

Treatment of a hemorrhage secondary to nephrostomy tube placement for derivation of monstrous hydronephrosis in upper tract urothelial carcinoma

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Abstract

A 85-year-old female patient underwent nephrostomy tube insertion for a huge hydronephrosis due to a papillary mass involving the right ureteral ostium diagnosed by at computed tomography scan. As soon as the nephrostomy tube was inserted, a pulsatile bleeding was found and a renal angiography was done. A massive bleeding from the main and unique right renal artery was found such as to require prompt endovascular embolization. A transurethral resection of the bladder was performed and the pathology report confirmed high-grade pTa transitional cell carcinoma. An open drainage was then placed to empty the contents of the pyelocalyceal system of the kidney. Once obtained the volumetric reduction of the abdominal mass the patient underwent the right nephroureterectomy.

Keywords: Hydroureteronephrosis, percutaneous nephrostomy, radical nephroureterectomy, transcatheter arterial embolization, upper tract urothelial carcinoma

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INTRODUCTION

Radical nephroureterectomy (RNU), either open or laparoscopic, with excision of a cuff of the bladder mucosa, is the gold standard treatment for the management of upper tract urothelial carcinoma (UTUC). Hydronephrosis in UTUC is associated with advanced disease and poor oncological outcomes.^[1,2] Placement of a percutaneous nephrostomy drainage tube (PNDT) is basically considered a safe procedure, but in rare cases, it can develop life-threatening complications, making prompt diagnosis and management mandatory.

Herein, we described the case of a woman with a huge right hydronephrosis occupying most of the abdomen,

developed by UTUC of the right distal ureter and bladder cancer. PNDT, indicated to facilitate subsequent RNU, caused life-threatening bleeding that made arterial embolization mandatory.

CASE REPORT

An 85-year-old woman presented to the accident and emergency department (A and E) complaining of asthenia and a 1-day history of anorexia and bilious vomiting. On physical examination, abdominal distension with percussion tympanic abdomen was evident. Laboratory data revealed a white blood cell count of $7.53 \times 10^3/uL$,

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hemoglobin 9.3 g/dL, creatinine 1.4 mg/dl, and C-reactive protein 0.74 mg/dL. In A and E, the patient underwent computed tomography (CT) scan with contrast that revealed huge right hydroureteronephrosis with a maximum axial diameter of 23 cm and a craniocaudal diameter of 29 cm of the renal pelvis [Figure 1]. The bladder was partially filled and the right trigonal area captured contrast.

Given the suspicion of distal ureteral/bladder disease and the compression of the biliary tract, it was decided to place a PNDT. The presence of blood in the collection bag was immediately noted and a progressive decrease in blood pressure appeared within 2 h.

A CT angiography revealed active bleeding from the unique renal artery. The following right renal artery arteriography performed with a 5F nonhydrophilic cobra catheter (Cordis, Santa Clara, California, USA) documented contrast medium leakage related to ongoing arterial bleeding. Angiography was performed with an automatic injector (20 ml of contrast medium in 4 ml/s). Furthermore, there was an abnormal course of the right renal artery, which appears displaced to the left due to the volumetric increase of volume in the right kidney.

A 2.4F coaxial Direxion microcatheter (Boston Scientific, Marlborough, Massachusetts, USA) was positioned and based on the clinical conditions of the patient and the CT findings (inveterate calicopyelic dilatation of the right kidney and markedly thinned renal cortex) we proceed to massive ischemization of the organ.

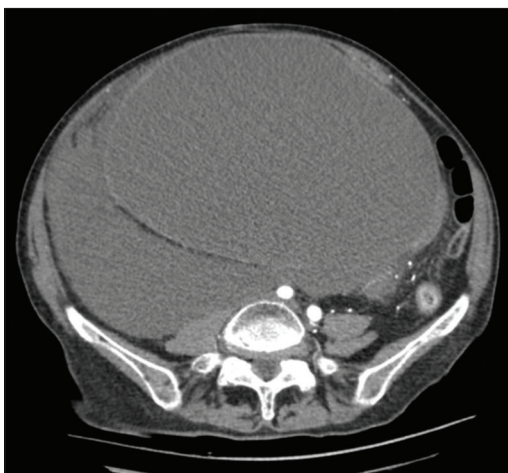


Figure 1: CT scan performed upon patient arrival at A and E. We can point out the enormous pyelocaliceal dilatation of the right kidney and the markedly thinned renal cortex and poor concentration of iodized urine ipsilaterally. At the CT scan we also noticed marked compression on the liver with associated dilatation of the intra and extra hepatic bile ducts (maximum dilatation of about 12 mm of the bile duct). Front compression and a left pancreas with mild Wirsung duct ectasia. CT: Computed tomography

The embolization was performed using 0.018" AZUR® CX nonmagnetic metallic coils (TERUMO, Shibuya, JP) with controlled release. Postprocedural arteriography documented the correct embolization of the treated artery with the abolition of the hemorrhagic focus. At the end of the procedure, mechanical hemostasis was performed using 6F Angioseal™ VIP (TERUMO, Shibuya, JP) closure device [Figure 2].

In the meantime, the patient was transfused and supported with vasopressor drugs as the hemoglobin level had dropped to 3.3 g/dL. The patient was later transferred to the Intensive Care Unit for stabilization of the vital signs. Three days later, the patient was taken to the operating room for transurethral resection (TUR) of 2.5 cm bladder tumor involving the right ureteral ostium. At the end of the resection, the ureteral lumen was still affected by the disease [Figure 3]. pTaHG cancer was found in the final pathology report.

The following day the patient was then subjected, after a right paramedian transverse incision of 4 cm, to the evacuation of 2.3 liters of chocolate-colored liquid and abundant clots organized until the renal pelvis was completely cleaned and a 24 Ch-tubular drainage in the renal pelvis was positioned.

On the 10th day postembolization, the patient underwent a right RNU with lymphadenectomy of the right pelvic nodes. The distal ureter was mobilized down toward its insertion into the bladder. The ureter was excised down to the bladder level. The bladder time, with bladder opening and bladder cuff removal, given the recent resection and the patient's performance status, was not performed in order not to further prolong the operative times and avoid dissemination of the disease into the abdominal cavity. With reasonable intraoperative certainty, the disease was completely excised. The distal ureter was excised with an extravesical approach using a clamp to provide gentle traction for access to the entire intramural portion. The surgical piece was removed with ligation of the lumbar

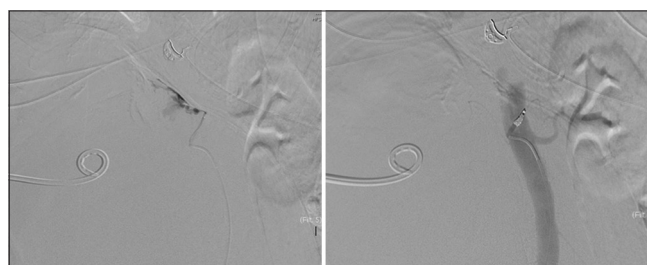


Figure 2: In the left image we note the diffusion of contrast medium from the right renal artery. It may also be noted that, due to hydronephrosis, the right renal artery is swung to the left. In the picture on the right, after the embolization, no more arterial leakage can be seen

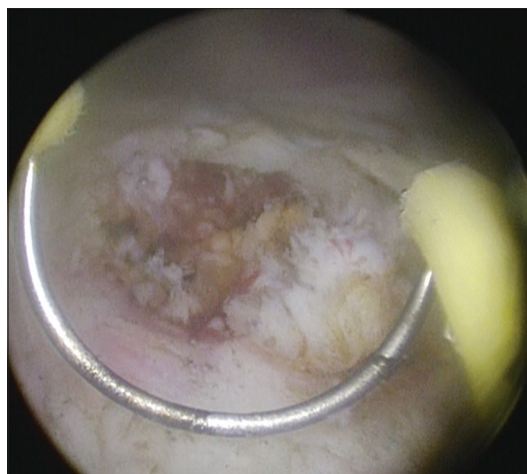


Figure 3: We can noticed the presence of the lesion protruding from the right ureteral ostium during the resection of the bladder tumour

ureter and subsequent removal of the remaining part of the ureter to facilitate the mobilization of the voluminous mass.

Figure 4 shows the kidney with the cranial portion of the ureter removed.

The postoperative course was characterized by abundant drainage lymphorrhoea related to renal decompression and lymphadenectomy, which required the reintegration of albumin and potassium. The bladder catheter was removed on the 6th postoperative day and the patient was discharged on the 9th post-RNU day with abdominal drainage. Once the flow rate of the abdominal drainage dropped below 100 ml/day, it was removed.

The pathology report indicated a focal positive margin (<2 mm) distally and the nodes removed resulted in negative.

CT scan with contrast performed after 2 months identified only a fluid lymphocele of 46 mm of diameter in the right parahilar region and oval collection of 55 mm × 18 mm adherent to the psoas muscle in the absence of residual disease.

As the patient was asymptomatic, afebrile, and with inflammation indices within the norm, it was decided to adopt a wait-and-see attitude.

Cystoscopy in operating theater performed at 3 months resulted negative for bladder tumor.

DISCUSSION

Emergency embolization is a safe, effective minimally invasive treatment for renal hemorrhage, and complete occlusion of all bleeding sites is the key to successful hemostasis.^[3]

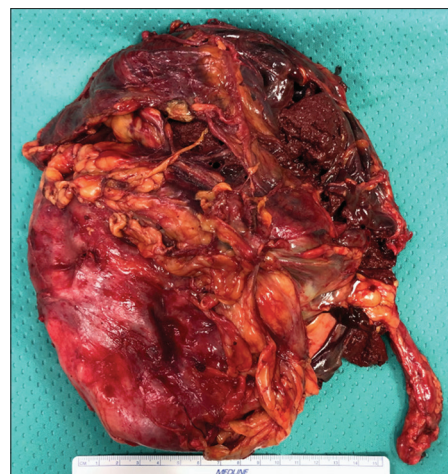


Figure 4: Specimen of the right kidney and the first portion of the ureter. The ureter was ligated and dissected to facilitate the safe removal of the mass and reduce the risk of tumor cell spillage into the abdomen

TUR had a therapeutic function both in treating bladder disease and in attempting to decompress the upper urinary tract (UUT) by favoring the outflow of urine. Perform a urethroscopy to exclude the presence of bladder disease is a strong recommendation of EAU guidelines inasmuch as in 17% of cases, concurrent bladder cancer is present and even, following treatment, recurrence in the bladder occurs in 22%–47% of UTUC patients.^[4]

The treatment of UTUC in recent years has gone much more conservatively than in the past, so much so that kidney-sparing management is the primary treatment option to offer to patients with low-risk tumors and it is necessary to evaluate a conservative approach even in high-risk tumors in the distal ureter.^[4]

Some colleagues reported that patients who had positioned a PNDT because of pyonephrosis or to relieve obstruction that subsequently underwent simple nephrectomy had earlier and more frequent wound infections than patients who underwent the identical procedure without PNDT.^[5] In our case, the patient never developed a fever above 38°C during hospitalization and the indexes of inflammation never reached such levels as to suggest an infection. The surgical wounds did not over infect and did not require procedures other than the classic disinfection with iodine solution and sterile gaze once a day.

We considered it surgically difficult to access the abdominal cavity and then remove such a large organ whose parenchyma had shrunk to a veil. It was, therefore, decided to reduce the volume and abdominal pressure by placing a PNDT and performing a fractional emptying of the fluid. This is because, in our opinion, the manipulation of a kidney with such a dilated UUT would have led to an almost

certain rupture of the latter. We, therefore, decided to place a PNDT and accept the low risk of seeding related to the procedure and then subsequently manipulate an organ in the open surgery with greater safety.^[6] The rupture of the dilated UUT and the spillage of urine almost certainly lead to the dissemination of neoplastic cells in the abdomen.

The coagulated blood in the UUT would not have allowed the renal decompression, and therefore, the risk of dissemination of the disease for which it was surgically drained with a small access, also in consideration of the fact that the disease was localized on the distal ureter, so we accepted the risk of opening the UUT with a small access on the anterior renal pelvis.

It is true on one hand that having disease involving the ureteral ostium the risk of leaving the disease *in situ* subsisted, but in consideration of the TUR performed and therefore the potential presence of neoplastic cells inside the bladder, we thought that the opening of the bladder would have created a greater risk of spillage of cells outside the bladder. Moreover, the extravesical time alone reduced the operating times in consideration of the patient's age.

Yap *et al.* reported that increasing age was associated with worse disease at presentation, less-aggressive treatment patterns, and worse outcomes in patients with UTUC.^[7] Therefore, proceeding with a major surgery on a patient over 80 years of age certainly presents risks. All in all, the necessity to undergo major surgery must be considered in patients over 80 but with a good performance status, also in consideration of the fact that women over 60 seemed to have an increased risk of death from UTUC compared to men.^[8]

Liguori *et al.* found overall survival rates were 36% and 26%, at 3 and 5 years, respectively, in octogenarian patients who underwent major surgery for urologic cancer. Interestingly, overall survival rates were significantly lower in patients suffering from chronic obstructive lung disease.^[9]

We believed that, even in octagenarian patients, with reduced or absent comorbidities, aggressive pathologies such as UTUC must be treated since the possibility that they may manifest themselves with symptoms and within a short time in terms of bleeding, hydronephrosis/infection or diffusion local or distant disease.

CONCLUSION

The management of UTUC with voluminous

hydronephrosis can be extremely complex. Even the simple placement of a PDNT can lead to catastrophic consequences such as massive bleeding and such as to endanger the patient's life. The management of complex cases and the use of a good and careful clinical choice must always guide the therapeutic choice.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Messer JC, Terrell JD, Herman MP, Ng CK, Scherr DS, Scoll B, *et al.* Multi-institutional validation of the ability of preoperative hydronephrosis to predict advanced pathologic tumor stage in upper-tract urothelial carcinoma. *Urol Oncol* 2013;31:904-8.
2. Ito Y, Kikuchi E, Tanaka N, Miyajima A, Mikami S, Jinzaki M, *et al.* Preoperative hydronephrosis grade independently predicts worse pathological outcomes in patients undergoing nephroureterectomy for upper tract urothelial carcinoma. *J Urol* 2011;185:1621-6.
3. Wang HL, Xu CY, Wang HH, Xu W. Emergency Transcatheter arterial embolization for acute renal hemorrhage. *Medicine (Baltimore)* 2015;94:e1667.
4. Roupêt M, Babjuk M, Burger M, Capoun O, Cohen D, Compérat EM, *et al.* European Association of urology guidelines on upper urinary tract urothelial carcinoma: 2020 update. *Eur Urol* 2021;79:62-79.
5. Greenstein A, Kaver I, Chen J, Matzkin H. Does preoperative nephrostomy increase the incidence of wound infection after nephrectomy? *Urology* 1999;53:50-2.
6. Schwartzmann I, Pastore AL, Saccà A, Territo A, Pisano F, Maruccia S, *et al.* Upper urinary tract urothelial carcinoma tumor seeding along percutaneous nephrostomy track: Case report and review of the literature. *Urol Int* 2017;98:115-9.
7. Yap SA, Schupp CW, Chamie K, Evans CP, Koppie TM. Effect of age on transitional cell carcinoma of the upper urinary tract: Presentation, treatment, and outcomes. *Urology* 2011;78:87-92.
8. Liu JY, Li YH, Zhang ZL, Ye YL, Liu ZW, Yao K, *et al.* Age-specific effect of gender on upper tract urothelial carcinoma outcomes. *Med Oncol* 2013;30:640.
9. Liguori G, Trombetta C, Pomara G, Amodeo A, Bucci S, Garaffa G, *et al.* Major invasive surgery for urologic cancer in octogenarians with comorbid medical conditions. *Eur Urol* 2007;51:1600-4.