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## CASE REPORT

# Superselective embolization of bilateral superior vesical arteries for management of intractable hematuria in context of metastatic bladder cancer

Q3 Ahmed Saadi <sup>a,\*</sup>, Abderrazak Bouzouita <sup>a</sup>,  
Mohamed Hedi Rebai <sup>a</sup>, Mohamed Cherif <sup>a</sup>, Walid Kerkeni <sup>a</sup>,  
Haroun Ayed <sup>a</sup>, Amine Derouiche <sup>a</sup>, Hatem Rajhi <sup>b</sup>,  
Riadh Ben Slama <sup>a</sup>, Najla Mnif <sup>b</sup>, Mohamed Chebil <sup>a</sup>

<sup>a</sup> Department of Urology, Charles Nicolle University Hospital, Tunis, Tunisia

<sup>b</sup> Department of Radiology, Charles Nicolle University Hospital, Tunis, Tunisia

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**Abstract** Hematuria due to cancer locally advanced or metastatic bladder is a common condition and is often a management problem. Percutaneous embolization is a mini-invasive option to handle this situation. We report a case of a patient with a metastatic bladder cancer and who presented with an abundant hematuria and severe anemia. After failure of endoscopic resections and “flush” of radiotherapy hemostatic and refusal of cystectomy by the patient, he was treated by superselective embolization of bilateral superior vesical arteries with excellent immediate results. The technique is safe and effective in the short term. The long-term effectiveness requires further investigation.

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## 1. Introduction

In a patient with bladder urothelial cancer that is not suitable for or does not choose curative treatment, intractable hematuria is a disastrous condition. Several means are available to handle this situation as trans-

\* Corresponding author.

E-mail address: [dr.saadi.ahmed@gmail.com](mailto:dr.saadi.ahmed@gmail.com) (A. Saadi).

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urethral resection of bladder and “flushes” of radiotherapy hemostatic, urinary diversions and palliative cystectomy [1]. The introduction of percutaneous arterial embolization has provided a minimally invasive and less morbid option to patients suffering from intractable hematuria in context of advanced or metastatic bladder cancer. Refinement of both techniques and instruments has enabled the development of selective embolization of the anterior division of the internal iliac artery and superselective embolization of the vesical artery [2,3].

We report our initial experience with managing a patient who had a metastatic bladder tumor and intractable hematuria with superselective embolization of bilateral superior vesical arteries.

## 2. Case reports

A 50-year-old man, smoker, which presents a tumor infiltrating the bladder muscle with lung and liver metastases presented with an abundant hematuria with severe anemia. The patient was treated with palliative chemotherapy based on gemcitabine. To control hematuria resection transurethral bladder and the “flush” of radiotherapy hemostatic has been made but without result. We tried to make a cystectomy but refused by the patient. So we decided to perform a selective embolization of bladder arteries.

Retrograde catheterization of the right common femoral artery was performed under local anesthesia. Angiography revealed a vascular blush at the branches of the upper bladder arteries most important on the right side (Fig. 1).

Bilaterally and through the same puncture site right femoral was catheterized the common iliac artery, the hypogastric artery and the anterior trunk of the internal iliac artery to reach the bladder artery where we realized an injection of embospheres (BioSphere Medical Embosphere 900–1200  $\mu\text{m}$ ) realizing a bilateral superselective

embolization superior vesical arteries. The result was satisfactory with no immediate incidents.

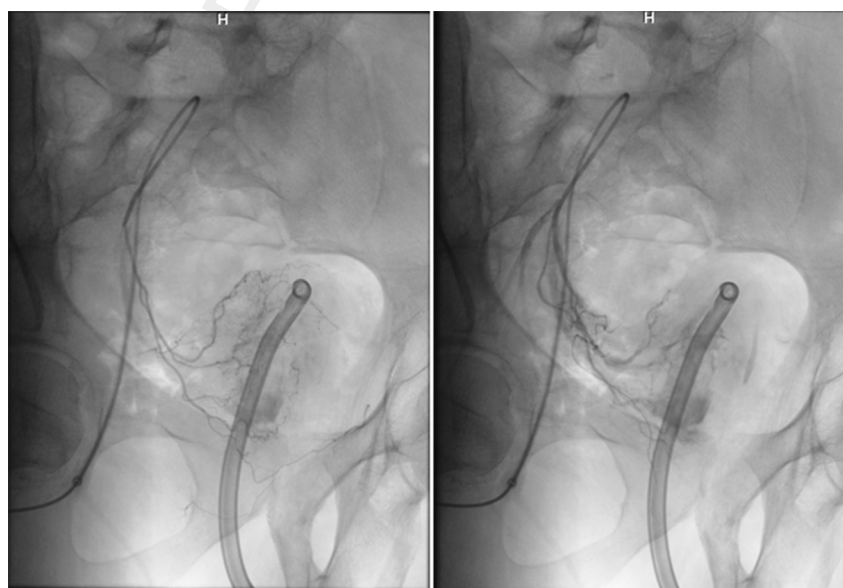
Angiography post-embolization (Fig. 2) showed occlusion of the vesical artery and disappearance of vascular blush with the preservation of other major branches of the internal iliac artery. Hematuria stopped immediately after the procedure and the patient did not develop acute complications.

## 3. Discussion

Abundant hematuria in the context of bladder cancer may have many etiologies such as tumoral mass, radiation cystitis, cyclophosphamide-induced hemorrhagic cystitis (CIHC), and also other sources of bleeding such as prostate or a tumor of the upper urinary tract associated [1]. Hematuria in our patient was rather related to the scaling of the tumor mass with the side effects of treatment.

The most widely used methods for the treatment of hematuria due to bladder cancer are arterial embolization, the intravesical instillation of formalin, aluminum or Carboprost (prostaglandin F2 alpha) [1], the hyperbaric oxygenation [1], hypo-fractionated radiotherapy [2], and finally urinary diversions and palliative cystectomy [1]. In our experiment we tried resection and radiotherapy goal hemostatic before proposing a palliative cystectomy refused by the patient. So we had recourse to the arterial embolization.

The embolization is a medical technique which is to inject selectively in a vessel an occlusive agent with the aim to stop a blood flow, to slow down this stream and/or for the devascularizing of the tissue irrigated by these vessels. It is a procedure known as mini-invasive, by opposition to the surgical techniques, because it is in general less aggressive, carried out under simple local anesthesia and requires a shorter hospital stay. The embolus produces a closure of vessels in the afferents of the tumor,



**Figure 1** Pre-embolization pelvic angiogram showing a vascular blush at the branches of the upper bladder arteries most important on the right side.

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