

Oncology

Laparoscopic radical prostatectomy with no anastomosis

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A B S T R A C T

From the first radical prostatectomy (RP), this kind of surgeries have always led to the need of a vesicourethral anastomosis (VUA). We present a case of a 65 year-old patient with diagnosis of prostate cancer and candidate for laparoscopic RP. The approach was a conventional extraperitoneal access with complete urethral sparing that avoids the need of VUA. Bladder catheter was removed on the third postoperative day observing immediate urinary continence. The anatomopathological analysis revealed a pT2 adenocarcinoma with negative margins. We report for the first time, a minimally invasive technique that avoids the need of VUA with favorable functional results.

Introduction

The primary aim of surgical treatment in Prostate Cancer (PCa) is to eradicate the disease and to obtain a complete cure. The functions that are among the secondary objectives include: conservation of erectile function and urinary continence.

From the first RP more than a century ago, up to its standardization using a retropubic approach and the evolution of minimally invasive techniques by laparoscopy or robot-assisted, the technique has always involved the section of the lower urinary tract with the need to reconstruct it afterwards with a VUA¹

Urinary incontinence (UI) is one of the major complications of this technique, with an incidence between 4% and 69%, and with an impact on the patients' quality of life.²

The introduction of minimally invasive techniques appears to have improved several surgical aspects, although there are studies in which the differences, as regards UI between the different techniques, are not significant.³

Below, we will describe a RP technique with complete urethral sparing (US) with no VUA, for which we have been unable to find any previous reports in the literature.

Case report/case presentation

The case presented for the technique is a 65 years-old male, with a BMI of 30.5 kg/m², with a diagnosis of a low risk PCa after transrectal prostate biopsy (PSA 3 ng/mL, 3/10 positive cores). Patient was included for laparoscopic RP after the therapeutic options assessment.

The clinical stage was cT1c, grade group 1, with no evidence of clinically significant neoplasia: a lesion described as PI-RADS 2 was observed by magnetic resonance (pMR). Patient's informed consent was obtained for publication of data and images.

Surgical technique

An extraperitoneal approach was chosen with usual positioning of the 4-ports: an infraumbilical optic port and 3 other working trocars positioned in a half-moon.

After space creation, we perform an anterior bladder neck dissection up to its edge.

The seminal plane is reached laterally to the integral bladder neck (Fig. 1a). This stage may be completed with a unilateral or bilateral para-cervical access and posterior dissection of seminal vesicles, vas deferens are sectioned.

After freeing both vesicles, the Denonvilliers' fascia is identified and is lowered to expose the posterior prostate capsule up to the apex.

Subsequently, we will free the neurovascular bundles and expose the lateral sides of the prostate up to the apex (Fig. 1b). Anterior dissection is performed preserving the anterior fascia and pubo-prostatic ligaments until the apex again, starting the dissection of the urethra distal to the prostate. Once the longitudinal urethral fibers are identified, and after freeing the apex, we move on to liberate the distal intra-prostatic urethra (Fig. 1c).

In the same way, we proceed to dissect the bladder neck and the proximal intra-prostatic urethra as such that the anterior region of the urethra is freed from the peri-urethral gland tissue. Once this maneuver

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is performed, we encounter and section the anterior prostate commissure, exposing all the anterior side of the urethra (Fig. 1d). Finally, by dissection and cold cutting, we free the rest of the parenchyma from the urethra (Fig. 2a). We perform all these maneuvers without removing the bladder catheter.

Finally, after checking the absence of leaks, a continuous suture of the anterior fascia and pubo-prostatic ligaments is made to the bladder neck, re-establishing the anatomical support (Fig. 2b).

With the aim of guiding the pathologist, we correct the continuity defect by approaching both sides with loose stitches in the anterior commissure (Fig. 2c).

Results

Surgery time was 110 minutes, and bleeding was below 250 cc. No drain tube was left inside.

The patient was discharged within 48 hours. The bladder catheter was removed on the third day after surgery.

A telephone follow-up was made at 24 hours from removing the bladder catheter, mentioning a complete early continence since the removal of the catheter (with no need for pads). 30 days follow-up, showed the absence of micturition or urinary continence problems.

Pathology analysis reported a pT2 and grade group 2 PCa. Both capsule and urethral margins were free of infiltration. Postoperative PSA was 0.05 ng/mL. In the voiding cystourethrography, a good urethral caliber was observed, as well as complete functioning of both inner and

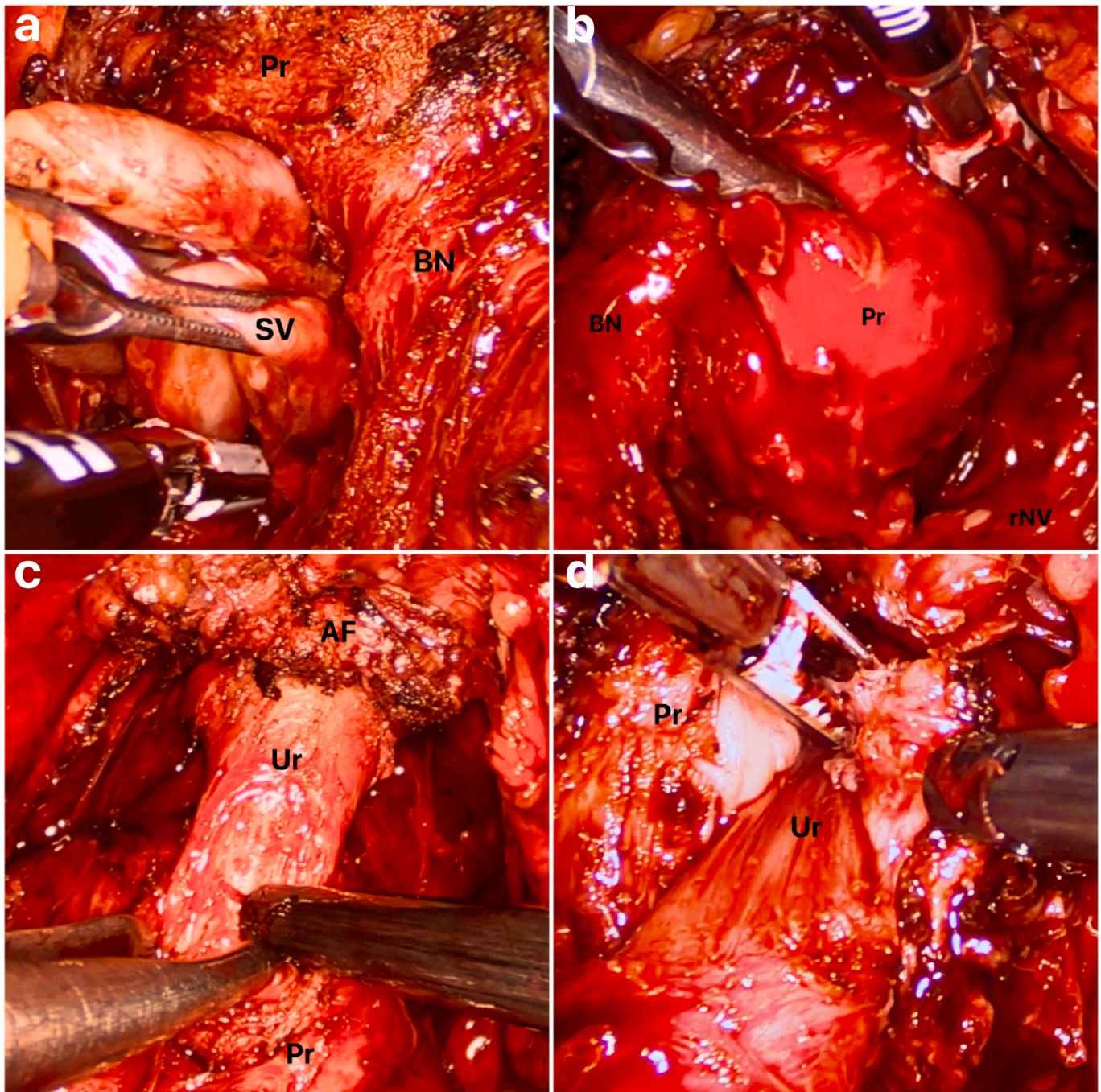


Fig. 1. AF: anterior Fascia. BN: bladder neck. Pr: Prostate. rNV: right neurovascular bundle. SV: seminal vesicles. Ur: Urethra.

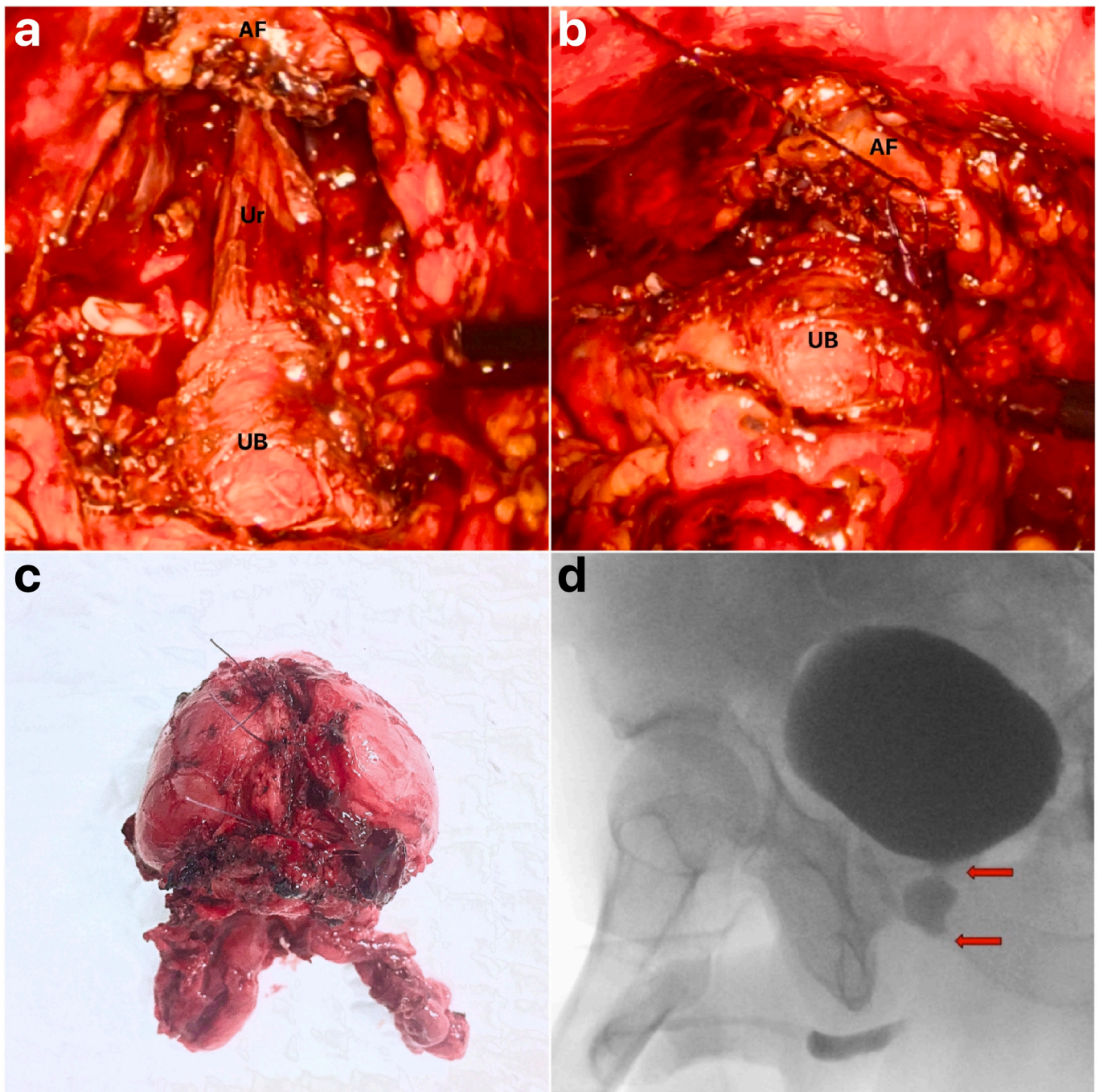


Fig. 2. AF: anterior fascia. UB: urinary bladder. Ur: urethra. Arrows: internal and external sphincter.

external sphincters (Fig. 2d). PSA remained stable during follow-up.

Discussion

Since the initial description, both perineal and retro-pubic approaches and even in the current described minimally invasive surgery techniques, RP has always required urethral section and the need of a VUA. This step has been an important topic and a critical point of the surgery, with different modifications with the aim of facilitating this step and improving the outcomes.

UI is one of the potential side effects of RP and can be affected by the quality of the conserved tissue as well as the quality of the VUA suture. UI has an impact on the quality of life and health costs arising from this, being able to reach tens of millions of Euros per year in western

countries.

On the other hand, the shortening of bladder catheter period, decreases the problems associated with it, including urinary infections, pain, or spasticity. Similarly, the integral conservation of the urinary tract without the need of a VUA prevents the appearance of any other post-operative complications like urinary fistulas, which may lead to longer hospital stays.⁴

For our initial experience we have chosen a favorable case due to the prostatic volume (<50 cc), low risk PCa, with the absence of clinically significant tumor on pMR. Voluminous prostates or the existence of previous prostatic surgeries could limit or prevent the technique. More advanced tumors or those with a high tumor load could be also a contraindication for this technique, due to possible para-urethral involvement, although this is uncommon.⁵ Considerations about the

capsule or peripheral margins of the prostate are no different from the conventional technique.

The RP-US technique is feasible and oncologically safe if cases are correctly selected. It represents a conservative alternative, which decreases the surgical aggressiveness by avoiding the urethral section and the subsequent need of a suture over healthy tissue. This technique, with its limitations and the expected medium and long-term results, could lead to an improvement of the potential side-effects and any complications associated with the need to perform a VUA.

Disclosure statement

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