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Is Laparoscopic Oncological Surgery After an Open Surgery Possible?

Vladimir Erik Vargas-Rocha[1]*, Patricia Segales-Rojas[2], Brian E Vargas Rocha[3]

[1]Hospital Obrero N°2, Cochabamba, Bolivia

[2]Bolivian-Japanese Gastroenterological Institute, La Paz, Bolivia

[3]University of San Simón, Cochabamba, Bolivia

***Corresponding author:** Vladimir Erik Vargas-Rocha, Vladimir.vargas.r@gmail.com

Abstract: This paper presents a case of a 55-year-old male patient with pain in the right lumbar region and hematuria. An abdominopelvic computed tomography was performed, and a tumor was discovered in the right renal pelvis. An open right radical nephrectomy was performed. She returned again with hematuria, thus cystoscopy, ureteroscopy, and selective cytology were performed, and local recurrence in the right ureter was documented. A radical right radical ureterectomy with laparoscopic bladder encirclement and extended lymphadenectomy was performed, with a histopathological report of right ureter with low-grade urothelial carcinoma. The patient showed satisfactory progress and was monitored. With this article, we stress that with adequate training, experience, and practice in laparoscopic surgery, excellent oncological and aesthetic results can be obtained, which is comparable to open surgery, but with the benefit of rapid recovery and less pain and bleeding. Therefore, we believe that with practice, laparoscopic oncological surgery after an open surgery is perfectly feasible.

Keywords: Urology; Medical oncology; Laparoscopy

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1. Introduction

In the last decade, laparoscopic surgery has caused a revolution in urological surgery, and the beginning of surgery using the laparoscopic approach is attributed to Cortesi [1] in 1979. For several years, this type of approach was not yet the first option until the first nephrectomy was performed by Clayman in 1991 [2], which is when it began to be accepted and popularized. However, it progressed slowly during the first few years due to technical and material limitations. Staging lymphadenectomy for the treatment of prostate cancer was among the first laparoscopic techniques. This surgery was described by Schuessler, which showed the viability of pelvic lymph node dissection with less bleeding and with greater ease, making it the ideal technique. This was when the majority of urology services began to promote and encourage laparoscopic methods [3].

The horizons of laparoscopic surgery have expanded in the urological field over the last few decades. In some urological procedures, laparoscopy has proven to be superior to open surgeries, and it has found an important place in the management of neoplasms of the genitourinary tract. While it was originally described for the treatment of renal cancer, it has become an important method for the treatment of adrenal, upper tract, bladder, prostate, and testicular neoplasms. Laparoscopic surgery combines the oncological principles of an open surgery while being minimally invasive [4].

Urothelial tumors of the urinary tract involving the renal pelvis or ureter are relatively rare and account for 5-7% of all renal tumors and about 5% of all urothelial tumors [5]. It has been found that 25–75% of patients with upper urothelial tumors will eventually develop bladder cancer [6]. Tumors are most commonly located in the lower third of the ureter: proximal, 3%; middle, 24%; distal, 73% [7-10]. These tumors rarely develop before the age of 40 and have a peak incidence at the age of 65, and they are twice as common in men [11-12].

Smoking is the most important factor related to these tumors and it is associated with an increased risk of approximately 3 times higher than the general population. Other factors are excessive consumption of analgesics such as aspirin, phenacetin, and salicylates with or without caffeine, and codeine, as well as the use of cyclophosphamide [13-14]. There is also a significantly increased risk of upper urinary tract tumors in workers of the chemical, petroleum and plastics industries [15].

When there is a suspicion of a urothelial tumors in the urinary tract, it is necessary to carry out cabinet studies that allows the evaluation of not only the urinary tract, but also the rest of the anatomy, in search of metastases or other associated lesions. CT urogram with excretory phase offers a sensitivity of approximately 67–100% and a specificity of 93–99%. Another study such as magnetic resonance imaging is approximately 75% sensitive towards tumors < 2 cm. Another tool that is available is ureteroscopy with or without biopsy, which is 95% effective in detecting flat and small tumors [16].

For the treatment of urothelial tumors of the upper urinary tract, whether an open or laparoscopic approach is used, complete distal ureterectomy with bladder segmentation is recommended because of the higher survival and cure rate. The general principles include complete intact resection of the ureter with controlled occlusion of the ureteral orifice. The entire distal ureter is removed, including the intramural portion and the ureteral orifice [17-18]. It is important to note that the management of the distal ureter remains a dilemma, as no technique has been proven to be superior towards others [19].

In cases where a segment of ureter is left, the risk of local tumor recurrence in the residual ureter is 73%. Therefore, in these cases, surgery should be completed with resection of the residual ureter segment and its intramural portion and ureteral orifice in the bladder, in order to achieve adequate oncological control [20].

2. Presentation of the case

We present the case of a 55-year-old male patient with a history of systemic arterial hypertension and type 2 diabetes mellitus diagnosed 4 years ago, and was under medical treatment, with adequate control. 18 months before presenting to the hospital, he began to suffer from mild pain in the right dorsolumbar region, colicky, radiating to the left hemi-intestine, with intensity 8/10, accompanied by total macroscopic hematuria with intermittent elimination of filiform clots. The patient had received multiple treatments with analgesics and antibiotics for probable urinary tract infections, colitis and gastritis, and all were unsuccessful, with partial improvement of the symptoms. 18 months after the onset of the symptoms, a simple and contrasted abdominal-pelvic tomography was performed, documenting tumor lesions in the right renal pelvis, causing moderate right hydronephrosis. Paraclinical examinations were performed, and all parameters were found to be normal. An open radical right nephrectomy was performed, with a histopathological report of high-grade papillary urothelial carcinoma in the renal pelvis, without muscle involvement, with a negative ureter section border. The patient did not come back for follow-up.

One year after radical kidney surgery, he came to our service with a new event of total macroscopic hematuria, with persistent clots, leading to anemic syndrome, so the Urology Department performed an emergency cystoscopy and ureteroscopy. The right ureteroscopy revealed multiple tumor fronds along the entire course of the remaining right ureter, with active bleeding and severe inflammation (**Figure 1**), with no evidence of tumor activity in the bladder. Urinary cytology reports suggest of malignancy on the right

side and negative on the left side, so a laparoscopic radical right ureterectomy was performed, with laparoscopic bladder encirclement and right pelvic lymphadenectomy, pre-caval, paracaval, and intercavoaortic (**Figure 2**).

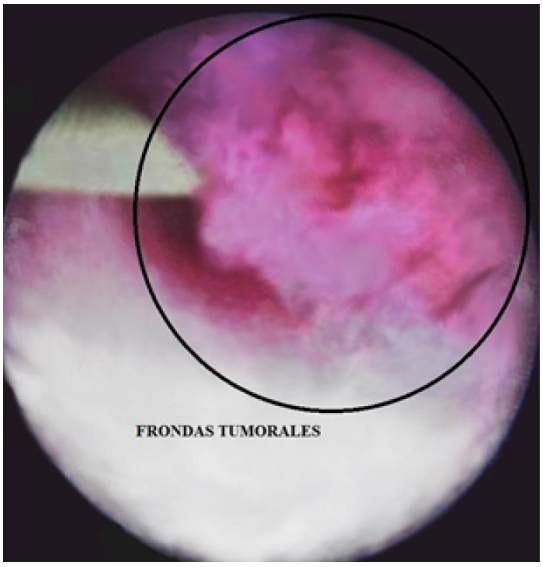

Figure 1. Right ureteroscopy: Hydrophilic guidewire (white) on the left, and on the right, multiple friable, actively bleeding, papillary-looking tumor fronds

Figure 2 Extended lymphadenectomy shows dissected vena cava and aorta

The procedure was performed in the left Israel Bergman position at 45°, an 18 Fr Foley catheter and three trocars were placed: one 10 mm paraumbilical trocar and two more 5 mm ones at the mid-clavicular line (**Figure 3**).

Figure 3. Patient position, 45° lateral decubitus, with the arms extended with fixation and support on the pelvis and thorax

Adhesions from previous surgery were released, and the ureter was identified and dissected from its

previous surgical ligature, following its trajectory up to the ureterovesical junction. After filling the bladder, a direct cut of the bladder is made with bipolar energy, with a margin of 5 mm around the meatus, and then bladder closure is performed with a continuous stitch with Vicryl 2-0 in two planes, to close the wound (**Figure 4**).

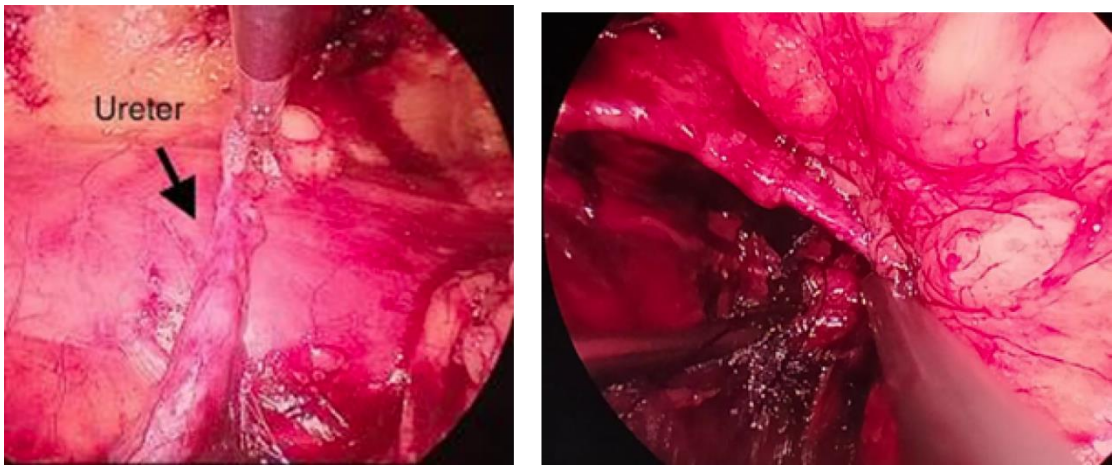

Figure 4. Ureter dissection (left), bladder closure with 2-0 Vicryl (right)

The ureter and impeller were extracted through a 10 mm port. The surgery was completed in 90 minutes, and no leakage and a satisfactory hemostasis was reported (**Figure 5**). The bleeding was approximately 50 mL. The patient progressed well and was discharged the following day, with catheterization for 10 days, with subsequent uncomplicated removal.

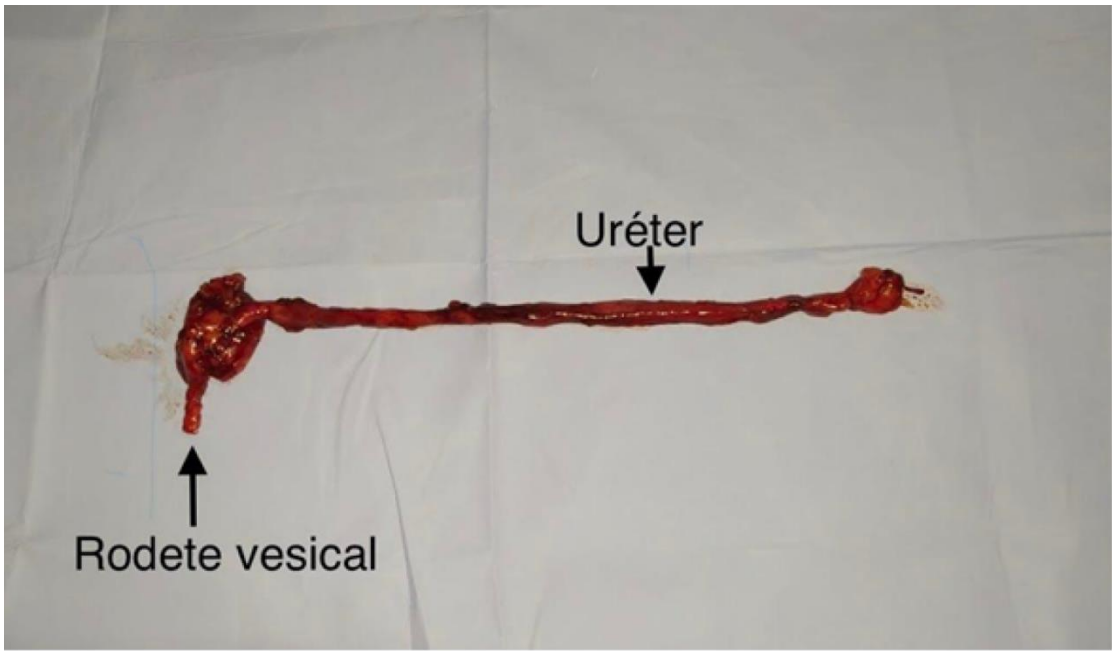

Figure 5. Surgical specimen, showing the entire ureter, with the bladder segment, intact and with a complete specimen

Results of histopathological reports: right ureter with low-grade papillary urothelial carcinoma, without invasion of the muscularis, mild chronic non-specific inflammation, negative for malignancy, with negative surgical margin. Lymphadenectomy was negative for malignancy.

At the six-month follow-up after surgery, the patient was found to have no evidence of recurrence or

tumor activity through cystoscopy and urinary cytology.

3. Discussion

The most frequent symptoms of upper urothelial tumors are hematuria, either macroscopic or microscopic, and lumbar pain, both of which occur in 56–98% and 10–40% respectively [20].

These two signs were present in this case study, the first one manifested weekly as thready hematuria, leading to an anemic symptom, accompanied by the second most frequent clinical sign – lower back pain. It has been reported that the sensitivity for detecting malignant disease of the upper tract through these methods are close to 100%, with a specificity of 60% and a negative predictive value of 100%. Hydronephrosis, also present in the patient, is linked to invasion in 80% of ureteral tumors.

Initially, an open radical right nephrectomy was performed, while the most appropriate approach in this case would have been a radical nephroureterectomy; however, a laparoscopic radical right ureterectomy was performed, with bladder encirclement and extended lymphadenectomy. The incomplete removal of the entire distal ureter and ureteral orifice is associated with a high rate of tumor recurrence. In fact, radical nephroureterectomy is recommended because it provides an optimal chance of survival in various cases. Several studies have shown lower morbidity rates with the laparoscopic approach compared to the open technique for renal pelvis and proximal or intermediate ureteral tumors.

The aim of this article is to show that the treatment of urological tumors can be approached laparoscopically, even if the initial approach was an open surgery. Therefore, an open surgery should not be a contraindication to offer laparoscopic treatment, considering that it is recommended in many papers. Laparoscopic treatment is safer, with adequate oncological control, minimal bleeding, quick recovery, and excellent aesthetic results. Therefore, this approach can be recommended for the treatment of urological pathologies even for those who underwent open surgery.

4. Conclusion

With this article, we wish to emphasize that with adequate training, experience and practice in laparoscopic surgery, excellent oncological and aesthetic results can be obtained, similar to that of an open surgery, except that the patients can recover faster with less pain and bleeding. Therefore, we believe that with practice and patience, laparoscopic oncological surgery after open surgery is absolutely feasible.

We show in this article that the laparoscopic approach after an open surgery for the treatment of oncological pathologies is totally safe and reproducible. It is a less invasive approach, and it allows adequate oncological control, and it is safer for the patient, which is why we recommend keeping this option in mind even with the history of an open surgery.

Disclosure statement

The authors declare no conflict of interest.

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