

Original Article

Benign Retrovesical Pelvic Mass in Men : Diagnostic and Management Dilemma

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Aim : To identify the diagnostic difficulties and management issues of benign pelvic masses in males and high light the diagnostic protocol for these rare pelvic masses.

Methods : A prospective single center study over a period of six years and three months. History, physical examination, operative findings and histopathological (HPE) diagnosis were recorded.

Results : A total of 20 male patients presented with retrovesical mass, aged 17 to 65 years old (mean age 36.7 years) were evaluated. masses were found to be of prostatic origin in seven cases (5 prostatic utricle cyst and 2 prostatic abscess), connective tissue in seven, seminal vesicle origin in four, mullerian duct remnant in one case, and embryonic urogenital vestigial remnants in one case. Of these 20 patients, 19 presented with acute or chronic lower urinary tract symptoms and in one case, the mass was asymptomatic and found incidentally. Ultrasound showed cystic lesions in 17 patients and solid masses in three. Nine cases underwent exploratory laparotomy. Further biopsies of specimen demonstrated tissue of origin in all cases (8/9) except one. HPE report confirmed the same clinical and operative diagnosis in six cases.

Conclusion : Benign retrovesical mass presents with lower tract obstructive symptoms, palpable pelvic mass and retention of urine. Needle or open biopsy is required in most cases to establish a histopathological diagnosis. Benign retrovesical mass is rare, we faces difficulty in diagnosis and management. Hence, diagnostic protocols can be helpful to manage retrovesical pelvic masses.

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Key words : Diagnostic protocol, Seminal vesicle, Prostate, Histopathology.

Retrovesical pelvic mass are often inflammatory, neoplastic or congenital. Benign pelvic masses in males apart from benign prostatic hypertrophy and bladder or prostate cancer may be a rare entity and pose problems in diagnosis and management¹. Rare retrovesical masses can be classified as cystic includes mullerian duct cyst, prostatic utricle cysts, congenital or acquired vesicle cysts and dermoid cysts or solid includes teratomas.

These retrovesical masses can be presented with varying clinical features and signs, which may mimic various other common diseases of the lower tract. There are often numerous differential diagnoses for a retrovesical mass which must be narrowed down to a histologically confirmed or biopsy-proven diagnosis. A series of diagnostic tests are available including USG, CECT or MRI and vasography etc. Hence a diagnostic

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Editor's Comment :

- Diagnosis and management of retrovesical pelvic (RVP) masses pose problems in men.
- This study identified the diagnostic difficulties and management issues of RVP masses.
- Radiological investigations showed cystic extra prostatic mass with no specific features.
- The surgical approach of CSVC can be challenging and associated with many complications.
- Therefore, there is a need of accurate treatment whenever symptoms are present.

protocol for suspected pelvic masses needs to be made clear. In spite of many new diagnostic modalities still present a diagnostic dilemma. We are here with presenting a case series of the following rare benign pelvic masses in male patients, their presenting features, diagnosis, and management aspects. The aimed is to identify the diagnostic difficulties and management issues of benign pelvic masses in males and high light the diagnostic protocol for these rare pelvic masses.

MATERIALS AND METHODS

A prospective study conducted at the Department of Surgery, Dr S N Medical College, Jodhpur, Rajasthan, India between September 2013 and December 2019. This study protocol was reviewed and

approved by Institutional Ethics Committee. All male patients diagnosed with pelvic mass with age between 17 and 65 years were included. A total of 20 male patients presented with retrovesical mass, aged 17 to 65 years old (mean age 36.7 years) were evaluated. We analyzed our data with regard to history, physical examination obtained with special attention to age, clinical presentation, diagnostic tests-haemogram, renal function test, X-KUB and USG, individualized investigations-CT scan, vasography, TRUS, MRI abdomen and pelvis, type of operation, operative findings, and histopathological diagnosis. Exclusion criteria-Common pelvic masses such as bladder diverticula, BPH, or malignant bladder or prostatic masses were excluded.

RESULTS

Table 1 summarizes the clinical findings, details of diagnosis and management of 20 patients with rare benign pelvic masses. These masses were found to be of prostatic origin in seven cases (5 prostatic utricle cyst and 2 prostatic abscess), connective tissue in seven, seminal vesicle origin in four, mullerian duct remnant in one case and embryonic urogenital vestigial remnants in one case.

Clinical presentation : Of these 20 patients, 19 presented with acute or chronic lower urinary tract symptoms and in one case, the mass was asymptomatic and found incidentally. Two patients presented with acute inflammatory symptoms, such as fever with or without flank pain and nine patients had non-inflammatory, such as urinary retention. In contrast, six patients had chronic symptoms, such as perineal pain, frequency, hemi-scrotal pain and urinary incontinence. Two patients had primary infertility and perineal pain.

On Abdominal, Digital Rectal and Bimanual Examination : Large suprapubic cystic mass was palpable in two cases, in the same two patients on Digital Rectal Examination (DRE), huge bimanually palpable cystic mass was found, prostate could not be felt separately and upper limit was not reachable. In addition, DRE revealed a large hard, non-tender, non-pulsatile, smooth surface, felt anterior to rectum just above the anal verge, upper limit not reachable, prostate can be felt separately likely connective tissue masses in three patients, while four patients revealed soft, non-tender, non-pulsatile, smooth surface, felt anterior to rectum just above the prostate, upper limit not reachable, likely connective or adipose tissue

Table 1 — Clinical findings, details of diagnosis and management of 20 patients with rare benign pelvic masses

Sl No	Age	Presenting complaints	Digital rectal examination	USG Findings	CECT/MRI Abdomen	Other Investigations	Diagnosis	Treatment
01	60	Supra pubic lump, Recurrent retention of urine	Bi manually palpable cystic mass	5x8cm cystic mass pushing bladder to right side and upwards	-	Vasography HPE-mullerian duct cyst with cystadenoma	Mullarian duct cyst with cystadeno-ma	Exploratory laparotomy
02	17	ROU and painless lump in lower abdomen	large cystic mass was palpable arising from the left posterolateral side. 31	-	-	HPE- cyst wall predominantly made of smooth muscles alongwithfibrocollagenous, adipose and nervous tissue.	Embryonicurogenital vestigial remnants? presacralmeningo-c-ale	Exploratory laparotomy
03	36	Pain in right hemiscrotum, burning micturation	7x6 cm soft cystic non-tender, mass felt anterior to rectum, 3 cm above the anal verge.	-	-	FNAC- anucleated epithelial cells having abundant pale stained eosinophilic cytoplasm.	Epidermoid or dermoid cyst	Excision
04	23	Anejaculation, Primary infertility Chronic perineal pain	3x2 cm sized, midline, cystic, nontender, swelling felt just above the prostate, and 4 cm above anal verge.	normal	7.8 x 7 mm cyst noted in prostate in midline (prostatic utricle cyst) Both seminal vesicles are dilated and show water density (seminal vesicles cysts)	TRUS-Showed Multiple anechoic lesion just above the prostate in mid line	Prostatic utricle cyst	Trans urethral resection of ejaculatory duct
05	18	Bleeding per rectum LUTS Limp in gait Retention of urine	A large hard, non-tender, smooth surface, felt anterior to rectum just above the anal verge.	Large mix enchogenic mass of size 10x9x8cm posterior to urinary bladder? Haematoma, collection	Large lesion with solid, cystic & haemorrhagic component, seen in pelvis, posterior to bladder. Differential diagnosis were 1. Teratoma? 2. Rhabdomyosarcoma? 3. Hematoma?	HPE- Teratoma	Teratoma	Exploratory Laparotomy
06	25	Pain Retention of urine	A smooth non tender anterior bulge noted.	-	Cystic lesion is noted in the pelvis anterior to bladder located slightly more toward the left side. It measures 5 x 4.5 x 3.6 cm The lesion is in adipose layer, without intramuscular/ intrapelvic extension.	HPE-Inclusion cyst	Inclusion cyst	Excision
07	33	Infertility	A cystic non-tender swelling felt above prostate.	-	Cystic lesion is seen in the midline (prostatic utricle)	TRUS-Multiple anechoic lesion in midline.	Prostatic utricle cyst.	Trans urethral unroofing of cyst

(Contd.....)

Sl No	Age	Presenting complaints	Digital rectal examination	USG Findings	CECT/MRI Abdomen	Other Investigations	Diagnosis	Treatment
08	38	Pain in left hemiscrotum	Approximately 6 × 8 cm cystic mass with smooth surface is felt anterior to rectum.	-	large cystic mass of size 63 × 82mm is noted in pelvis posterior to bladder.	-	Dermoid cyst	Excision
09	24	LUTS	A smooth nontender cystic mass felt anterior to rectum towards the right side.	-	Bilateral small undescended inguinal testes. Hemorrhagic right seminal vesical cyst associated with right renal agenesis (Zinner syndrome)	-	Right Seminal vesical cyst	Trans urethral resection of vesicle
10	40	Bleeding per rectum LUTS	A large, non-tender, smooth surface mass felt anterior to rectum just above the anal verge.	-	a circumscribed benign-appearing cystic lesion in posterior to bladder.	HPE-Teratoma	Teratoma	Exploratory laparotomy
11	40	LUTS	A smooth non-tender anterior bulge in the midline above the prostate of size approximately 5 × 8cm.	Normal	circumscribed benign multilocular cystic lesion in midline.	TRUS -Anechoic areas noted in the pelvis.	Prostatic utricle cyst	Trans urethral lay open of cyst
12	23	LUTS	Approximately 4 × 5cm Smooth cystic non-tender mass felt anterior to rectum.	-	large thin-walled pelvic cystic mass of size 46 × 52mm is noted in the pelvis. Differentials are left seminal vesical cyst/posttraic utricule.	-	Left seminal vesical cyst.	Trans urethral resection of vesicle
13	18	Retention of urine	Smooth non-tender anterior bulge noted.	-	large cystic mass of size 44 × 34mm is noted in pelvis posterior to bladder.	HPE-dermoid cyst	Dermoid cyst	Excision
14	38	LUTS	2x2 cm sized, midline, cystic, nontender, swelling felt above the prostate	Normal	Cyst noted in prostate in midline (prostatic utricle cyst)	TRUS-Multiple anechoic lesion just above the prostate in mid line	Prostatic utricle cyst	Trans urethral unroofing of cyst
15	35	Flank pain LUTS	3x2 cm sized, midline, cystic, nontender, swelling anterior to rectum	Normal	Cyst noted in the right seminal vesical	TRUS-Anechoic cystic area in the right seminal vesical.	Right seminal vesical cyst	Trans urethral resection of vesicle
16	59	Fever, painful micturition	Tender, soft cystic mass felt anterior to rectum	Normal	-	TRUS- hypoechoic areas with internal echoes	Prostatic abscess	Unroofing and drainage
17	18	None	A hard-non-tender, smooth surface mass felt anterior to rectum	Mixechogenic mass of size 3x4x4cm posterior to urinary bladder? Hematoma, collection	MRI-lesion with solid, cystic and hemorrhagic component, seen in pelvis, posterior to bladder. Differential diagnosis were Teratoma? Hematoma??	HPE-Teratoma	Teratoma	Exploratory laparotomy
18	22	Chronic perineal pain	Midline, cystic, nontender, swelling felt above the prostate	-	circumscribed benign multilocular cystic lesion in midline.	TRUS -Anechoic areas noted in the pelvis.	Prostatic utricle cyst	Trans urethral unroofing
19	49	Fever, painful micturition	Tender, soft cystic mass felt anterior to rectum	Normal	-	TRUS- hypoechoic areas with internal echoes	Prostatic abscess	Unroofing and drainage
20	50	Flank pain LUTS	Midline, cystic, nontender swelling anterior to rectum	Bilateral seminal vesical cyst are seen largest measuring 15 × 11mm on left side	Multiple thin-walled pelvic cystic masses largest of size 15 × 11mm is noted in the pelvis. Differentials are bilateral seminal vesical cyst/prostatic utricule.	TRUS-Anechoic cystic area in the bilateral seminal vesical.	Bilateral seminal vesical cyst	Trans urethral resection of cyst

masses. Intraprostatic lesions were noted in seven patients with a prostatic mass. Extra-prostatic masses were detected in four patients with a seminal vesicle mass.

Laboratory studies: All patients had haemoglobin, blood counts, urine examinations complete microscopic with culture, renal function tests. Urine examination showed pus cells 4-6 to full field per high power field in seven cases and *E. coli* was detected in urine culture of two cases. Urinalysis also demonstrated microhaematuria in all cases of prostatic and seminal vesicle masses. white blood count and Urine leukocytes were significantly higher in two

patients (prostatic abscess) than for a simple prostatic utricle but renal function tests was within normal range for all cases. Two patients presented as primary infertility had normal testosterone, FSH, LSH, serum prolactin and azoospermia but one patient had an ejaculation with azoospermia in post-void urinary sample. In the other patient's laboratory studies revealed no pathological findings.

Ultrasound studies : Ultrasound showed cystic lesions in 17 patients and solid masses in three. Medial locations of a cystic retro-vesical mass were consistent with a prostatic utricle cyst (Fig 1) or abscess (Fig 2). Transrectal ultrasound was performed

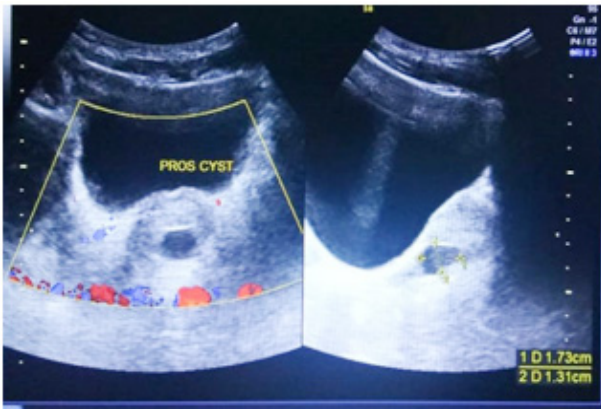


Fig 1 — USG images showed prostatic cyst



Fig 4 — USG images of seminal vesicle cyst

additionally in eight patients to confirm the intra-prostatic or extra-prostatic location of the cysts. Ultrasound revealed mixed echogenic masses in all the three patients with retro-vesical teratoma (Fig 3) which was difficult to differentiate from haematoma and four patients had cystic lesion contained hyperechoic material consistent with dermoid cyst but one letter on confirm on HPE was mullerian duct cyst with cystadenoma. A cystic extra-prostatic mass lateral to

the bladder neck was demonstrated on ultrasound for all seminal vesicle (Fig 4).

IVU, CYSTOGRAM, AGP and Vasography : One patient reported large mass shadow seen in pelvis left side pushing bladder towards right and anteriorly with raised base of the bladder. Vasography -B/I vas and seminal vesicle normal, bladder base elevated and grade 1 reflex on left side (Fig 5) (mullerian duct cyst with cystadenoma). In Case-4 vasogram confirm the

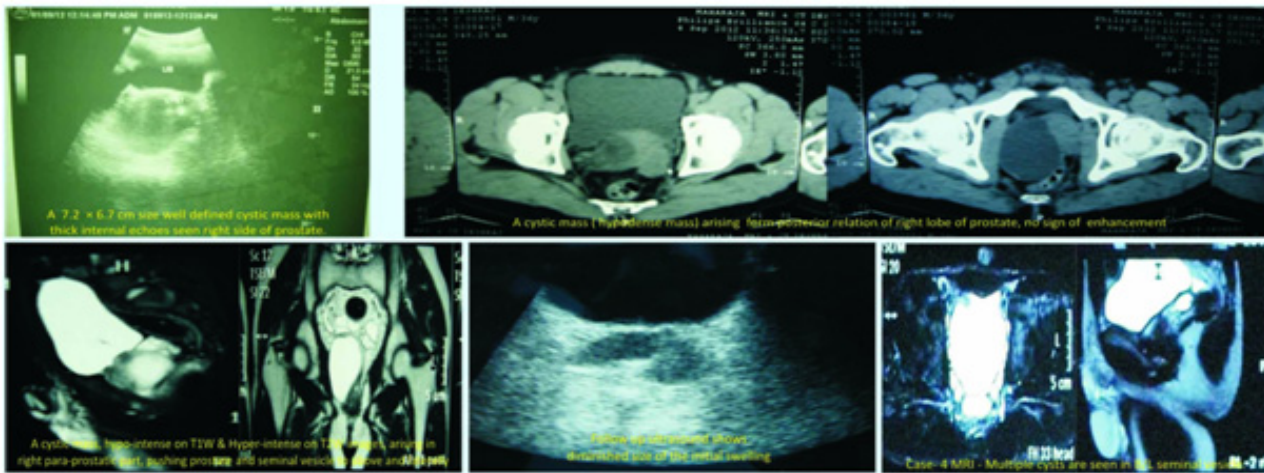


Fig 2 — Radiological pictures of Epidermoid cyst (case no 3) and Last MRI picture showed b/l seminal vesicle cyst (case no 4)

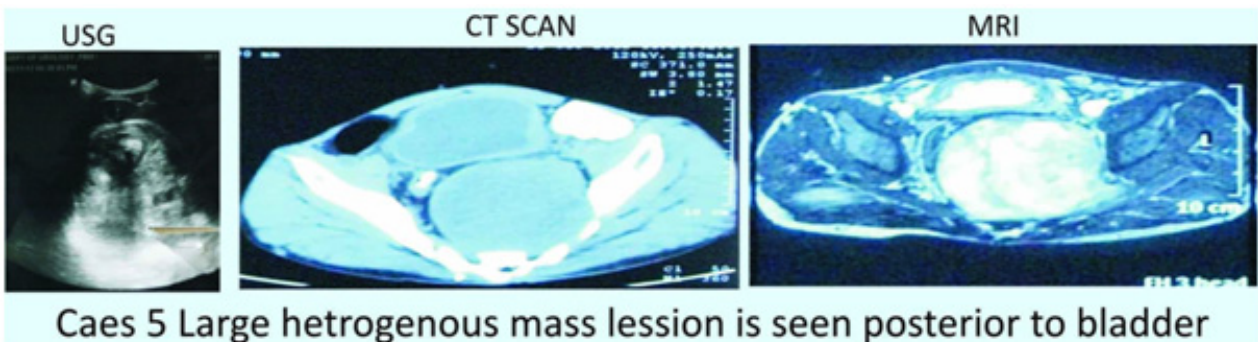


Fig 3 — Radiological images of Teratoma (case no 5)

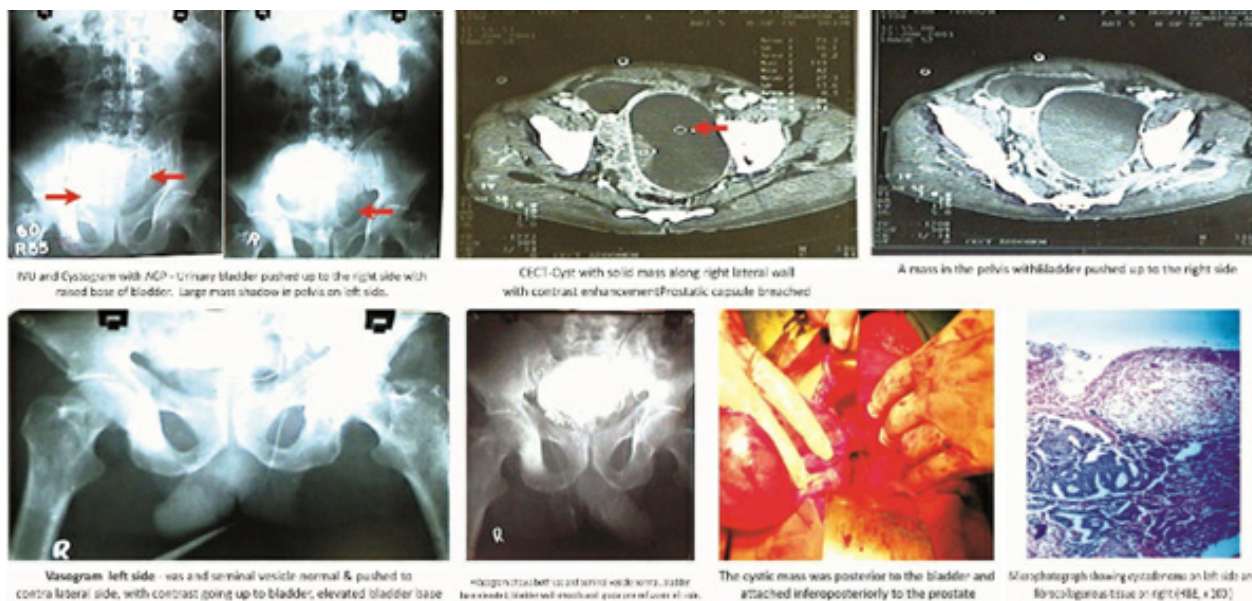


Fig 5 — Radiological and operative images of mullerian duct cyst with cystadenoma (case no 1)

diagnosis of ejaculatory duct cyst.

CT scan and/or MRI abdomen pelvis : CT Scan and/or MRI abdomen pelvis was performed in 16 cases, both were accurately demonstrated the anatomical relationship of associated intra pelvic organs with surrounding fat and pelvic lymph nodes. CT Scan and/or MRI abdomen pelvis clearly depicted prostatic utricle cysts in 3/3(100%) cases, intraprostatic abscess cavities in 2/2 (100%) cases, seminal vesicle cysts 2/2 (100%) and cystic connective tissue masses in 4/4 (100%). CT scan abdomen pelvis accurately demonstrated retro-vesical connective tissue solid masses in three cases. CT scan and/or MRI abdomen pelvis failed to differentiate accurate diagnosis in two cases (ejaculatory duct cyst and mullerian duct cyst with cystadenoma). However, MRI failed to differentiate between teratoma and haematoma. FNAC accurately demonstrates diagnosis in two cases of intraprostatic abscess (Fig 6).

Open Surgical and Endoscopic management: Nine cases underwent exploratory laparotomy ie, three

cases solid masses cut surface finding suggestive mature teratoma, three cases semi solid cyst masses on cut suggestive dermoid cyst and 3 were cystic masses surgical specimen finding inconclusive to clench the diagnosis. All surgical specimen sent for histopathological examination to confirm the diagnosis of the pelvic mass. Prostatic utricle and seminal vesicle cysts and prostatic abscess were treated with transurethral route. Transurethral unroofing was done in prostatic utricle cyst (4 cases) and in seminal vesicle cysts (3 cases). Transurethral resection of the ejaculatory duct was performed in one case of ejaculatory duct cyst and was uneventful. Transurethral unroofing and drainage of the prostatic abscess was done in two cases and were uneventful. One case of bilateral seminal vesical cyst managed conservatively. Follow up period was unremarkable in all cases.

Histopathological examination : Biopsies of specimen demonstrated tissue of origin in all cases (8/9) except one. HPE report confirmed the same clinical and operative diagnosis in six cases (3 were

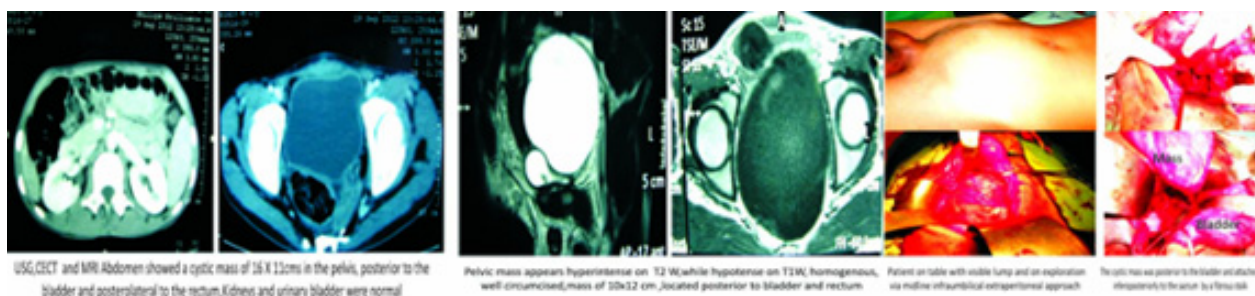


Fig 6 — Radiological and operative images of embryonic urogenital vestigeal remnant ??/ Presacral meningocele ??(case no 2)

mature teratoma and 3 were dermoid cysts). We were unable to clinch the diagnosis in two cystic mass with our clinical and operative finding but confirm with HPE ie, Mullerian duct cyst with cystadenoma and inclusion cyst. Even after HPE report in one case of cystic mass suggestive diagnosis embryonic urogenital vestigial remnant? presacral meningocele but not confirmed.

DISCUSSION

Retrovesical pelvic masses in males are uncommon and presented with varying features¹. They can be congenital or acquired. The mesonephric duct and the ureteral bud join the urogenital sinus during embryogenesis². The Wolffian duct differentiates into the genital duct system, forming the epididymis, vas deferens, seminal vesicles and ejaculatory ducts in males.

The appearance of Mullerian duct cyst was associated with the remnants of the Mullerian duct³ and usually occur in the 3rd and 4th decades of life, maybe incidental⁴. If large enough, they can cause obstructive or irritative urinary symptoms, like haematuria, ejaculatory impairment or suprapubic or rectal pain. In this study, a 65 years old male patient presented with LUTS and a cystic supra pubic lump with MRI abdomen showing cystic mass pushing bladder to right side. Final diagnosis of Mullerian duct cystadenoma was made on HPE of the cyst excised. In 1942, Clyde, *et al* described a Mullerian duct cyst in 34-year-old male with LUTS where final diagnosis was made on histopathological examination⁵.

Pre-sacral meningocele most frequently presenting as a presacral mass. It is an extension of the dura mater and arachnoid out of the sacral spinal canal into the retroperitoneal and intraperitoneal space through a congenital defect in the sacrum. Most of the patients presented with long standing constipation and urinary dysfunction. In case of constipation, the urinary dysfunction may be related to direct pressure on the bladder or may result from spinal cord tethering or sacral nerve root compression. Here we represent a 17-year-old male student with constipation for 5 years, episodes of ROU in the last one year & painless lump in the lower abdomen for 6 months. CECT and MRI abdomen showed a cystic mass in the pelvis, posterior to the bladder and posterolateral to rectum. On exploratory laparotomy confirm CECT finding with a fibrotic attachment to the posterior surface of the prostate. Mass was excised and sent for HPE. Biopsy of the specimen suggestive of embryonic urogenital vestigial remnants? Presacral meningocele? In 1971,

Chovnick, *et al* reported a case of 50-year-old male patient with retention of urine and cystic mass, diagnosis of anterior sacral meningocele was confirmed by HPE.

Dermoid cysts of the presacral space are relatively common while dermoid cysts presented at the anterior to the rectum are not so common, and those which involve the bladder usually occur in women and are ovarian in origin and rare in men⁶. In the present study, three male patients diagnosed to have dermoid cyst in pelvis, where all of them presented with pain in the scrotum and burning micturition. Radiological investigations showed cystic extra prostatic mass with no specific features and confirm by FNAC. In one case, dermoid cyst was wrongly diagnosed to be ischio-rectal abscess and incision drainage was done, which yielded whitish material. Wilson, *et al* in 1973, reported a case of dermoid cyst in a 51-year-old male, which was diagnosed to be a gluteal hernia on clinical examination, final diagnosis of dermoid cyst was made on HPE and fluid examination of the cyst after excision.

Prostatic utricle cysts are emerged at the extent of the verumontanum and most of the time found within the midline. Utricle cysts are usually smaller and are less likely to extend above the prostate. There is an association between utricle cysts and variety of genitourinary abnormalities⁷.

Congenital Vesicle Cysts (CSVCS) related to anomalies of the ipsilateral upper urinary tract are uncommon. This condition has been reported as "Zinner syndrome". In such patients onset was reported during second or third decade of life with high incidence of dysuria (37%), frequency (33%), perineal pain (29%), and epididymitis (27%)⁸. The diagnosis is mainly achieved in adult age but demanding in pediatric age. The surgical approach of CSVC can be challenging and associated with many complications. Therefore, there is a need of accurate treatment whenever symptoms are present. Livingston L and Larsen CR reported seminal vesical cyst in all five patients, two patients were examined for primary infertility. Four patients were seen because of a history of dysuria. Other clinical symptoms included hematuria; nocturia; urinary frequency; urgency; lower abdominal, perineal, and ejaculatory pain; and haemospermia. One patient was treated empirically for prostatitis and chronic recurrent epididymitis with antibiotic therapy during a 6-year interval⁹.

Teratomas are congenital tumours that contain derivatives of all three germ layers. Retrovesical teratomas are rare entity of extragonadal tumour commonly observed in adults, especially in males. The

prevalence of retrovesical teratomas is more in various sites and organs. The majority of patients were asymptomatic with large neoplasm at the time of presentation which can cause urinary disturbance¹⁰.

Prostatic abscess is rare in the era of antibiotics. Most of them presented with perineal pain, fever, urinary tract infection. In 1992, 25 patients with prostatic abscess were diagnosed mainly by TRUS and IVP. Treated with parenteral antibiotics and 22 underwent surgical drainage¹¹.

The present study proposed a diagnostic algorithm (Fig 7) for suspected pelvic masses, according to proposed diagnostic guideline. Every retro-vesical mass evaluated by history, general physical and local examination with findings on DRE followed by ultrasound allow reliable diagnosis of retro-vesical lesions whether cystic or solid mass but most of the times exact location, tissue origin, involvement of organs and lymph nodes cannot be confirmed. In such situation, most of the cases according to the present study diagnostic approach CT and MRI of abdomen and pelvis are needed. However, rare retro-vesical mass may require biopsy and exploratory laparotomy followed by histopathological examination to confirm the diagnosis.

CONCLUSION

Benign retrovesical mass presents with lower tract obstructive symptoms, palpable pelvic mass and retention of urine. CT or MRI is useful for exact location, tissue of origin, the involvement of organs and lymph nodes. Needle or open biopsy is required in most cases to establish a histopathological diagnosis. Laparotomy and histopathological examination are the procedures of choice when other findings are equivocal. Excision of benign retrovesical mass is difficult because of deeply situated in pelvis. Benign retrovesical mass is rare, we faces difficulty in diagnosis and management. Hence, diagnostic protocols can be helpful to manage retrovesical pelvic masses.

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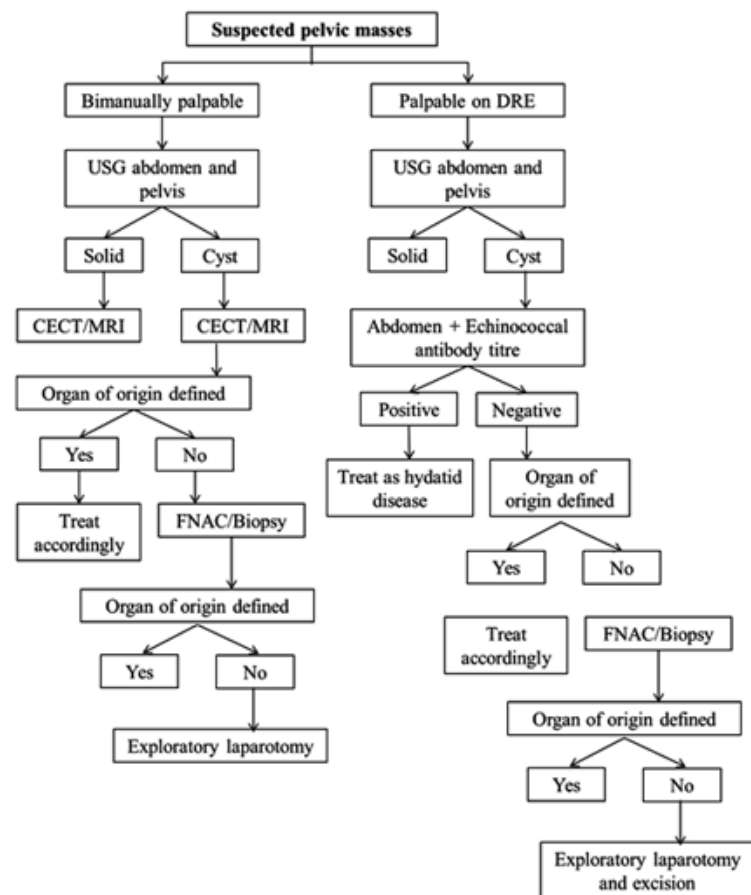


Fig 7 — Proposed diagnostic protocol flow chart