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A Retrospective Histopathological Study Of Male Genital Tract Lesions

Dr.Priyanka.J[1], Dr. Shanmuga Priya.M[2*], Dr.Eswari.V[3]
[1]Post Graduate , [2*]Professor, [3]Professor and Head of Department,
Department of Pathology, Meenakshi Medical College Hospital and Research Institute, Enathur, Kanchipuram - 631552, Tamilnadu, India.

***Corresponding Author:**
Dr. Shanmuga Priya
Professor, Department of Pathology, Meenakshi Medical College Hospital and Research Institute

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Abstract

Distinct pathologic conditions affect the male genital tract. They constitute a group of lesions which are difficult to diagnose and treat due to their location anatomically, biological characters and implications. Tumors and tumor like lesions of male genital tract accounts for major health problem in many countries of the world. The aim is to study the frequency of benign tumours, premalignant lesions, malignant lesions and the burden of male genital tract cancers in a tertiary care hospital, Kanchipuram, Tamilnadu.

Materials and methods:

This is a retrospective study carried out in the department of pathology at Meenakshi Medical College Hospital and Research Institute that included 287 cases of male genital tract lesions received over a period five years from January 2016 to December 2020. The data collected includes patient's age, sex, clinical history, diagnosis, procedure done and histopathological diagnosis that were retrieved from the histopathology registers. The data was entered and analyzed using Microsoft Excel.

Results:

Out of 287 cases out of which majority were of prostatic lesions (45.2%) followed by testicular (25.08%), penile (18.1%), scrotal (6.6%) and epididymal(4.8%) lesions. The most common age group of affected patients were more than 60 years of age (57.83%) with Benign Prostatic Hyperplasia(29.9%) being the commonest cause.

Conclusion:

This present study was carried out as an attempt to emphasize the importance of male genital tract lesions and it serves an important part of pathologic practice to provide accurate diagnosis and reducing the risk of male mortality.

Keywords : Benign Prostatic Hyperplasia, Calcinosis cutis, Pyocele, Squamous cell carcinoma.

INTRODUCTION

The male reproductive system is responsible for the production of spermatozoa, the major functional organs involved are; a pair of testes, epididymis, vas deferens, prostate, seminal vesicles and the penis [1]. The male genital tract lesions constitute a group of lesions which are difficult to diagnose and treat due to their location anatomically, biological characters and implications. Tumors and tumor like lesions of male genital tract accounts for major health problem in many countries of the world [2]. Malignant neoplasms of male genital tract account for 4% of all malignancies in India [3]. Malignant lesions of testis is the most common malignancy in men between 15 to 35 years of age and accounts for less than 1% of all

malignancies caused in men. The prostatic adenocarcinoma tends to arise in peripheral zone whereas Benign Prostatic Hyperplasia (BPH) typically arise in transition zone[4]. BPH is the most common benign disease of prostate seen in men more than 50 years of age. It is seen in approximately 20% of men by 40 years of age, increases to 70% by age 60 years and 90% by age 80 years. Prostatic adenocarcinoma is the most common cancer in men which accounts for 29% of cancer in the United states in 2012 and it is typically seen in men more than 50 years of age. 95% of testicular tumours arise from germ cells, and almost all are malignant. The incidence of testicular tumours in united states is approximately 6 per 1,00,000 and resulting in approximately 300 deaths per year. The Germ cell tumours are subdivided into seminomatous and non seminomatous tumours. Inflammatory processes may affect the skin of the scrotum and neoplasms of the scrotal sac are unusual. Cryptorchidism is a failure of testicular descent is associated with a 3 to 5 fold increased risk of testicular cancer. Inflammatory lesions of the testis are more common among epididymis than the proper testis. Torsion of the spermatic cord results in obstruction of testicular venous drainage which leads to intense vascular engorgement and infarction unless the torsion is relieved. The penis can be affected most importantly by inflammations and tumours. Squamous cell carcinoma of the penis makes up from 10% to 20% of male malignancies in some parts of Asia, Africa and South America. They are associated with poor genital hygiene and with high-risk HPV infection [5]. The aim and objectives are to study the histopathological spectrum of lesions, age wise distribution of lesions, frequency of benign tumours, premalignant and malignant lesions, and the burden of male genital tract cancers in a tertiary care hospital, Kanchipuram, Tamilnadu.

MATERIALS AND METHODS :

It is an observational study which included 287 cases of male genital tract lesions that was carried out in the department of pathology at Meenakshi Medical College Hospital and Research Institute (MMCH&RI), Kanchipuram. The specimens were received from the department of surgery and urology either as histopathological biopsies or resected specimens. Data analysis was done retrospectively for the cases received over a period of five years from January 2016 to December 2020. The data collection were retrieved from the histopathology registers which provided the patient's biopsy number, name, age, sex, clinical history, diagnosis, procedure done and the histopathological diagnosis based on the gross examination and microscopic examination of Haematoxylin and Eosin stained paraffin embedded sections. The collected data were entered in Microsoft excel and secondary analysis was done using the same. The lesions were categorised based on their site of origin such as prostatic, testicular, penile, scrotal and epididymal lesions and further classified into benign and malignant entity by using the WHO classification [6]. The inadequate tissue samples which doesn't provide confirmatory diagnosis were excluded from the study.

RESULTS :

In this present study the age group included ranges from 1 to 94 years and the most common age group of affected patients were more than 60 years of age (57.83%) with Benign Prostatic Hyperplasia(30.6%) being the commonest cause. Among the age group of 46 to 60 years BPH again remains the most common cause (5.2%) and followed by pyocele (4.5%). Phimosis was seen in 2.4% in 31 to 45 years of age and followed by calcinosis cutis(1.74%). Among the age group of 16 to 30 years phimosis, calcinosis cutis, sebaceous cyst and testicular infarction constituted 0.6% each. Under the age group of less than15 years, phimosis (1.7%) was common (Table 1).

Out of 287 cases included in the present study, majority of lesions were of prostate(45.2%) followed by testis and paratestis (25.08%), penis (18.1%), scrotum (6.6%) and epididymis(4.8%) (Figure 1).

Among these the benign tumour and tumour like lesions were 241(83.9%), premalignant lesions

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were 12(4.1%) and the malignant lesions were 34(11.8%)

Out of 130 cases of prostatic lesions 103 cases were benign prostatic hyperplasia out of which 3 cases showed von brunn's nest. Xanthogranulomatous prostatitis was found in 1 case (Table 2). Prostatic Intraepithelial Neoplasia was seen in 12 cases and adenocarcinoma of prostate (Figure 2) was seen in 14 cases which constitutes 41.1% of total 34 malignant cases found in this study.

Out of 72 cases of testicular lesions (Table 3), 5 were malignant which constitutes 14.7% of total 34 malignant cases, among which 3 were seminomas, mixed germ cell tumour (1) and yolk sac tumour (1). Among the benign lesions pyocele (Figure 3a) was more common that constituted 44.4% of all lesions of testis and paratestis. Atrophic testis constituted 15.2% and Xanthogranulomatous orchitis (Figure 3b) constituted 2.7% of all testicular lesions seen in this study. The miscellaneous cases of testicular lesions included in the study were maturation arrest, granulomatous orchitis, malakoplakia (Figure 3c) and vascular malformation which constituted (2.09%) out of total 287 cases.

Out of 52 cases of penile lesions (Table 4), 15 were squamous cell carcinoma (Figure 4a & 4b) which constitutes 44.1% of total 34 malignant cases and 37 (71.1%) cases were of phimosis.

Out of 19 cases of scrotal lesions (Table 5) seen in this study almost all the lesions were benign with calcinosis cutis (Figure 5a), being the most common constituting 52.6% of all scrotal lesions. Fournier's gangrene (Figure 5b) constituted 10.5% and plexiform neurofibroma (Figure 5c) constituted 5.2% of all scrotal lesions.

Out of 14 cases of epididymal lesions (Table 6), seen in this study all the cases were of benign lesions. The cases such as acute epididymoorchitis , epididymal cyst constituted 28.5% each among all lesions of epididymis and spermatocele constitutes 7.1% (Figure 6) .

DISCUSSION :

The present study included 287 cases out of which majority of the lesions were of prostate (45.2%), this is similar to the study done by Kaur J et al where the prostatic lesions constituted 64.5%. [2]

The age range included in the present study was between 1-94 years. The most common age group affected were more than 60 years (57.8%), this is similar to the study conducted by Singh S et al which included 33.3% cases above 60 years of age [7]. But it doesn't correlate with the study done by Fukatsu et al which showed 57.8 % of cases diagnosed between the age group of 10 to 40 years [8].

Benign tumours and tumour like lesions (83.9%) of male genital tract were more common than the malignant lesions(11.8%) in this study and the premalignant lesions constitute about 4.1%. Similarly non-neoplastic lesions were observed most commonly (87.5%) in Singh S et al [7].

Among the 34 malignant tumours of male genital tract lesions observed in this study, penile cancers were 15 (44.1%) followed by prostatic cancers 14 (42.4%) cases and testicular cancers 5 (14.7%). Study by Kaur J et al showed 39% of penile malignancies followed by 34.5% of prostatic malignancies and 17% of testicular malignancies [2]. But the study by Takiar R et al doesn't correlate with the present study which showed frequency of 77.6% of prostatic tumors, 11.6% of penile cancers and 10.5% of testicular tumors, this is because their study included data obtained from 5- population based urban registries [9].

Majority of the testicular and paratesticular lesions are benign (93%) than the malignant lesions (6.9%). Similarly Dhanya K et al reported 96.1% benign lesions of testis and 3.9% of malignant lesions [10].

Among the benign testicular and paratesticular lesions majority of them were pyocele (11.1%), followed by atrophic testis (3.8%) similarly the study conducted by Dhanya K et al reported 20.4% pyocele and 12.2% atrophic testis [10].

Other studies which showed similar findings were Reddy H et al (Benign lesions 86% and malignant lesions 14%), Patel MB et al (Benign

lesions 85% and malignant lesions 15%), Karki S et al (Benign lesions 88.5% and malignant lesions 11.4%) and Dhawle et al (Benign lesions 81.42% and malignant lesions 18.58%) [11-14].

Cryptorchidism is considered the most important risk factor, associated with 10% of all testicular cancers [15]. In this study 3 cases of undescended testis were reported out of which none of them showed malignancy, whereas the study done by Sharma M et al had 4 cases of testicular neoplasm with history of cryptorchidism [16].

Out of the 5 malignant lesions of testis 3 cases were of seminoma and all of them were seen in the age group of 46 to 60 years, 1 case of mixed germ cell tumour was found in 27 years of age and 1 case of yolk sac tumour seen in the age of 1 year . The study by Taneja et al also showed seminoma as the most frequent tumour in testis in the age range of 23-80 years [17].

Malignant tumours of penis constitutes about 42.4% in the study by Nagpal et al, present study had similar finding of squamous cell carcinoma penis which was 44.1% out of 34 malignancies overall. Most common age group involved in the study was 6^{th} to 7^{th} decade. Similarly Venkateswaran et al studied carcinoma penis among 6^{th} decade [18, 19].

Scrotal lesions constituted 6.6% of total cases, out of which 10 cases were calcinosis cutis followed by 5 cases of sebaceous cyst whereas Martinez et al reported 3 cases of idiopathic calcinosis and 7 cases of sebaceous cyst [20].

The rare cases encountered in the present study were sperm granuloma and malakoplakia.

Incidence of sperm granuloma is 2.5% in general population and 42% in those who have undergone vasectomies [21]. In this study sperm granuloma constitutes 0.3% with no history of vasectomy surgery or trauma.

Malakoplakia is most common in urinary bladder whereas it is a rare entity in testis [22]. Testicular involvement is seen in only 12% of genital malakoplakia with 388 cases in the literature [23]. It is characterised by presence of von Hansemann cells (macrophages) containing Michaelis – Gutman bodies in the cytoplasm (Figure 3c) [24]. Under the miscellaneous lesions seen in our study malakoplakia constitutes about 0.3%.

Conclusion:

Benign Prostatic Hyperplasia being the most common benign tumour has outnumbered all other lesions of male genital tract. Squamous cell carcinoma was most common among the malignant tumours followed by adenocarcinoma of prostate. Infectious and inflammatory lesions were more commonly encountered in lesions of testis and paratestis. Considering the fact that male genital tract lesions account for a major health problem, it serves an important part of pathologic practice to provide accurate diagnosis and thereby helping in appropriate management and reducing the risk of male mortality. Screening studies which are of utmost important in detecting early cases of male genital tract lesions are highly recommended in future.

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Table 1: Age wise distribution of male genital tract lesions

S.NO	DIAGNOSIS	0 - 15 yrs	16 – 30 yrs	31 – 45 yrs	46 – 60 yrs	>60 yrs	TOTAL N=287	%
1	Benign Prostatic Hyperplasia	-	-	-	14	86	100	34.8%
2	Benign Prostatic Hyperplasia with Von brunn's nest	-	-	-	1	2	3	1.04%
3	Prostatic Intraepithelial Neoplasia	-	-	-	6	6	12	4.1%
4	Adenocarcinoma of Prostate	-	-	-	1	13	14	4.8%
5	Xanthogranulomatous prostatitis	-	-	-	-	1	1	0.3%
6	Pyocele	-	-	4	13	15	32	11.1%
7	Infarction of testis	-	2	-	1	-	3	1.04%
8	Atrophic testis	-	-	-	4	7	11	3.8%
9	Hematocele	-	-	-	1	3	4	1.3%
10	Seminoma	-	-	-	3	-	3	1.04%
11	Yolk sac tumour	1	-	-	-	-	1	0.3%
12	Mixed germ cell tumour	-	1	-	-	-	1	0.3%
13	Xanthogranulomatous orchitis	-	-	1	-	1	2	0.6%
14	Undescended testis	1	-	1	-	1	3	1.04%
15	Benign cyst	-	1	1	-	-	2	0.6%

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16	Torsion testis	-	1	2	-	-	3	1.04%
17	Metastasis	-	-	-	-	1	1	0.3%
18	Miscellaneous	-	-	1	2	3	6	2.09%
19	Chronic Epididymitis	-	-	-	2	-	2	0.6%
20	Tuberculous Epididymitis	-	-	-	1	-	1	0.3%
21	Xanthogranulomatous epididymitis	-	-	-	-	1	1	0.3%
22	Acute Epididymo-orchitis	-	-	2	-	2	4	1.3%
23	Epididymal cyst	-	1	1	1	1	4	1.3%
24	Spermatocele	-	-	-	1	-	1	0.3%
25	Sperm granuloma	-	-	-	1	-	1	0.3%
26	Calcinosis cutis	-	2	5	2	1	10	3.4%
27	Sebaceous cyst	-	2	3	-	-	5	1.7%
28	Lipoma	-	-	-	-	1	1	0.3%
29	Fournier's Gangrene	-	-	-	1	1	2	0.6%
30	Plexiform neurofibroma	-	-	-	1	-	1	0.3%
31	Phimosis	5	2	7	11	12	37	12.8%
32	Squamous cell carcinoma	-	-	3	4	8	15	5.2%

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33	TOTAL	7	12	32	70	166	287	100%

Figure 1

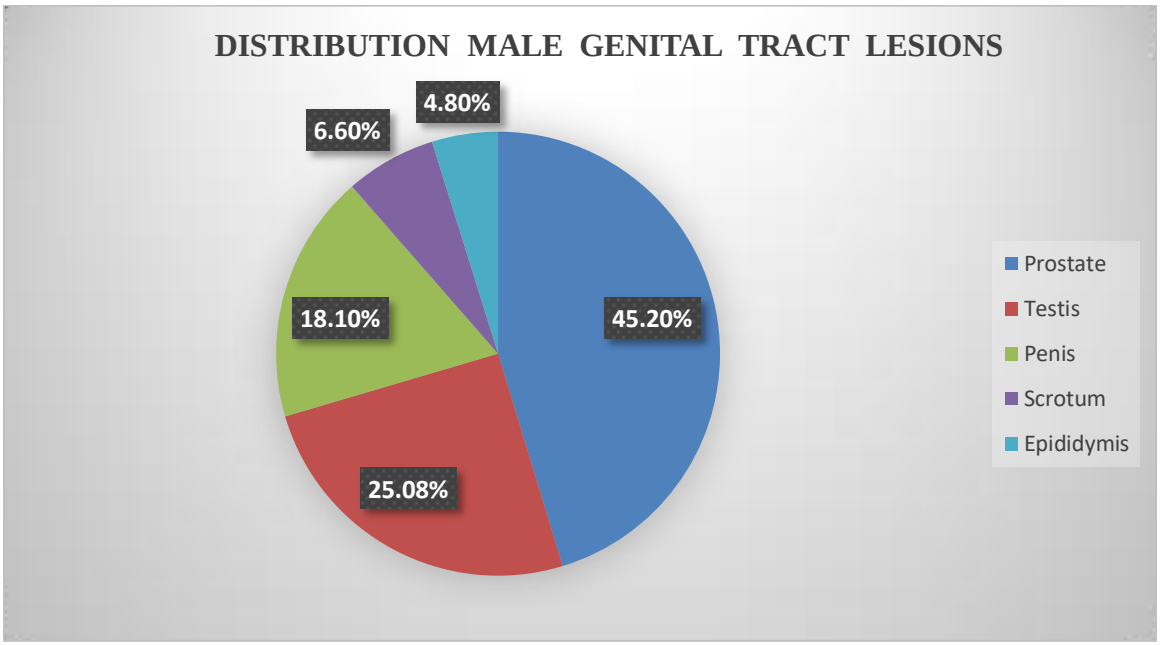

Table 2: Prostatic Lesions (n=130)

DIAGNOSIS	NUMBER OF CASES	PERCENTAGE
Benign Prostatic Hyperplasia	100	76.9%
Benign Prostatic Hyperplasia with Von brunn's nest	3	2.3 %
Prostatic Intraepithelial Neoplasia	12	9.2 %
Adenocarcinoma of Prostate	14	10.7 %
Xanthogranulomatous prostatitis	1	0.7%
TOTAL	130	100 %

Table 3: Testis and Paratesticular Lesions (n=72)

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DIAGNOSIS	NUMBER OF CASES	PERCENTAGE
Pyocele	32	44.4 %
Infarction of testis	3	4.1 %
Atrophic testis	11	15.2 %
Hematocele	4	5.5%
Seminoma	3	4.1 %
Mixed germ cell tumour	1	1.3 %
Yolk sac tumour	1	1.3 %
Xanthogranulomatous orchitis	2	2.7 %
Undescended testis	3	4.1 %
Benign cyst	2	2.7 %
Torsion testis	3	4.1 %
Metastasis	1	1.3 %
Miscellaneous	6	8.3%
TOTAL	72	100%

Table 4: Penile Lesions (n=52)

DIAGNOSIS	NUMBER OF CASES	PERCENTAGE
Phimosis	37	71.1%
Squamous cell carcinoma	15	28.8%
TOTAL	52	100 %

Table 5: Scrotal Lesions (n=19)

DIAGNOSIS	NUMBER OF CASES	PERCENTAGE
Calcinosis cutis	10	52.6%
Sebaceous cyst	5	26.3 %
Lipoma	1	5.2 %
Fournier's Gangrene	2	10.5 %
Plexiform neurofibroma	1	5.2%
TOTAL	19	100%

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Table 6: Epididymal Lesions (n=14)

DIAGNOSIS	NUMBER OF CASES	PERCENTAGE
Chronic Epididymitis	2	14.2 %
Tuberculous Epididymitis	1	7.1%
Xanthogranulomatous epididymitis	1	7.1 %
Acute Epididymo-orchitis	4	28.5 %
Epididymal cyst	4	28.5%
Spermatocele	1	7.1 %
Sperm granuloma	1	7.1 %
TOTAL	14	100 %

Figure 2: Adenocarcinoma of Prostate (H&E Stain, 40x)

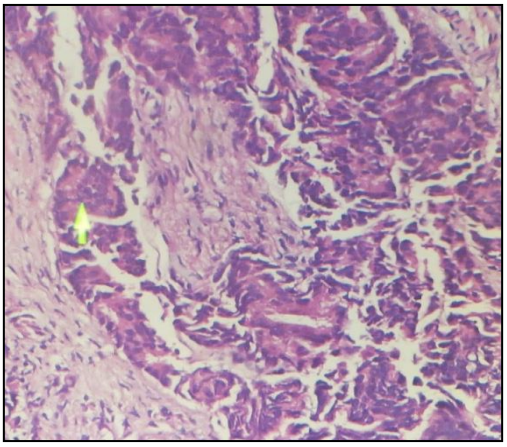

Figure 3a: Pyocele – Gross Image

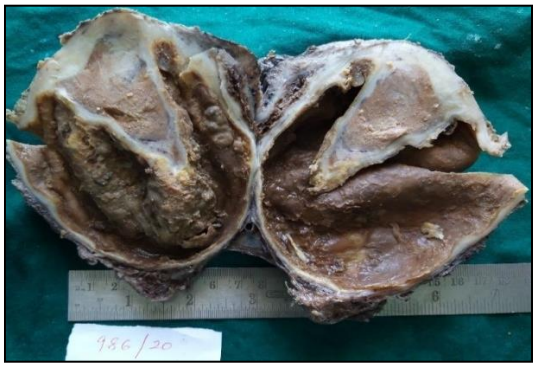

Figure 3b: Xanthogranulomatous Orchitis (H&E Stain, 10x), Inset image shows foamy hitiocytes (40x)

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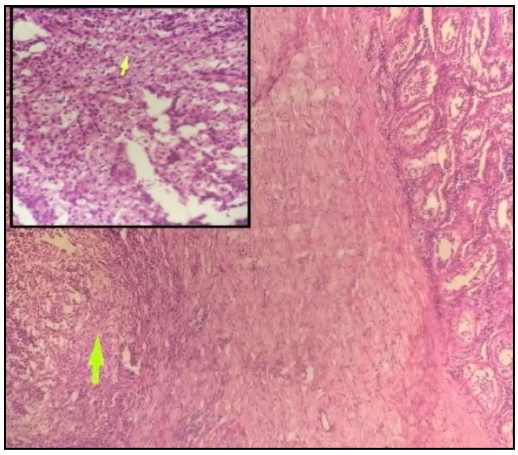

Figure 3c: Malakoplakia of testis (H&E Stain, 40x) showing characteristic Michaelis- Gutman bodies in the cytoplasm of von Hansemann cells.

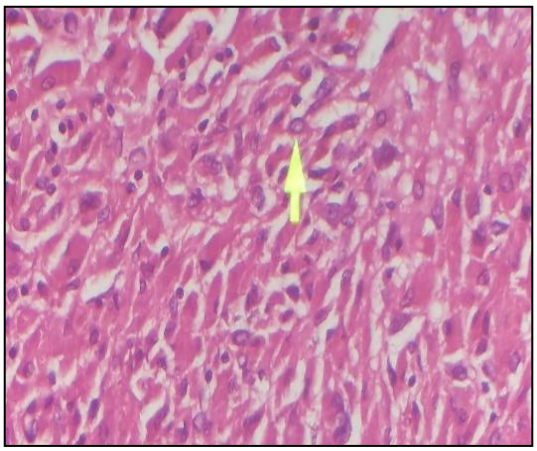

Figure 4a: Squamous Cell Carcinoma of Penis – Gross Image

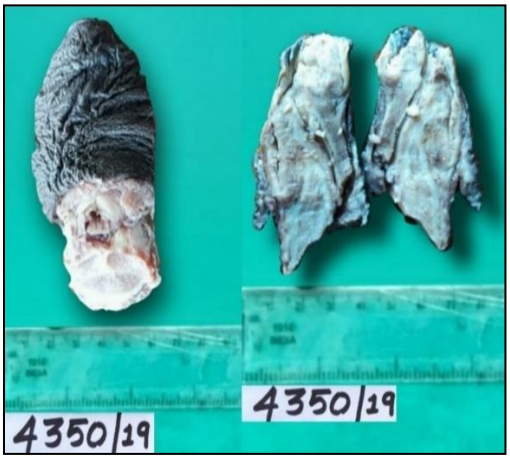

Figure 4b: Squamous Cell Carcinoma of Penis – Grade 1, Well Differentiated (H & E Stain, 40x)

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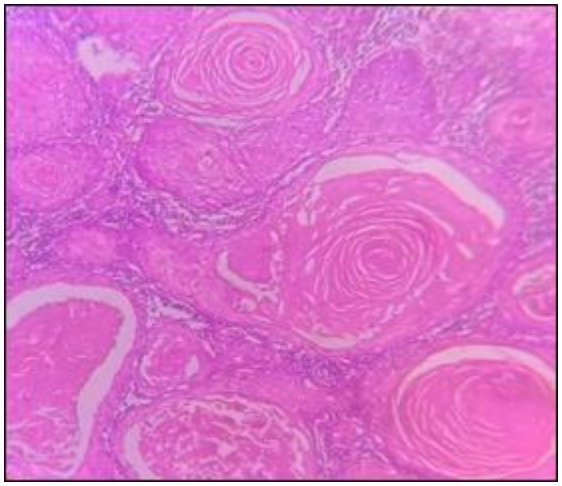

Figure 5a : Calcinosis Cutis of scrotum – Gross Image

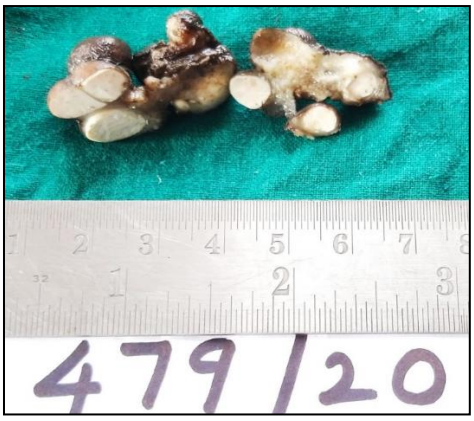

Figure 5b: Gangrene Scrotum – Gross Image

Figure 5c: Plexiform Neurofibroma of scrotum (H & E Stain, 10x), Inset image shows hypocellular proliferation of spindle cells interspersed with collagen bundles (40x).

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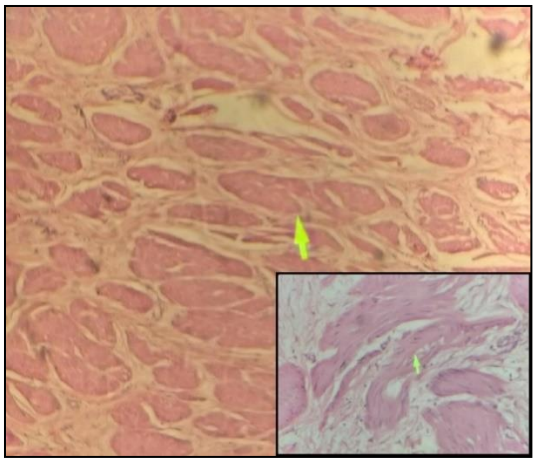
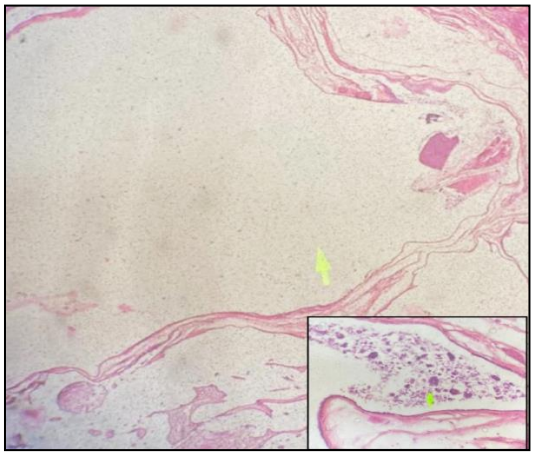


Figure 6 : Spermatocele of Epididymis (H & E Stain, 10x), Inset image shows spermatozoa with histiocytes and foreign body giant cell reaction (40x).



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