

Pelvic Exenteration: Review of Conventional Technics and Advantages of Laparoscopic Approach

Exenteração Pélvica: Revisão de Literatura da Técnica Convencional e as Vantagens da Abordagem Laparoscópica

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ABSTRACT

Objective: The study aims a literature review of pelvic exenteration conventional cancer treatment and possible advantages associated with the laparoscopic approach. **Background:** Pelvic exenteration was initially described for the treatment of advanced cervical cancer and involves the removal of the female genitalia in conjunction with the bladder or rectum. Currently, this operation recommended for the treatment of various pelvic malignancies, both primary and persistent, or recurrent. Laparotomy has been the approach of choice, however, with the increasing development and experience in laparoscopy, a new field of advanced procedures in oncology has been developed. **Discussion:** Pelvic exenteration may be the only chance of cure for some patients with local recurrence after primary surgery, radiotherapy and chemotherapy. It is a safe and effective when performed by a multidisciplinary team. Larger studies are needed to confirm the benefits of laparoscopic pelvic exenteration as a safe surgical option, but recent data are promising.

Key words: surgical procedures in gynecology, pelvic exenteration, cancer of the female genitals, laparoscopy.

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INTRODUCTION

Pelvic exenteration is the radical surgical treatment that removes the female genital organs such as the uterus, fallopian tubes, vagina, and in some cases the vulva, together with the bladder or rectum.¹ It has been indicated for the treatment of various pelvic malignancies, both primary and persistent, or even recurrent.

Although pelvic exenteration was initially described for the treatment of advanced cervical cancer, this operation has been recommended for the treatment of various tumors, including those of the bladder and rectum. In special situations, it may also be indicated for the treatment of ovarian cancer or,

occasionally, to correct complex fistulas after radiation therapy.^{2,3}

Gynecologic cancers that persist or recur after primary treatment have unfavorable prognoses and limited therapeutic options. Patients who experience recurrence after surgical treatment are generally treated with sensitizing chemotherapy and radiation therapy. For those who relapse after chemoradiation, however, radical surgery may be the only chance for cure or local control of the disease. Historically, has been the method of choice.^{4,5}

With the growing experience in laparoscopy, a new field of advanced procedures in oncology has developed. The first series comparing laparoscopy and laparotomy in pelvic exenteration and its

immediate reconstruction have had a limited number of cases, but demonstrated an absence of significant adverse effects.⁶⁻⁸

CLASSIFICATION AND TECHNIQUES

Brunschwig first described a multi-visceral pelvic resection for the treatment of advanced pelvic neoplasms in 1948.² Once the exenteration was completed, a phase of reconstruction follows, which at that time was performed by a terminal cutaneous ureterosigmoidostomy. A priori, this procedure was considered palliative and was little used at the time, due to its significant morbimortality. The complications most frequently described were recurrent pyelonephritis and ureteral stenosis. Nevertheless, during the next 20 years, with significant improvements in operative technique and postoperative and supportive care, as well as more selective indications, this therapeutic modality resurfaces with curative intent, for both locally advanced pelvic malignancies and isolated pelvic recurrence. It may offer satisfactory control of symptoms and a five-year survival rate of ~20% to 60%.^{2, 9-13}

Pelvic exenteration is classified as anterior, posterior, and total. In anterior exenteration the resection of the female genitals is performed as a monoblock with the lower urinary tract (bladder and urethra).^{2,4,12,14} One of the remarkable advances with this type of surgery has been the urinary reconstruction technique which, in the early days, had high rates of morbidity. In 1950, Bricker described a new technique, which uses a segment of the ileum to make a cutaneous ureteroileostomy. This reconstruction greatly reduces metabolic complications and infections of the cutaneous ureterosigmoidostomy previously advocated by Brunschwig.² It is still the gold standard for reconstruction of the urinary tract at most gynecologic oncology referral centers.¹³

Recent studies have demonstrated that the implementation of new surgical techniques with continent urinary diversion, even in previously irradiated patients, achieve results – especially with regard to renal function – comparable to those obtain with the classic Bricker technique.¹⁵

The use of the cecum as a continent urinary diversion was first described in 1908 by Verhoogen, but Rowland, Bejany and Thuroff, in the 1980s, refined and popularized the ileocolonic pouch (Miami pouch). Other variants have been described, such as the ileal

pouch (Kockpouch) and the supracecal colonic continent urostomy. The ileocolonic pouch was widely adopted because it is easy to perform, has low reoperation rates, and higher continence rates when compared to other techniques. Constructing a neobladder with an ileal conduit is not recommended. Pelvic exenteration encompasses structures that should be preserved during this procedure, such as the anterior vaginal wall, urethra, pubo-urethral ligaments, and the endopelvic fascia. The high risk of urinary fistulas after pelvic irradiation and the high rate of recurrence of gynecologic malignancies, argue against it.^{13,16}

For the posterior exenteration, the resection of the female genitals is performed together with rectosigmoid. The exenteration can be subdivided into supralelevator or infralelevator procedures depending on whether the sphincter apparatus is preserved. With supralelevator exenteration the pelvic floor is preserved, enabling an end-to-end anastomosis. In the infralelevator technique, the sphincter apparatus, anus, the lower portion of the vagina, vulva, and perineum are resected, requiring a Hartman colostomy.

Total pelvic exenteration entails the simultaneous performance of anterior and posterior exenterations.^{2,4,14} In these cases reconstruction can be carried out to create two stomata: a Bricker urostomy, located in the right flank, and a Hartman colostomy in the left flank. An alternative is creating a single stoma using a loop of sigmoid colon with implantation of the ureters into the distal segment, called a “wet colostomy”.

Laparoscopic Pelvic Exenteration

It has been demonstrated that laparoscopy can be accomplished in these situations and when associated with a combined vaginal approach, it is even more feasible.

The benefits of laparoscopic exenteration include less blood loss, less postoperative pain and adhesion formation, earlier ambulation, and a more favorable aesthetic result.

The mean duration of hospitalization for the laparoscopic procedures did not, however, differ when compared with the length of stay for the conventional technique. The justification is that the duration of the hospitalization was not associated with the size of the surgical incision, but rather with the pelvic trauma caused by the dissection and with the post-operative care required because of the urinary diversion and colostomy.⁶⁻⁸

In a series of 16 cases, Puntambekar (2006), reported a mean blood loss of 200 ml (range 100-500 ml), less pain and fewer postoperative adhesions, earlier ambulation, and a better aesthetic result.⁸ Ferron (2006), in five cases, like Puntambekar, had blood loss of less than 500 ml. In Ferron's small series, however, the duration of the hospitalization for the laparoscopic technique and for laparotomy were comparable.⁶

As part of the preoperative evaluation for pelvic exenteration, especially when total pelvic exenteration is planned or possible, vaginal reconstruction should be discussed with the patient. Such discussions are associated with better postoperative satisfaction, increased self-confidence, and continuity of sexual function in more than 50% of cases. The use of a myocutaneous flap derived from the rectus abdominis is the most widely used technique, with anatomical and functional restoration and complete filling of the dead space in the pelvic cavity.¹⁷⁻²⁰

Laparoscopy has limited the number of techniques for vaginal reconstruction, with the omentum flap and the sigmoid loop procedures most frequently used to create a neovagina.⁶

Limits of Pelvic Exenteration

A review of the literature encompassing 932 patients who had undergone pelvic exenteration found that this surgery was not well tolerated by individuals with limiting comorbidities. Emotional stability and a positive attitude are essential, as are good family and psychological support.^{2,11,21}

Physical, psychological and social disorders inherent to the procedure are quite common. Studies show that fear, depression, and lack of self-confidence due to changes in body image, are most frequent psychological consequences. Neovagina reconstruction directly influences these psychological changes, and can offer many benefits.¹⁸

Although obesity and advanced age were considered relative contraindications for the procedure, other medical conditions such as arterial vascular invasion, bilateral ureteral involvement, invasion of nerve structures (sciatic nerve and sacral structures) or lymph node metastases distance have been considered formal contraindications to this type of surgery.^{2, 11,21}

Höckel described a technique of pelvic exenteration with lateral extension, indicated in neoplastic recurrence with invasion of pelvic wall. In this initial series of 36 cases, the five-year survival rate was 49%. Viera et al. evaluated 100 patients with recurrent tumors with lateral extension who underwent resection. At follow-up averaging 30 months, 62% showed no recurrence. The morbidity rate, however, was 70%.⁴

DISCUSSION

Pelvic exenteration remains the only chance for cure for patients with local recurrence after initial surgery, irradiation and chemotherapy. It is a safe and effective option when performed by a multidisciplinary team. When tumor recurrence occurs, the patient's understanding of the situation is of utmost importance. Whenever possible, patients should be encouraged to participate in support groups with patients who have gone through similar experiences and can convey the consequences of the procedure.^{12,19}

Studies involving a larger number of cases are needed to confirm the benefits of laparoscopic pelvic exenteration as a safe surgical option.⁷ The case series studied to date suggest that laparoscopy is a promising and feasible therapeutic modality, despite the high complexity of the procedure and the long learning curve.

RESUMO

Objetivo: O estudo realizado teve como objetivo uma revisão bibliográfica da exenteração pélvica convencional e as possíveis vantagens associadas à técnica laparoscópica. **Síntese Histórica:** A exenteração pélvica foi descrita inicialmente para o tratamento do câncer do colo uterino avançado e consiste na remoção dos órgãos genitais femininos em conjunto com a bexiga ou o reto. Atualmente, esta operação tem sido indicada para o tratamento de diferentes neoplasias pélvicas, tanto primárias quanto persistentes, ou ainda recorrentes. A laparotomia é a abordagem de eleição, porém, com o crescente desenvolvimento e experiência em laparoscopia, um novo campo de procedimentos avançados em oncologia vem sendo desenvolvido. **Discussão:** A exenteração pélvica pode ser a única possibilidade de cura para algumas pacientes com recorrência local após cirurgia primária, radioterapia e quimioterapia. É uma opção segura e eficaz, quando realizada por uma equipe multidisciplinar. Estudos mais amplos são necessários para confirmar as vantagens da exenteração pélvica laparoscópica como uma opção cirúrgica segura, mas os dados recentes são promissores.

Descritores: procedimentos cirúrgicos em ginecologia, exenteração pélvica, neoplasias dos genitais femininos, laparoscopia.

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