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Pelvic exenteration – our initial experience in 15 cases

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Summary

Objective: To analyse the initial experience of pelvic exenteration for gynaecological malignancies in a tertiary referral center. *Materials and Methods:* Between 2011 and 2013, 15 patients underwent a pelvic exenteration for gynaecological malignancies. *Results:* Out of the 15 exenterations, six were total, four anterior, and five posterior. The indication was cervical (nine patients), advanced vaginal (one patient), and ovarian cancer (in five patients). A Bricker non-continent ileal urinary conduit was performed in all ten anterior and total exenterations. In-hospital complications occurred in six patients (40%) of whom two perioperative deaths (13%). Among the 15 patients, at this moment, eight are alive and six died because of the disease, and one was lost to follow-up. *Conclusion:* Pelvic exenterantion for recurrent or advanced pelvic malignancies can be associated with long-term survival and even cure without high perioperative mortality in properly selected patients. However, postoperative complications are common and can be lethal.

Key words: Pelvic exenteration; Gynecologic malignancies; Perioperative mortality.

Introduction

After initially published by Alexander Brunschwig in 1948 [1] with a palliative intent and described as "the most radical surgical attack against the pelvic cancer", pelvic exenteration became an ultimate, salvage therapy for patients with advanced or recurrent pelvic cancers. It is considered an extremely difficult and demanding procedure for both surgeon and anaesthesiologist, with an intra- and perioperative mortality between 0 and 9% [2-12], but, if succeeded, for those patients without other alternative curative option, the five-years survival rate ranges between 20% and 60% [2-13].

The main indications are the central pelvic recurrences after gynaecologic, urologic or rectal cancers. In later years, the indications have expanded to include also lateral recurrences involving the pelvic side wall when resection with clear margins is achievable, making it possible to offer salvage therapy to selected patients previously regarded to be incurable [14]. Occasionally, pelvic exenteration is performed as primary treatment for advanced pelvic malignancies with the intent of excising the malignancy en bloc [15], as well as for palliation in patients with severe symptoms, like intense pelvic pain, bleeding difficult to control, fistulas or grossly changes of local anatomy, where no other treatment options exist.

Pelvic exenterations may be total (removal of urinary bladder, rectum, vagina, tumour), anterior (urinary bladder, vagina, tumour) or posterior (rectum, vagina, tumour). In all three situations, it is mandatory to remove the uterus and the adnexae, if not previously removed. An anterior exenteration generates the need for a urinary diversion, which can be incontinent or continent. Also, the continent urinary diversion may be heterotopic, when the reservoir is placed under the abdominal wall and the patient has to catheterize herself, or orthotopic, when the new reservoir is placed in the pelvis and the patient voids through her preserved urethra [13, 16, 17]. The procedure can be classified also as supralevatory, infralevatory or infralevatory with vulvectomy [3] depending on the resection lines in relation to the levator ani muscles. An infralevatory excision including the removal of the anal canal requires a permanent colostomy, and a total colpectomy requires the creation of a neo-vagina for the patients who desire to maintain their sexual function [13].

The objective of this study was to review the authors' pelvic exenteration initial experience for patients with gynaecologic cancers, in terms of patient selection, indications, surgical technique, and complications.

Materials and Methods

Between August 2011 and September 2013, 15 patients were submitted for a pelvic exenteration in the First Clinic of Obstetrics and Gynaecology, University of Medicine and Pharmacy Târgu-Mureş, Romania. This procedure was initially considered feasible in 18 patients, but it succeeded only in 15. Even when complete tumour resection was assessed as possible after preoperative staging, the surgical procedure was abandoned in three patients. In two patients the tumour was found impossible to be removed because of sidewall involvement with extension to the bony structure or tumour involving the neurovascular structures of the sciatic foramen (especially the first sacral plexus root), and in one patient, multiple metastases have been discovered in the omentum and peritoneum. Patients' age ranged between 36 and 73 years. All the procedures were considered with a curative intent. The preoperative assesment included mandatory a computed tomography (CT) or magnetic resonance imaging (MRI), for exclusion of extrapelvic disease and evaluation of operability. All

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Figure 1. — MRI scan of a Stage IVa cervical cancer with bladder invasion and unilateral hydronephrosis.

Figure 2. — MRI scan of a large cervical tumour (Stage IVa cervical cancer) invading the bladder and rectum and compressing the rectal lumen against the sacrum.

Figure 3. — Total infralevatorian exenteration with vulvectomy. The entire perineum was removed. A tissue sponge is placed into the pelvis.

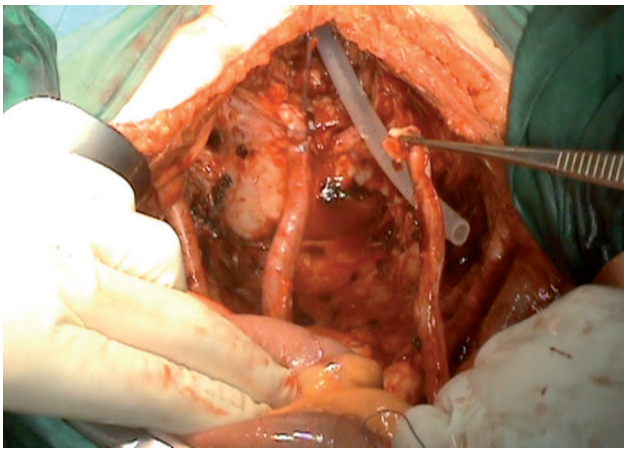

Figure 4. — Intraoperative aspect after an infralevatorian total exenteration with vulvectomy. Both ureters, internal iliac arteries, and veins were ligated. A drain is placed through the perineal wound.

patients proposed for a total or anterior exenteration underwent cystoscopy, and for a total or posterior exenteration a colonoscopy. Two patients with cervical cancer Stage IVa (bladder mucosa involvement and unilateral hydronephrosis) decided for primary anterior exenteration as treatment and refused radiochemotherapy, when they asked for the treatment options. One patient with a Stage IVa vaginal cancer was treated 19 years before with surgery and radiotherapy for a cervical cancer. Also, in two patients with pelvic advanced ovarian cancer, the authors considered as posterior exenteration en-bloc removal of uterus, adnexae, recto-sigmoid junction together with the tumours of the pouch of Douglas; the procedure necessitating a retroperitoneal and pelvic side-wall dissection. All the other cases were exenterations performed for recurrent or persistent cervical cancer after radiochemotherapy or for central pelvic recurrent ovarian cancer. The authors did not consider mandatory to obtain a histopathologic confirmation of all recurrences or persistent cervical cancers when the clinical or imaging were doubtful. In all cases when, during the procedure, a complete resection was considered impossible with macroscopically no residual tumour (R0), the surgery was abandoned. A detailed informed consent was obtained for each patient before surgery. Complications were divided as early (< 30 days) or late (> 30 days). For each patient, only the highest complication was recorded when a complication clearly occurred as a consequence of a prior complication of a lower grade.

Results

Out of the 15 exenterations, six were total, four anterior, and five posterior. The indication was recurrent (for seven patients) or advanced (for two) cervical cancer, vaginal (for one) and ovarian cancer (in five patients). All ten total or anterior exenteration underwent a urinary diversion by Bricker

Table 1. — *Oncologic indications, type of exenteration, and early and late complications for the 15 patients who suffered a pelvic exenteration.*

Age (years)		36-73 (median 54.5)	
Gynecological cancer			
Cervix	- reccurrent or persistent	7	(46.6%)
	- Stage IVA	2	(13.3%)
Vagina		1	(6.6%)
Ovary	- reccurrent	3	(20%)
	- Stage IV	2	(13.3%)
Type of exenteration			
Supralevatorian		11	(73.3%)
Infralevatorian		4	(26.6%)
Complications			
Early		6	(40%)
Late		2	(13.3%)
Patients' status			
Alive		8	(53.3%)
Dead of disease		6	(40%)
Lost to follow-up		1	(6.6%)

ileal non-continent conduit [18], because the authors considered it technically easier and with less complications. In eight patients, the ileo-ureteral anastomosis was made separately for both ureters, and in two through a common ureteral plate (Wallace technique), depending of ureters diameter and vascularization. Out of 11 cases in which a total or posterior exenteration was performed, six patients required a definitive end-colostomy, and five a low rectal anastomosis (performed by manual suturing in three and by circular stapler in two). A supralevatorian exenteration was performed in 11 cases, but in four patients, the authors performed an infralevatorian exenteration with vulvectomy (all total for recurrent or persistent cervical cancer with vaginal involvement or for vaginal cancer) for a better oncologic radicality. All patients required blood and plasma transfusion, total parenteral nutrition, and prophylactic antibiotic treatment.

In the present series, the authors did not experienced intraoperative death but, as early complications, unfortunately, two patients died before 30th postoperative day. A young 36-year-old woman, para 3, referred to the present hospital in a general poor condition, with a suboclusive syndrome caused by a huge cervical tumour invading the rectal wall and compressing the rectal lumen against the sacrum, developed in the fourth day after a total supralevatorian exenteration, a caecal perforation with general peritonitis, which was fatal, despite re-operation and intensive care support. The second death was registered in a 67-year-old patient with a myocardial infarction 12 months before the surgery, with a surgical uneventful recovery after a total exenteration, who developed suddenly in the tenth postoperative day an acute pulmonary oedema with cardiac failure. Other severe early complication was an entero-perineal fistula developed on the 16th day following a total infralevatorian exenteration with vulvectomy, which necessitated re-laparotomy and enteric suturing. Other early minor complications included a urinary conduit leakage which resolved spontaneously and a prolonged paralytic ileus, resolved by drug therapy. As late complications, the authors encountered a stenosis of the uretero-ileal anastomosis, which underwent finally a unilateral permanent nephrostomy.

Among the 15 patients, at this moment, eight are alive with no evidence of disease, six died because of the disease, and one was lost to follow-up. This data are not conclusive for survival, because the follow up period is too short for all the patients. All these data are summarized in Table 1.

Discussion

Analyzing the results of pelvic exenteration series, it must be keep in mind that this procedure remains the only option and the only potentially curative treatment for these patients with recurrent or advanced pelvic malignancy. Even when a tendency to push forward the indications occurs, the medical (poor general conditions or all other illness causing problems for a long and difficult surgical procedure and recovery) and surgical-oncologic contraindications, like extrapelvic metastases (exception – isolated hepatic or pulmonary one), distance lymph nodes metastases (inclusive para-aortal), sidewall involvement with extension to the bony structures of the pelvis or tumour involving the neurovascular structures of the sciatic foramen, must be respected. Nonetheless, considerable differences exist between indications and contraindications for exenteration within and between countries.

The mainstay for treatment success in terms of locoregional control and long-term survival is resection of the pelvic tumour with clear margins [14, 16, 19]. In this series, the procedure was abandoned in three patients when complete tumour removal was considered impossible. Margin status appears to be the factor most consistently associated with prognosis [14, 19]. Pelvic sidewall involvement was previously considered a contraindication for exenterations with curative intent [14, 20], but since then, studies have shown equal results as for central recurrences when a complete resection can be performed [14, 19, 21-23]. However, resections including pelvic side wall are technically demanding and may be associated with increased risks. Patients considered for exenterations with curative intent should be properly selected based on thorough clinical and imaging assessment to minimize the risk of performing resections with involved margins or to abandon the procedure based on intraoperative findings.

Perioperative mortality in more recent studies ranges between 0% and 9% [5-9, 14]. In the present authors' initial series, they had two deaths in the first 30 days after the surgery in 15 patients - a higher perioperative mortality of 13%. The present department is the first gynaecological one in Romania, a country with an extremely high incidence of cervical cancer, to perform such hyper-radical procedures. These are the authors' initial results; probably, by achieving more experience in all the steps already mentioned, the morbidity

and mortality related to pelvic exenteration will decrease and the survival will be better.

Introducing exenteration is paramount for a group of cases. It is a complicated procedure, needs special training, surgical devices (as staplers, vessel sealing devices, etc), and special postoperative care. Introducing this procedure has a learning curve, and thus an initial relative risk. It seems that this experience (with acceptable morbidity and mortality rate) might encourage other services to begin using exenterative procedures. For certain, an international experience is needed in teaching and learning complicated and infrequent surgical procedures. Aiming to obtain maximum results in terms of patients cure and survival, clear protocols must be established for all the steps to be followed in the management of such a case: patient selection, preoperative assessment, surgical procedure, intensive care support, and recovery period.

The major limitations of this report are the retrospective nature of the study, the small number of patients included, the limited follow-up period, and the heterogeneity of diagnoses for which the exenterations were performed. These drawbacks restricted a statistical analysis and major conclusions should be drawn with cause.

Overall, pelvic exenterantion for recurrent or advanced pelvic malignancies can be associated with long-term survival and even cure without high perioperative mortality in properly selected patients [24]. New devices, such as the harmonic scalpel, new vessel sealants, and mechanical staplers have diminished the operative time dramatically, increasing the safety of the vascular ligatures at the same time. However, postoperative complications are common and can be lethal. Complete surgical resection with negative margins is associated with sustained survival and should be the goal of surgery. An international experience is needed in teaching and learning complicated and infrequent surgical procedures.

Conclusions

Pelvic exenterantion for recurrent or advanced pelvic malignancies can be associated with long-term survival and even cure without high perioperative mortality in properly selected patients. However, postoperative complications are common and can be lethal.

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