# Urothelial Cancer with Local Invasion in the Colon

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**Abstract**

**Introduction and Objectives.** Urothelial cancers is a multifocal process, with high ability of local invasion and distant dissemination, directly dependent on the degree of histological differentiation. The purpose of the work is to present the experience of Department of Urology Sibiu in urothelial cancer with local invasion in the digestive system.

**Materials and Methods.** Two cases were diagnosed with urothelial carcinoma invasive in the colon, and treated in our department. A 38 year old male with tumor mass that involved upper part and hepatic angle of the right colon together with the upper right ureter and renal pelvis. And a 77 year old female a tumor mass involving the left wall of the bladder and the sigmoid colon.

**Results.** The male underwent en bloc excision of tumor mass, lateral-lateral ileo-transverse anastomosis and latero, *retro-caval* and inter-aorto-caval *lymphadenectomy. Histopathology reveled poorly differentiated pT4N2M1G3 urothelial carcinoma. The female underwent* total cystectomy and segmental resection of sigmoid, side to side colo-rectal anastomosis and extended bilateral pelvic lymph node dissection and right side iliac ureterostomy. *Histopathology reveled poorly differentiated pT4N0M1G3 urothelial carcinoma.*

**Conclusions.** Urothelial carcinoma has a great capacity of local invasion. Evolution can be for a long time asymptomatic for upper urothelial tumors due to lack of symptoms (delayed hematuria) or involvement of the digestive lumen. The surgical removal of urothelial tumors with digestive invasion is difficult because this involves nephroureterectomy or total cystectomy together with the digestive part affected by the tumor and the restoration of digestive continuity.

**Key-words:** urothelial cancer, digestive system, histopathology

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## Introduction and Objectives

Urothelial cancers encompass carcinomas of the bladder, ureters, and renal pelvis; these cancers occur at a ratio of 50:3:1. Cancer of the urothelium is a multifocal process.

Patients with cancer of the upper urinary tract have a 30% to 50% chance of developing cancer of the bladder at some time in their lives [1].

On the other hand, patients with bladder cancer have a 2% to 3% chance of developing cancer of the upper urinary tract. The incidence of renal pelvis tumors is decreasing.

Urothelial tumors of the renal pelvis and ureters (upper urinary tract) are relatively rare. Tumors of the renal pelvis account for approximately 10% of all renal tumors and approximately 5% of all urothelial tumors [2].

For urothelial cancers of the upper tract or muscle invasive bladder cancers, a CT scan of the abdomen / pelvis is performed to detect local extension of the cancer, involvement of the abdominal / pelvic lymph nodes, or systemic metastases. The CT imaging usually consists of an abdominal / pelvic CT scan with contrast (usually with delayed images to assess the entire urinary tract) [4].

For patients with bone pain or an elevated alkaline phosphatase level, a radioisotope bone scan is performed.

A chest x-ray completes the staging evaluation. Any suspicious findings in a chest-x-ray must be followed by a contrast CT scan of the chest.

The purpose of the work is to present the experience of Department of Urology Sibiu in urothelial cancer with local invasion in the digestive system.

## Materials and Methods

Two cases with urothelial carcinoma invasive in the colon were diagnosed and treated in the Urology Clinic from Sibiu.

## Results

*First case*

A 38 years old man was admitted in our department accusing acute right flank pain and fever. The patient underwent diagnostic algorithm as follows: ultrasound which revealed a 2nd degree right *ureterohydronephrosis*. High elevated leucocytes and serum creatinine were found (23000/mm3, serum creatinine 3.2 mg/dl). Percutaneous nephrostomy was performed in order to decrees the fever and pain (resistant to painkiller drugs) and serum parameters.

Computed tomography revealed 5/3 cm tumoral mass that involved the upper part and hepatic angle of the right colon, together with the upper right ureter and renal pelvis (Fig. 1).

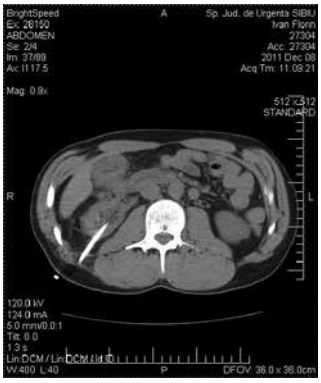

*Fig. 1.*
*CT scan image revealed a tumoral mass involving the kidney and the right colon; nephrostomy catheter is present inthe right renal pelvis.*

Initially it was thought to be a tumor with digestive starting point, so that the patient was sent to the Department of Gastroenterology for colonoscopy with biopsy and staging. The biopsy revealed colonic mucosa with inflammatory infiltrated macrophages, thus rising the suspicion of Crohn disease. The patient returned to our department, where it was decided to perform a diagnostic ureteroscopy. During the procedure, in the upper right ureter was identified intraluminal mass-looking urothelium. In this case we decided to use open surgery.

Intraoperative: tumor mass that involved upper part and hepatic angle of the right colon together with the upper right ureter and renal pelvis. We performed en bloc excision of tumor mass. The digestive continuity was realized with lateral-lateral ileo-transverse anastomosis using suture lines of 3.0 PDS (polydioxanone). The operation was completed with latero, *retro-caval* and inter-aorto-caval *lymphadenectomy (Fig. 2, 3, 4, 5).*

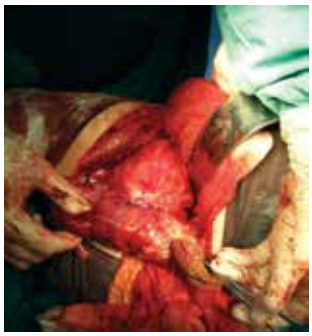

*Fig. 2.*
*Intraoperative aspect: tumor mass*

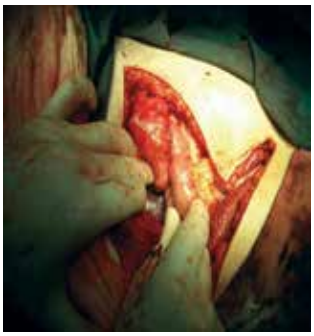

*Fig. 3.*
*Intraoperative aspect: digestive suture.*

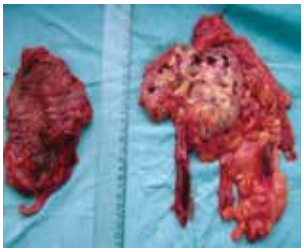

*Fig. 4.*
*The surgical specimen*

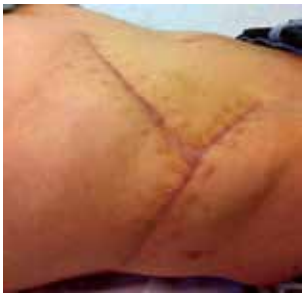

*Fig. 5.*
*Surgical scar after three month post-surgery*

*The recovery period was without complications with the exception of a plague seroma, with lasted for 10 days.* Postoperative chest X-ray was performed: no aspect of secondary determinations.

*Histopathological results: poorly differentiated G3 urothelial carcinoma infiltrating the ureter, renal pelvis and the colon wall, respecting the mucosa; 20 lymph nodes involved with tumor. Final result: pT4N2M1.*

*Follow-up:* the patient was sent to the Oncology Clinic where he received complementary treatment with chemotherapeutic agents.

*During the follow-up, 60 months after the surgery, clinical examination, ultrasound and CT scan discovered no signs of tumor recurrence. The patient developed a lumbar postoperative hernia at 48 month after surgery. Therefore he was submitted to surgery with polypropylene mesh hernia repair.*

*Second Case*

A 77 years old female diagnosed with a bladder tumor invading the sigmoid colon. The patient addressed our department for macroscopic persistent haematuria, recurrent urinary tract infections in the past 10 weeks, associated with constipation.

The patient underwent diagnostic algorithm as follows: ultrasound which revealed a 1st degree right ureterohydronephrosis. Cystoscopy identified a big left retrotrigonal bladder tumor respecting the ureteral orifices. We performed a transurethral resection of bladder tumor (TURBT) with biopsy. The histopathologic examination disclosed a poorly differentiated G3 urothelial carcinoma, at least pT2 stage.

Computed tomography revealed a tumor mass involving the left wall of the bladder and the sigmoid colon (Fig. 6). Pulmonary X-ray without any signs of secondary determinations.

The patient was submitted to open surgery. Total cystectomy and segmental resection of sigmoid were performed. The digestive continuity was made with

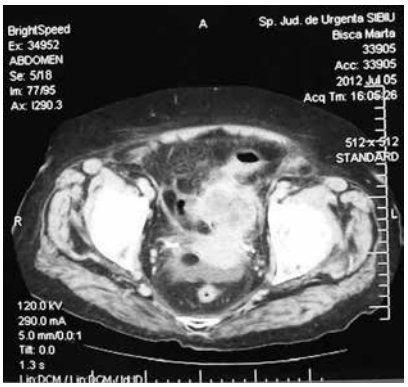


*Fig 6. CT scan image*

side to side colo-rectal anastomosis using separated suture of silk 0 (Fig. 7, 8, 9). The operation was completed with extended bilateral pelvic lymph node dissection and right side iliac ureterostomy. *The recovery period was simple, with the exception of 10 days persistent anastomotic fistula with spontaneous closure.*

*Histopathologic results: poorly differentiated G3 urothelial carcinoma, infiltrating the bladder wall, the sigmoid wall, respecting the mucosa. 28 lymph nodes free of tumor.*

*The final staging pT4N0M1.* The patient was sent to the Oncology Department where she received complementary chemotherapy.

*During follow-up at 48 months: clinical examination, ultrasound and CT without any signs of disease.*

## Discussions

Direct extension of urothelial cancer has been described in the literature. It is the major mode of spread through metalloproteinase-mediated basement membrane breakdown [4,5].

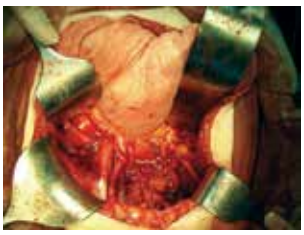

*Fig. 7.*
*Intraoperative aspect*

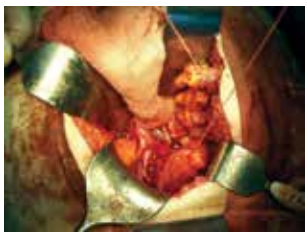

*Fig. 8.*
*Intraoperative aspect: segmental resection*

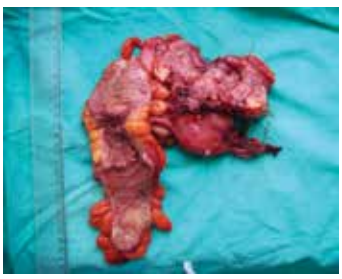

*Fig. 9. Surgical specimen*

Tumor spilling has been associated with recurrence at surgical sites [6] as well as in the bladder in patients treated by transurethral resection, compared with patients treated by radical cystectomy. Moreover, direct extension impacts staging, thus serving as a major predictor of prognosis. The ability of cancer cells to migrate and invade through the extracellular matrix is a critical step for tumor metastasis [7,8]. The extent of layer invasion correlates directly with recurrence, distant metastasis, and disease-related mortality [9].

Lymphatic extension is premise to be the commonly accepted as pathway of metastasis. Abdel-Latif et al reported that lympho-vascular invasion is a predictor of lymph node metastasis, and many reported that lympho-vascular invasion is an independent predictor of overall and cancer-specific survival [10,11].

Even in patients with early subepithelial binding tissue tumors (cT1), lympho-vascular invasion may suggest a more aggressive clinical course with an increased risk of tumor recurrence and progression. Nodal status is an independent predictor of distal recurrence [10].

Transitional cell carcinomas of the genitourinary tract with sarcomatoid differentiation are extremely rare, representing tumors with both epithelial and non-epithelial components. Although debate exists as to the pathogenesis and nomenclature of such tumors, they are more aggressive with a higher incidence of malignancy [12]. Possibly the natural history of this subtype of transitional cell carcinoma contributed to patient's pattern of metastasis despite only local invasion of the bladder urothelium.

The more common secondary bladder adenocarcinomas include hematogenous, lymphatic or direct spread of adenocarcinoma from surrounding organs, especially colo-rectum, female genital tract, prostate, and urothelial carcinoma with focal glandular differentiation. Metastatic colonic adenocarcinoma (MCA) evidence for approximately one third of secondary bladder tumors and is virtually indistinguishable from PBA based on histomorphology and ultrastructural features. Evidence of cystitis glandularis or intestinal metaplasia can be a helpful clue in establishing the diagnosis of primary bladder adenocarcinoma; however, MCAs have been reported to colonize the surface urothelium and mimic in-situ glandular lesions [13,14,15].

## Conclusions

Urothelial carcinoma has a great capacity of local invasion.

Evolution can be for a long time asymptomatic for upper urothelial tumors due to lack of symptoms (delayed hematuria) or involvement of the digestive lumen.

The surgical removal of urothelial tumors with digestive invasion is difficult because this involves nephroureterectomy or total cystectomy together with the digestive part affected by the tumor and the restoration of digestive continuity.

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