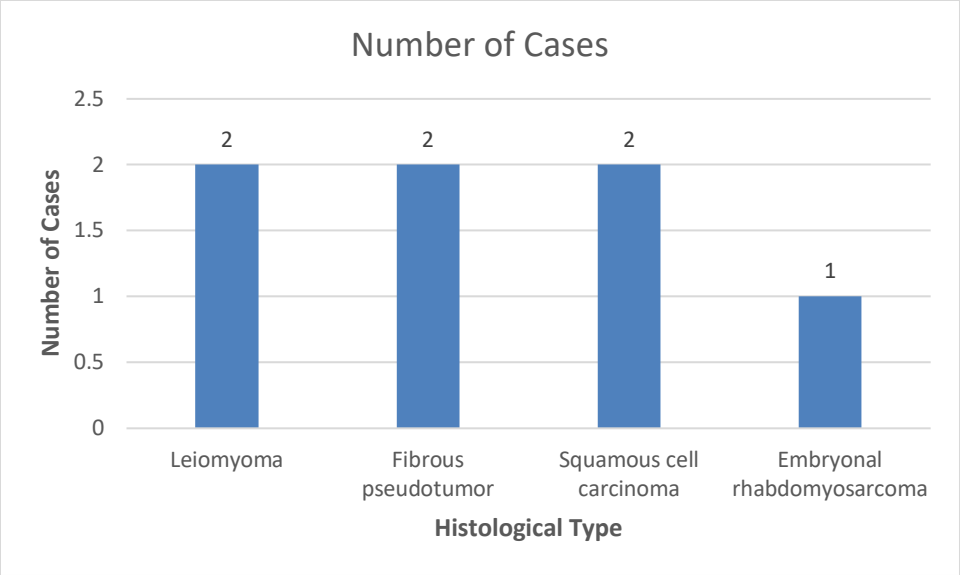

Figure 4: Distribution of paratesticular neoplasms.

Discussion

The current five-year study focused solely on paratesticular lesions, which occur less frequently than testicular pathologies but show significant histopathological variety. Out of 52 cases, non-neoplastic lesions made up 86.5%, while neoplastic lesions accounted for 13.5%. This aligns closely with findings from Shukla et al. [1] and Kour et al. [2], who recorded non-neoplastic lesions in 84% and 88% of their cases, respectively. Similarly, Tekumalla et al. [3] and Mansi et al. [4] also noted a predominance of benign, non-neoplastic conditions in their tertiary center reviews.

Among the non-neoplastic group, hydrocele (71.1%) was the most common lesion identified in this study. This supports the observations of Kour et al. [2] and Mansi et al. [4], who found hydrocele to be the leading paratesticular condition in 70–75% of cases. The higher rate in this series may relate to chronic infections, trauma, and tropical climatic factors, known to contribute to hydrocele formation in Indian populations [5]. Other significant lesions included scrotal wall abscess (11.1%) and epididymal cyst (8.8%), which align with data from Sadasivan et al. [6], who identified inflammatory and cystic lesions in 10–15% of cases.

The age range in this study was from 6 months to 75 years, with the highest incidence in the 31–40 year age group (21.1%). This matches findings from Tekumalla et al. [3] and Gupta et al. [7], who reported peak occurrences in the third and fourth decades of life. The mean age of 42.6 years in the current series also corresponds with Shukla et al. [1]. The right-sided predominance noted (43%) was similar to results from Khurana et al. [8], indicating no significant side preference but a slight bias towards the right.

In the neoplastic paratesticular lesions, leiomyoma and fibrous pseudotumor were the most common benign tumors, each making up 28.5%. These results align with Algaba et al. [9], who claimed leiomyoma as the most common benign neoplasm from the spermatic cord or tunica. While fibrous pseudotumor is rare, it has been reported in 6–8% of paratesticular lesions, matching the findings in this study [10]. Both conditions can clinically resemble malignant tumors, highlighting the need for histopathology for accurate diagnosis.

Squamous cell carcinoma (SCC) of the scrotal skin, found in two adult patients in this study, is a rare cancer often linked to chronic irritation or exposure to carcinogenic oils. This observation supports the epidemiological findings by Chaurasia and Shukla [11], who pointed out occupational predisposition as an important risk factor for Indian patients.

The single case of embryonal rhabdomyosarcoma (14.5%) in a pediatric patient aligns with global literature that identifies this tumor as the most common malignant neoplasm in children and adolescents [12,13]. Dangle et al. [12] and Bisogno et al. [13] reported similar age patterns and stressed the need for multimodal therapy to enhance survival.

When comparing the total neoplastic incidence (13.5%) to previous Indian studies, our results fit within the previously reported range of 10–18% [1–4]. The slightly lower percentage of malignant lesions (only one case in this series) might relate to the hospital's referral pattern, where more advanced

malignant cases could have been managed at specialized oncology centers.

In this study, scrotal swelling (72%) and pain (40%) were the most common symptoms reported. This is in line with findings from Kour et al. [2] and Gupta et al. [7], underscoring that clinical features alone are not specific. Imaging may not reliably differentiate between benign and malignant lesions. Therefore, histopathology remains crucial for accurate diagnosis [14].

Overall, this study supports earlier research while providing region-specific information. The higher prevalence of non-neoplastic lesions, the dominance of hydrocele, and the rare occurrence of rhabdomyosarcoma are consistent with previous reports from India. These findings highlight the need for increased clinical awareness and histopathological verification to ensure correct diagnosis and management of paratesticular lesions.

Conclusion

Paratesticular lesions in this study were predominantly benign, with hydrocele being the most common pathology. Leiomyoma and fibrous pseudotumor represented the major benign neoplasms, while embryonal rhabdomyosarcoma was the principal malignant tumor encountered.

Given their varied presentations, all paratesticular swellings warrant thorough clinical and histopathological evaluation. Awareness of the possible clinicopathological spectrum facilitates early diagnosis and appropriate management, ultimately improving patient outcomes.

References

1. Algaba F, Mikuz G. Pathology of paratesticular tumors. Virchows Arch. 2013;462(4):359–76.
2. Kour B, Kaur R, Singh M. Paratesticular and testicular lesions: a clinicopathological study. J Evid Based Med Healthc. 2018;5(15):1305–9.
3. Shukla P, Kumar S, Kundu R. Paratesticular tumors: clinicopathologic review and management outcome. J Clin Diagn Res. 2015;9(11):EC10–EC14.
4. Eble JN, Sauter G, Epstein JI, Sesterhenn IA, editors. Pathology and Genetics of Tumours of the Urinary System and Male Genital Organs. Lyon: IARC Press; 2004.
5. Ulbright TM. Germ cell tumors of the gonads: an update and review of diagnostic criteria. Mod Pathol. 2016;29(S2):S78–S95.
6. Rajwanshi A, Dey P, Sharma SC, et al. Paratesticular rhabdomyosarcoma: cytologic features and diagnostic challenges. Acta Cytol. 2001;45(4):529–34.
7. Kumar V, Abbas AK, Aster JC. Robbins Basic Pathology. 10th ed. Philadelphia: Elsevier; 2018.
8. Gupta A, Sharma S, Aggarwal A. Patterns of presentation in testicular and paratesticular pathology: a retrospective study. Indian J Pathol Oncol. 2016;3(2):249–53.
9. Prasad SR, Menias CO, Patnana M. Testicular and paratesticular pathology: imaging correlation with clinical and histopathologic findings. Radiographics. 2013;33(3):721–40.
10. Bancroft JD, Gamble M. Theory and Practice of Histological Techniques. 6th ed. London: Churchill Livingstone; 2008.
11. WHO Classification of Tumours Editorial Board. WHO Classification of Tumours of the Testis. 4th ed. Lyon: IARC Press; 2016.
12. Sadasivan J, Bhat S, Thomas B. Spectrum of testicular and paratesticular lesions in a teaching hospital. Indian J Pathol Oncol. 2019;6(3):400–6.
13. Kour B, Kaur B, Kaur R. Histopathological spectrum of testicular lesions: a 3-year study in a tertiary care center. Indian J Pathol Oncol. 2018;5(2):250–5.
14. Shukla AK, Das AK, Bhardwaj M. Clinicopathological study of paratesticular lesions: a tertiary hospital experience. J Clin Diagn Res. 2015;9(12):EC10–EC14.
15. Tekumalla A, Singh M, Reddy V. Pattern of testicular and paratesticular pathology: a study from a tertiary hospital. Indian J Pathol Microbiol. 2017;60(2):211–5.
16. Mansi S, Patel P, Patel H. Paratesticular lesions: a clinicopathological study. Int J Health Sci Res. 2017;7(11):74–9.
17. Algaba F, Trias I, Santaularia JM. Benign paratesticular tumors: a clinicopathologic study of 50 cases. Eur Urol. 2001;40(4):444–9.
18. Chaurasia RN, Shukla VK. Scrotal carcinoma: clinical and etiological considerations. Indian J Cancer. 2013;50(3):198–202.
19. Dangle P, Correa A, Russo P. Paratesticular rhabdomyosarcoma: current management and outcomes. J Pediatr Urol. 2013;9(6):1016–21.
20. Bisogno G, Jenney M, Bergeron C. Treatment and outcome of paratesticular rhabdomyosarcoma: results from a large international series. J Clin Oncol. 2014;32(34):3857–63.
21. Tekumalla A, Singh M, Reddy V. Clinicopathological analysis of testicular lesions in a tertiary care hospital. J Med Sci Clin Res. 2017;5(11):30589–94.
22. Khurana A, Singh R, Sharma R. Laterality of testicular and paratesticular lesions: a clinico-

histopathological correlation. J Med Sci Clin Res. 2016;4(7):11549–53.
23. Woodward PJ, Heidenreich A. Diagnostic approach and management of scrotal masses: integrating clinical, radiologic, and pathologic data. Eur Urol. 2015;68(1):156–68.