



## **Luts induced to a Basal Cell Carcinoma of the Prostate: A Case Report and Review of the Literature**

**Antonopoulos C<sup>1\*</sup>, Pouloupoulos I<sup>1</sup>, Simoulis A<sup>2</sup>, Nakou M<sup>3</sup> and Komninos C<sup>1</sup>**

<sup>1</sup>Department of Urology, Athens Medical Center, Marousi, Greece

<sup>2</sup>Department of Anatomical Pathology, Athens Medical Center, Marousi, Greece

<sup>3</sup>Department of Anesthesiology, Athens Medical Center, Marousi, Greece

\***Corresponding author:** Christos Antonopoulos, Department of Urology, Athens Medical Center, Marousi, Attikis 26, Ilioupoli, Greece, Tel: 6936980047

### **Abstract**

**Background:** Basal cell carcinoma (BCC) of the prostate is a very rare variant of prostate malignancy. Its clinical presentation, diagnostic features, and biologic behavior differ from conventional acinar adenocarcinoma. The absence of prostate-specific antigen (PSA) elevation and nonspecific symptoms often delay diagnosis.

**Case report:** We report the case of a 75-year-old male presenting with lower urinary tract symptoms and a firm prostate on digital rectal examination. Serum PSA was within normal limits. Imaging identified a prostatic mass without extraprostatic extension. Cystoscopy was performed, which revealed abnormal tissue, and a transurethral resection was carried out with the specimen sent for biopsy resection. The prostatic mass showed basaloid cell proliferation with immunohistochemistry positive for high molecular weight cytokeratin and p63, consistent with basal cell carcinoma. The patient underwent robotic radical prostatectomy with pelvic lymphadenectomy. Final pathology confirmed a predominant basaloid component with adenoid cystic/cribriform architecture,

negative surgical margins, and no lymph node involvement. At 6 months post-surgery, the patient remained free of disease.

**Conclusion:** This case shows how important it is to use special tests, like immunohistochemistry, to diagnose basal cell carcinoma of the prostate, and how surgery can be an effective treatment for this type of cancer. Since this cancer is so rare and can behave unpredictably, we need to keep collecting information about real cases to learn how to treat it best.

### **Introduction**

Prostate cancer is a common problem around the world, but most of the time it's a type called conventional acinar adenocarcinoma. However, there are some rare types of prostate cancer that can be really challenging to diagnose and treat - one of these is called basal cell carcinoma. This type of cancer starts in the basal cells of the prostate's ducts and acini, and it often doesn't cause the usual increase in PSA levels, which can make it harder to detect and diagnose [1,2].

As a result, people with this type of cancer might not find out they have it until later on. This condition is

very rare, so not many cases have been studied. In fact, only around 100 to 140 cases have been reported so far [3-7]. When looking at the tissue under a microscope, it can show a basaloid pattern, and sometimes it has features that resemble adenoid cystic or cribriform patterns. However, it's still not clear what the best way to treat this condition is or what the outlook is for patients [4].

We're looking at a new instance of basal cell carcinoma of the prostate, and we'll be discussing how it presents, how it's diagnosed, the treatment options, and a quick look at what's already been written about it.

## Case Presentation

### Patient and Clinical Presentation

A 75-year-old man presented with a several-months history of progressive lower urinary tract symptoms (e.g., urinary frequency, weak urinary stream), and a sensation of incomplete bladder empty in after

transurethral prostatectomy 3 years ago. He denied hematuria or systemic symptoms such as weight loss. There was no prior history of elevated PSA. Cystoscopy was performed, which revealed abnormal tissue, and a transurethral resection was carried out with the specimen sent for biopsy resection. The prostatic mass showed basaloid cell proliferation with immunohistochemistry positive for high molecular weight cytokeratin and p63, consistent with basal cell carcinoma. Staging was performed with a PET scan, which was negative for secondary lesions.

On digital rectal examination, the prostate felt firm and nodular. No peripheral lymphadenopathy was noted.

### Laboratory Studies

- Serum PSA: [1.0 ng/mL] (within normal range)
- Routine blood counts and metabolic panel: unremarkable

### Imaging



C/T Abdomen showed a heterogeneous mass in the prostate with irregular borders. A heterogeneous mass in the bladder floor, at prostatic fossa.

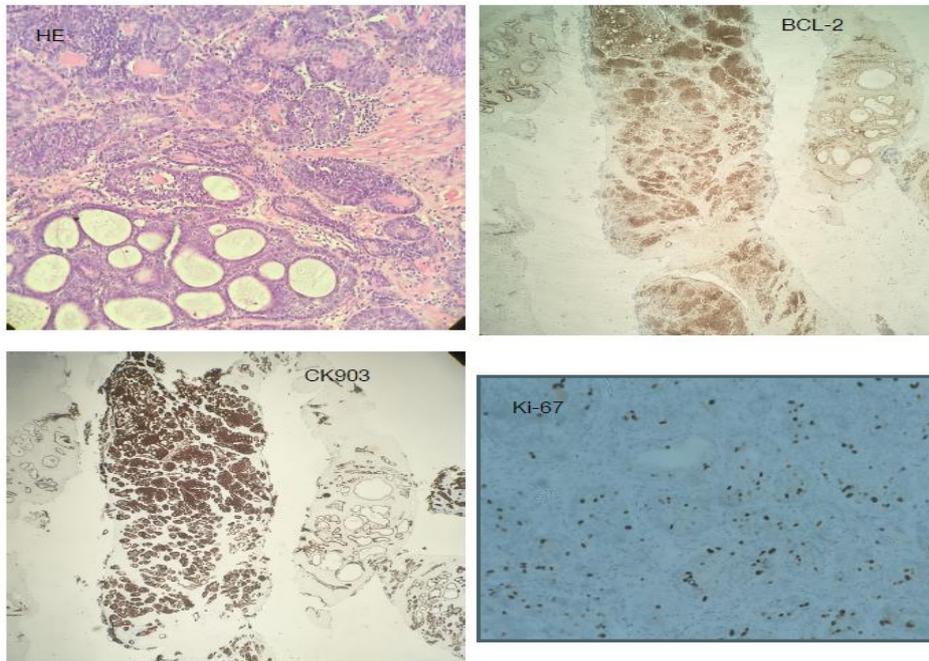
### Pathology (Biopsy)

Transurethral biopsy of the prostate yielded multiple cores showing:

- Basaloid cells arranged in nests, cribriform/solid patterns, with peripheral palisading.
- High mitotic rate, occasional necrosis.

- Absence of typical glandular/acinar architecture of conventional adenocarcinoma.

### Immunohistochemistry (IHC) revealed



- **Positive:** high-molecular weight cytokeratin, p63, Ki-67, BCL-2, CK903
- **Negative or weak:** PSA, PSAP, androgen receptor

These findings supported a diagnosis of basal cell carcinoma (basaloid type) of the prostate.

### Treatment and Surgical Pathology

Given localized disease, the patient underwent robotic radical retzius -sparing prostatectomy with extended pelvic lymph node dissection. Gross specimen measurement: tumor maximal dimension [1 cm], confined to the prostate without seminal vesicle invasion.



Histologic examination confirmed a predominant basaloid component (~ > 90%) with adenoid cystic/cribriform architecture, positive cytokeratin, p63, Ki-67, BCL-2, CK903.

Negative conventional acinar adenocarcinoma markers. Surgical margins were negative; no lymph node metastasis was identified ( pT2cN0M0).

### Follow-Up

At 6 months postoperatively, the patient remained asymptomatic, with no radiologic evidence of recurrence. PSA remained at low/undetectable levels, consistent with non-PSA-secreting nature of BCC.

## Discussion

### Epidemiology and Clinical Features

Though prostate cancer is among the most common malignancies, BCC of the prostate remains exceedingly rare. Estimates suggest that BCC accounts for approximately 0.01–0.1% of all prostate cancers [6]. To date, fewer than 140 cases have been documented globally [7]. Patients often present with lower urinary tract symptoms (LUTS), urinary retention or, less commonly, hematuria — rather than elevated PSA or suspicion of typical prostate cancer [2]. On digital rectal examination, the prostate may feel firm or “stony-hard” [8,9].

### Diagnostic Challenges

Because PSA may be normal or only mildly elevated, BCC is often not suspected before biopsy [2]. Imaging may reveal a prostatic mass, but radiologic features are not specific. Definitive diagnosis relies on histopathologic examination and immunohistochemistry (IHC), demonstrating basal cell markers (e.g., 34βE12, p63, Ki67, BCL-2) and lack of luminal/acinar markers (e.g., PSA, PSAP) [9].

This immunoprofile helps distinguish BCC from:

- Conventional acinar adenocarcinoma (positive for luminal markers, negative for basal markers)
- Basal cell hyperplasia (benign) — which shows no invasive features, lacks mitotic activity, atypia, and no destructive growth into stroma.

Additionally, some variants of BCC show adenoid cystic / cribriform architecture, sometimes accompanied by gene rearrangements (e.g., MYB/MYBL1) analogous to adenoid cystic carcinomas elsewhere [4].

### Behavior, Prognosis, and Molecular Insights

For a long time, people thought that basal cell carcinoma of the prostate wasn't very aggressive, but now we have more evidence that suggests it can actually be quite serious. This type of cancer can spread beyond the prostate, invade the nerves, reach the lymph nodes, and even metastasize to other parts of the body. It can also progress very quickly. Scientists have recently made some progress in understanding what's going on at a molecular level. A case report from 2025 found some changes in certain genes, like PIK3R1, KMT2D, and NOTCH1, which aren't inherited, as well as some inherited variations in genes like MUTYH, NBN, and MSH3. These changes seem to be affecting some important pathways in our cells, like the ones that control the cell cycle, epigenetics, and DNA repair. This is interesting because it might mean that we can develop targeted therapies to treat these issues in the future [8-10].

### Treatment Considerations

Although basal cell carcinoma of the prostate is rare, treatment typically involves radical prostatectomy, which is currently the most accepted approach for localized cases, despite the lack of specific consensus or clinical guidelines. When it comes to treating advanced, metastatic, or recurrent diseases, doctors have tried using non-surgical methods like radiation, chemotherapy, and hormonal therapy, but it's still not clear how well these treatments work. However, with new information about the molecular makeup of these diseases, there may be new opportunities for personalized treatments that are tailored to each individual's specific needs, even though there isn't much evidence to support this approach yet. Long-term follow-up is crucial given the reported potential for late recurrence or metastasis [2,8].

### Differential Diagnosis

The differential diagnosis for a basaloid tumor in the prostate includes:

- Basal cell hyperplasia is a benign condition that doesn't invade surrounding tissues. It's noninvasive and doesn't show any abnormal cell changes or spread into the tissue around it.
- Conventional acinar adenocarcinoma — lacks basal marker expression, shows luminal differentiation.
- Adenoid cystic carcinoma and cribriform carcinoma can be quite similar, which sometimes makes it hard to tell them apart.

Luckily, there are some tools that can help, like special tests called immunohistochemistry and molecular studies. For example, looking at something called MYB rearrangement can give us more information to make a clearer diagnosis.

## Conclusion

Prostatic basal cell carcinoma is a rare but clinically important entity. Its nonspecific presentation, normal PSA, and rarity contribute to diagnostic difficulty, often delaying definitive diagnosis. Histopathology with immunohistochemical staining is essential for accurate diagnosis. Radical prostatectomy offers the best chance of disease control in localized BCC. Given variable biological behavior and potential for aggressive course, long-term follow-up and further data collection are needed. Emerging molecular findings may ultimately inform targeted therapies.

## Declarations

**Patient Consent:** Written informed consent was obtained from the patient for publication of this case report.

**Conflicts of Interest:** None declared.

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