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Spectrum of Scrotal Diseases and its Management in A Rural Medical College

Puneet Agrawal

Author's Affiliation: Associate Professor, Department of General Surgery, FH Medical College, Etmadpur, Agra, Uttar Pradesh 283201, India.

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Abstract

Scrotal complaints are common surgical problems encountered in men for whom patients report in surgical out patients department as well as in emergency department. Scrotum is present at a place which is easily accessible, yet patients suffer for long time before presenting.

Objectives: A prospective study was done in department of General Surgery, FH Medical College, Etmadpur, Agra from July' 2016 to December' 2019 to know the correct incidence of pathologies affecting the scrotum, their mode of presentation, diagnosis and the management done for these conditions.

Material & Methods: We identified a total of 184 patients who came to us with some scrotal complaints and followed up all patients in pre, peri and post-operative phases.

Results: Most of the scrotal diseases were seen in individuals below 30–40 years, which is the most productive earning age for the men. Hydrocele was the commonest condition. The most common presenting symptom was swelling in the scrotum (n = 153). Other complaints were pain (n = 76), heaviness, fever or absence of testes. Ultrasound of the scrotum was performed on all patients to confirm the diagnosis. Most common surgical procedure done was eversion of sac.

Conclusion: Hydrocele is the most common disease of scrotum for which patients report. They mostly belong to 30–40 years of age group. The presentation is swelling of scrotum. Ultrasound is primary investigation of choice. Eversion of sac was done for all patients with hydrocele. Patients with no significant pathology were reassured and managed conservatively.

Keywords: Scrotal swelling; Scrotal pain; Hydrocele.

Introduction

Scrotal complaints are common surgical problems encountered in men for whom patients report in surgical out patients department as well as in emergency department.

Scrotum is present at a place which is easily accessible for self examination and assessment, yet due to several factors patients suffer for a long time before presenting to a surgeon. These factors are- poverty, lack of awareness, hesitation and taboo. Due to the long time gap they are diagnosed at an advanced stage with high morbidity and mortality.[8]

According to David JE[1] scrotal pain may be presentation of many extra scrotal conditions e.g., ruptured or dissecting abdominal aortic aneurysm, peritonitis, strangulated inguinal hernia. These conditions require urgent diagnosis and management.

The spectrum of cystic scrotal swellings consists of hydrocele (most common), epididymal cysts,

Corresponding Author: Puneet Agrawal, Associate Professor, Department of General Surgery, FH Medical College, Etmadpur, Agra, Uttar Pradesh 283201, India.

E-mail: puneet265@hotmail.com

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spermatocoele, haematocoele, pyocoele, chylocoele, parasitic cyst and sebaceous cysts.[3] Chronic testicular pain has numerous etiologies, including infection, tumor, hernia, torsion, hydrocele, spermatocele, varicocele, referred pain, trauma and a prior operation.

A prospective study was done in department of General Surgery, FH Medical College, Etmadpur, Agra to know the correct incidence of pathologies affecting the scrotum in this part of India, their mode of presentation, diagnosis and the management done for these conditions.

Materials and Methods

Ethical committee approval was taken before starting the study.

This prospective study was done from July' 2016 to December' 2019. We included patients who presented to us in our outdoor as well as in emergency department of FH Medical College, Etmadpur, Agra with scrotal complaints. Patients were investigated in OPD or in emergency and were admitted to surgical ward if required.

Each patient's history and examination was recorded on a specially prepared proforma created for this study. This includes the mobile number of patient also. We contacted the patient on phone, if he did not come for follow-up.

We also recorded all biochemical and radiological investigations done during the course of treatment. Themedical treatment and surgical intervention were also recorded.

We identified a total of 184 patients who came to us with some scrotal complaints and followed up all patients.

Inclusion criteria

1. Patients who came to us in surgery OPD as well as in emergency department of FH Medical College with some scrotal complaints, during July' 2016 to December' 2019.
2. Patients willing to be included in the planned study.
3. Patients who were having testicular or extra-testicular symptoms and swellings.
4. Swellings arising from skin were also included.
5. Patients of all age groups were included.

Exclusion criteria

1. Patients who refused to give written consent.
2. Patients having inguino-scrotal swellings
3. Systemic diseases involving scrotum.

We included all the patients who fulfilled our inclusion criteria which included the written consent.

Besides recording in the case sheets, we recorded all the data in the study proforma created for this study. We recorded all pre operative and peri and post-operativedata in our proforma.

At the time of admission tetanus prophylaxis was given, if it was not already received by the patient.

At the time of induction antibiotic prophylaxis was given as per the institution policy. Operative steps and findings were also recorded. Corrugated drains were used in most of cases, and were removed within 48 hours, if no drainage was noted.

In post-operative phase we gave scrotal support to all patients. Antibiotics, analgesics and anti-inflammatory medication were given as per our policy. Treatment was modified as per the condition of patient. Complications were also recorded and their management was done and recorded.

All patients were instructed to come for regular follow-up. Lost patients were contacted on phone and were persuaded to visit the OPD.

Results

In our prospective study we studied total 184 patients who reported to us between July 2016 to December 2019 in out patients and emergency department.

Most of scrotal swellings were hydrocele (n = 67, 36.41%) in adults and congenital hydrocele in children (n = 18, 9.78%). Varicocele was also a common problem (n = 16, 8.7%). Inflammatory conditions were also common - Acute Epididymo-orchitis (n = 18, 9.78%), Chronic Epididymo-orchitis (n = 4, 2.17%), Scrotal abscess (n = 8, 4.35%), Abscess testes (n = 3, 1.63%), Filarial scrotum (n = 2, 1.09%). No significant abnormality was found on clinical as well as on radiological investigations in 29 patients (Table 1).

Congenital causes were present in form of congenital hydrocele and absence of testes.

Table 1: Incidence of various diseases

S. No.	Disease	Number	Percentage (%)
1	Hydrocele	67	36.41
2	No clinical abnormality	24	13.04
3	Congenital hydrocele	18	9.78
4	Acute Epididymo-orchitis	18	9.78
5	Varicocele	16	8.70
6	Scrotal Abscess	8	4.35
7	Testicular tumour	7	3.80
8	Haematocele	6	3.26
9	Epididymal Cyst	5	2.72
10	Chronic Epididymo-orchitis	4	2.17
11	Scrotal Calcinosis	4	2.17
12	Absence of Testes	3	1.63
13	Testicular torsion	2	1.09
14	Filarial Scrotum	2	1.09
Total		184	

Most of the scrotal diseases were common in 30–40 years old individuals, which is the most productive earning age for the men. Hydrocele was the commonest condition. Congenital hydrocele was common in less than ten years old children (Table 2).

Table 2: Age vise distribution of diseases

	0–10 yrs	10–20 yrs	20–30 yrs	30–40 yrs	40–50 yrs	>50 yrs	Total
Hydrocele		17	17	19	5	9	67
NAD	5	5	5	9			24
Cong hydrocele	18						18
Ac epididymoorchitis		5	6	5	2		18
Varicocele		6	4	3	2	1	16
Scrotal abscess			3	4	1		8
Testicular tumour		2	2	1	1	1	7
Haematocele				4	1	1	6
Epididymal cyst		1	2	1	1		5
Chepididymoorchitis			2	1		1	4
Scrotal calcinosis			2	1	1		4
Abscence of testes	3						3
Testicular torsion	2						2
Filarial scrotum				1		1	2
Total	28	36	43	49	14	14	184

Most common presenting symptom was swelling in scrotum (n = 153) for which patient came to us. Other complaints were pain (n = 76), heaviness, fever or absence of testes. Most patients are having multiple symptoms (Table 3).

Most of the patients with acute symptoms reported to us in first week of illness (n = 52) (Table 4).

Table 3: Presenting symptoms of patients

S. No.	Presenting symptoms	Number	Percentage (%)
1	Swelling in scrotum	153	83.15
2	Pain/Heaviness in scrotum	76	41.30
3	Fever	28	15.22
4	Absence of testes	3	1.63

Table 4: Duration of symptoms

	<1 week	1–4 weeks	1–3 months	46 months	>6 months	Total
Hydrocele	3	4	12	26	22	67
NAD	4	20				24
Cong hydrocele	8	10				18
Acute epididymo-orchitis	18					18
Varicocele		6	10			16
Scrotal abscess	8					8
Testicular tumour				3	4	7
Haematocele	6					6
Epididymal cyst				2	3	5
Chepididymoorchitis				2	2	4
Scrotal calcinosis					4	4
Abscence of testes	3					3
Testicular torsion	2					2
Filarial scrotum		2				2
Total	52	42	22	33	35	184

Most common investigation done was ultrasound of scrotum which was the initial ordered investigation and was done in all of our patients (Table 5).

Treatment was done according to diagnosis of patient. Table below depicts the various treatments done (Table 6).

Table 5: Investigations done to confirm diagnosis

S. No.	Investigations	Number	Percentage (%)
1	Ultrasound of scrotum ± Abdomen	184	100.0
2	CT / MRI	21	11.4

Table 6: Treatment done

S. No.	Treatment done	Number
1	Eversion of sac	67
2	Conservative treatment	48
3	Ligation of congenital sac, herniotomy	18
4	Incision & Drainage	17
5	Ligation of veins in inguinal canal	16
6	Excision of testes	7
7	Cyst excision	5
8	Excision of scrotal calcinosis	4
9	Exploration and fixing the testes	2

Discussion

Scrotal complaints are common surgical problems encountered in men for whom patients report in surgical out patients department as well as in emergency department.

Scrotum is present at a place which is easily accessible for self examination and assessment, yet due to several factors patients suffer for long time before presenting to a surgeon. These factors are-poverty, lack of awareness, hesitation and taboo. Due to long time gap they are diagnosed at an advanced stage with high morbidity and mortality.[8]

A prospective study was done in department of General Surgery, FH Medical College, Etmadpur, Agra to know the correct incidence of pathologies affecting the scrotum, their mode of presentation, diagnosis and the management done for these conditions.

We included all patients who came in out patients department as well as patients who reported directly to the emergency department.

A detailed history including sexual history was taken and recorded on study proforma. It was followed by thorough general and local examination. A fully informed consent was also taken from patients for including them in the study.

Key points that were recorded in the history of a man with scrotal swellings[7]

1. Age
2. Duration of swelling
3. Onset of swelling (sudden or gradual)
4. Presence of pain
5. Fever
6. Associated lower urinary tract or infective symptoms
7. Recent trauma
8. Previous scrotal surgery including orchidopexy
9. Previous testicular tumour
10. Family history

Key points in the examination of a man with scrotal swelling[7]

1. Site
2. Size
3. Tenderness
4. Irregular/smooth
5. Solid/soft/fluctuant
6. Can upper border be palpated?
7. Transillumination
8. Scrotal appearance
9. Auscultation
10. Inguinal lymphadenopathy (for superficial pathology)

After the history and examination patient was investigated by Ultrasound and Doppler study of scrotum if needed. Biochemical investigations were also done to rule out systemic diseases as Diabetes and sexually transmitted diseases, and various viral diseases. Various tumour markerswere also done if required – Alpha feto protein (AFP), beta subunit of human chorionic gonadotropin (β-HCG), Lactate dehydrogenase (LDH).

According to David JE[1] scrotal pain may be presentation of many extra scrotal conditions e.g., ruptured or dissecting abdominal aortic aneurysm, peritonitis, strangulated inguinal hernia. These conditions require urgent diagnosis and management. If process vaginalis is patent then pus, blood or bowel may reach up to scrotum. Blood within the scrotum may lead to an ecchymotic appearance referred to as "the blue scrotum sign of Bryant." Torsion of the appendix testis is diagnosed by the presence of a small painful, firm paratesticular nodule located at the superior pole of the testis. Inspection of the scrotum may reveal a "blue-dot" sign, which represents the infarcted appendage as seen through the scrotal skin.[1]

Age is an important factor because many conditions responsible for acute scrotum commonly occur in certain age groups. For example, testicular torsion has a peak incidence in the neonatal and postpuberal stages. In contrast, torsion of the appendices (testis and epididymis) most often occurs during early adolescence. Epididymitis occurring in prepuberal boys may be associated with abnormalities involving the genitourinary tract. In adolescent and young adults, most cases are secondary to sexual transmitted diseases.[1]

Our maximum patients were in the age Group 31–40 years (n = 49, 26.63%). 43 patients were belonging to age Group 20–30 years (23.37%). In a study by Kumar he found the same findings. In his study 68 (40%) cases were seen in the age group of 31–40 years.[3] Kemparaj foundthe maximum number of subjects in the 41–50 years age group (n = 52) accounting for 28%, followed by the 31–40 years age group (n = 43).[4]

The spectrum of cystic scrotal swellings consists of hydrocele (most common), epididymal cysts, spermatocoele, haematocoele, pyocoele, chylocoele, parasitic cyst and sebaceous cysts.[3] Chronic testicular pain has numerous etiologies, including infection, tumor, hernia, torsion, hydrocele, spermatocele, varicocele, referred pain, trauma and a prior operation. In many chronic testicular pain no obvious pathology was found in up to 25% of patients.[2] In our study 13.04% (n = 24) patients did not have any significant pathology even after all investigations and were managed conservatively and reassured about not having any significant disease.

In our study hydrocele was most commonly encountered disease. 36.41% patients were having hydroceles (n = 67). Congenital hydrocele (n = 18, 9.78%), acute epididymo-orchitis (n = 18, 9.78%) and varicoceles (n = 16, 8.7%) were other common diseases.

Swelling in scrotum was most common presentation (83.15%), followed by pain, heaviness and fever. Many patients were having combination of symptoms.

Until 1970's clinical examination of the scrotum including palpation and transillumination, was the main stay for the evaluation of the scrotal pathology. This method was however far from adequate because of tender swelling and gross scrotal contents resulting in low sensitivity and specificity often eluding the best of the clinicians. Sonography of the scrotum is simple to perform, safe, easily available noninvasive, without any radiation hazard, relatively inexpensive, widely available and portable. Colour flow imaging allows visualization of morphology and parenchymal blood flow characteristics and has led to increase in the clinical applications of scrotal sonography. It has largely replaced testicular scintigraphy, which had been the examination of choice in patients with suspected torsion.[5]

Magnetic resonance (MR) imaging, because of its superior soft-tissue contrast and multiplanar capabilities, is increasingly being used as a supplemental diagnostic problem-solving tool in cases where scrotal US findings are inconclusive or nondiagnostic. In addition to morphology, lesion location, and tissue characterization (e.g., fat, blood products, granulation tissue, and fibrosis), scrotal MR imaging provides important information that can affect surgical planning and improve patient care. MR imaging also is helpful for differentiating testicular and extratesticular lesions, distinguishing between benign and malignant lesions, and evaluating the local extent of disease.[6]

Ultasound of scrotum and abdomen was our initial basic investigation and was done in all of our patients. Magnetic resonance or CT scan was required in only 11.4% of patients (n = 21).

In 13.04% of our patients no obvious pathology was found on clinical examination and no significant pathology was detected on biochemical and radiological investigations. Patients were managed conservatively and reassured for any pathology. Patients were kept on follow-up.

The testis is covered by two layers of the tunica vaginalis, which have both secretory and absorptive ability. The balance of the secretory and absorptive functions of these layers results in only a small accumulation of fluid; deficient absorption of fluid causes hydrocele.[9] 36.41% of patients were diagnosed as vaginal hydrocele. Preoperative assessment was done and all patients were treated by jabouley's procedure, which is most popular surgical technique to treat hydrocele patients in our institution. 9.78% of patients were having congenital hydrocele which was managed by herniotomy under general Anesthesia.

A varicocele is a dilatation of the testicular vein and the pampiniform venous plexus within the spermatic cord. Although rare in pediatric populations, the prevalence of varicoceles markedly increases with pubertal development to approximately 15% by the late teenage years, a rate similar to that in adult populations.[10,11] Patients should be examined in a warm room in standing and supine positions and with and without a Valsalvamanoeuvre. Classically, varicoceles are graded according to the following criteria: Grade 1 (small): palpable only with Valsalvamanoeuvre Grade 2 (medium): palpable with the patient standing Grade 3 (large): visible through scrotal skin, palpable with the patient standing. After examining in an upright position, the patient should be reexamined in the supine position. Idiopathic varicocele is more prominent in the upright position and disappears in the supine position. Secondary varicoceles, especially on the right side, can be caused by retroperitoneal tumors or lymphadenopathy and do not change size as noticeably as in the supine position.[12] In adults, treatment is straightforward and is proposed whenever

1. there is a palpable varicocele,
2. there is documented infertility,
3. it has been confirmed that there is no female infertility problem, and
4. there is at least 1 abnormality found on semen Analyzis.[13]

Treatment options include open surgical approaches, laparoscopic varicocele ligation, and percutaneous transvenous embolization.[12] 8.7% of our patients were diagnosed as a case of varicocele and were treated by ligations of spermatic veins at inguinal canal.

Acute epididymo-orchitis is an acute inflammatory disease of both the epididymis and ipsilateral testis. It most often presents unilaterally and occurs because of a specific or nonspecific urinary tract infection (urethritis, prostatitis, or cystitis) that seeds to the epididymis and testis through the lymphatic vessels or *ductus deferens*. It can also be the result of viral infections, trauma, and autoimmune disorders. A bladder outlet obstruction, transurethral diagnostic or surgical manipulations, surgeries on the lower urinary tract,

or even different urogenital malformations is also thought to play a significant role. Treatment should be started immediately after diagnosis and includes antibiotics, analgesics, and, if necessary, surgery.[14] In our study we got 9.78% of patients with acute epididymo-orchitis. All patients were managed conservatively and improved with antibiotics and anti-inflammatory drugs.

Epididymal tuberculosis is a rare extrapulmonary form of tuberculosis that occurs in young adults.[15] Patients with this disease may have no obvious clinical symptoms or only mild symptoms. The disease typically develops slowly and early diagnosis is difficult; delayed diagnosis and misdiagnosis are common. Recently, due to the emergence of multi-drug resistant bacteria, anti-tuberculosis drug resistance, and the widespread use of glucocorticoids, the incidence of male genital tuberculosis, including epididymal tuberculosis, has been increasing worldwide. Surgical treatment combined with chemotherapy has been the preferred treatment approach for this disease.[16] Reproductive system tuberculosis can occur in any age, mainly in men 30–50 years old.[17] All our cases were more than twenty years old.

Scrotal calcinosis is a benign disease of the scrotal skin. It is defined as the existence of multiple calcified and asymptomatic nodules of the scrotum skin wall. Some authors think that it is the result of dystrophic calcifications of preexisting structures such as epidermal cysts, others did not find any evidence of preexisting cystic structures and believe this condition to be idiopathic.[18] We had 4 cases of scrotal calcinosis in our study. All cases were investigated and involved tissue was excised.

Lymph scrotum is a condition characterized by the presence of lymphatic vesicles on the surface of the scrotal skin that can easily rupture, giving rise to drainage of the whitish secretion typical of the disease. This secretion serves as an excellent culturing medium that favors repeated bacterial infections. It may trigger progression of the condition to lymphedema and scrotal elephantiasis.[19] We had two cases of filarial scrotum with us during this study. They were treated with anti-filarials and improved with the treatment.

In suspected cases of testicular tumour we performed high inguinal orchiectomy. In Biopsy report two cases were of yolk sac tumour, two cases were mixed cell type of embryonal carcinoma and seminoma, and one case of each seminoma, teratoma and mixed embryonal and yolk sac tumour. After the biopsy report we sent the patient to oncologist for chemotherapy and radiotherapy.

Treatment for various diseases was according to condition of the disease, which ranges from conservative treatment to operative intervention namely eversion of sac, herniotomy, incision & drainage, excision of cyst and calcinosis, fixing of testes and ligation of veins.

Conclusion

Scrotal complaints are common surgical problems encountered in men for whom patients report in surgical out patients department as well as in emergency department. Spectrum of diseases varies from Hydrocele, congenital hydrocele, varicocele, epididymo-orchitis, abscess, tumour etc. No significant abnormality was also found in many patients. Patients were managed by operation as well as by conservative treatment also.

Public should be made aware about self examination of scrotum. So the patients will be able to report to the surgeon early with better outcome.

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