SKILL AND TALENT

Radical cystectomy, hysterectomy with double adnexectomy and bilateral nephroureterectomy with transvaginal extraction

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Received 8 January 2014; accepted 5 February 2014
Available online 28 October 2014

Abstract

Objectives: The onset of synchronous urothelial carcinoma in the upper or lower urinary tract is uncommon. Even more uncommon is the onset the bilateral form. The aim of this article is to describe the surgical technique of complete laparoscopic exeresis of the urinary apparatus and to add several variants of the technique that improve the patient’s hemodynamics during surgery.

Material and methods: We present the technique of cystectomy with bilateral nephroureterectomy, hysterectomy with double adnexectomy and bilateral ilio-obturator lymphadenectomy by laparoscopy and transvaginal extraction of specimens from a 58-year-old patient with multiple prior vesical resections of high-grade urothelial carcinoma. The patient currently presents bladder recurrence and bilateral ureteropelvic tumor. The technique consists first of the hysterectomy and double adnexectomy along with the lymphadenectomy and cystectomy, maintaining the urethrovaginal, ureterovesical and uterovaginal junctions. After changing the patient’s position, both nephroureterectomies were performed. Lastly, we completed the resection of the previously mentioned segments to extract the specimens transvaginally.

Results: The histological result was high-grade urothelial carcinoma that affected the bladder and both ureteropelvic junctions, along with endometrial carcinoma. After reviewing the literature, we found less than 10 cases in which complete exeresis of the urinary apparatus was performed and none with the technical description presented in this article. In most cases described in the literature, surgery was performed at two separate times and without preserving renal function until the end of the complete exeresis.

Please cite this article as: Juarez-Soto A, Arroyo-Maestre JM, Soto-Delgado M, de Paz-Suarez M, Beardo-Villar P, Arrabal-Polo MA. Cistectomía radical, hysterectomía con doble anexectomía y nefroureterectomía bilateral con extracción por vía transvaginal. Descripción y consideraciones específicas de la técnica quirúrgica. Actas Urol Esp. 2014;38:694–697.

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Conclusion: This technique helps maintain diuresis for a longer time during surgery and thereby facilitates the work of the anesthesiologist and improves the patient's circulatory dynamics. Additionally, the technique prevents any type of handling of the urinary tract, thereby avoiding the passage of tumor cells to the peritoneal cavity, given that the specimens are extracted whole through the vagina.

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Introduction

A 58-year-old patient with a history of high blood pressure, hemorrhoids, mild kidney failure, anxiety, and urinary incontinence using absorbents, who was referred to our hospital from another hospital after 30 previous TURs due to high-grade urothelial cancer and bladder instilla-
tions with BCG. At present the patient has new bladder tumor recurrence and after performing abdominal-pelvic CT bladder of small capacity is observed with neoplastic lesion (Fig. 1A), bilateral ureteral dilation (Fig. 1B), filling defect in the lumbar ureter and right renal pelvis (Fig. 1C), as well as filling defect in the lumbar ureter and left renal pelvis (Fig. 1D). Bladder endoscopy is performed with tumor resection, with histological diagnosis of high-grade urothelial carcinoma, bilateral ureteroscopy, observing a mass in the right pelvic ureter, preventing the passage of the ureteroscope and a mass in the left lumbar ureter. Due to the high tumor burden and multiple location, recurrent disease, and high-grade carcinoma, radical resection surgery laparoscopically is indicated, performing bilateral nephroureterectomy, cystectomy, hysterectomy with double adnexitomy, and bilateral ilio-obturator lymphadenectomy in the same surgery, as well as removal of the parts together transvaginally (Fig. 2). Prior to the surgery, arteriovenous fistula had been performed to start postoperative dialysis. The histological diagnosis was high-
grade urothelial carcinoma of the bladder, the right and left ureters extending to both renal pelvis and infiltrat-
ing nonkeratinizing squamous cell carcinoma affecting the uterus. There was no neoplastic involvement of the excised lymph node chains.

Methods and description of the technique

First we positioned the patient in supine position with slight Trendelenburg and 10-mm transumbilical port for the optical equipment that the assistant will carry, another 10-mm
Figure 1  Abdominopelvic CT in which there is the presence of a lesion in the bladder (A) compatible with neoplasia, bilateral ureterohydronephrosis (B), and bilateral ureteropelvic filling defects compatible with possibly neoplastic lesions taking up space (C and D).

Figure 2  Complete surgical specimen of the urinary system extracted transvaginally after laparoscopic excision, along with the uterus and the appendages.

port for the use of dissector and Hem-o-lock applicator if necessary and Ligasure® which the main surgeon will carry, another 5-mm port for the use of pulling clamp/bipolar clamp for the main surgeon and another 5-mm port for tractor and separation clamps for the assistant (Fig. 3). Surgery begins performing hysterectomy with double adnexectomy, keeping the uterus attached to the vaginal vault to prevent loss of the pneumoperitoneum. Subsequently, bilateral iliopelvic lymphadenectomy along with cystectomy

Figure 3  Placement of the trocars used during laparoscopic surgery to perform cystectomy, bilateral nephroureterectomy, lymphadenectomy, and hysterectomy with double adnexectomy.
is performed, this time respecting the bladder neck, the urethrovesical junction, and the ureterovesical junction to prevent contamination of the surgical field and allow for kidney function during the following steps of the surgery.

Secondly, we placed the patient in right lateral decubitus, we used the optical equipment introduced through the 10-mm transumbilical trocar and the 5-mm trocar of the main surgeon used in the first section, which on this occasion will be used by the assistant. We placed another two trocars, a 10-mm one for the use of Hem-o-Lock Ligasure® and a 5-mm one for the use of traction/bipolar forceps for the main surgeon (Fig. 3). We performed left nephrectomy and complete dissection of the left ureter to the ureterovesical junction.

Thirdly, we positioned the patient in left lateral decubitus, we used the transumbilical 10-mm trocar for the optical equipment and the 5-mm trocar of the first section of the assistant. We also placed a 10-mm trocar for Ligasure® and Hem-o-Lock and another 5-mm one for bipolar/tractor clamps (Fig. 3). We performed right nephrectomy and complete dissection of the ureter to the ureterovesical junction.

In fourth place, we repositioned the patient supine with slight opening of the lower limbs, and using the same trocars of the first part of the surgery, the surgery is completed with the section of the uterus and the urethrovesical junction and surgical specimen removal through the vagina. After removal, suture of the vagina was made and an 18 Ch Foley catheter was left as a drainage through the urethra.

Discussion

The presence of synchronous or metachronous urothelial carcinoma occurs in a variable percentage depending on the series, from 1.7% to 21%, so this factor must be taken into account in the diagnosis and surgical treatment. Simultaneous surgical treatment in a single surgical procedure is described, although there are few series and surgical experience. Barros et al. placed eight abdominal trocars, as in our case, to perform cystectomy and bilateral nephroureterectomy. However, in this series, bilateral nephroureterectomy is carried out by means of neophathy, not urothelial carcinoma. In other published series, hand-assisted bilateral nephroureterectomy is performed, either by laparoscopy or by retroperitoneoscopy, but in patients who were previously on dialysis, which does not happen in our patient, who although had renal failure, was not in a dialysis program. Lin et al. perform laparoscopic technique consisting of cystectomy and nephrectomy in dialysis-dependent patients, using only six trocars with transvaginal extraction of the surgical specimen, with surgical results similar to those described in our patient; however, they begin surgery with nephrectomy, the same as the other authors. In our case, we prefer to start the surgery with hysterectomy and double adnexitomy along with cystectomy, but with the technical variation that we keep together the cervix to the vaginal vault to prevent loss of the pneumoperitoneum, and more importantly, we keep the ureterovesical junction and the urethrovvesical junction intact to prevent contamination of the abdominal cavity by tumor cells and preserve the kidney function most of the surgery, facilitating excretion of anesthetic drugs used during it, and thus we collaborate with the anesthesiologist in the proper maintenance of the patient during surgery. Berglund et al. set out surgery similarly to the way we perform it; however, although they begin with cystectomy, they make a clamping of the ureters at the level of the crossing of the iliac vessels, and therefore they do not preserve the renal function during it. Furthermore, in the case described by Berglund, following surgical resection, tumor absence was histologically checked in the nephroureterectomy pieces. We have not observed in the cases described in the literature that the technique of radical cystectomy was performed in two parts, as we describe it, in order to maintain the renal function as long as possible during surgery. We agree with other authors on the fact that the specimen removal through the vagina is a safe and effective procedure, especially in patients with comorbidities.

Although bilateral nephroureterectomy with cystectomy, hysterectomy, and double adnexectomy is a rare surgical treatment, we have shown that it can be performed laparoscopically with specimen removal vaginally without complications for the patient, therefore, we consider it an effective alternative valid in these patients.

Conflict of interest

The authors declare that they have no conflict of interest.

References