



Oncology

Treatment of prostatic abscess concomitant with high-risk prostate cancer: A 2-steps approach

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ABSTRACT

Prostatic abscess (PA) prevalence has decreased in the era of antibiotics. This condition is associated with chronic conditions, including diabetes, immunodeficiency, liver disease, or even severe diseases such as prostate cancer. Concomitant prostatic abscess and prostate cancer are very challenging to treat because of the lack of specific guidelines, significant complications, and controversial treatment approaches. By reporting a case with prostate cancer in the setting of a prostatic abscess treated successfully by surgery, we propose a 2-steps approach including transurethral resection drainage followed by laparoscopic radical prostatectomy.

1. Introduction

The prostatic abscess (PA) is a rare and mainly seen in patients with underlying conditions.¹ Infrequently, patients with prostatic abscesses can have concomitant prostate cancer (PC). The diagnosis and treatment of this complicated condition can present significant challenges due to its nonspecific clinical features and the absence of specific guidelines.² To address this, our surgical team proposes a two-step approach. In this case report, we present a successful case of treating a high-risk prostate cancer patient with a prostatic abscess using transurethral resection drainage followed by laparoscopic radical prostatectomy (RP).

2. Case presentation

A 68-year-old male patient arrived at the emergency room with a five-day history of urinary retention. His medical history was remarkable for long-standing type 2 diabetes mellitus. Vital signs were normal, except for a fever of 38.5 °C. Digital rectal examination unveiled an enlarged, rigid, solid, and tender prostate with two lobes and no fluctuation areas. Laboratory tests indicated an elevated white blood cell count (12.37 K/ μ l), TPSA level of 31.11 ng/ml, and FPSA level of 7.38 ng/ml. Urinalysis showed negative nitrite with a very high leukocyte count, and the urine culture was positive for *Escherichia coli*. MRI revealed an enlarged prostate (54 × 40 × 43mm) with a large lesion area (28 × 51 × 42mm) exhibiting low signal on T1 and enhanced signal on

T2, along with peripheral contrast enhancement. A mass lesion was found in the upper one-third of the peripheral transitional zone at 7–11 o'clock, with strong enhancement and washout phenomenon radiating to the capsule (Fig. 1A). A few iliac nodes measuring 13 × 11mm showed contrast enhancement. The patient was diagnosed with a prostatic abscess and was suspected of high risk for prostate cancer (PIRADS V2:4). The treatment plan involved a two-step approach: transurethral resection of the prostate (TURP) to drain the abscess for the first step, which was successful (Fig. 1B). For the second step, we will schedule laparoscopic radical prostatectomy to remove the prostate cancer. The excised tissue obtained during the unroofing procedure was sent for pathological assessment, which resulted in a moderately differentiated carcinoma with a Gleason score of 7 (4 + 3), indicating grade 3 cancer. Post-operatively, the patient remained stable, receiving insulin and antibiotics to manage glycemia and infection. After a 7-day hospital stay, the patient was discharged without significant complaints. A follow-up after two weeks was scheduled to evaluate the prostate cancer and establish a treatment plan.

At follow-up, MRI results showed scattered tumor images in the peripheral zone extending into the surrounding capsule and invading into seminal vesicles (Fig. 1C). The tumor was classified as PIRADS V2:5. Bone scan and chest X-rays are normal. We diagnosed the patient with prostatic carcinoma stage IIIb cT3bNoMo. One month later, MRI demonstrated the abscess resolution with remarks of transurethral resection of the prostate (Fig. 1D), no infiltrating lesion and without any

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sign of regional lymphadenopathy. Inflammatory markers were normalized, and PSA level was 24.43 ng/ml. Urinalysis was negative for nitrite and leukocyte esterase. Patient was asymptomatic and the urine culture was negative. At this moment, we decided to treat patient with radical prostatectomy. We removed the prostate, two seminal vesicles, vas deferens, and the pelvic lymph nodes on both sides. The surgery lasted 4 hours with 300ml of estimated blood loss. The patient had the urinary catheter removed on the fifth postoperative day and was discharged on the seventh day. The postoperative pathological results showed prostate carcinoma with a Gleason score of 8 (4 + 4) staged pT3aN0M0. The two seminal vesicles, dissected lymph nodes and the surgical margins were free from malignant cells. Immunohistochemistry (IHC) results revealed PTEN loss (Fig. 2A). The patient had a follow-up in 2 weeks to remove the urethral catheter, achieving good urinary control without complaining about any symptoms including urinary retention, intermittent voiding, irregular small volume voiding or incontinence, nocturnal urination, and urinary leakage. Erection quality wasn't assessed due to pre-existing diabetes-related erectile dysfunction. In the follow-up appointment two months and five months after the prostatectomy, the patient was asymptomatic, and the PSA result was 0.04 ng/ml and 0.03 ng/ml, respectively. MRI results at two months follow-up showed resolution of the tumor without any suspicious lesion.

(Fig. 2B).

3. Discussion

The prostatic abscess is a rare disease in males with an incidence rate of about 0.5% among urological disorders, and high the mortality rate ranging from 1% to 16%.² Cases with concurrent prostate cancer are infrequent and pose significant challenges due to the absence of specific guidelines.³⁻⁶ Based on current knowledge, we propose a 2-steps approach for managing this situation.

Our first step focuses on the drainage of the prostatic abscess to stabilize the patient's inflammatory status, create a more convenient environment for prostate cancer surgery, and reduce life-threatening complications. Current studies suggest transrectal ultrasound-guided aspiration as the first-line therapy.⁷ However, in concomitant PA and PC, we suggest that TURP should be the first-line therapy, especially for PA with a diameter greater than 10 mm, which usually requires drainage beside the medications.^{2,8} Moreover, TURP provides necessary prostate tissue specimens for pathological diagnosis, and a significantly shorter hospitalization length.^{9,10}

The second step involves the treatment of prostate cancer according to current guideline.¹¹ For high risk and locally advanced prostate

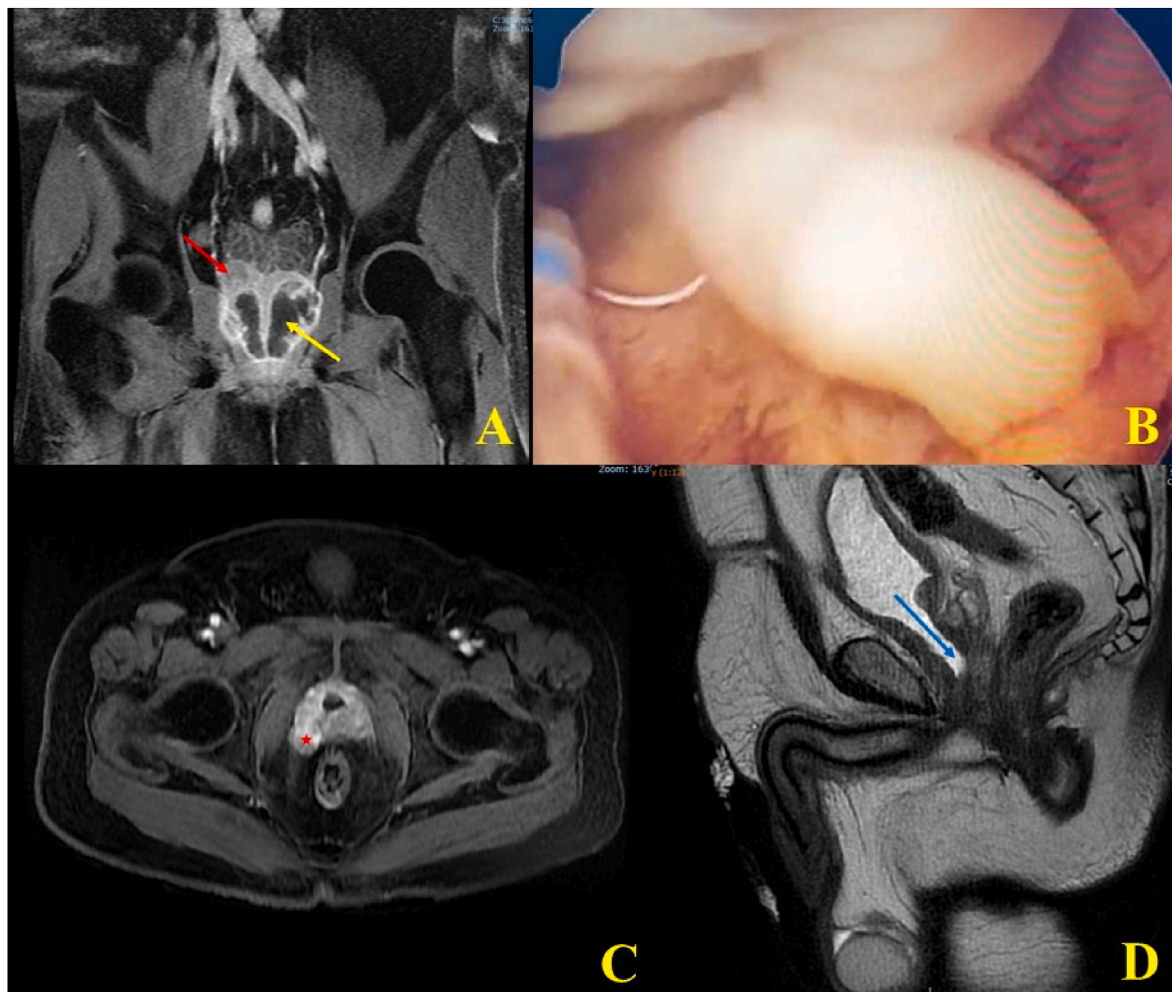


Fig. 1A. The MRI with contrast enhancement revealed a large, thick-walled fluid collection (measuring 28 × 51 × 42mm) indicative of a prostatic abscess (Yellow arrow). Additionally, a mass lesion in the peripheral transitional zone, measuring 20 × 36mm, was identified, suggestive of prostate cancer (Red arrow). 1B. Initial drainage of pus from the prostatic abscess after transurethral resection. 1C. Two weeks follow-up MRI results showed scattered tumor images (Red star) in the peripheral zone extending into the surrounding capsule and invading into seminal vesicles. 1D. One month follow-up MRI demonstrated the abscess resolution with remarks of transurethral resection of the prostate (Blue arrow). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

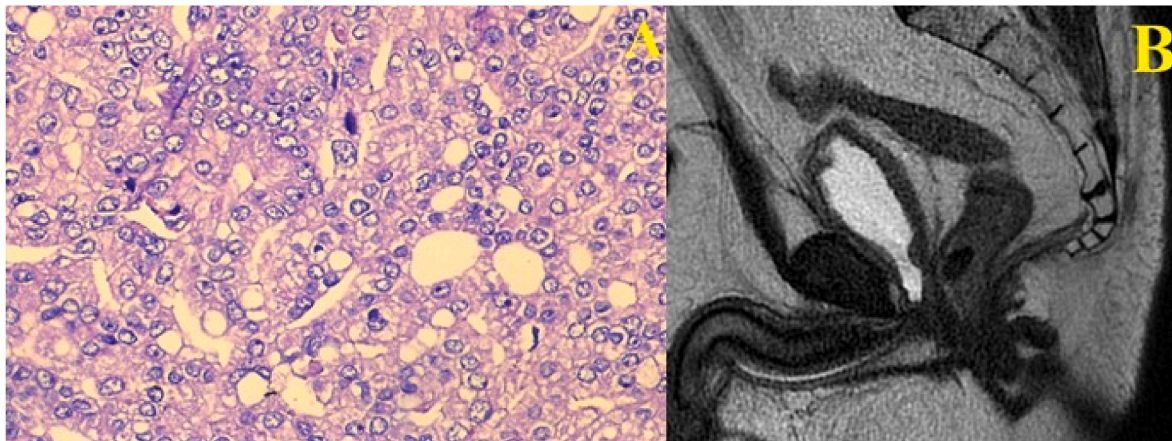


Fig. 2A. Post-operational pathological examination revealed prostate carcinoma, moderately differentiated, Gleason 8 (4 + 4), associated with prostatitis and Immunohistochemistry (IHC) results revealed PTEN loss. **2B.** MRI result showed resolution of tumor without any suspicious lesion.

cancer, radical prostatectomy combined with radiation therapy and endocrine therapy is considered an effective first line treatment method for increasing patient survival rates.¹¹ However, the time to surgery after an infectious event is an essential factor that needs to be evaluated carefully. While literature evidence does not exist, the operation theoretically should be delayed until we have evidence of the resolution of the inflammatory state, including the normalization of inflammatory markers and imaging findings. Delaying radical prostatectomy in patient with high-risk PC for at least three months does not lead to worse oncological survivals outcomes.¹²

Our patient was classified as high-risk because of a stage IIIb cT3bNoMo prostate carcinoma, 31.11 ng/dl PSA, and a Gleason score 7 (3 + 4). Four weeks after PA drainage, the patient was asymptomatic and inflammatory markers returned to normal range. MRI revealed no infiltrating lesion and total resolution of prostatic abscess. He then underwent RP and pelvic lymph node dissection. The early results are promising, with patients showing urinary control after catheter removal and no postoperative complications recorded. However, PTEN loss results indicates a high-risk prostate cancer that requires follow-up for early detection of recurrence or metastasis.¹³

4. Conclusion

Concomitant prostatic abscess and prostate cancer are rare conditions. In this situation, we propose a 2-steps approach with transurethral resection of the prostate for drainage and pathological specimen as the first step and the second step of prostatic cancer treatment according to corresponding guidelines after stabilizing the inflammatory status. However, we need more additional data from cases or studies to evaluate the efficacy of our 2-steps approach.

Consent

Informed consent has been obtained from our patient.

Author agreement

All authors have seen and approved the final version of the manuscript being submitted.

Declarations of interest

None.

Author contributions

Vo Anh Vinh Trang: Conceptualization, Investigation. Thien Tan Tri Tai Truyen: Writing - original draft. Huu Doan Pham: Writing - original draft. Viet Nhat Tan Mai: Validation. Le Chuyen Vu: Supervision. Vinh Hung Tran: Writing - review & editing.

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