

SPECTRUM OF SCROTAL PATHOLOGIES BY ULTRASONOGRAPHY IN CASES OF NONTRAUMATIC PAIN AND / OR SWELLING

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ABSTRACT

BACKGROUND & OBJECTIVE: There is a wide range of spectrum of pathologies which affects scrotum. Ultrasonography (US) findings help narrow the differential to benign or malignant causes. The purpose of our study is to evaluate different non traumatic scrotal pathologies in complain of pain and swelling in scrotum and to describe role of USG as a primary investigation of choice for different scrotal pathologies.

METHOD: This paper reviews the incidence of different scrotal pathologies in total 46 patients presenting with complain of pain/swelling or both in scrotum for USG in Radiology Department of S.S.G. Hospital & Medical College Baroda in a period of 18 weeks study.

RESULTS: Largest number of patients in this study, fall in the age group of 21-40 years and patients with exclusive testicular pathologies were 10 in number (i.e 21.7%) of all cases, out of which most common pathology was orchitis, while extra testicular scrotal pathologies were observed in 21 cases (i.e.45%) and majority of them were hydrocele. The most common cause of pain and swelling in scrotum was due to the epididymo-orchitis.

CONCLUSION: USG is primary, non-invasive diagnostic technique without any radiation hazard, which is easily available and effective and can be an investigation of choice for different scrotal pathologies.

KEY-WORDS: Scrotal swelling, Scrotal pathology, ultrasonography, color-dopple.

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INTRODUCTION

Acute scrotal pain is a common clinical problem, symptoms are often vague and

clinical findings are nonspecific. Ultrasound examination of acute scrotum can differentiate surgical emergency condition like testicular torsion from non

surgical emergency like epididymo-orchitis as well ultrasonography can evaluate testicular from extra testicular pathologies and cystic from solid pathologies. Being easily available non invasive and cheap investigation ultrasound also provide diagnosis in scrotal pathologies with 90% sensitivity.^{1,2,3} Due to the advances in high-resolution gray-scale and color doppler the scrotal USG has become an ideal imaging modality to evaluate the acute scrotum in all the patients.^{4,5,6}

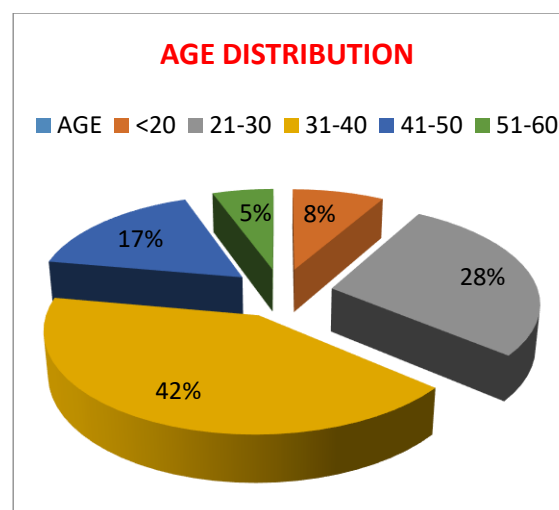
Knowledge of the normal appearance of the testis and scrotal contents and familiarity with the many pathologic conditions that may affect the scrotum are essential for expedient and accurate diagnosis of scrotal pathology.⁴ The Tunica vaginalis and the epididymis are two important structures for the scrotal examination. The Tunica Vaginalis is a potential space that encompasses the anterior two thirds of the testis where fluid from a variety of sources may accumulate. The epididymis lays posterolateral to the testis and must be differentiated from a scrotal mass. The spermatic cord, which consists of the testicular vessels and the vas deferens, is connected to the base of the epididymis.⁷ The present study was conducted to evaluate different non traumatic scrotal pathologies in complain of pain and swelling in scrotum and to analyze the role of USG as a primary investigation of choice for different scrotal pathologies.

This prospective and observational study was carried out in the Radiology Department of S.S.G. Hospital & Medical College, Baroda, Gujarat after taking the due permission from Institutional Ethics Committee. All the patients who had come with chief complain of pain or swelling or both in scrotum were selected for the present study during a period of 18 weeks. Total 46 patients were brought to us with complained of acute scrotum and after taking consent all patients were examined by USG. The scrotal ultrasound was performed in supine position and a rolled towel was placed between the legs to support the scrotum and the penis was placed superiolaterally with a sling and draped with towel. All USG were done with high frequency (7MHz) linear probe on i-u 22 and Esaote My Lab 40 machine. Higher-frequency transducers allow us greater resolution of scrotal contents and lower frequency transducer were employed for edematous scrotum. Tranverse and side by side images of both the testes were obtained to compare echogenicity, flow, echotexture and scrotal wall thickness. Color Doppler and power Doppler ultrasound were also used to detect perfusion and verify the abnormal flow. All the data were collected in predesigned proforma and analyzed with the help of computer and comparison was done with the observations of various Indian and foreign authors.

MATERIAL AND METHOD

Scrotal Pathologies Detected by USG

Pathology	No. Of Cases	Testicular	Extra Testicular
Epididymoorchitis	10	Y	Y
Epididymitis	3	N	Y
Orchitis	4	Y	N
Epididymo-orchitis with funn	5	Y	Y
Funiculitis	1	N	Y
Hydrocele	7	N	Y
Pyocele	1	N	Y
Testicular abscess	1	Y	N
Torsion of testis	2	Y	?
Infarcted testis	1	Y	N
Seminoma of testis	1	Y	N
Testicular microlithiasis	1	Y	N
Tubal ectasia	1	N	Y
Epididymocele/spermatocele	1	N	Y
Extratesticular dermoidcyst	1	N	Y
Encysted hydrocele of cord	1	N	Y
Varicocele	3	N	Y
Scrotal wall edema/hematoma	2	N	Y
	Total =46	Total=10 cases exclusively testicular	21 cases extratesticular Exclusively
			15 cases both extra and Intratesticular



RESULT AND DISCUSSION

Out of 46 cases largest number of patients fall in age group of 21-40 years, which is 69.4 % of all cases. 3 cases were in age group of ≤ 20 (8%) and rest 20% (11 cases) were in age group of 40-60 year (as shown in Pie Chart). Out of all cases patients with exclusive testicular pathologies were 10 in number (i.e 21.7%), out of which most common pathology was orchitis (fig-1,2,12). Exclusive Extra testicular scrotal pathologies were seen in 21 cases, of which most common pathology was hydrocele (fig-8) and total 15 cases (32%) were of both extra and intratesticular pathologies.

There were total 18 cases who were having epididymitis out of which total 3 cases were of exclusive epididymitis and 15 cases were of epididymitis with orchitis/funiculitis. (fig-2). The most common cause of pain and swelling in the scrotum is seem to be epididymo-orchitis (fig-12). Out of 15, 8 cases of epididymo-orchitis (fig-12) presented with variable amount of hydrocele. Funiculitis (fig-10) was seen in 2.1% cases and varicocele (fig-11) was

found in 6.5% cases while encysted hydrocele of cord was seen in 2.1% cases. A rare case of extratesticular mature cystic teratoma was also observed in one case (fig-7). The cases of typical intratesticular abscess, testicular microlithiasis, tubal ectasia of epididymis, non seminomatous germ cell tumour of testis, scrotal filariasis were also encountered during the present study.

The USG features of epididymitis is characteristic, the epididymis may be involved in focal areas (often the lower is affected first) or in a global pattern, with enlargement, decreased reflectivity and increased Colour Doppler flow (fig-12). The increased Colour Doppler flow to the inflamed epididymis is the mark for hyperemia and conveniently aids the diagnosis of epididymitis.^{1,6,7,10} There is often a reactive hydrocele. The infection may spread to the adjacent testis (epididymo-orchitis), seen as patchy areas of low reflectivity and increased Colour Doppler signal,^{4,8} an appearance that may persist for several months following treatment.

Epididymal cysts³ are most commonly found in the epididymal head, contain clear serous fluid and on USG demonstrate features typical of a cyst; anechoic structure with posterior acoustic enhancement (fig-2). A spermatocele (fig. 2-a,b,c) consists of cystic dilatation of tubules of efferent ductules and occurs in the epididymal head, often containing low reflective debris representing spermatozoa, lymphocytes, cellular debris fat and proteinaceous fluid. The differentiation between a spermatocele and a simple cyst is unimportant and often

indistinguishable on USG. A spermatocele is more common than an epididymal cyst and more frequent in the epididymal head.³

A varicocele was considered to be present on high frequency USG if 2 or more veins could be identified with at least 1 vein having greater diameter of 3 mm or greater. A varicocele was considered to be present by color Doppler USG if retrograde flow was identified within the pampiniform plexus spontaneously and / or during Valsalva maneuver (fig-9).¹² The left-sided predominance probably occurs because the venous drainage on the left side is into the renal vein, as opposed to the right spermatic vein, which drains directly into the vena cava. The cases with acute testicular torsion were diagnosed and later confirmed on surgery with findings of enlarged unilateral testis and decreased vascularity on Doppler USG. Prompt diagnosis is necessary because torsion requires immediate surgery to preserve the testis. The testicular salvage rate is 80% to 100% if surgery is performed within 5 to 6 hours of the onset of pain, 70% if surgery is performed within 6 to 12 hours, and only 20% if surgery is delayed for more than 12 hours (fig-5).^{7,8,11} Color Doppler USG is the most useful and most rapid technique to establish the diagnosis of testicular torsion and to help distinguish torsion from epididymo-orchitis. In torsion, blood flow is absent in the affected testicle or significantly less than in the normal, contralateral testis (fig-5).

A diagnosis of testicular malignancy was made in a single patient with a heterogenous mass within the testis with calcifications (fig-10). USG abdomen also showed enlarged retroperitoneal nodes.

FNAC showed a non seminomatous germ cell tumor. High resolution USG and color and power Doppler are accurate with 90 % sensitivity and 80% specificity hence it is used for screening and follow up.⁴ High resolution usg and color Doppler can differentiate epididymo-orchitis from

torsion (fig-5) in acute scrotal pain as well USG can differentiate solid from cystic masses and extratesticular lesions from intratesticular lesions.^[10,11] USG is also useful for diagnosis of subclinical varicocele (fig-9).¹²

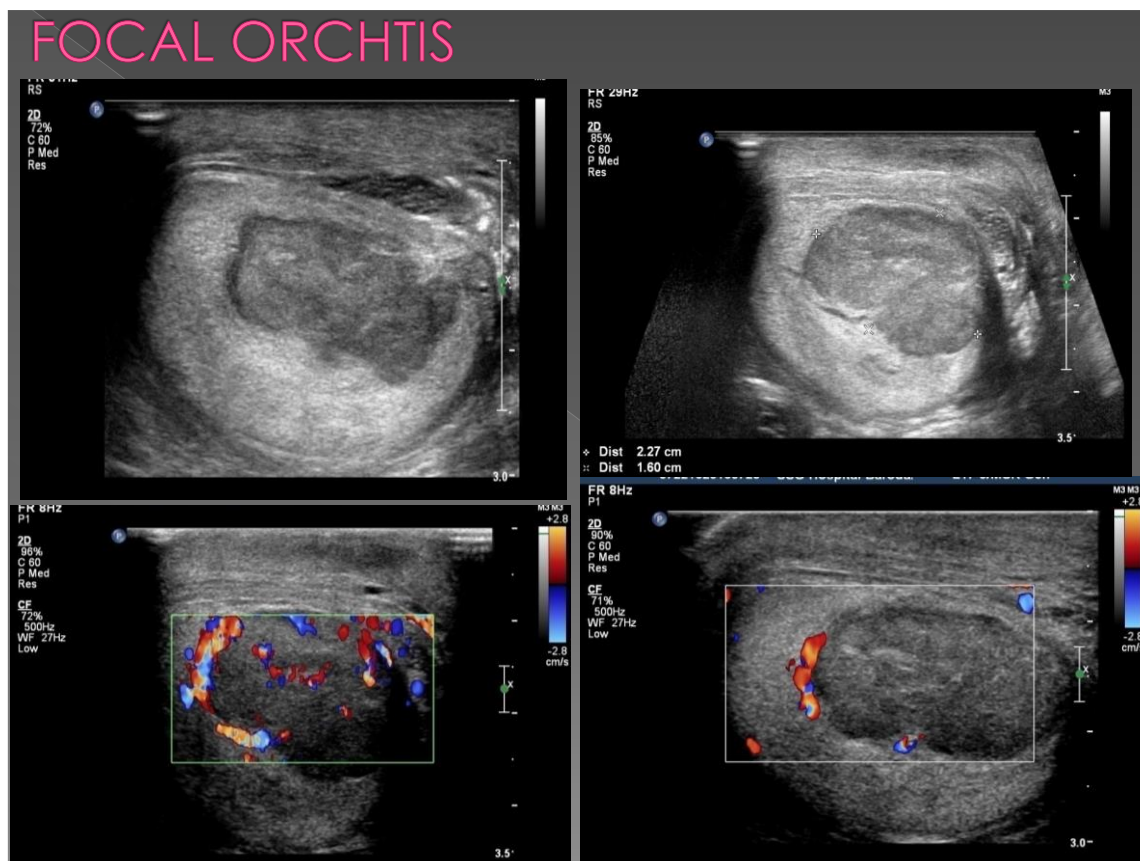


FIG 1:- Focal orchitis.

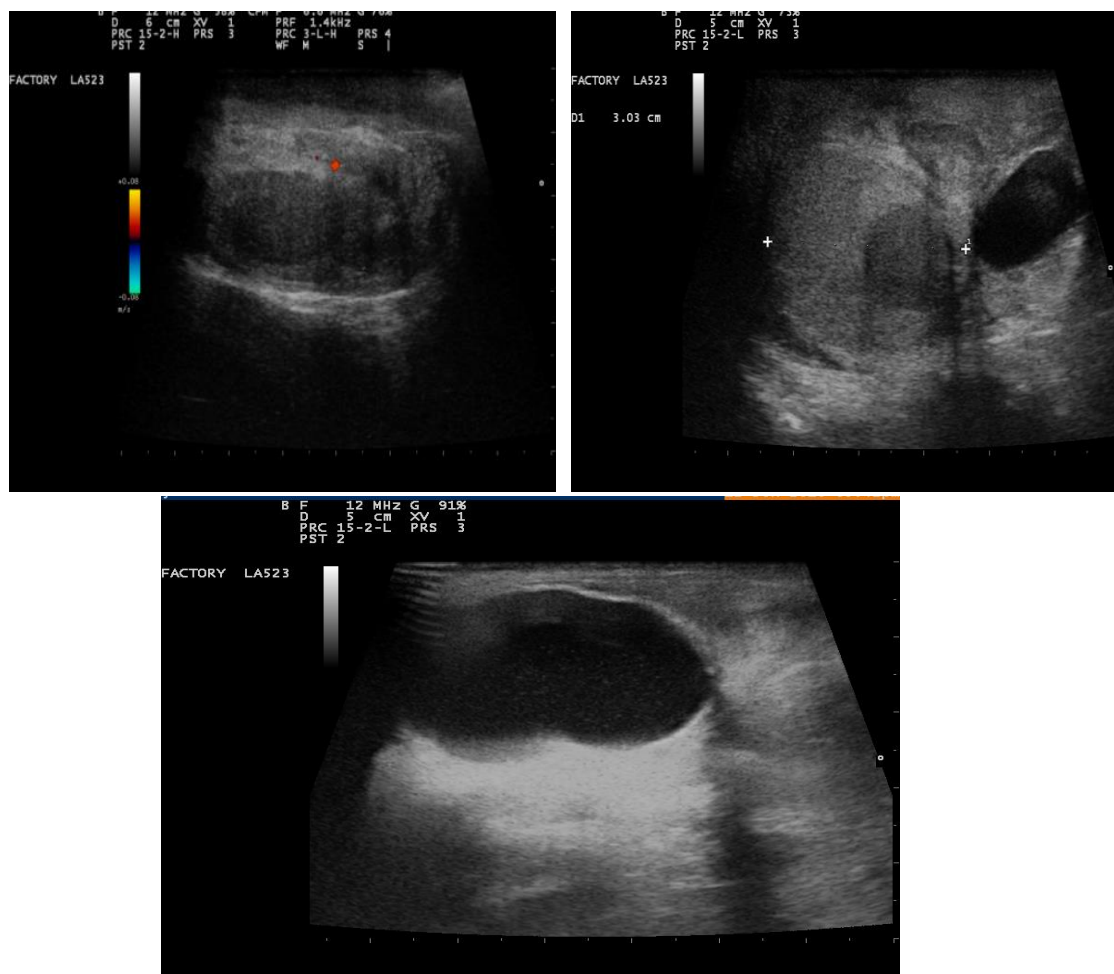


FIGURE 2 :-(a,b,c)-Spermatocele with focal orchitis

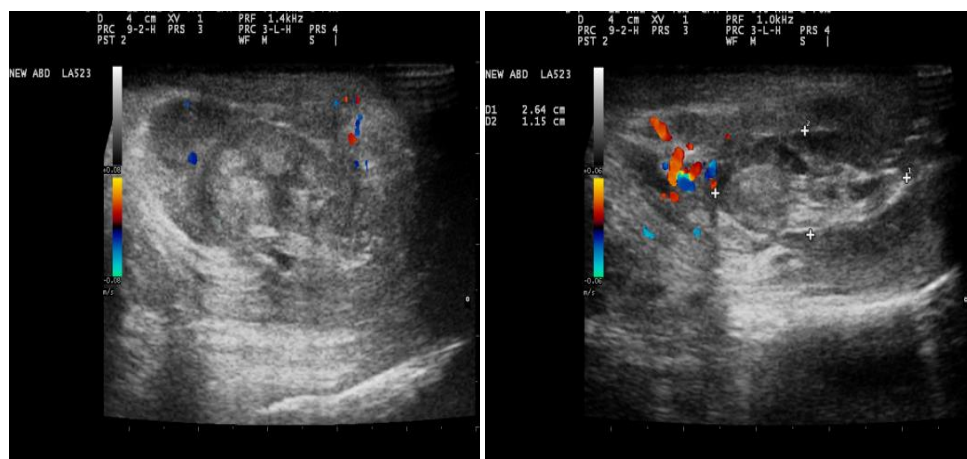


Figure 3:-Infarcted left testis with left side epididymitis.

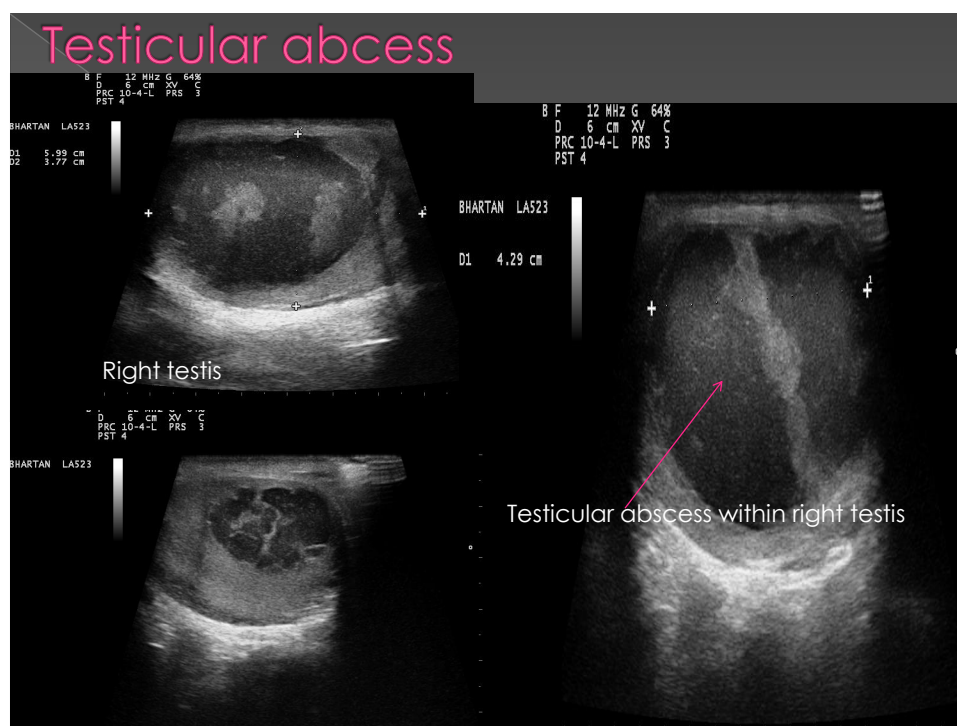
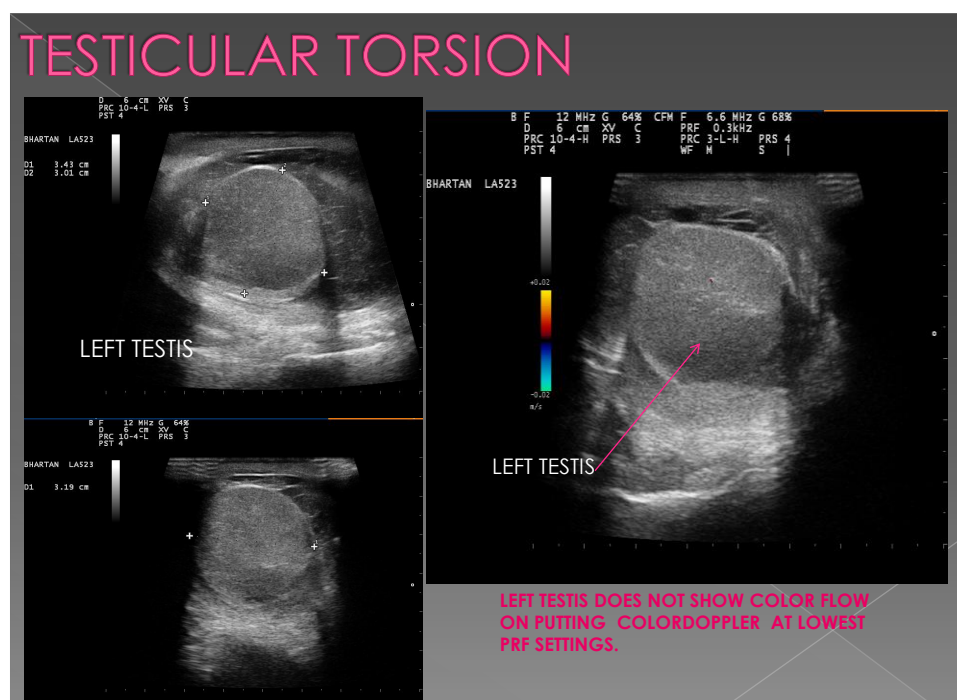


FIGURE 4:- Testicular abscess



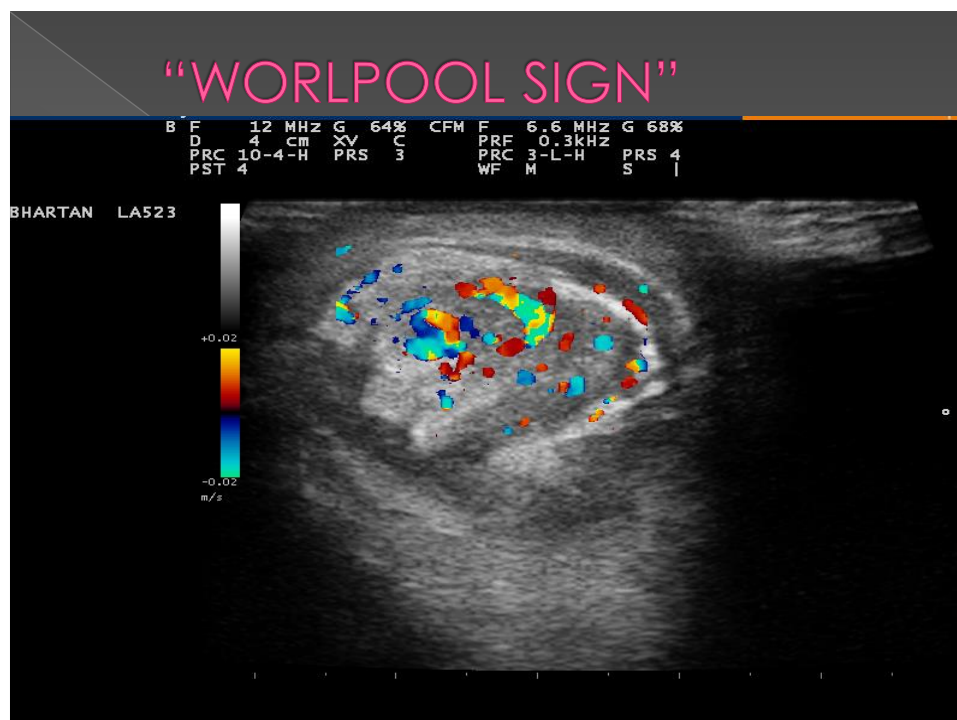
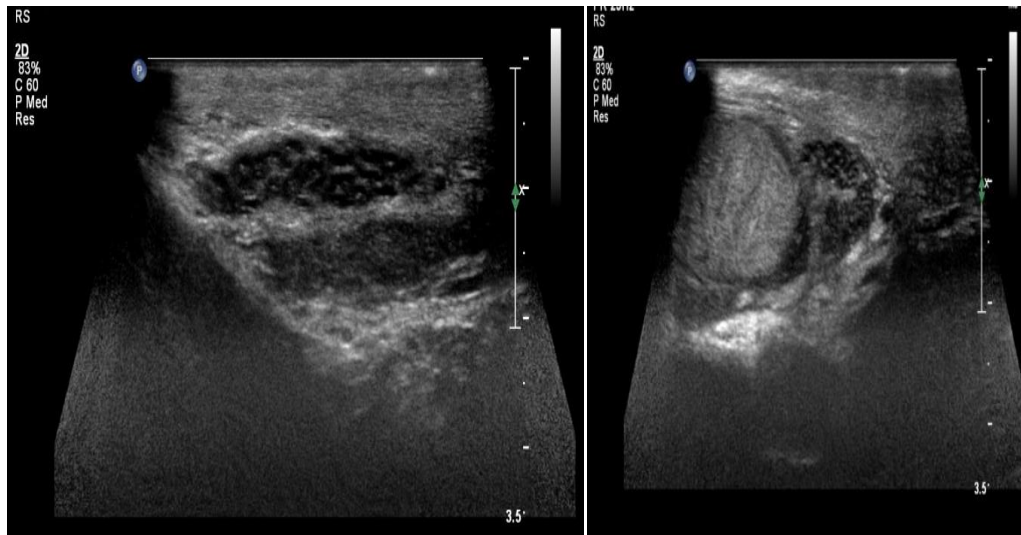


Figure 5:-Testicular torsion: upside down testis which shows no internal vascularity within with coiled up spermatic cord appearing echogenic and shows typical “whirlpool” appearance on color Doppler.



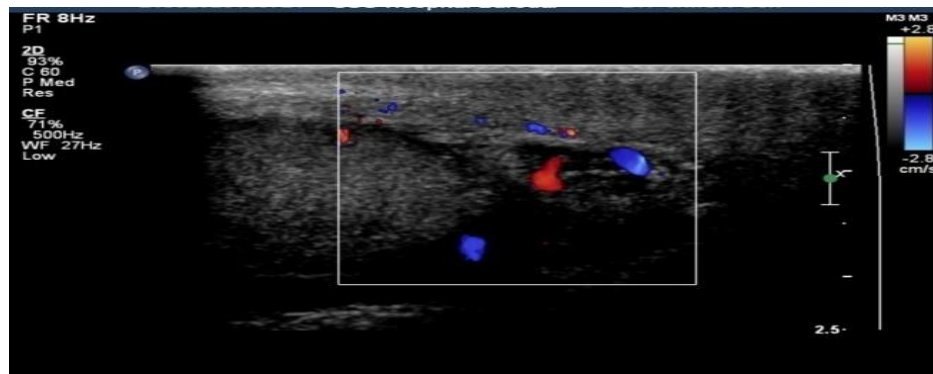


Figure 6:- Ttubal ectasia: multiple tiny cystic lesions with intervening echogenic septations inbetween with no internal vascularity within noted in region of body and tail of left epididymis.

EXTRA-TESTICULAR DERMOID CYST

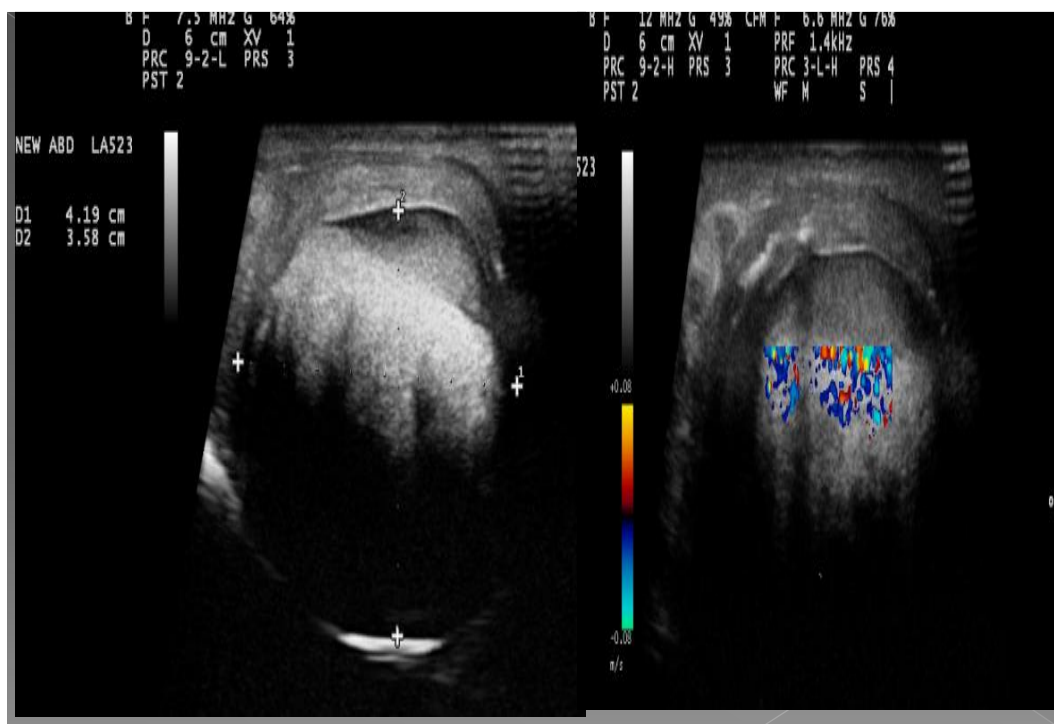




Figure 7:-Extratesticular cystic teratoma: large well defined anechoic cystic lesion with echogenic and calcific material within forming debris fluid level noted within the scrotum which is seen separately from the both testis



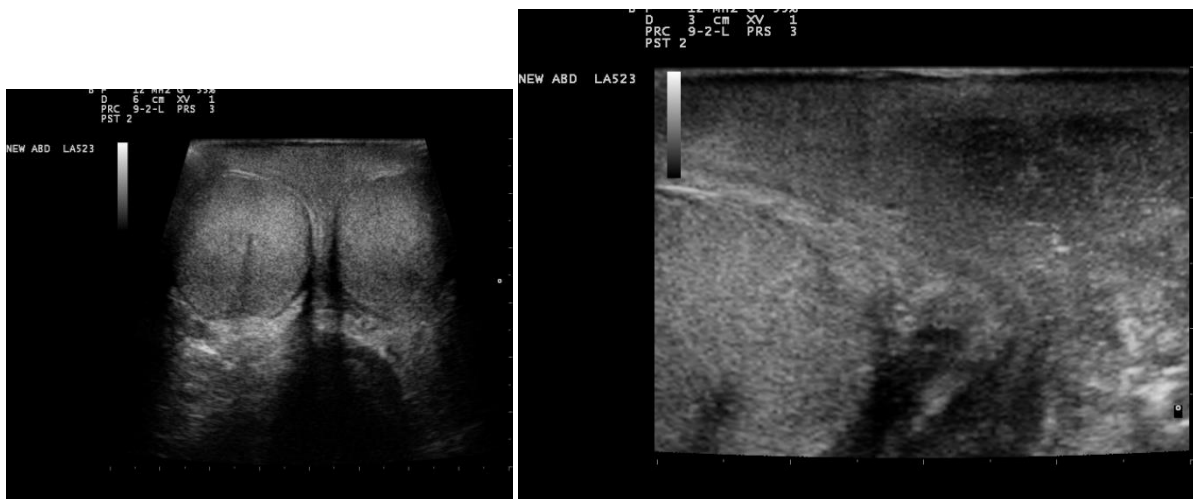


Figure 8 :-scrotal abscess: an illdefined hypoechoic collection with internal echoes and echogenic material within and no internal vascularity within noted in wall of scrotum with normal bilateral testis .

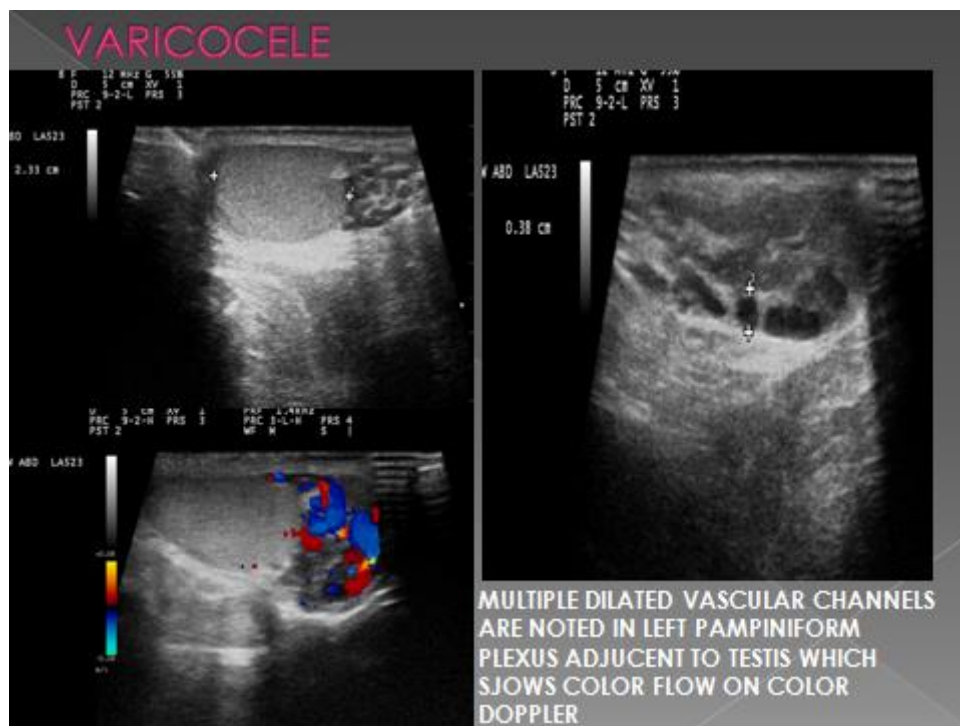


Figure 9: varicocele

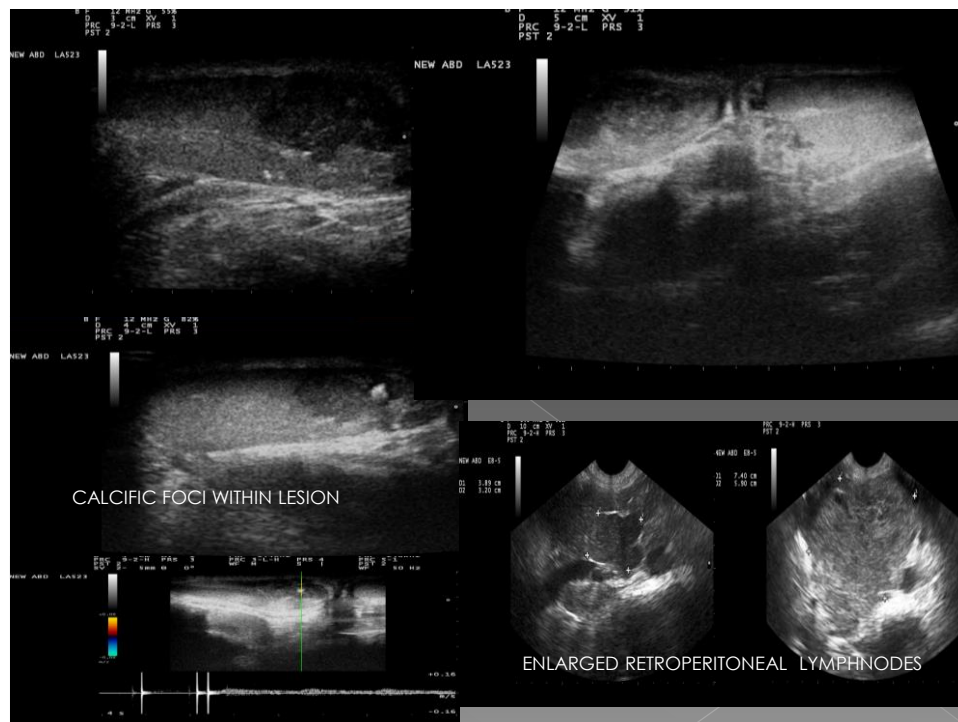


Figure 10 :-Non seminomatous germcell tumour: An illdefined hypoechoic lesion with internal vascularity with a calfic foci within noted within the testis with multiple enlarged intra abdominal lymphnodes.

CONCLUSION

We can conclude that in span of 18 weeks study of different scrotal pathologies with pain and swelling most common cause of pain in scrotum includes epididymo-orchitis and most common cause of swelling is hydrocele and. Torsion of the testis remains the most urgent and important entity dependent on USG for diagnosis. Epididymo-orchitis most commonly falls in age group of 21 to 40 years. USG is primary, non-invasive diagnostic technique without any radiation hazard, which is easily available and effective and can be an investigation of choice for different scrotal pathologies.

Conflict of interest: None.

Source of Funding: Nil.

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