

CASE REPORT

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Should asymptomatic small anteriorly located midline prostatic cyst in young adults be treated surgically or conservatively? A case report and review of the literature

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Abstract

Background: Prostatic cysts are uncommon, typically asymptomatic and discovered by chance during imaging. Prostatic cysts in the midline are less prevalent and primarily seen in the posterior aspect of the prostate.

Case presentation: We describe a case of a 32-year-old man with a complaint of left loin pain and a little sensation of pelvic discomfort. Ultrasound was done revealing small pelvic cystic structure related to urinary bladder base and neck with possibility to be prostatic in origin. Transrectal ultrasound and pelvic magnetic resonance imaging were done and showed an anteriorly located midline prostatic cyst protruding into the bladder lumen, with no communication with the urethra on conventional ascending urethrogram.

Conclusion: The rare relationship between the cyst, bladder neck, and prostate make this case to some extent unique and further interesting. To our best knowledge, this is the eighth documented case in the literature to describe an anteriorly located midline intraprostatic cyst projecting at the bladder neck and base with illustration of different plans of treatment.

Keywords: Prostatic cyst, Midline anterior prostatic cyst, MPCs

Background

Lower male genitourinary tract cysts are rare finding and usually tend to be benign. Their detection was as result of increasing use of transrectal and pelvic ultrasound, computed tomography, and magnetic resonance imaging [1].

There are two pairs of genital tubes in each sex embryos: the paramesonephric ducts (Wolffian) and the mesonephric ducts (Müllerian). This occurs in the male genital tract as a result of the differentiation of Wolffian duct components and the involution of Müllerian duct components. In some cases, those remnants persist on adult males despite the müllerian ducts degeneration

resulting in the presence of certain formations or anatomic disorders [2].

Prostatic cysts are commonly classified as intraprostatic, periprostatic, or median, paramedian, and lateral cysts [3, 4]. The midline behind the upper half of the prostatic urethra is where median cysts (prostatic utricle cysts and Müllerian duct cysts) are found [5] (Table 1).

Prostatic utricle cysts are the result of an incomplete regression of the Müllerian duct system during embryologic development. Males under the age of 20 are mostly affected. Their reported occurrence in the general population is about 1%–5% [2]. They may be accompanied with different urogenital abnormalities, such as cryptorchidism, intersex disorders, hypospadias, and ipsilateral renal agenesis in addition to manifesting with multiple symptoms and signs, such as infection of urinary tract,

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Table 1 Lower male genitourinary tract cystic lesions (source: Reference [5])

| Intraprostatic | | | Extraprostatic | Mimics of prostatic and para-prostatic cysts |
|---|------------------------|--|---|---|
| Median | Para-median | Lateral | | |
| Prostatic utricle cysts Müllerian duct cysts | Ejaculatory duct cysts | Prostatic retention cysts BHP nodules with cystic components Tumors with cystic components Prostatic inflammatory cystic lesion | Seminal vesicle cyst Cysts of vas deferense Cowper duct cysts | Ureterocele Bladder diverticula Hydroureter and ectopic insertion of ureter |

pain, epididymitis also hematospermia [6]. In view of utricle cysts that are communicating with the urethra, they may cause post-voiding dribbling. Prostatic utricle cysts could be bacterially infected and have pus or bloody content, which can cause imaging confusion because of the overlap in appearance with abscesses as well as prostatic cystic malignant lesions [7]. Utricle cysts are pear shaped which do not extend above the prostate’s base, unlike Müllerian duct cysts. They have direct communication with the prostatic urethra [8]. Utricle cysts are commonly 8–10 mm long and lesser in size than müllerian ones. On T2-weighted images, they contain fluid with a high signal intensity; however, they appear as a midline anechoic cystic structure behind the urethra on transrectal ultrasound [2].

Müllerian duct cysts are caused by focal mesonephric duct regression failure and saccular dilatation. They are sometimes linked to renal agenesis, but with normal external sex organs [9]. Between the ages of 20 and 40, the incidence of Müllerian duct cysts peaks. There have been a few reports of cases occurring in children. The stated frequency in men is 1%, according to an earlier autopsy dataset. However, because other writers identified a prevalence of 5% in urologic patients, the frequency of occurrence may be underreported [10]. Müllerian duct cysts are often have no symptoms; however, they can cause urinary retention and infection in young adults [11]. By obstructing the ejaculatory duct in the midline, they can also induce ejaculatory dysfunction. Also Müllerian duct cysts never contain spermatozoa when aspirated; however, they frequently include calculi [12] (Table 2).

Case presentation

A 32-year-old patient presented at the outpatient clinic of urology department with left loin pain and a little sensation of pelvic discomfort; by taking patient history, he was married since 4 years and had one child; routinely abdominal and pelvic USG were done with incidentally discovered cystic structure related to the bladder base and neck. Prostatic in origin cystic lesion was suggested; however, possibility of ureterocele could not be excluded and transrectal ultrasound (TRUS) was recommended for more confirmation. TRUS was done and showed small cystic structure measured (1.4 × 1.1 cm) prostatic in origin protruding anteriorly towards the bladder base and neck (Fig. 1), after 2 days 3 T. MRI using high-resolution (axial, coronal, and sagittal) images of the pelvis was performed delineating well-defined small cyst measured (1.4 × 1.1 cm) originating from prostatic base and herniating into bladder base and neck; also no definite communication with the urethra could be noted (Fig. 2), so we proceed to conventional ascending urethrogram which confirm the non-urethral communication (Fig. 2). Finally this case was reported as anteriorly located midline prostatic cyst mostly Müllerian duct (in view of its size, non-communication with the urethra and the extension beyond the base of the prostate).

The present case could have been managed by transrectal aspiration of the cyst, but with patient history of non-complaining from definite LUTS or any significant complaint from this cyst till the time of detection, conservative treatment, and close follow-up of the size and

Table 2 Prostatic utricle cysts versus Müllerian duct cysts (source: Reference [2])

| Parameters | Utricle cysts | Müllerian duct cysts |
|--------------------------------------|--|---|
| Patient age origin | 0–20 | 10–35 |
| Configuration | Embryologic remnant of the Müllerian duct system | Failure of regression and focal saccular dilatation of the müllerian duct |
| Extension above base of prostate | Pear shape | Teardrop shape |
| Communication with prostatic urethra | No | Yes |
| Spermatozoa present | No | Yes |
| | Yes | No |

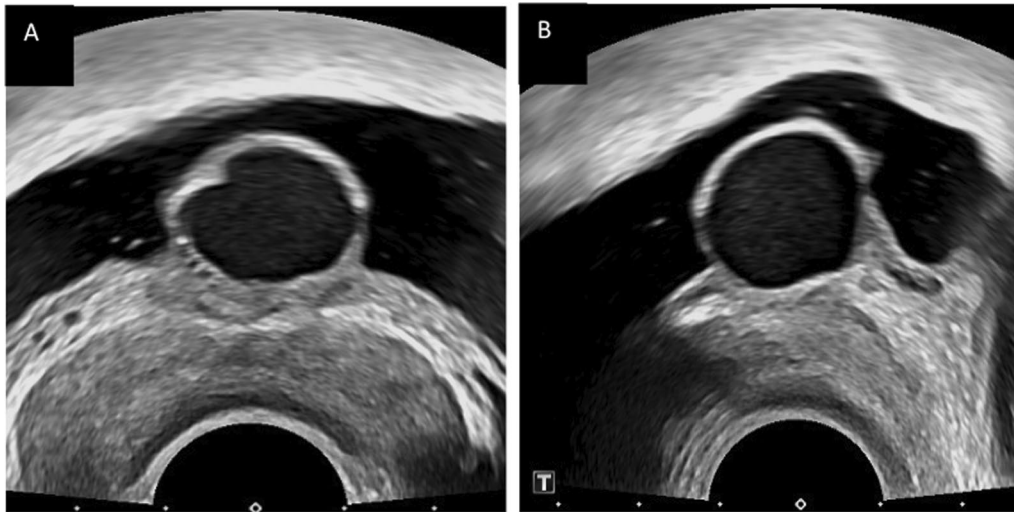


Fig. 1 Axial (A) and sagittal (B) images of TRUS showing an anteriorly placed midline prostatic cyst projecting at the bladder neck region measuring (1.4 × 1.1 cm)

content of the cyst and any newly developed symptoms were recommended.

Discussion

Midline prostatic cysts (MPCs) are rare, with an incidence of less than 1%. The majority of cases have no symptoms and posteriorly. They can become infected, act as a recurrent infection source, or become greatly enlarged, compressing adjacent tissues such as the ejaculatory duct, urethra, and bladder neck. Although anteriorly oriented ones are exceedingly rare, there is currently a continuous pattern of growth in reported cases with an estimated incidence of 5–14 percent due to broad availability and routine use of TRUS, CT, and MRI [13].

As a result, MPCs could be associated with recurrent infection of lower male genital tract, bloody urine or semen, poor semen volume, or even infertility. Furthermore, MPCs have been reported to develop in 5% of LUTS patients, causing urine retention or being mistaken for benign prostatic hyperplasia (BPH) or neuropathic bladder [14].

Only about ten reports of anteriorly located MPCs have ever been published, making them extremely unique [5]. Some cases have been documented to develop at the level of the prostatic urethra, causing bladder outlet obstruction and requiring conservative treatment with antegrade ejaculation preservation [15]. The odd anterior position of the MPC in the bladder base and neck region, with no apparent lower urinary tract symptoms, adds to the case's intrigue, posing diagnostic and therapeutic hurdles. To

the best of our knowledge, this is the eighth case of its kind that has been documented in the literature [5].

Currently there are no definite guidelines in the plans of management of prostatic cysts. Symptomatic patient undergoes intervention actively which is recommended and modified according to the size and site of the cyst's, as well as the accompanying complaint of the patient, including transrectal aspiration with or without sclerotherapy, transurethral resection of the prostate (TURP), cyst unroofing or marsupialization with wire loop, Collin's knife, or Holmium laser, and less commonly open surgery. On the other hand, asymptomatic patients should be followed up without intervention, due to the presence of potential risk factors including infection and recurrence [16].

Conclusions

MPC is an uncommon condition and may have symptoms or not, yet it should be taken in consideration during diagnosis of infertile men and patients with LUTS. Although anteriorly situated MPCs are extremely uncommon, they can be difficult to be managed and pose a danger of retrograde ejaculation due to most cases protruding into the bladder neck and base. As a result, everyone diagnosed with such a condition should have a careful diagnostic workup to determine the cause-and-effect relationship with the symptoms of the patients, with concerning the conservative management and follow-up in non-complaining cases.

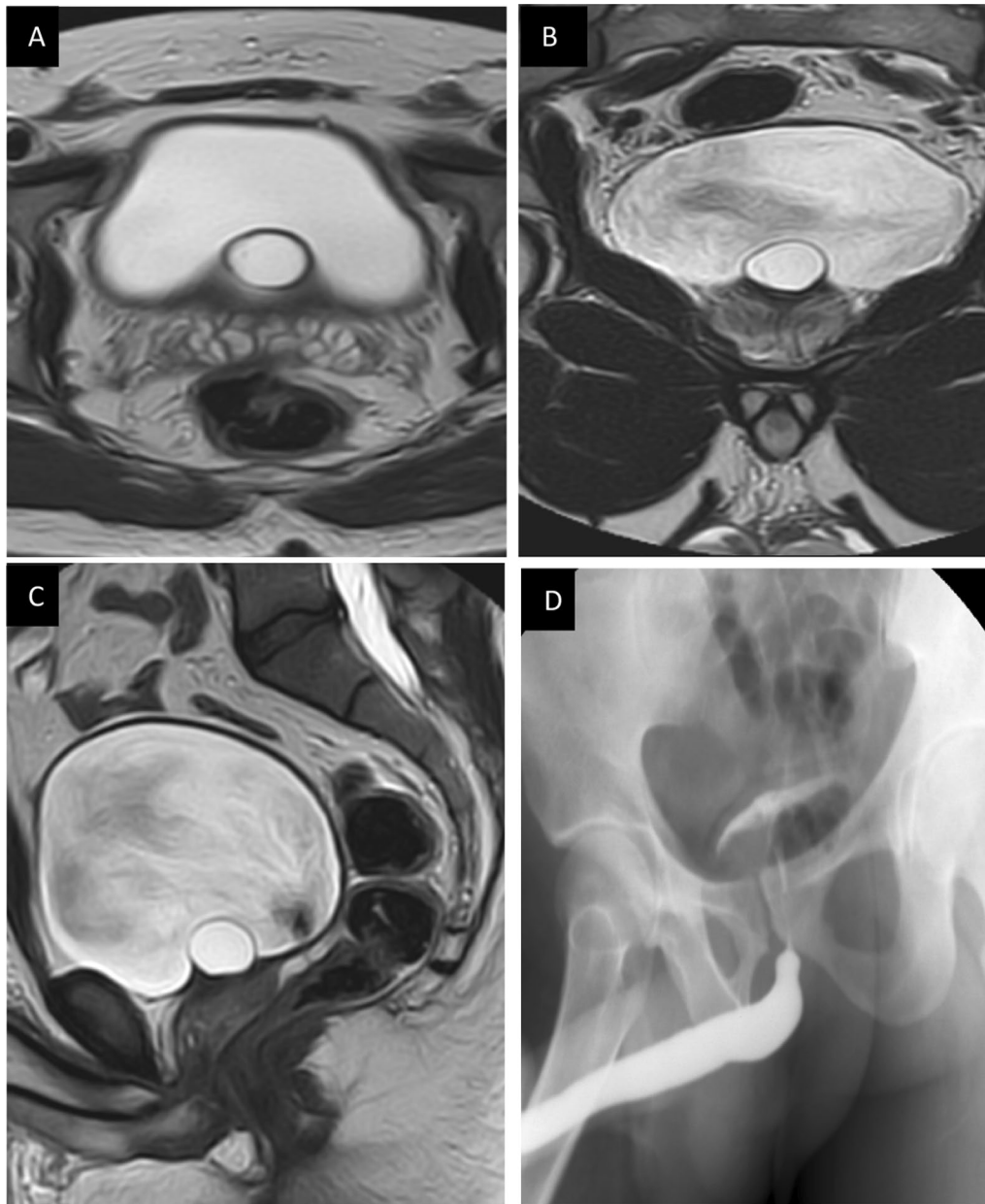


Fig. 2: 3 T. MRI of the pelvis: axial (A), coronal (B), and sagittal (C). High-resolution T2W images showing an anteriorly positioned midline prostatic cyst measuring (1.4 × 1.1 cm) projecting at the bladder base and neck, (D) conventional retrograde ascending urethrogram showing normal contrast opacification of the whole urethra with non filling or opaciing of the cyst confirming the non communication with the urethra

Abbreviations

3 T: 3 Tesla; BPH: Benign prostatic hyperplasia; CT: Computed tomography; LUTS: Lower urinary tract symptoms; MPCS: Median prostatic cysts; MRI: Magnetic resonance imaging; TURP: Transurethral resection of the prostate.

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Author contributions

HF and AA contributed in the data collection. AE and MZ contributed to data analysis and writing. ME supervised the study. All authors read and approved the final manuscript.

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Availability of data and materials

The datasets used and/or analyzed during this case report are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study was approved by the Research Ethics Committee of the Faculty of Medicine at Mansoura University in Egypt on 20 /01 /2022; reference number of approval: MS/17.09.71.

Consent for publication

Patient included gave written informed consent to publish the data contained within this case report.

Competing interests

The authors declare that they have no competing interests.

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