



## Laparoscopic-Assisted Vaginal Pelvic Exenteration and Reconstructive Procedure

María Dolores Diestro Tejeda<sup>1</sup>, Begoña Díaz de la Noval<sup>1\*</sup>, Ignacio Javier Brunel García<sup>2</sup>, Ignacio Zapardiel<sup>1</sup>, Alicia Hernández Gutiérrez<sup>1</sup> and J De Santiago García<sup>1</sup>

<sup>1</sup>Department of Gynecology Oncology Unit, La Paz University Hospital, Spain

<sup>2</sup>Hospital Quirón Madrid, Spain

### Abstract

**Introduction:** Total pelvic exenteration is an ultra-radical surgical approach which involves an en-bloc resection of the tumor and pelvic organs affected. The procedure is performed with a curative intention in recurrent or advanced gynecological malignancies. The aim of this video is to describe a step by step video presentation of the surgical and reconstructive procedure.

**Case Report:** A 46-year old woman, previous stage IA vaginal carcinoma treated with radiotherapy. Two years after, she has a 5 centimeters centropelvic relapse that compromises pelvic organs, no pelvic wall infiltration or metastasis. A total type I pelvic exenteration with vulvectomy is performed. The surgical procedure involves four steps: (1<sup>st</sup>) diagnostic laparoscopy, (2<sup>nd</sup>) laparoscopic total supralevator pelvic exenteration with perineal-rectal vaginal resection, (3<sup>rd</sup>) urinary (Bricker's technique) and digestive (colostomy) diversions performed extracorporeally, (4<sup>th</sup>) pelvic floor reconstruction with a biological mesh and bilateral gracilis myocutaneous flaps as a neovagina. Post-surgical minor complications were superficial ischemia of gracilis flaps, pyelonephritis, and recurrent pelvic abscess. The tumor was a high grade invasive squamous carcinoma with lymphovascular invasion and free surgical margins but microscopic residual tumor in the parametrium. Due to complications, adjuvant treatment could not be performed; the patient had a metastatic relapse a year later, she died. The radical excision of locally advanced gynecological cancers may produce a wide defect of perineal tissue that predisposes to complications, so pelvic floor reconstruction is recommended.

**Discussion:** Morbidity is close to 50%, OS and DFS 40 and 60% respectively. Prognostic factors are residual tumor, tumor size greater than 5 cm and lymph node involvement. Surgical rescue by pelvic exenteration should be seen as part of a multidisciplinary and experienced team.

**Conclusion:** Laparoscopy in pelvic exenteration is feasible in selected cases and reconstruction procedure should include proper handling of the pelvic floor.

**Keywords:** Laparoscopy; Minimally invasive surgery; Pelvic exenteration; Pelvic floor reconstruction; Vaginal carcinoma

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#### \*Correspondence:

Begoña Díaz de la Noval, European Society of Gynaecology Oncology [ESGO] Fellow and Gynecology Oncology Unit, La Paz University Hospital, Paseo de la Castellana 261, 28046-Madrid, Spain, Tel: +34616306566;

E-mail: begodelanaval@gmail.com

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### Highlights

- Minimal invasive surgery is technically feasible in selected patients.
- Laparoscopic approach provides excellent local tumor control with low morbidity.
- Multidisciplinary expert teams should perform it.
- The main objective is free resection margins with no residual tumor.
- A correct reconstructive procedure reduces complications improving quality of life.

### Introduction

Total pelvic exenteration involves resection en-bloc of the tumour and pelvic organs affected followed by reconstruction [1]. Pelvic exenteration remains the only therapeutic option in recurrent or persistent gynecological malignancies, after chemoradiation failed [2]. Most common indications for pelvic exenteration in woman are tumors of the uterine cervix, but it can be any pelvic tumor origin [3,4].



**Figure 1:** Image study pre-surgery: PET-TC (A, B) and MRI (C) shown a neoformation in the upper third of the vagina (measure: 58 x 40 x 28 mm) that destroyed the cervix, extends above peritoneal reflection and mesorectal fat with invasion of the bladder (no lesions seen in cystoscopy) and anterior wall of the rectum-sigmoid, the tumor affects left proximal and all right parametrium; no infiltration of the pelvic wall or distant metastases.

## Case Presentation

A 46-year-old woman, stage IA vaginal non-squamous cell carcinoma treated with external radiotherapy and brachytherapy. 24 months after she had a five centimeters centropelvic relapse that compromised pelvic organs, without infiltration of the pelvic wall or distant metastasis (Figure 1). Surgical treatment was indicated and the patient was qualified for total type I pelvic exenteration with immediate reconstruction.

The surgical procedure involves four steps:

1. Diagnostic laparoscopy. We conducted a 4-port access (10 mm umbilical trocar, 5 mm two side and one central trocars). *Findings:* an eight centimeters vaginal tumour that destroys the cervix and spreads to rectovaginal septum, posterior and right sides of the uterus and right side of the bladder. No abdominal spread.

2. Laparoscopic total supralelevator pelvic exenteration with perineal-rectal resection. Abdominoperineal resection of the female genital tract en-bloc with adjacent pelvic organs such as the distal urinary tract (urethra, bladder and ureters) and the anorectum. The surgical procedure included a radical cystectomy and urethrectomy, radical hysterectomy with double anexectomy, partial-central resection of the levator ani muscle, complete resection of sigma-rectum-anus and vulvo-perineal area with vaginectomy (Figure 2). A 12 mm trocar access was needed for the endocutter. Intraoperative biopsy margins of the pelvic wall were negative (R0).

3. Urinary and bowel reconstruction. Urinary diversion type Bricker and right ileostomy. The ureters are anastomosed directly into one end of the ileum, and the other end of the ileum is brought out to the level of the skin. Digestive derivation with a left colostomy. A minilaparotomy was necessary.

4. Perineal and pelvic reconstruction. The empty pelvic dead space predisposes to abscesses, fistula and intestinal obstruction, so the pelvic floor reconstruction is recommended. The pelvic defect was covered with a biological mesh and vulvoperineal-rectal resection with bilateral gracilis myocutaneous flap and neovagina.

Post-surgery complications were superficial ischemia of gracilis flaps, pyelonephritis and recurrent pelvic abscess.



**Figure 2:** Tumor specimen: en-bloc abdominoperineal removal of the female genital tract with adjacent pelvic organs. A: rectum, sigmoid and anus with partial-central levator ani muscle, B: uterus, parametrium and annexes, C: bladder, urethra and distal bilateral ureters.

The tumor was a high grade invasive squamous cell carcinoma with lymphovascular invasion and masive infiltration. Free surgical margins but microscopic residual tumor in the parametrium (R1). Due to complications adjuvant treatment with chemotherapy and concomitant pelvic radiotherapy was not performed, the patient died a year later because of disseminated disease.

## Discussion

Although laparotomy is the most used technique, laparoscopic or laparoscopy-vaginal assisted pelvic exenteration followed by reconstruction can be performed in selected cases [5]. Explorative laparoscopy prior to exenterative surgery is an effective procedure for evaluation of patients who were candidates for exenteration and avoids unnecessary laparotomy if extended disease [6].

Magriñá describes two classifications for pelvic exenteration, four groups: anterior, posterior, total or extended (exenterative procedures requiring additional resection of tissues like small bowel, bone, groin nodes or soft tissue) and three levels of resection: type I [supralelevator], type II (infralelevator) and type III (with vulvectomy or perinectomy) [7].

The surgery is carried out with a curative intention, aiming the excision of the tumor with microscopic free margins. Few exenterative procedures are performed for palliation of intractable local symptoms. Actually surgical contraindications are sciatic foramen tumor involvement or invasion of the pelvic sidewall, bulky retroperitoneal lymph node metastasis, extrapelvic metastatic disease and no good general condition [4,6]. Inclusion criteria for pelvic exenteration include biopsy confirming recurrent pelvic carcinoma, no extrapelvic disease and good performance status. For Pomel et al, the ideal selected patients for laparoscopic approach were: small centropelvic recurrence less than 5 cm without pelvic sidewall involvement, BMI less than 30 kg/m<sup>2</sup> and no need to perform pelvic reconstruction [1].

Morbidity is close to 50% due to urinary or digestive anastomosis and plastic reconstructive complications, with a global perioperative mortality of 5% [5]. The five-year PFS is 35%, OS is between 40 to 60% and DFS is 57% respectively [8]. The most important prognostic factors are the absence of residual tumor after surgery (R0), tumor size greater than 5 centimeters and lymph node involvement [3,7].

## Conclusion

Surgical rescue by pelvic exenteration should be seen as part of a multidisciplinary committee and an experienced team. Minimally invasive laparoscopic surgery approach is possible in selected cases.

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