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Case Report

Late Arteriovenous Fistula after transurethral resection of the prostate: case report

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Abstract: This study describes a case of symptomatic arteriovenous fistula after Transurethral Resection of the Prostate diagnosed by urethrocystoscopy and confirmed by imaging tests. The patient presented lower urinary tract symptoms associated with hematuria twenty years after being submitted to a TURP. Arterial and venous tomography angiography of the pelvis visualized a hypervascularized lesion involving the membranous urethra and aneurysm of the right external iliac artery. The patient underwent embolization of bilateral prostatic arteries with good post-embolization recovery and complete remission of urinary symptoms. Arteriovenous fistula after transurethral resection of the prostate is a rare pathology that must be considered in the differential diagnosis of persistent hematuria and infravesical obstruction without significant prostatic enlargement. In cases like this, embolization has become a new therapeutic option with excellent obliteration rates and minimal morbidity.

Keywords: Transurethral Prostatic Resection; Arteriovenous fistula; Embolization.

1. Introduction

Bleeding after transurethral resection of the prostate (TURP) is a common complication that may demand new surgical approach of the patients. Arteriovenous fistulas (AVF), although described as a rare diagnosis with challenging handling, must be recalled as a diagnostic hypothesis in cases of hematuria after TURP. The diagnoses may be done through computerized tomography or magnetic resonance, although the gold standard is arteriography [1]. This study describes a case of symptomatic arteriovenous fistula after-TURP diagnosed by urethrocystoscopy and confirmed by imaging tests.

2. Case Report

Patient 84 years old, with Benign Prostatic Hyperplasia underwent TURP 20 years ago, with improvement of the lower urinary tract symptoms. Three months ago, presented macroscopic hematuria evolving with urinary retention. When performing a computed tomography of the abdomen, intravesical clots were visualized. After probing and

bladder irrigation, an abdominal ultrasound was performed, exhibiting a normal bladder with no clots. At that moment, urethrocystoscopy was indicated with the intention of performing a new TURP. Endoscopic examination presented a neovascularization visualized with membranous/prostatic urethra compression. Resection of these vessels was not performed to avoid bleeding and/or vascular injury, and embolization of the lesion was indicated. Arterial and venous tomography angiography of the pelvis was performed, visualizing a hypervascularized lesion involving the membranous urethra and aneurysm of the right external iliac artery (Figure 1).

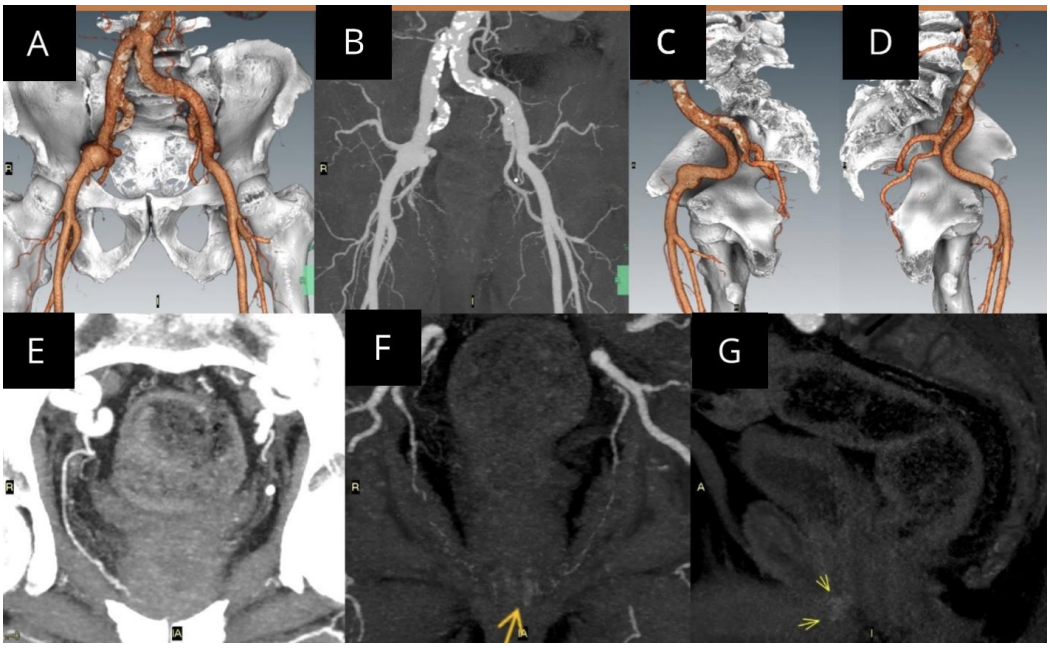

Figure 1: Arterial and Venous Tomography Angiography of the Pelvis. A: 3D reconstruction of pelvic arteries showing right external iliac artery aneurysm; B: Atheromatous, moderately elongated, normal caliber common and left external iliac arteries; C: 3D right view reconstruction; D: 3D left view reconstruction; E: Lower Bladder Artery; F: Internal Pudendal Artery; G: Urethral trauma.

The patient underwent embolization of bilateral prostatic arteries (Figure 2), with good post-embolization recovery and complete remission of urinary symptoms. Subsequently to embolization (Figure 3), the patient was transferred to the urology ward for routine postoperative care. After being discharged, a follow up appointment was arranged in the clinic in 15 days. Control appointments were made after 30 and 45 days of postoperative, in which the patient was urinating 5 to 6 times a day, had adequate stream, no hesitancy or straining, no prolonged micturition, no nocturia, no feeling of incomplete bladder emptying or dribbling. Post-void catheterization was performed, and the residual volume was less than 10mL. The patient remains asymptomatic with no evidence of recurrence in 5-month postoperative follow-up. No other image exams have been performed.

3. Discussion and conclusion

Pelvic vascular lesions, such as pseudoaneurysms and arteriovenous fistulas (AVF), related to internal pudendal arteries after prostate procedures, are rare events. The main causes are trauma, including iatrogenic injuries, and disease, infection, or inflammation, which lead to endothelial dysfunction and damage in the vessel wall [2]. Congenital arteriovenous malformations are an even more rare entity that originate from arrest of embryonic developments resulting in anomalous vascular structures [3]. Transurethral resection of the prostate (TURP) is considered gold standard treatment for lower urinary symptoms caused by benign prostatic hyperplasia (BPH). Despite being minimally

invasive, the procedure is not free from complications, which may include vascular tissue injuries. The surgical approach of these complications is challenging due to the complex anatomical location, which makes endovascular approach the most suitable treatment.

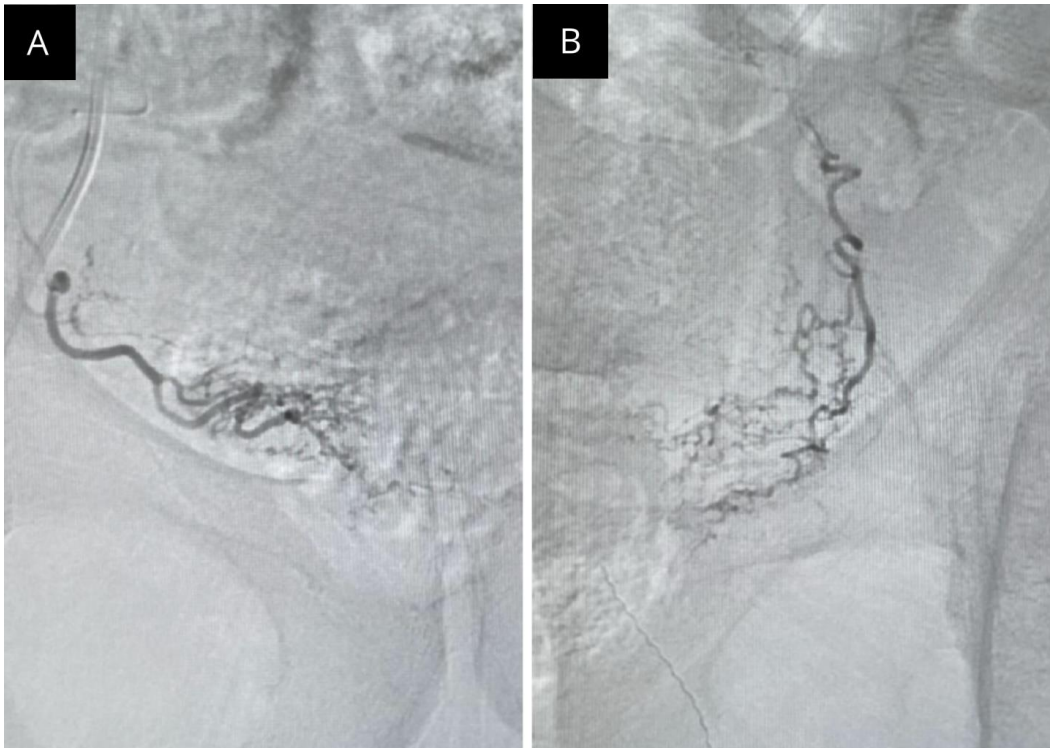

Figure 2: Arteriography of the prostate before embolization (A and B).

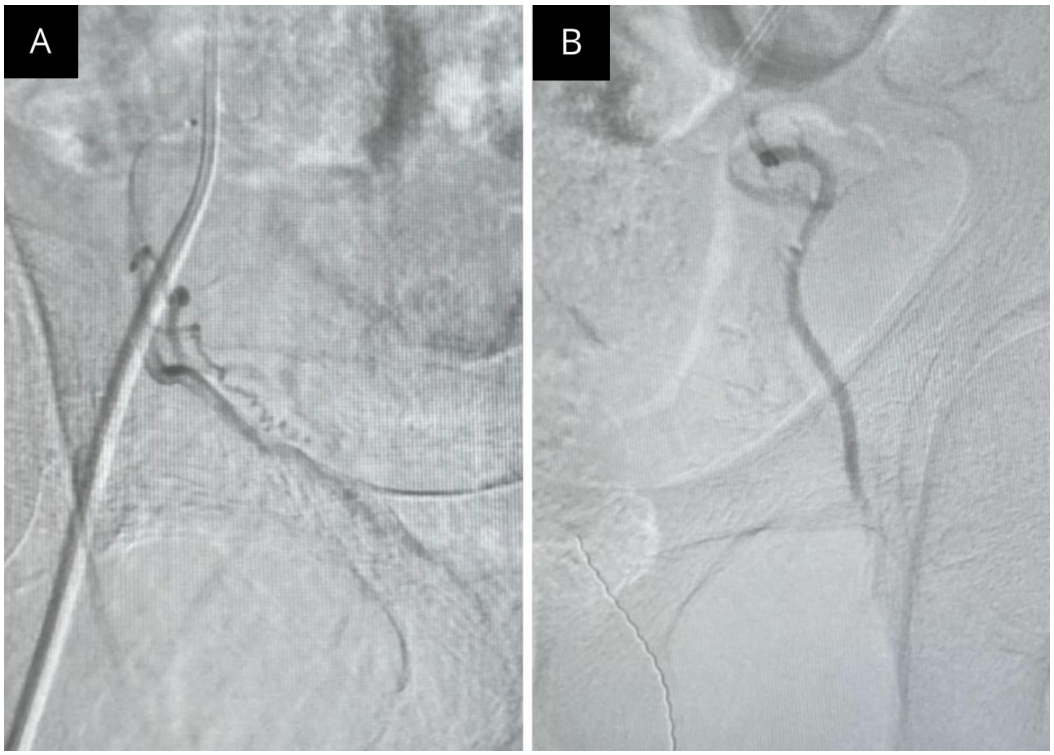

Figure 3: Arteriography of the prostate after embolization (A and B).

In the medical literature, there few reports of similar cases in which patients developed pseudoaneurysms and AVFs after prostatic procedures which were effectively

treated using endovascular techniques: Galosi et al, describes a case report of pseudoaneurysm with arteriovenous fistula after a pelvic trauma, diagnosed by trans-rectal ultrasound after patient exhibited recurrent hematuria [2]. Although surgical treatment is an option, it is associated with a higher mortality rate, therefore, embolization of the AVF was the chosen treatment [2][4]. Beckley et al [5] described endovascular treatment of a patient with late hematuria after robotic radical prostatectomy, due to a pseudoaneurysm in the pudendal artery. Asimakopoulos AD et al [6] reported a case of a patient who developed an AVF associated with pseudoaneurysm after Homium laser enucleation of the prostate (HoLEP). After unsuccessful endoscopic and surgical treatment attempts, the patient was effectively treated by selective embolization. Celtikci et al [7] also described a case of hematuria after transurethral resection of the prostate, associated with AVF and pseudoaneurysm, which was successfully treated through catheterization and selective embolization.

The connection of the feeding vessels or excision though open surgery are alternative treatments for AVF. However, the efficacy of surgery is debated due to the rapid development of new collateral vessels, greater bleeding and extensive involvement of adjacent structures [8]. Robot assisted surgery is also a considerable therapeutic method considered in cases of unsuccessful embolization [9]. The case in question is remarkable due to the detection of the fistula 20 years after the prostate procedure, due to development of complications (hematuria). This unique characteristic differs from other cases in the literature and highlights the challenges of late diagnosis. Furthermore, after embolization, the patient improved not only the hematuria, but also the lower urinary symptoms exhibiting the effectiveness of endovascular approach in treatment of vascular complications.

Selective catheterization followed by embolization has proven to be a successful strategy, providing positive results, and minimizing the risks associated with traditional surgical approaches. The endovascular access choice, in addition to being less invasive, is particularly beneficial due to the location of the lesions and the complexity of the surgical access, justifying its adoption as the treatment of choice in these clinical scenarios. Arteriovenous fistula after transurethral resection of the prostate is a rare pathology that must be considered in the differential diagnosis of persistent hematuria and infravesical obstruction without significant prostatic enlargement. In cases like this, embolization has become a new therapeutic option with excellent obliteration rates and minimal morbidity [8].

The report emphasizes the challenges of late diagnosis in such cases. Further research is needed to explore the risk factors, prevalence, and optimal diagnostic methods for identifying AVFs after prostatic procedures. A more comprehensive understanding of these factors could contribute to improved early detection and treatment.

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Research Ethics Committee Approval: We declare that the patient approved the study by signing an informed consent form and the study followed the ethical guidelines established by the Declaration of Helsinki.

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Conflicts of Interest: None.

Supplementary Materials: None.

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