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Original Research Article

Analysis of Scrotal Swellings in a Tertiary Care Hospital

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Abstract:

Introduction: The conditions of acute scrotum can occur due to a wide variety of causes. Testicular torsion, epididymo-orchitis & Fournier's gangrene deserves special attention because of their prevalence and severity. Objectives of the study were to study the diagnostic and therapeutic modalities adopted in the management of scrotal swellings in our hospital and their outcome; and to study the relationship of certain scrotal swelling with male infertility.

Materials and Methods: This cross-sectional study was done on a total of 110 patients with cystic swellings from the testes & its coverings, epididymis, spermatic cord & from scrotal skin.

Results: 7.3% observed to have Infertility in the present study. About 22.7% had Epididymo orchitis, 21.8% had hydrocele, 20.9% had varicocele, 10% had Epididymitis, 7.3% had Epididymal cyst, 5.5% had Orchitis, 4.5% had Hematocele, 2.7% had Torsion testis, 1.8% had Spermatocele, 1.8% had Carcinoma testis, 0.9% had Pyocele. 41.8% had undergone conservative treatment and 58.2% had underwent surgical treatment. In the present study, 7 patients out of 23 had infertility and 1 patient out of 25 with Epididymo orchitis had infertility. All the carcinoma testis, Hematocele, Hydrocele, Pyocele, Spermatocele, Torsion of testis, Varicocele and 37.5% of Epididymal cyst, 4% of epididymo orchitis underwent surgical treatment. Epididymitis, Orchitis have underwent conservative treatment.

Conclusion: The younger age group and manual labourers are more prone to scrotal swellings. There is a resurgence of thorough clinical examination to establish a diagnosis in patients with scrotal swelling. Majority have right sided swelling. Majority of the swelling are due to Epididymo orchitis, hydrocele and varicocele. About 7% have infertility and majority are due to varicocele. Most of the study subjects present with scrotal swelling needing surgical modality treatment.

Keywords: Scrotal swelling, hydrocele, infertility, varicocele.

Introduction

Scrotal swellings are one of the commonest clinical entities in surgical practice. Though the scrotum lies hanging down from the lower abdomen and is easily accessible for self-examination it is pitiable to note that even today we come across some late cases of testicular tumor, which is a curable disease if we come across early. [1] The conditions of acute scrotum can occur due to a wide variety of causes. These include torsion of testis, torsion of appendix testis, epididymo-orchitis, scrotal wall abscess, Fournier's gangrene, scrotal haematoma, testicular tumour and some of the miscellaneous conditions like 'idiopathic scrotal oedema, scrotal fat necrosis, Henoch Schonlein purpura, ischemic orchitis etc.' Amongst these conditions - testicular torsion, epididymo-orchitis & Fournier's gangrene deserve special attention because of their prevalence and severity. Sometimes scrotum can become swollen without any apparent cause. This condition, known as idiopathic scrotal edema, is thought to be caused by streptococcus hemolyticus and Cl. Welchii. Scrotum can become swollen due to systemic

illnesses causing generalized edema, as in congestive cardiac failure (CCF), nephritic syndrome, and cirrhosis of liver and hypoproteinaemic states. [2] In the coastal area, elephantiasis of the scrotum can occur due to infection by the microfilaria, W. Bancrofti, the treatment of which is difficult. Fournier's gangrene of scrotum is a condition thought to be caused by obliterative endarteritis of scrotal vessels with super infection. Finally testicular tumors, though forming only 1-2% of the malignancies in the male, are essentially curable. [3]

Scrotal swelling may be acute or chronic and painful or painless. Abrupt onset of painful scrotal swelling necessitates prompt evaluation because some conditions, such as testicular torsion and incarcerated inguinal hernia, require emergency surgical management. Routine investigation like urine analysis, haemogram, blood sugar, urine C/S, wound swab C/S and special investigations like USG are not always very much conclusive to the final diagnosis but are supportive to clinical diagnosis. Pulsed Doppler sonography with mechanical sector scanner is a better method than colour Doppler USG for the diagnosis of testicular torsion. Since the scrotal disease may represent inherent disease of testis, epididymis and other intrascrotal structures which may affect the entire life of the patient in the form of sterility, so they need aggressive treatment. Conservative treatment with rest, scrotal support, antibiotics, and analgesics are effective in case of epididymo-orchitis. Emergency surgical exploration proved to be the best option in case of Torsion testis, Fournier's gangrene, Pyocele & Hematocele. It doesn't involve major expenditure with negligible surgical morbidity, and proved to be the best investigation modality as definite diagnosis can be reached in every case with exploration.

The present study was conducted to study the various causes for scrotal swellings, their pattern, various clinical presentations of patients with swelling of the scrotum and to analyse the diagnostic and therapeutic modalities adopted in the management of scrotal swellings in our hospital and their outcome. Objectives of the study were to study the diagnostic and therapeutic modalities adopted in the management of scrotal swellings in our hospital and their outcome; and to study the relationship of certain scrotal swelling with male infertility.

Materials and Methods

The present study was a cross-sectional study conducted between 1.5 February 2021 to August 2022, at Tirumala hospitals Vzianagaram'. A total of 110 patients were selected after applying following inclusion and exclusion criteria. Inclusion criteria: Patients aged between 13 to 60yrs; Cystic swellings from the testes & its coverings, epididymis, spermatic cord & from scrotal skin. Exclusion criteria: Cystic inguino - scrotal swellings and patients aged above 60 years. Patients admitted with complaints swelling of scrotum willing to give written consent were included in the study.

Detail history was taken followed by clinical examination for probable diagnosis. Relevant hematological and radiological investigation was done to confirm the diagnosis. The diagnosis in operated cases was confirmed after exploration. Qualified participants as per the selection criteria were given adequate information about the procedure in their local language.

Clearance from ethical committee and informed written consent from study participants was obtained. Data Entry was done using Microsoft excel 2013 and analysis done using SPSS V 16. Qualitative data was expressed in frequencies and percentages and Quantitative data in mean and standard deviation. Unpaired t test for intergroup comparison was used. Chi square test was used to qualitative study. Results are presented in the form of percentages, mean and SD where appropriate. A p value of <0.05 was considered statistically significant.

Results

Table 1 shows the distribution of various parameters among study participants. Figure 1 shows the USG diagnosis observed in the study. Table 2 shows the relationship between diagnosis and infertility. Table 4 shows the relationship between treatment and infertility. A total of 46 cases (41.8%) were treated conservatively and remaining 64 (58.2%) were treated surgically.

Table 1: Distribution of various parameters among study participants (n=110)

Parameter			**Parameter**		
Age-group in years	**Freq.**	**%**	**Duration of swelling in days**	**Freq.**	**%**
16 – 30	38	34.5	<15 days	50	45.5
31 – 40	39	35.5	16 – 60 days	10	9.1
41 – 50	19	17.3	61 – 100 days	6	5.5
51 – 60	14	12.7	101 – 365 days	38	34.5
Mean ± SD	35.25 ± 11.87		>365 days	6	5.5
Occupation	**Freq.**	**%**	**Presenting symptom**	**Freq.**	**%**
Manual labourer	73	66.4	Pain	55	50
Sedentary	37	33.6	Fever	33	30

Side	**Freq.**	**%**	Painless swelling	55	50
Right	63	57.3	**Predisposing factors**	**Freq.**	**%**
Left	41	37.3	Idiopathic	75	68.2
Bilateral	6	5.5	Past history	5	4.5
Infertility	**Freq.**	**%**	STD	2	1.8
Yes	8	7.3	Trauma	9	8.2
No	102	92.7	Urinary symptoms	19	17.3

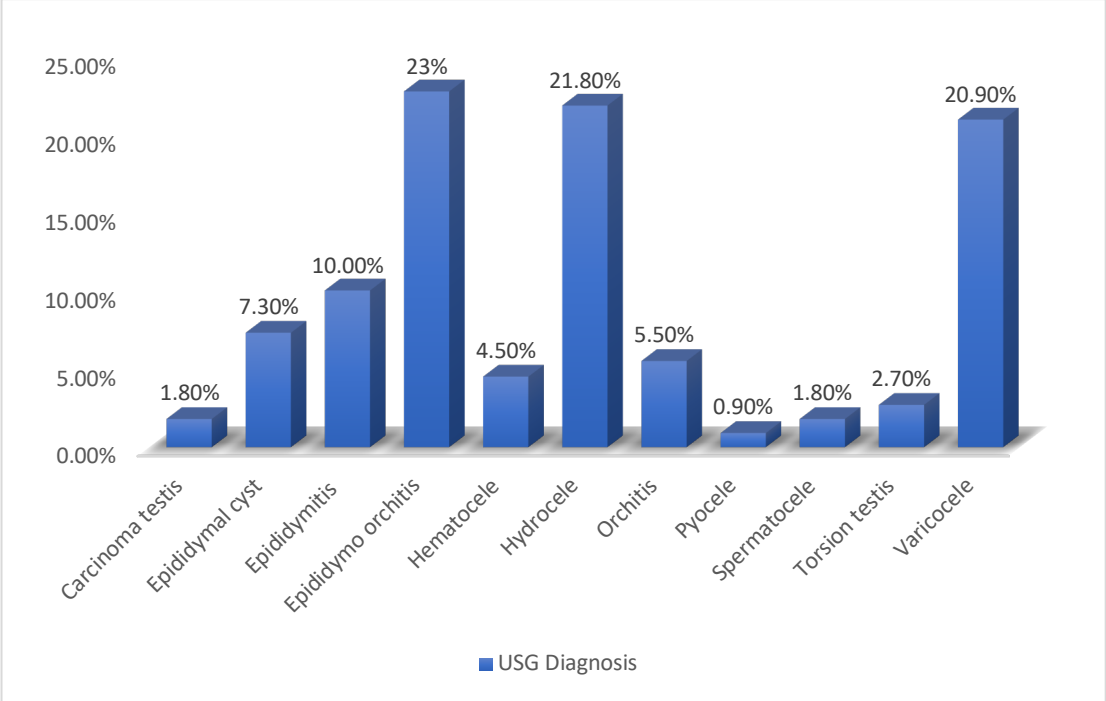

Figure 1: USG diagnosis in the study

Table 2: Relationship between Infertility and diagnosis

Diagnosis	**Infertility**	
	Yes	**No**
Carcinoma testis	0 (0.0%)	2 (100.0%)
Epididymal cyst	0 (0.0%)	8 (100.0%)
Epididymitis	0 (0.0%)	11 (100.0%)
Epididymo orchitis	1 (4.0%)	24 (96.0%)
Hematocele	0 (0.0%)	5 (100.0%)
Hydrocele	0 (0.0%)	24 (100.0%)
Orchitis	0 (0.0%)	6 (100.0%)
Pyocele	0 (0.0%)	1 (100.0%)
Spermatocele	0 (0.0%)	2 (100.0%)
Torsion testis	0 (0.0%)	3 (100.0%)
Varicocele	7 (30.4%)	16 (69.6%)
Total	8 (7.3%)	102 (92.7%)
Chi square test = 23.55, p=0.008* Sig.		

Table 3: Relationship between Diagnosis and Treatment.

Diagnosis	**Treatment**	
	Conservative	**Surgical**
Carcinoma testis	0 (0%)	2 (100%)
Epididymal cyst	5 (62.5%)	3 (37.5%)
Epididymitis	11 (100%)	0 (0%)
Epididymo orchitis	24 (96%)	1 (4%)
Hematocele	0 (0%)	5 (100%)
Hydrocele	0 (0%)	24 (100%)
Orchitis	6 (100%)	0 (0%)

Pyocele	0 (0%)	1 (100%)
Spermatocele	0 (0%)	2 (100%)
Torsion testis	0 (0%)	3 (100%)
Varicocele	0 (0%)	23 (100%)
Total	46 (41.8%)	64 (58.2%)
Chi square test = 98.34, p=0.001* Sig.		

Discussion

In the present study, the mean age of the study participants was 35.25 ± 11.87 years. Majority belong to 16 – 40 years age group, i.e., 34.5% in 16-30 years and 35.5% in 31-40 years age group, 17.3% belong to 41-50 years and 12.7% in 51-60 years age group. In the study conducted by Munda VS et al., [4] reported that the youngest patient was 7-year-old and the oldest was 68 years (38.91±12.46 years). Maximum number of cases was seen in the age group between 31-50; accounting for 61.35% of cases (n=107). In the present study, 45.5% had duration of swelling for <15 days, 9.1% had swelling for a duration of 16-60 days, 5.5% had for 61-100 days, 34.5% had swelling for 101-365 days and 5.5% had the swelling for >365 days. In Munda VS et al., [4] study the duration of symptoms ranged from 2 weeks to 12 years. Most cases presented in the camp had symptom duration of 1 to 2 years– 33.9% (n=61), followed by 2 to 5 years– 23.23% (n=42); 12 cases (6.67%) had symptoms for more than 5 years. Bhovi et al., [5] study reported that the duration of symptoms ranged from as early as three hours in a case of testicular torsion to 2 years in a case of primary vaginal hydrocele. Kempraj et al., [6] reported that mean duration of symptoms for patients with cystic swellings of the scrotum was 17.3 months. It ranged from one month to three years.

Based on predisposing factors, Idiopathic in 68.2%, 17.3% with urinary symptoms, 4.5% with Past history of swelling, 8.2% had trauma and 1.8% had STD. related to infertility, 7.3% observed to have Infertility in the present study. In the present study, 7 patients out of 23 had infertility and 1 patient out of 25 with Epididymo orchitis had infertility. This observation was statistically significant. Approximately 15% of couples worldwide have infertility; half of these cases are attributable to male factors. Varicocele (VC), a vascular disease characterized by abnormal enlargement of the pampiniform plexus veins, is a highly treatable cause of infertility observed in 35–40% of men with infertility. [7]

VC is left-sided in at least 85% of cases; right-sided VCs are rare. [8-9] surgical ligation or embolization of the spermatic cord vein can improve semen quality, sperm DNA integrity, mitochondrial activity, and assisted reproductive cycle outcomes. [10] It has been suggested that VC-mediated infertility (VMI) is not caused by a single factor but is the result of the synergy of genetic and other molecular factors, such as hypoxia, oxidative stress, and nutrient deprivation. However, some patients fail to regain fertility after surgery, antioxidant therapy, or other treatments. Interestingly, Mazdak Razi et al., [11] proposed that VMI is caused by endoplasmic reticulum stress and the unfolded protein response, which promote testicular cell apoptosis, and could be treated with antioxidants and anti-inflammatory molecules. In addition to the above factors, there are likely other factors that contribute to irreversible testicular damage. Evidence suggests that VC is associated with anti-sperm antibodies (ASAs), spermatogenesis and testosterone secretion abnormalities, and cytokine production in the testes. Moreover, inhibition of inflammation can alleviate VC-mediated pathogenesis. The normal function of the testis depends on its immune tolerance mechanism. [12]

In the present study, 22.7% had Epididymo orchitis, 21.8% had hydrocele, 20.9% had varicocele, 10% had Epididymitis, 7.3% had Epididymal cyst, 5.5% had Orchitis, 4.5% had Hematocele, 2.7% had Torsion testis, 1.8% had Spermatocele, 1.8% had Carcinoma testis, 0.9% had Pyocele. Chauhan et al., [13] reported that most common diagnosed on the basis of USG was hydrocele. 3% of patients were with neoplasm (seminoma). Munda VS et al., [4] study reported that Primary vaginal hydrocoele was the commonest cause accounting for 78.9% (n=142) of all scrotal swellings in the study, followed by epididymal cysts 7.8% (n=14) and sebaceous cysts 7.9% (n=17); 6 cases had multiple sebaceous cysts. Kempraj et al., [6] reported that Hydrocele was the most common cystic swelling of the scrotum encountered. It comprised 75.8% of the study population. Epididymal cysts accounted for 19.4% of the study population. Ruban et al., [14] reported that primary vaginal hydrocoele was the commonest cause of cystic swellings 60 of 100 cases accounting for 60% of the study, followed by epididymal cyst, 28 cases accounting for 28%. Four cases of haematocoele were noted and 4 cases of Sebaceous cyst, of which, 2 was multiple sebaceous cysts, 2 cases each of spermatocoele and pyocoele. Mahala et al., [15] reported that upon USG screening hydrocele was seen in 33 cases (33.00%), 31 cases were diagnosed with epididymo orchitis (31.00%), varicocele was observed in12(12.00%),6(6.00%) cases each of scrotal abscess & epididymal cyst were noted and 5 cases of testicular tumour (5.00%) were encountered. 41.8% had underwent conservative

treatment and 58.2% had underwent surgical treatment. All cases of carcinoma testis, Hematocele, Hydrocele, Pyocele, Spermatocele, Torsion of testis, Varicocele and 37.5% of Epididymal cyst, 4% of epididymo orchitis underwent surgical treatment. Epididymitis, Orchitis have underwent conservative treatment.

Chauhan et al., [13] reported that management of cases was done with different treatment modalities, 28% patients who were treated conservatively, Eversion of Sac for hydrocele was practiced in 31% patients, and Varicocelectomy for varicocele in 13% of patients, Incision and drainage procedure was put into practice for 5% of patients suffering from scrotal abscess. Whereas Conservative means followed by Eversion of Sac in 10% of patients and Conservative Management followed by Varicocelectomy in 3% of patients, Detorsion with Orchidopexy in 4% of patients and High Inguinal Orchidectomy in 3% of patients, and Eversion of Sac with Varicocelectomy 3% patients. Testicular Mass was viable in 3% of the cases. Kempraj et al., [6] reported that the most performed surgery was Jabouley's procedure (in 57% of patients). Lord's plication was performed in 17.2% and excision in 20.4%.

Mahala et al., [15] reported that surgically managed patients of scrotal swelling Lord's plication was done in 33 cases (47.14%) followed by Palomo's operation in 11 cases (15.71%) and varicocelectomy for 1 case (1.42%) of recurrent varicocele while Cyst excision was done in 10 cases (14.28%), incision and drainage in 5(7.14%) & high inguinal orchidectomy were performed in 5 cases (7.14%). 3 cases (4.28%) of testicular torsion were managed by orchidectomy with contralateral orchidopexy. Only 1 case (1.42%) underwent epididymectomy. Orchidectomy was done in 1 case (1.42%) of scrotal abscess. Conclusions are that the younger age group and manual labourers were more prone to scrotal swellings. There is a resurgence of thorough clinical examination to establish a diagnosis in patients with scrotal swelling. Majority have right sided swelling. Majority of the swelling are due to Epididymo orchitis, hydrocele and varicocele. Study observed that 7.3% had infertility and majority were due to varicocele. Most of the study subjects presented with scrotal swelling needing surgical modality treatment.

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