



## Unusual Presentation of Giant Vesical Calculus in an Adolescent Female

Authors

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### ABSTRACT

**Background:** Giant vesical calculus is rare nowadays. The purpose of this case report is to highlight the difficulty in its detection and consequence of misdiagnosis in an adolescent female.

**Case:** A 14-year-old female presented with progressively increasing lower abdominal lump, and was misdiagnosed sonographically as having teratoma. The mystery was unraveled by CECT and MRI and treated by cystolithotomy. Summary and

**Conclusion:** Careful sonographic examination needs to be done due to small uterus and ovaries in an adolescent female when presenting with calcified pelvic lesion, to avoid any undue surgical procedure.

### INTRODUCTION

Giant vesical calculus (weighing >100 gm) is rare in modern urologic practice.<sup>1,2</sup> Only 30 such cases have been reported in English literature.<sup>1</sup> Females are generally less commonly affected and 95% of these occurred in males.<sup>3,4</sup> To our knowledge, giant vesical calculus in an adolescent female and that too without any urinary complaint is unusual. We present an unusual case of giant vesical calculus where the imaging surpasses clinical acumen and no definitive etiology could be ascertained.

### CASE

A 14-year-old female presented to the gynaecology out-patient services with chief complaint of progressively increasing lower abdominal lump and dull-aching pain for 3 months. The patient had not attained her menarche yet. Per abdominal examination showed a

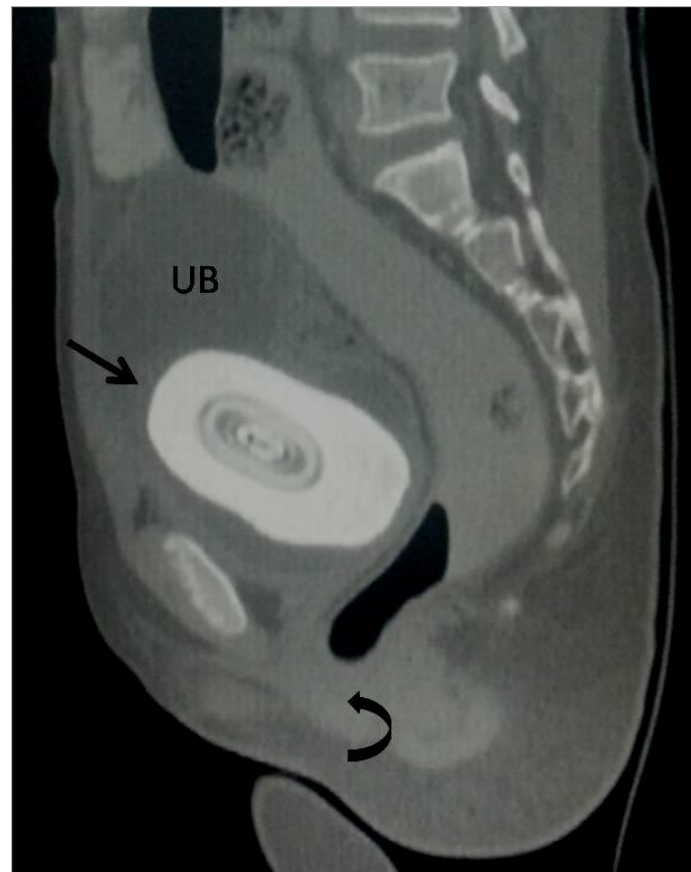
relatively non-tender lump, cystic to firm in consistency, involving hypogastric and umbilical regions. Local examination of external genitalia showed intact hymen without any bulge. Per rectally, a hard mass was felt. Her bladder/bowel habits were normal. Clinically, abdominal lump was supposed to be due to hematometrocolpos and short perineum was suspected.

Transabdominal ultrasound showed presence of a large calcified lesion in pelvis with dense posterior acoustic shadow hampering proper assessment of the lesion and adjacent organs. Urinary bladder was seen distended anterior to the lesion with bilateral moderate to gross hydroureteronephrosis. Uterus and adnexae could not be seen. Possibility of ovarian tumour (teratoma) with mass effect over the urinary system was made.

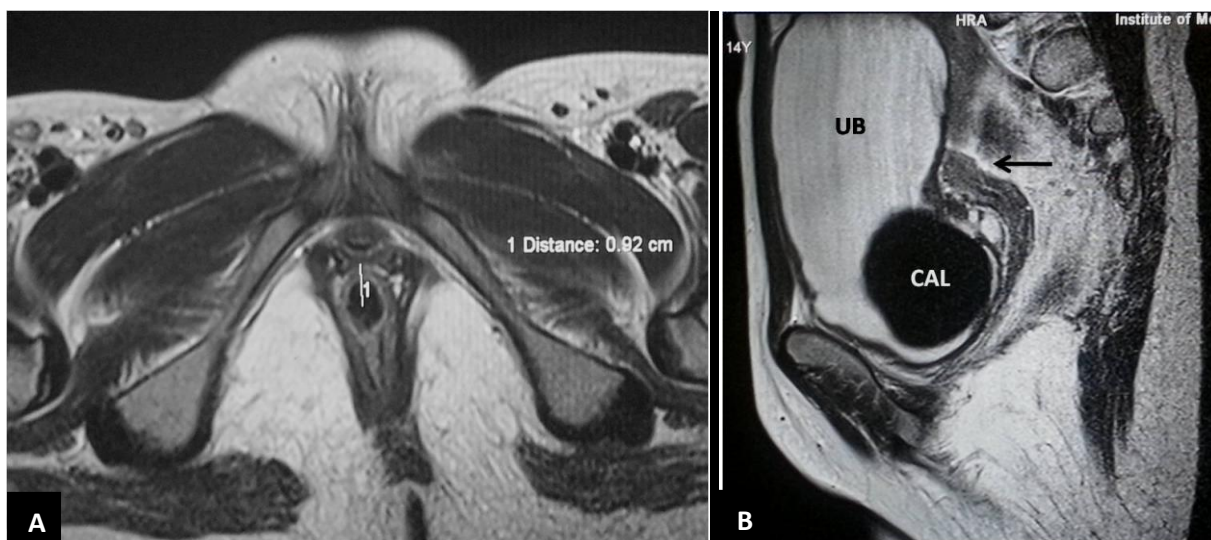
Contrast enhanced computed tomography (CECT) abdomen surprisingly revealed a laminated giant vesical calculus of size 7.0 cm x 5.4 cm x 4.0 cm (figure 1) with over distended bladder and backpressure changes in form of bilateral moderate to gross hydronephrosis. Uterus could not be visualized. Adnexae appeared normal. Suspicion of short perineum persisted.

MRI was done which, besides showing giant vesical calculus and backpressure changes, confirmed presence of short perineum<sup>5,6</sup> with perineal length of 9.2 mm (figure 2A). Uterus with normal endometrial cavity could be delineated lying stretched (figure 2B) behind the over distended urinary bladder with irregular wall.

Hb was 9.2 gm%. Urine-routine and microscopy showed 2-3 pus cells/hpf and no RBCs. Blood urea was 38 mg/dl. Her serum calcium and parathormone levels were within normal limits. Suprapubic extraperitoneal cystolithotomy was done and a yellowish brown, hard stone weighing 122 gms with smooth surface (figure 3) was removed. Analysis of the stone revealed triple phosphate.



**Figure 1:** Contrast enhanced computed tomography sagittal section (bone window) showing a large laminated vesical calculus (arrow) with an over distended urinary bladder. Suspicion of short perineum is raised (curved arrow). UB: urinary bladder.



**Figure 2 A & B:** Axial (A) T2-weighted image showing perineal length of 9.2 mm indicating short perineum. Sagittal (B) T2-weighted image showing small uterus lying stretched behind the over distended urinary bladder. UB: urinary bladder. CAL: vesical calculus.



**Figure 3:** Giant vesical calculus (122 gms), yellowish-brown with smooth margins.

### DISCUSSION

Vesical calculus accounts for just 5% of all urinary calculi.<sup>2, 3</sup> Largest ever vesical calculus reported is of 6294 gm by Arthure et al.<sup>7</sup> Females are generally less commonly affected as 95% occur in males.<sup>3, 4</sup> Vesical calculi most often occur in case of chronic bladder outlet obstruction and urinary tract infection.<sup>3, 4</sup> These conditions are complicated by diverticulum e.g. benign prostatic hyperplasia in males, genital prolapse in female<sup>3</sup>, urethral stricture etc. Bladder diverticulum is also a secondary cause which may interrupt normal voiding. Prolonged catheterisation, neurogenic bladder, foreign body in bladder, trauma are other causes.<sup>4</sup> There are case reports of other objects introduced into the bladder which act as a nidus for stone formation.<sup>3</sup> Pomerantz et al. have reported a rare case of formation of urinary bladder calculus around an arterial graft, which was incorporated in the bladder.<sup>4</sup> It is thought that a giant vesical calculus develops from the nidus of the infected material or from a single ureteric calculus with progressive layer-wise deposition of calcified matrix. Stone encrustation of migrated IUD, pessaries and contraceptive diaphragms has been reported.<sup>8</sup> Thus, each of the earlier stated factors may mutually contribute to the formation of a calculus. Although infection may not be the inciting factor in stone formation, it may play a major role in further stone crystallization.<sup>3</sup> The

composition of stones resulting from anatomic obstruction varies with geography and ethnicity. Most of the stone composition is of triple phosphate, calcium oxalate and calcium carbonate.

Patient with vesical calculus may present with macroscopic terminal hematuria. Intermittency, frequency, urgency, dysuria, decreased force of the urinary stream, incontinence and lower abdominal pain aggravated by brisk movement may also be present. Bladder stones are rarely asymptomatic. Chronic obstruction due to vesical calculus may lead to infection, perforation and rarely hydronephrosis and acute renal failure.

Whereas open surgery is best recommended for giant vesical calculus, small and moderate size calculi are amenable to endourological intervention such as optical mechanical cystolithotripsy. It has added advantage of correcting bladder outlet obstruction.

Our case was unique in not having any urinary complaint and presented with progressively increasing lower abdominal lump. As she had not attained menarche and the mass was of cystic to firm consistency, hematometrocolpos was suspected clinically. Sonographically, due to dense posterior acoustic shadow, the case was misdiagnosed as teratoma. It was only after CECT, correct diagnosis of a giant vesical calculus could be made. As short perineum (perineal length of 9.2 mm; normal- >3 cm & <6 cm)<sup>5, 6</sup> was revealed by MRI, it itself could be the possible cause behind the formation of giant calculus due to fecal contamination of urethra because of close proximity between the urethra and anal opening.

A small uterus and less ovarian follicles in such age-group can be difficult to visualize with an over-distended bladder. This holds true also for a post-menopausal female due to atrophic uterus and ovaries. Although it is difficult to assess adjacent anatomy due to dense posterior acoustic shadow from the calculus, chances of labeling it as teratoma may be avoided if the posterior vesical wall could be appreciated posterior to the

lesion. In this case, had associated backpressure changes not been present (which arouse suspicion of genitourinary malignancy), CECT might not have been done and an undue surgical procedure could have been attempted.

### SUMMARY AND CONCLUSION

This case highlights the importance and need of careful and time-devoting sonographic examination whenever one comes across a calcified pelvic lesion in an adolescent female. The chances of missing the diagnosis of a giant vesical calculus can be minimized on sonography if every possible attempt is made to trace the posterior wall of urinary bladder.

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