



## Oncology

## Subcutaneous nephrovesical bypass in a patient with advanced prostate cancer

Boyan Stoykov<sup>a,\*</sup>, Nikolay Kolev<sup>a</sup>, Vladislav Dunev<sup>a</sup>, Vladislav Mladenov<sup>b</sup>, Aleksandar Vanov<sup>a</sup>, Pencho Genov<sup>a</sup>

<sup>a</sup> Department of Urology, Medical University Pleven, Bulgaria

<sup>b</sup> Department of Urology, Medical University Sofia, Bulgaria



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## ABSTRACT

In the presence of hydronephrosis, as a result of ureteral malignant invasion, advanced pelvic tumor or retroperitoneal fibrosis, we most often perform a double J stent or percutaneous nephrostomy. In the search for a better quality of life for our patients in recent years in urological practice is increasingly becoming the use of subcutaneous nephrovesical bypass due to its proven safety, effectiveness and minimal invasiveness.

## Introduction

Patients with advanced pelvic malignancies often develop renal failure over time due to ureteral obstruction. If internal ureteral stenting is unsuccessful, percutaneous nephrostomy is performed, with all its consequences such as loss of quality of life, risk of dislocation of the nephrostomy tube, infection, and recurrent obstruction. Subcutaneous nephrovesical bypass is a safe alternative to percutaneous nephrostomy for the palliative treatment of ureteral obstruction caused by pelvic malignancy.

## Case report

We present a 58-year-old man with advanced prostate cancer in stage T4N1M1. The patient's PSA is 958 ng/ml (before biopsy) and there is evidence of bone metastases. The patient started hormone therapy with Enzalutamide and bisphosphonates for bone metastases and underwent external beam radiation therapy. Due to obstruction of both ureters and the appearance of acute renal failure, the patient underwent bilateral percutaneous nephrostomies before admission to us. The patient was admitted to the urology clinic at the University Hospital "St. Marina" Pleven on 10.02.2021 with the desire to remove his percutaneous

nephrostomies and to offer him another method for urine derivation. During the CT scan the presence of obstruction of the contrast material in the pelvic sections of the ureters was established. Due to unsuccessful retrograde and antegrade catheterization of the ureters and deteriorating quality of life, the patient was offered a subcutaneous nephrovesical bypass as an alternative to percutaneous nephrostomies. The nephrovesical bypass kit consists of a 9F/54 cm special double J stent as a nephrovesical bypass (Paterson-Forrester Subcutaneous Urinary Diversion Stent Cook), 18-G renal puncture needle and long wire guide, 8-12-F fascia dilators and Alken dilators for subcutaneous tunneling. Under fluoroscopic control, we injected a contrast agent into the calyx system of the kidney for good orientation. We released a wire guide, which was monitored under fluoroscopic control, and dilated the fascia with Amplatz dilators to 10F. The proximal part of the nephrovesical bypass is positioned in the pelvis (Fig. 1A). An incision was made in the skin 1 cm deep and another 2–3 cm above the crista iliaca, and with the help of Alken dilators a subcutaneous tunnel was made through which the stent was passed (Fig. 1B and C). The stent was fixed in the subcutaneous tissue to prevent dislocation (Fig. 1D). Similarly with dilators of the Alken a new subcutaneous tunnel was made from the crista iliaca to a level 4 cm above the suprapubic bone, through which the nephrovesical bypass was passed (Fig. 1). With a cystofix under cystoscopic

\* Corresponding author. UMHAT "Saint Marina", 8 Bulgarian aviation str., University of Pleven, Pleven, Bulgaria.  
E-mail address: [atanasovmd@yahoo.com](mailto:atanasovmd@yahoo.com) (B. Stoykov).

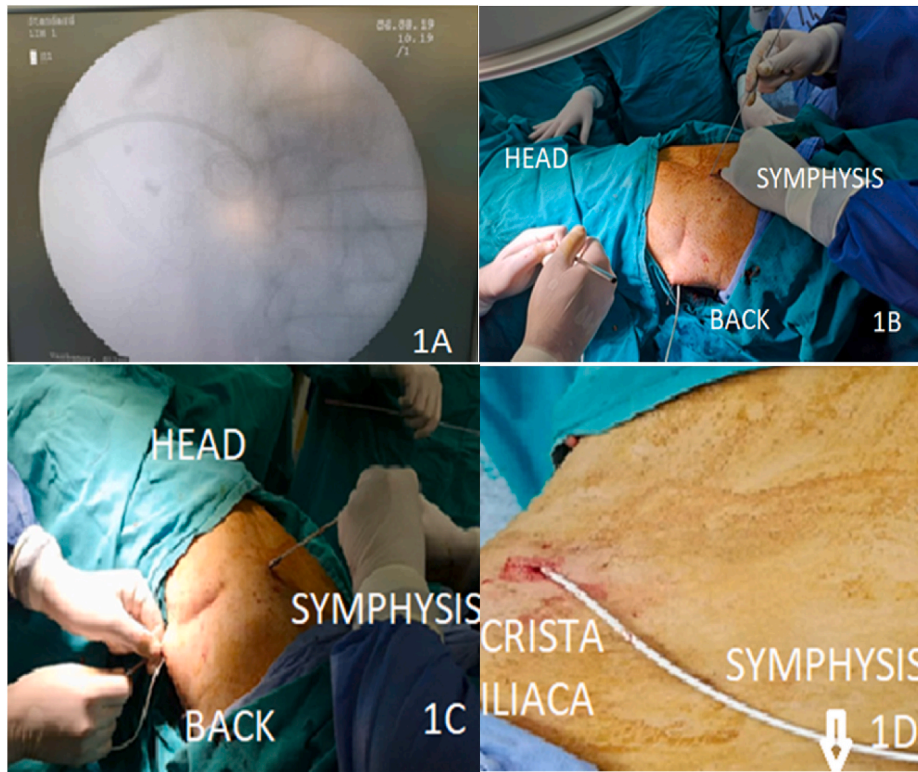


Fig. 1. 1A, 1B, 1C, 1D. Technical stages of the operation.



Fig. 2. Positioning of the distal part of the nephrovesical bypass.

control, the bladder is punctured and the distal part of the nephrovesical bypass is positioned (Fig. 2). Due to the presence of a perivesical hematoma, the procedure was performed only on the right and a perivesical drain was placed. On day 2, a control CT scan was performed to determine that the nephrovesical bypass was positioned correctly and drained well (Fig. 3).

**Discussion**

Malignant tumors in the pelvis or advanced metastases often lead to unilateral or bilateral obstruction of the ureter, which can lead to hydronephrosis and renal failure. These problems can be solved by retrograde stenting of the ureter, which requires periodic changes of the stent.<sup>1</sup> Retrograde placement of a JJ stent into the ureter may fail in the presence of advanced pelvic malignancy or be complicated by infection or obstruction.<sup>2</sup> Alternatively, a percutaneous nephrostomy may be

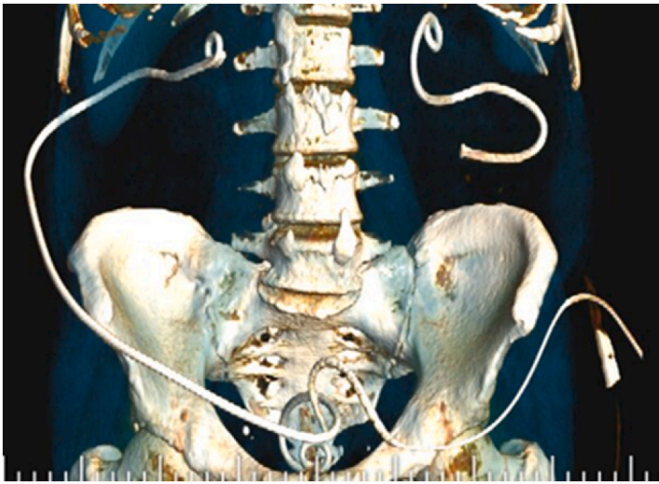


Fig. 3. Control CT scan.

used, but this requires special care.<sup>3</sup> As the malignancy progresses, patients suffer not only from the progression of the tumor stage, but also from complications, including infection, obstruction, and dislocation of

the nephrostomy tube.<sup>4</sup> Subcutaneous removal of the urine with nephrovesical bypass provides effective urine drainage and can improve the quality of life of patients with malignant ureteral obstruction.<sup>5</sup>

### Conclusion

Subcutaneous nephrovesical bypass is a successful alternative to percutaneous nephrostomy in patients who do not want external drainage of urine. In order to ensure a better quality of life, efficacy, safety and good tolerability, nephrovesical bypass is increasingly required in urological practice.

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