A completely calcified prostate

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Abstract
Prostatic calcification and prostatic calculus formation is commonly seen in adult population with chronic prostatitis, however, gross prostatic calcification which involves more than 3 cm² of the gland is quite rare. We are presenting here one such case in which almost whole glandular prostate was converted into stone which is never reported so far.

Key Words: Chronic prostatitis, prostatic calcification, prostatic calculus

INTRODUCTION
Prostatic calcification and prostatic calculus formation is common finding in setting of chronic prostatitis.[1] However, gross (>3 cm²) prostatic calcification is rare.[2] We are presenting here one such case in which almost whole glandular prostate was converted into stone.

CASE REPORT
A 60-year-old male presented with complaints of irritative lower urinary tract symptoms for last 1 year and single episode of hematuria with clots 1 month back. He had a history of cystolithotomy 4 years back and antitubercular treatment for pulmonary tuberculosis 15 years back. On examination, urinary bladder was palpable and tender. Digital rectal examination revealed Grade III stony hard nodular prostate, but serum prostate-specific antigen was only 0.07 ng/ml. Urine analysis showed microscopic hematuria with plenty of pus cells but culture did not suggest any growth. Ultrasonography of kidneys, ureters and bladder (KUB) region showed 36 mm spherical bladder calculus with echogenic debrises, thickened bladder wall and a heterogeneously enlarged prostate of 111cc with areas of calcification and posterior acoustic shadow [Figure 1]. Plain X-ray of KUB confirmed gross prostatic calcification along with bladder stone [Figure 2]; intravenous urography was otherwise normal. Cystoscopy revealed obstructive prostatic lobes which were heavily encrusted, allowing 17 Fr sheath only with very difficult. Transvesical open prostatectomy was done after breaking calcification. Bladder stone delivered through the same wound and biopsies were taken from bladder wall and prostatic capsule [Figure 3].

Postoperative period was uneventful and catheter removed on the 10th day following surgery. Histopathological examination of bladder and prostatic capsular biopsy did not suggest any anaplasia. Chemical analysis of prostatic calcification revealed mixture of calcium phosphate (75%) and calcium carbonate (25%) while bladder calculus was mixed phosphate.

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**DISCUSSION**

Prostatic calcification is common in men older than 50 years and incidence increases with age.\(^2\) According to a recent series, it is detected in as high as 88% of operative specimens.\(^3\) Any such calcification when occupies an area of more than 3 cm\(^2\) on a standard X-ray of the pelvis is arbitrarily defined as gross calcification which is extremely rare in any age group.\(^2\)

Prostatic calcification is usually associated with prostatic inflammation, and there are a cause and effect relationship between them.\(^1\) With the inflammation of prostate, the prostate acini get congested while the prostate gland ducts become narrow, that causes stasis and retention of salt from the urine. Stasis of prostatic fluid along with hold up of desquamated acinar cells leads to the development of corpora amylacea with subsequent deposition of calcium salts leading to calcification and calculus formation. This further irritates and blocks the ducts of prostatic glands and thus vicious cycle of inflammation and calcification remain continued.\(^2\)

Apart from prostatitis, prostatic calcification has been reported in association with prostatic hypertrophy, prostatic carcinoma, after radiotherapy for carcinoma of prostate, after prostatectomy, ochronosis, and hematospermia.\(^3\) An extensive prostatic calcification can also be seen with tuberculosis of prostate and other granulomatous conditions.\(^4\)

Prostatic calcifications are mostly found in the cephalad portion of the gland. They may also be identified in the region of verumontanum and the ejaculatory duct, most commonly as the duct inserts into the verumontanum.\(^5\) With transrectal ultrasonography (TRUS), most of these are seen as interface calcification appearing as poorly defined or amorphous hyperechoic structures while peripheral or transitional zone calcification are unusual and can be seen in association with carcinoma prostate,\(^1\) although the incidence of such association is not as high as like breast carcinoma.\(^3\) The calcifications may also be situated in the caudal portion of the periurethral prostatic tissue which can mimic as prostatic urethral calculi. Hence, prostatic urethral calculi should be distinguished from intraprostatic calcifications, which are normally found periurethrally or in the pseudocapsule.\(^5\) According to distribution in gray-scale TRUS of the prostate, Harada et al. described these calcification in two types.\(^6\) Discrete, multiple small echoes that is usually diffusely distributed throughout the gland were called Type A calcification while large mass of multiple, coarser echoes were referred as Type B that corresponds to calculi, mainly situated in the prostatic ducts.\(^7\) In computed tomography, calcifications appear as hyper-attenuating foci of variable thickness. In magnetic resonance imaging, these calcifications can be identified in

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**Figure 1:** Ultrasonography of kidneys, ureters, and bladder showing bladder calculus with heterogeneous prostate with areas of calcification and posterior acoustic shadow

**Figure 2:** X-ray kidneys, ureters, and bladder showing completely calcified prostate with bladder stone

**Figure 3:** Specimen of enucleated calcified prostate with bladder stone

Over 3 months of follow-up, there is no voiding problem, and the patient has been kept in close surveillance.
susceptibility weighted imaging sequences.\[^{8}\] The chemical analysis of most of these calcification reveals either calcium phosphate or calcium carbonate.\[^{9}\]

Prostatic calcifications may be asymptomatic but usually present with symptoms of associated disease such as dysuria, infection, hematuria, obstruction, or pelvic/perineal pain.\[^{6,7}\] Occasionally, calcifications can be passed through the urethra and present as prostatic urethral calculi.\[^{9}\] Silent asymptomatic prostatic calculi or calcification does not warrant any treatment as it could be an age-induced phenomenon\[^{10}\] but a gross calcification may affect the relaxation of the prostate, which may lead to obstruction in voiding and must be treated.\[^{11}\]

A significant bladder obstruction and symptoms indicate surgical intervention in form of transurethral resection of the prostate (TURP) or prostatectomy,\[^{9,10}\] although extracorporeal shock wave lithotripsy with suprapubic percutaneous extraction has also been described.\[^{12}\] A transurethral removal may produce temporary relief, but may not necessarily guarantee removal of all the prostatic calculi, therefore, recurrent prostatic calcification may be encountered subsequently. Larger calcification and stone burden should be treated aggressively and completely as formal prostatectomy at the very first intervention, to avoid the necessity of repeat intervention.\[^{9,10}\]

Open prostatectomy was done in this case as there was a concomitant bladder calculus and TURP was not possible due to heavy encrustation.

**Conflicts of interest**

There are no conflicts of interest.

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