

## Total Pelvic Suprlevator Exenteration with Ileo-Colic Orthotopic Neobladder for Locoregional Recurrence after Cervical Cancer - A Case Report

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### Rezumat

***Exenterație pelvină totală suprlevatorie cu neovezică ortotopică din ileocolon drept pentru recidivă pelvină după cancer de col - prezentare de caz***

Exenterația pelvină este una dintre cele mai agresive intervenții chirurgicale din chirurgia oncologică ginecologică, dar, în același timp, singura metodă potențial curativă în tratamentul recurenței locoregionale după cancerul de col uterin. Mulțumită îmbunătățirii tehnicilor chirurgicale și a managementului postoperator, supraviețuirea globală a crescut semnificativ în ultimele decade. În încercarea de a îmbunătăți calitatea vieții acestor pacienți, au fost imaginate multiple modele de reconstrucție a tractului urinar și digestiv. Prezentăm cazul unei paciente de 51 ani la care am efectuat o exenterație totală suprlevatorie cu reconstrucție a vezicii urinare din ileocolon drept, cu rezultate bune oncologice și funcționale.

**Cuvinte cheie:** exenterație totală suprlevatorie, neovezică din ileocolon, recidivă pelvină, cancer de col uterin

### Abstract

Pelvic exenteration is one of the most aggressive surgical interventions in gynaecologic surgical oncology, but, in the same time, is the only potentially curative treatment of

locoregional recurrence after cervical cancer. Due to improvements in surgical technique and postoperative management, the overall survival increased significantly in the last decades. Trying to improve the quality of life, multiple models of reconstruction of urinary and digestive tract have been developed. In this report we present the case of a 51 years old female who underwent a total suprlevator exenteration with ileo colic neobladder reconstruction with good oncologic and functional outcomes.

**Key words:** total suprlevator exenteration, ileo-colic neobladder, pelvic recurrence, cervical cancer

### Introduction

Recurrent and locally advanced gynecologic malignancies have limited options for treatment. Since 1948 when Brunschwig first reported it, pelvic exenteration, became the only potentially curable intervention in such patients, and the overall survival constantly improved over time. If, as far as resectional phase of this surgical intervention is concerned, things did not significantly changed, the reconstructive phase has undergone permanent modifications in order to best suppleate the missing pelvic organs by various reconstructive methods. Our patient was submitted to radical hysterectomy with pelvic lymph node dissection and adjuvant radiotherapy for a stage IIB squamous cervical carcinoma in a different center. 13 months after completion of radiotherapy she was addressed to us for a locally invasive pelvic recurrence. We performed a total suprlevator pelvic exenteration with ileo-colic neobladder with good postoperative results.

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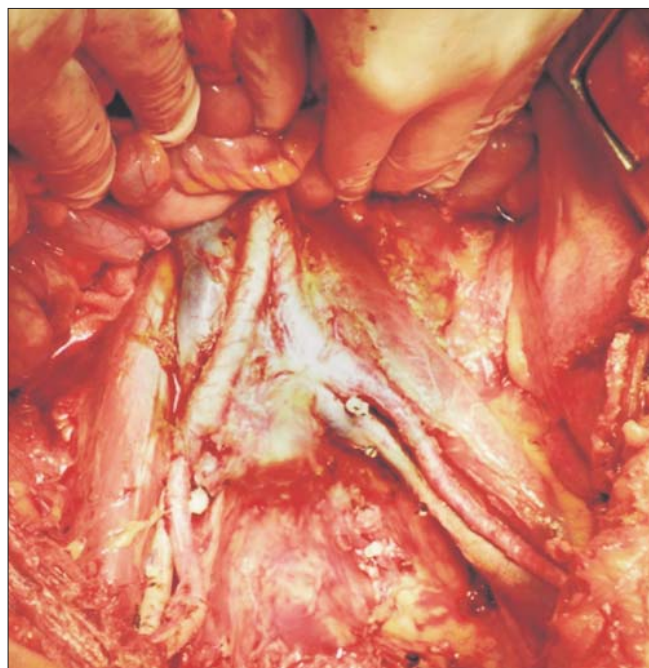
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## Case report

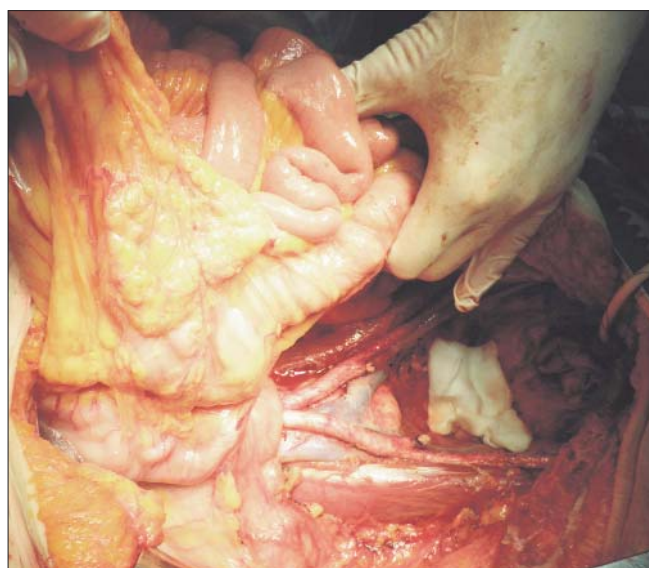
We report the case of a 51 years old female who was addressed our service for pelvic pain and haematuria. The patient had been submitted to total hysterectomy with bilateral adnexectomy and lymph node dissection for moderate differentiated squamous cervical cancer, with good postoperative evolution. After the initial surgery she was submitted to postoperative irradiation. 13 months after completion of radiotherapy the patient developed pelvic pain and haematuria. The IRM examination showed the presence of a locoregional recurrence including the vaginal cuff, the urinary bladder and the rectal ampulla. In April 2013 we performed a total supraleveator exenteration with pelvic and inter-aortico-caval lymph node dissection. (Fig. 1) To establish the urinary continuity we performed a ileocaecal reconstruction using the last 20 cm of ileum, the caecum and the right colon with vascular pedicle from the ileocolic artery (Fig. 2, 3). The urethra was also implanted in the neobladder and the Foley catheter was maintained in place for 5 weeks. (Fig. 4, 5) An incision was made on the antimesenteric part of the ileum and the two ureters were implanted at this level. Before doing the anastomosis, 4 stiches of 4-0 Vicryl were passed between the ileal serosa and periurethral tissues in order to offer stability of the junction. The ileo-urethral anastomoses were made using a 3-0 PDS stich and they were protected with 7- French ureteral catheters which were removed 1 month after through endoscopic methods. (Fig. 6, 7) The ileal antimesenteric incision was closed with PDS 4-0 separate stiches. (Fig. 8) The integrity of the neobladder was verified by injecting methylene blue through the Foley catheter. The digestive continuity was established by a side to side ileo-transverse anastomosis and the distal part of the left colon after removing the specimen was exteriorized through a terminal left colostomy. The histopathological findings of the specimen (Fig. 9) confirmed the recurrence with malignant cells infiltrating the urinary bladder and the rectum, with present tumoral emboli and perineural tumoral invasion. The lymph nodes at the origin of the inferior vena cava presented tumoral cells. One of the 3 inter-aortico-caval lymph nodes presented tumoral infiltration. A positive adenopathy was identified at the level of left common iliac artery was identified. The postoperative evolution was uneventful until the 10th day postoperatively when the 18 Ch urinary catheter was obstructed with mucous detritus and it was replaced with a larger one (a 22 Ch one). We also administrated N-acetylcysteine in order to increase the mucus fluidity. The patient was discharged in day 21 postoperatively. At 10 months follow-up she was free of disease on pelvic and abdomen MRI and showed a good general status. The renal ultrasonography excluded hydronephrosis due to ureteral strictures after removing the stents.

## Discussions

Total pelvic exenteration represents the only potentially curative intervention in patients with central pelvic recurrence of cervical cancer and consists in radical en bloc resection of endopelvic organs. (1, 2) This type of intervention, first



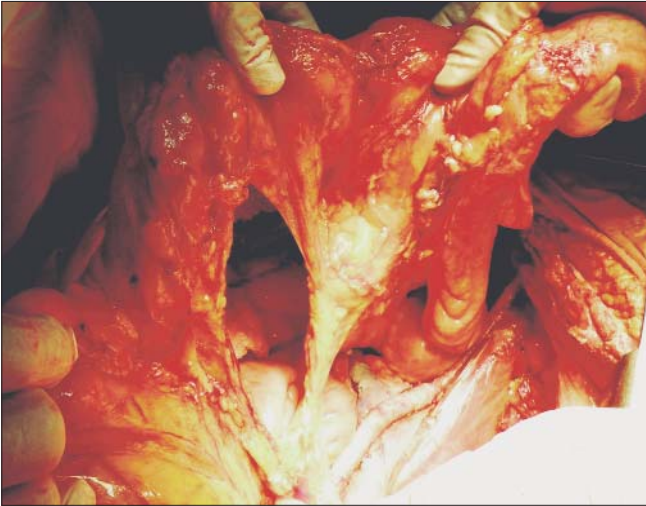
**Figure 1.** The final aspect after resection and lymph node dissection



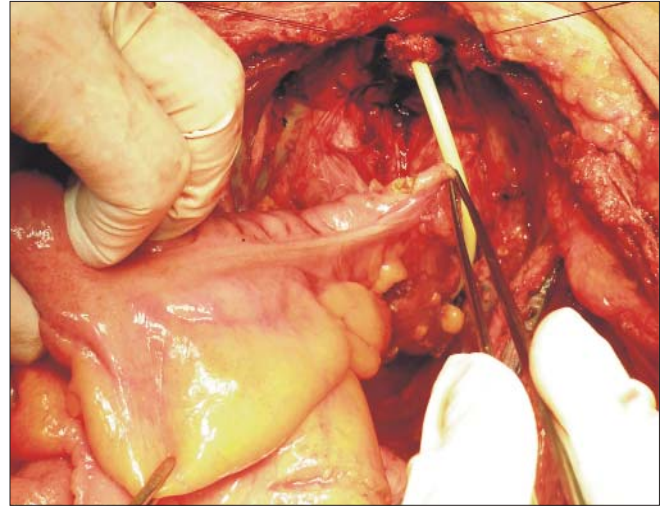
**Figure 2.** Mobilisation of the right ileo-colon

reported by Brunschwig in 1948, consisted in complete resection of the rectosigmoid, genital tract, bladder, perineal organs: urethra, anus, vulva and the 2 ureters were implanted in the colon which was exteriorized in end colostomy, thus being one of, if not the most, invasive gynecological intervention with a great impact on the patient's quality of life. (2,3) So it was also one of the most destructive gynecologic interventions with a great impact on the quality of patient's life. (4) In time, due to evolution of surgical techniques and better selection of patients, an up to 50% 5 years survival rate came to be reported.

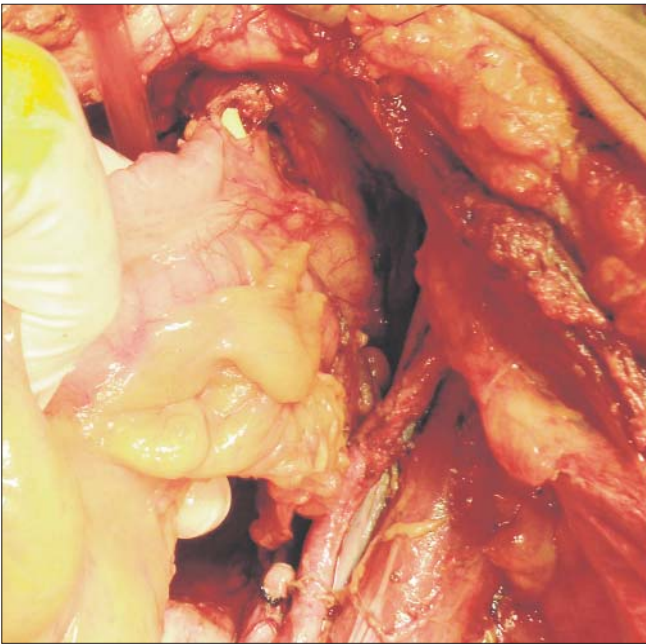
The most important factors affecting the overall survival



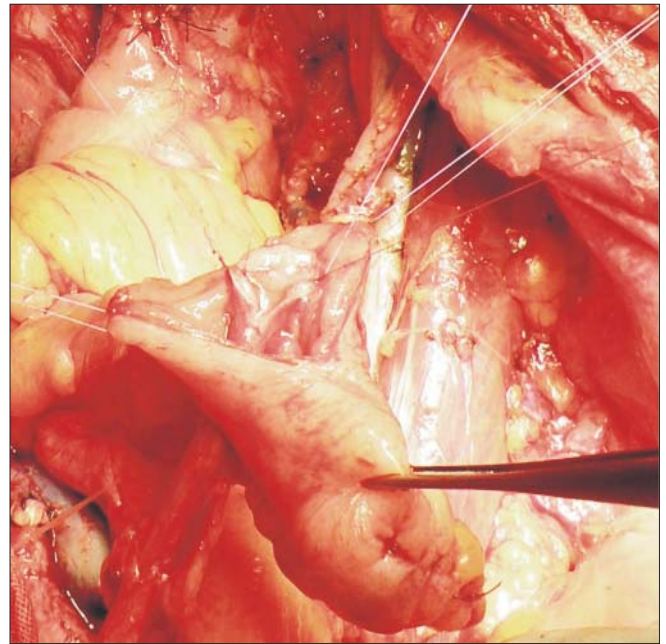
**Figure 3.** Creation of the ileo-colic reservoir and its vascular pedicle: the ileocolic artery



**Figure 4.** The anastomosis between right colon and urethra



**Figure 5.** The final aspect of the colo-urethral anastomosis



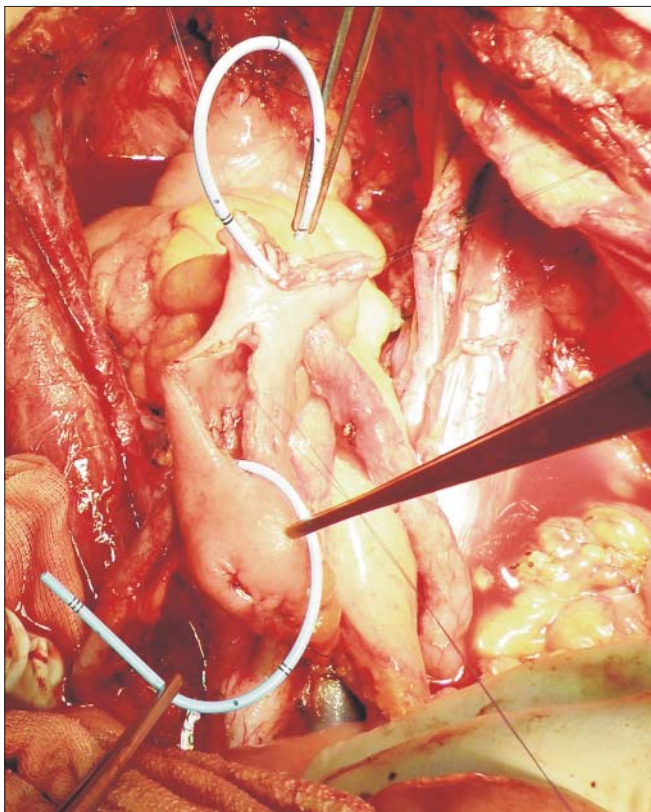
**Figure 6.** Ileal implantation of the left ureter

were identified to be the interval from radiotherapy to recurrence, margin status, the size of central tumor and the presence of pelvic side wall involvement based on clinical examination.(1,5,6,7,8) In our case it was a short-medium time of recurrence interval between radiation and recurrence (13 months), a large tumor involving both the posterior wall of the bladder and the urinary trigone structures, the anterior side of the rectum but with no pelvic side wall involvement and negative resection margins.

The most common adjuvant treatment, especially in pre-irradiated patients is chemotherapy. Chemotherapy is indicated in patients with risk factors such as positive resection

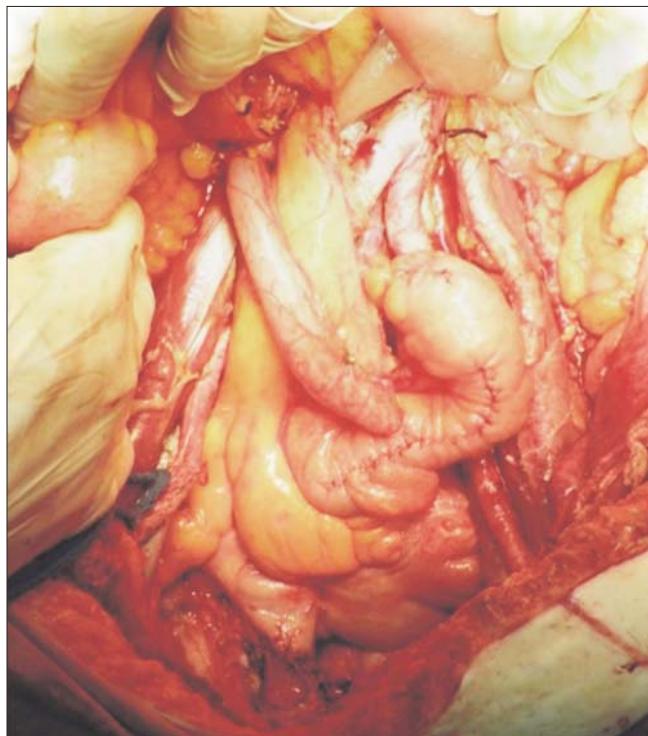
margins, large tumor (>3 cm) or positive lymph node. (1)

In the last decades, multiple studies focused on quality of life, and various techniques of pelvic reconstruction were developed in order to reestablish the digestive and urinary continuities, and, depending on the patient's wish, the creation of a neo-vagina. (6, 9-25). Bricker reported his technique for creating an ileal conduit in 1950; the method did not however imply a mechanism of continence. In time many other urinary diversions or bladder reconstructions were imagined. (26) The evolution of urinary diversions developed according to 3 directions: incontinent cutaneous diversions (conduit), continent cutaneous diversions (pouch) and urinary



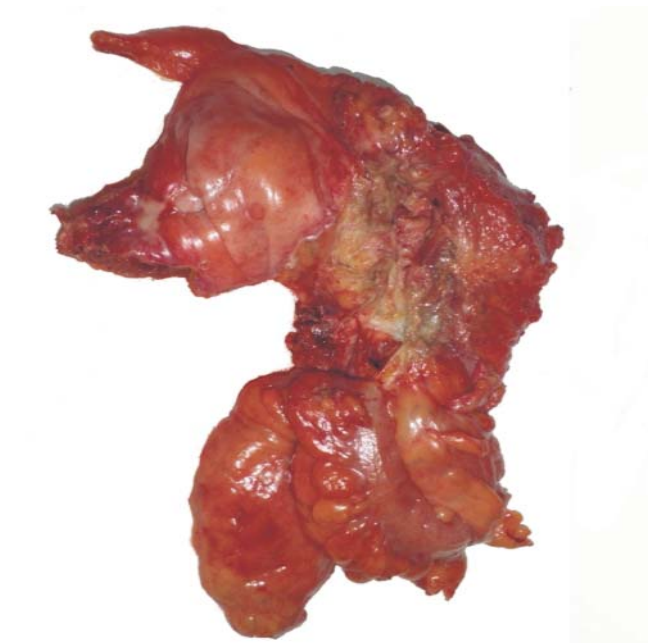
**Figure 7.** *The two ureters are implanted in the ileal stump;  
The two anastomosis are protected by urinary stents*

diversions to the native urethra (orthotopic neobladder reconstruction) (27). Conduit diversions are less demanding technically than continent pouches and neobladders but they transform the patient into a permanent urostomy pouch carrier,



**Figure 8.** *The final aspect of the ileocolic neobladder*

with a negative effect on the quality of life. (2) Although the complication rate after orthotopic neobladder construction is higher than that of incontinent diversions, they are much more easily treated by means of endoscopic and radiologically guided interventions, decreasing in this way the number of re-laparotomies and in the mean time increasing the overall survival (4,28,29,30). The recipient for ureteral implantation



**Figure 9.** *The specimen: the tumor en bloc with total cystectomy, vaginal cuff and rectal resection*

varies between ileum, different segments of the colon or the sigmoid. It has been proven that patients who had received long term radiotherapy can benefit more of a reconstruction using transverse colon, which is situated far from the irradiated area. (31,32) However this is not possible in all cases, especially if the transverse mesocolon is short and it can not descend in the pelvis without tension. The right ileo-colon is suitable for creating an orthotopic neobladder because of the favorable sources of vascularisation – the ileo-colic artery and the possibility of easy descent of the mobilized colon in pelvis (27, 33-36).

In pelvic exenteration, if supralelevator resection is performed with preservation of more than 80% of the urethra, good results in terms of urinary continence can be achieved (37)

The most dangerous complications in early postoperative period are represented by urinary and gastrointestinal fistulae or obstructions (1). It seems that prior history of radiation therapy remains the main reason for a higher rate of postoperative complications. Chiva et al reported the first series of 6 patients who underwent prior radiotherapy before pelvic exenteration with ileal orthotopic neobladder. 3 of the 6 patients developed urinary anastomotic leak: 2 cases were treated conservatively by replacing a Foley catheter, with spontaneous healing in 2 months. In the third case a neobladder-vaginal leak occurred and it was repaired with a Mauritius flap 4 months after initial surgery. (2)

Ungar et al reported a series of 29 women who underwent a reconstruction using the right ileo-colon in which the 2 ureters and uretra were implanted. 19 of the 29 patients were pre-irradiated. 6 of the 19 patients developed an urinary fistula and needed re-laparotomy (38). The risk of fistula between the neobladder and other pelvic organs (vagina, bowel) in pre-irradiated patients is almost 10% according to Mills et al (27,39)

In patients undergoing total supralelevator exenteration, performing a coloanal anastomosis in order to establish the continuity of digestive tract is useful to preserve the bowel continence but, in the same time is a risk factor for developing an urinary fistula. This is why some authors recommend association of a temporary loop ileostomy (4,26)

In conclusion the balance between the potential risks of different types of reconstruction and improved body image should be weighed in an individualized way for each patient. (2) The most important goal of patient counseling should be to find out which intervention is the better in tumor control, has a lower risk of early and late complications (according to the medical past of each patient – pre-irradiation, chemotherapy, renal function) and offers the best quality of life (27)

Another problem which can appear when ureteral implantation in ileo-colon is performed is the urinary reflux. In order to reduce this complication, an extraluminal serosal ureteral implantation (creating in this way an anti-reflux flap valve) can be used with good results if the ureters are of normal caliber or dilated (27, 40-44) The most frequent cases of uretero-enteric anastomotic strictures occur in the first 2 years postoperatively, regardless the type of implant. (27, 45-49) An

important risk factor for the apparition of the uretero-enteric strictures is ureteral ischemia which occurs especially if extended ureteral mobilization is performed. In case of anterior exenterations, there is a risk of angulation of the left ureter. If placement of the left ureter under the free edge of the left colonic mesentery causes angulation against the inferior mesenteric artery, the ureter may be brought through a higher avascular window within the colonic mesentery. (27)

If an ileo-colic orthotopic neobladder is chosen for the restauration of the urinary tract, there are some patient selection criteria which should be respected; chronic renal failure (creatinine > 200 micromol/L), severe hepatic dysfunction, inflammatory bowel disease represent absolute contraindications. Also, if a large segment of urethra is removed because of tumoral involvement, orthotopic reconstruction is absolutely contraindicated (27, 50,51)

When performing an urinary reconstruction, biological consequences of exposing the bowel's mucosa to urine should be taken in consideration. No difference was observed between ileal and colonic mucosa in sodium-absorbing rate; when it comes about bicarbonate and chloride absorption, these are significantly higher in the colic mucosa, predisposing in this way to hyperchloremic acidosis. This has even a worse outcome if a grade of renal impairment already existed. (52-57) So, ileal neobladder is the most appropriate reconstruction in patients with decreased renal function or with important metabolic disorders. In order to diminish chloride absorption, Natrium citrate can be administrated only under close monitoring of blood pressure. Ileocolic neobladder has however the disadvantage of excluding the ileocecal valve from the digestive tract that can predispose to accelerated intestinal transit and the exclusion of the terminal ileum that decreases vitamin B12 absorption. Routine administration of B12 vitamin every 6 months seems to have good results in preventing this deficiency, which, otherwise, can lead to irreversible neurologic and hematologic sequelae. (27,58)

Mucous production of the bowel is another important impediment which can affect the postoperative evolution. Continent urinary diversions produce 35 g/day of mucus which can impede the complete emptying of the reservoir. The estimated risk is lower in patients with good spontaneous voiding; in contrast, patients needing cleaning intermittent catheterization may also need neobladder irrigation to remove retained mucus. (27,59,60,61) N-acetyl cysteine is an effective drug which provides mucus dissolution and can be administrated orally or by local instillations through a Foley catheter. (59, 62,63,64). In our case, oral administration of 600 mg 2 times daily had a satisfactory result.

## Conclusions

Nowadays, orthotopic reconstruction of the bladder represents the standard procedure of re-establishing the urinary continuity after total pelvic supralelevator exenteration, avoiding in this way the need of a urostomy on the anterior abdominal wall and offering a good rate of urinary continence (up to 80%) (26) Sparing the urethra in selected cases

does not increase the risk of local recurrence (26). Association between radiotherapy in the history of the disease and creation of a neobladder should be carefully weighed in order to obtain the best results.

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