

ORIGINAL RESEARCH

Pelvic exenteration for gynaecological cancer: a 10-year cohort analysis from a tertiary centre in the UK

Ruiling Xu¹, Georgina Gower², Pubudu Pathiraja^{1,*}¹Department of Obstetrics and Gynaecology, Addenbrooke's Hospital, CB2 0QQ Cambridge, UK²Addenbrooke's Hospital, School of Clinical Medicine, CB2 0SP Cambridge, UK***Correspondence**pubudu.pathiraja1@nhs.net
(Pubudu Pathiraja)**Abstract**

Background: Pelvic exenteration provides a valuable curative treatment option for recurrent or persistent gynaecological malignancies. This case series describes the surgical outcomes and complications of pelvic exenteration surgery in patients with recurrent or persistent gynaecological cancer over a 10-year period at a tertiary university teaching hospital. **Methods:** Data were collected from the electronic medical record system (Epic Systems) at Cambridge University Hospital between October 2014 and 15 September 2023. The study was conducted as part of a service evaluation. Data were collected and analyzed for patient characteristics, pre-exenteration primary treatment profiles, perioperative complications, survival profiles and follow-up duration. **Results:** Out of 136 pelvic exenterations performed during the study period, 16 were undertaken for gynaecological cancer. The median age at the time of exenteration was 59.5 years (interquartile range (IQR), 55–66 years). Cervical cancer was the most common primary tumor (5/16, 31.3%). Three patients had vulvar cancer (18.8%), two had vaginal cancer (12.5%), and three had uterine cancer (18.8%). We observed severe (III/IV) complications in 3 out of 16 patients within 30 days of postoperative period. There were no postoperative deaths within 30 days. The median follow-up period was 37.1 months (95% confidence interval (CI): 26.4–47.7). No mortality occurred within 90 days, and the 5-year survival rate was 43.8% (7/16). **Conclusions:** With a carefully selected patient group, pelvic exenteration represents a safe and curative approach for recurrent or persistent gynaecological cancers.

Keywords

Gynaecological cancer; Pelvic exenteration; Surgical outcome

1. Introduction

Pelvic exenteration (PE), initially described in 1948 by Brunschwig for recurrent cervical carcinoma affecting the pelvic viscera [1], entails an *en bloc* resection aimed at removing pelvic organs in cases of recurrent or locally advanced gynaecological cancer of cervix, uterus, vulva or vagina. Less commonly, it is offered to patients with ovarian cancer. This procedure is subcategorized into anterior (*en bloc* resection of the tumour together with the bladder), posterior (rectum), or total pelvic exenteration. Advances in perioperative care, operating equipment and reconstruction techniques have led to significant evolution in pelvic exenteration, ensuring radicality and complete resection, including bone resection, perineal reconstruction and removing surrounding structures in the lateral pelvic sidewall [2].

The exenteration procedure poses substantial technical and clinical challenges to cancer specialists and is associated with significant morbidity and mortality. Reported mortality rates following pelvic exenteration range between 0.5–17% [3–7]. The PelvEX Collaborative [8], which collected data from 1293

cases across 22 tertiary centres, reported a median 30-day mortality rate of 1.7%, with a median hospital stay of 17.5 days. Matsuo *et al.* [9] reported 2647 cases of pelvic exenteration for gynaecological cancers, the mortality rate was 1.9%. Despite improvement in surgical techniques and peri-operative care, the 30-day morbidity remains high (27–34.5%) for non-rectal pelvic cancer [4, 10]. Factors such as perioperative blood transfusion, three or more pre-existing co-morbidities, and sacrectomy were associated with higher postoperative morbidity [4, 11].

The five-year survival rate after pelvic exenteration for gynaecological malignancies varies significantly across centres, with reported rates between 21% to 60%. Contributing factors negatively impacting surgical outcomes include vulva primary, positive margins, lymphovascular space invasion (LVSI), and positive lymph nodes status [8, 12–14]. Poor preoperative nutritional status was found to be associated with increased complication rate and worse overall survival, but not the 90-day mortality rate [15].

Pelvic exenteration is primarily performed with curative intent; rarely, it is undertaken with palliative intent. A study from

Oxford Gynaecological Cancer Centre revealed that when exenteration was performed for palliative intent, the mean overall survival was only 11 months [16]. Fleisch *et al.* [17] reported that, within a carefully selected patient cohort, the 5-year survival rate nearly doubled from 21% to 40%, when pelvic exenteration was performed for curative intent in patients with no lymph node involvement, without pelvic sidewall infiltration, and with complete surgical resection. More recently, an 8-year retrospective analysis demonstrated that preoperative factors, including American Society of Anesthesiologists (ASA) class 3–4, vulvar cancer and age >62 years, were associated with worse overall survival in patients undergoing pelvic exenteration [18].

The objective of this 10-year retrospective cohort analysis is to describe the surgical outcomes and complications of pelvic exenteration performed at a tertiary cancer centre. We present a cohort of patients who underwent pelvic exenteration for gynaecological cancers, over a 10-year period, following the implementation of the comprehensive electronic medical record system (Epic Systems) in our hospital in 2014.

2. Materials and methods

A retrospective analysis of electronic medical records was conducted for all patients who underwent pelvic exenteration surgery for recurrent or locally advanced gynaecological cancer in the Department of Gynaecological Oncology at Cambridge University Hospital from October 2014 until 15 September 2023. The study was undertaken as part of a service evaluation. Data were collected from electronic patient records. Patients were identified from the database using the relevant procedure codes for pelvic exenteration. Pelvic exenteration is defined as the *en bloc* removal of all the pelvic organs, including gynaecological, urological, and parts of the gastrointestinal tract. It is then classified into three subgroups: anterior PE (uterus plus bladder), posterior PE (uterus plus rectum), and total PE (uterus plus bladder and rectum). The inclusion criteria encompassed cases in which pelvic exenteration was performed for advanced or recurrent gynaecological tumors, as well as those who developed fistulas following their primary treatment for gynaecological cancers. Patients who underwent pelvic exenteration for non-gynaecological malignancies were excluded. We reviewed the complete medical records of each patient and collected baseline clinical variables, including age at surgery, primary tumour, date of primary treatment, and adjuvant therapy following the primary treatment. Surgical variables included date of exenteration, operative time, blood loss, length of hospital stay, perioperative complications, resection margin, and survival. Pre-operative albumin, hemoglobin levels, and American Society for Anesthesiologists (ASA) score, were evaluated. We report on tumour characteristics, perioperative complications, morbidity, and oncological outcomes associated with pelvic exenteration for gynaecological malignancies.

Complications were graded according to the Clavien-Dindo Classification. Non-parametric variables are presented as medians with interquartile ranges (IQR). We calculated the post-operative mortality rate, as usually described in the literature. Progression-free survival was defined as the time elapsed from

the date of PE to the date of clinical evidence of disease recurrence, and overall survival (OS) as the time from PE to the last follow-up date or death. Survival analysis was performed using the Kaplan-Meier method. The five-year survival rate represents the percentage of patients in the study alive five years following the PE surgery. Given the small sample size of this cohort, only descriptive analyses were performed without conducting statistical analysis.

3. Results

We identified 16 patients who underwent pelvic exenteration due to gynaecological cancer. Demographic data are summarised in Table 1. All PEs were performed using an open approach. Total exenteration was performed on 14 patients, while one patient underwent posterior exenteration and another had anterior exenteration. Two patients (2/16, 12.5%) underwent pelvic exenteration for complex pelvic fistula, and 14 patients (14/16, 87.5%) had pelvic exenteration for gynaecological cancers with curative intent. Thirteen patients had pelvic exenteration for recurrent cancer, and one patient had pelvic exenteration for persistent vaginal adenocarcinoma. Five patients underwent pelvic exenteration for cervical cancer, three for uterine cancer, one for locally advanced borderline ovarian tumour, three for vulva cancer, and two for vaginal cancer.

TABLE 1. Pre-operative characteristics of the cohort.

Characteristic	Number (Percent)
Age Distribution	
<50 yr	1 (6.3)
50–59 yr	7 (43.8)
60–69 yr	6 (37.5)
≥70 yr	2 (12.5)
Albumin	
≤34 g/L	14 (87.5)
>34 g/L	2 (12.5)
Haemoglobin	
<100 g/L	2 (12.5)
100–120 g/L	4 (25.0)
>120 g/L	10 (62.5)
ASA score	
I	0
II	9 (56.3)
III	7 (43.8)
IV	0
Primary diagnosis	
Cervical	5 (31.3)
Endometrial	3 (18.8)
Ovarian	1 (6.3)
Vulva	3 (18.8)
Vaginal	2 (12.5)
Fistula	2 (12.5)

TABLE 1. Continued.

Characteristic	Number (Percent)
Adjuvant following the primary treatment	
None	4 (25.0)
Chemotherapy	0
Chemoradiation	4 (25.0)
Radiotherapy	3 (18.8)
Brachytherapy	2 (12.5)
Chemoradiation and Brachytherapy	2 (12.5)
Other	1 (6.3)

ASA: American Society of Anaesthesiologists.

The median patient age at the time of surgery was 59.5 years (IQR, 55–66 years). Patients younger than 60 years at the time of surgery had better overall survival than the older patients (OS: 74.3 months vs. 29.2 months). Nine patients had ASA scores II, while seven had ASA III during the preoperative assessment. Consistent with previous study conclusions, patients with better preoperative health conditions had better overall survival compared to those who had more medical comorbidities (OS: 63.2 months vs. 37.1 months) (Table 2). The pre-exenteration progression-free interval (PFI) was defined as the date between the primary cancer treatment and the date of first recurrence for which pelvic exenteration is required. The median pre-exenteration PFI was 64.5 months (IQR, 19.8–81.5 months). Preoperative hypoalbuminaemia, defined as when plasma albumin level is less than 35 g/L, is associated with increased mortality and unfavorable survival in gynaecological cancer patients. Several retrospective studies have identified low plasma albumin as a negative prognostic factor for gynaecologic cancer patients, in particular, ovarian cancer [4, 19, 20]. In our cohort, two patients had good nutritional status at preoperative assessment, while 14 had sub-optimal status. According to the World Health Organization (WHO), anaemia in women is defined as the hemoglobin level lower than 120 g/L. Previous study has identified preoperative hemoglobin less than 100 g/L as one of the independent predictors of severe postoperative complications for patients who underwent pelvic exenteration [3]. In our cohort, 14 patients had preoperative hemoglobin level of 99 g/L or above. In our secondary analysis, the presence of preoperative hypoalbuminaemia or anemia did not negatively impact overall survival.

The operative and histopathological outcomes of the cohort are presented in Table 3. The median operating time was 8.8 hours (IQR: 8.0–9.4 hours) with a median blood loss of 1650 mL (IQR: 1375–3700 mL). Twelve patients had intraoperative hemorrhage with blood loss greater than 1500 mL, of whom six had massive hemorrhage with estimated blood loss over 2500 mL, all the 12 patients received perioperative transfusion.

Postoperative complications were defined as early if occurring within 30 days of the operation and late if occurring after 30 days. Grade I–IV complications are defined as per the Clavien-Dindo classification system. The most common minor (I/II) complication observed was blood transfusion, infection required antibiotics treatment, and postoperative ileus requiring total parental nutrition (TPN). One patient developed an

TABLE 2. Survival outcome.

Subgroup	n (%)	Mean PFS (mon)	Mean OS (mon)
Age at surgery			
<60 yr	8 (50)	70.1	74.3
≥60 yr	8 (50)	22.5	29.2
ASA score			
<3	9 (56)	57.3	63.2
≥3	7 (44)	32.1	37.1
Preoperative Albumin			
≤34 g/L	14 (88)	51.1	54.5
>34 g/L	2 (12)	13.0	26.5
Preoperative Hemoglobin			
<99 g/L	2 (12)	44.0	49.5
≥99 g/L	14 (88)	46.6	52.1
Resection margin			
R0	12 (92)	47.0	50.1
R1	1 (7.6)	36.0	77.0
LVSI			
No LVSI	13 (81)	44.0	49.9
LVSI	3 (19)	56.3	60.3

PFS: Progression-free survival; OS: Overall survival; ASA: American Society of Anaesthesiologists; LVSI: lymphovascular space invasion.

TABLE 3. Operative and histopathological outcomes of the cohort.

Operative features	Number (Percent)
Median operating time	
8.8 h	
EBL	
<2500 mL	10 (62.5)
≥2500 mL	6 (37.5)
Clavien-Dindo Complications	
Early	
- Minor complications (I/II)	9 (56.3)
- Major complications (III/IV)	3 (18.8)
Late	
- Minor complications (I/II)	13 (81.3)
- Major complications (III/IV)	2 (12.5)
Type of Exenteration	
Total	14 (87.5)
Posterior	1 (6.3)
Anterior	1 (6.3)
Resection margin	
R0	12 (92.3)
R1	1 (7.7)
LVSI	
No LVSI	13 (81.3)
LVSI	3 (18.8)

EBL: Estimated Blood Loss; LVSI: Lymphovascular Space Invasion.

ileo-ureteric anastomotic leak, and one had an ileal conduit obstruction resulting in bilateral hydronephrosis. We observed that severe (III/IV) complications occurred in 5 out of 16 patients. Three patients developed severe (III/IV) complications within 30 days post exenteration operation. Four patients required intensive care unit admission at the post-operative stage. One patient had re-laparotomy for small bowel obstruction and incisional hernia. Another patient who had anterior PE for recurrent vulva cancer returned to theatre twice for debridement of gluteal transposition flaps at postop day 8 and perineum debridement and fasciocutaneous flap repair at day 14. Two patients experience grade III/IV late complications. One patient underwent perineal proctectomy two years after the pelvic exenteration for rectovaginal fistula, while another patient went back to theatre 42 days post PE for wound exploration, flap revision with plastic surgery, and application of Vacuum Assisted Closure (VAC) dressing.

The median length of stay in our cohort was 27 days (IQR: 17–30 days). No patient died within 90-day period following surgery. In fact, only one patient died within 1 year of the surgery (at 8 months) due to a second recurrence of endometrial cancer.

Analysis of histology reports showed that 3 out of 16 patients had LVSI. Fifteen patients had R0 resection with clear margins.

On further analysis, 12 out of the 15 patients had true complete resection, whereas the other 3 specimens showed no evidence of malignancy on histological analysis (two patients underwent exenteration for complex pelvic fistula, one for suspected recurrent cervical cancer). Of those who had cancer in the histological report, clear resection margins were achieved in 12 patients (92.3%), while one patient had R1 resection with positive surgical margins (7.7%).

All 16 patients were followed up until death or until the time of data collection if alive. The median follow-up period of our cohort was 37.1 months (95% CI: 26.4–47.7). Median overall survival (OS) and median progression-free survival (PFS) are defined as the point when 50% of the subjects have died or experienced disease progression. In this study, the median survival time could not be determined because the censoring rate exceeded 50% (Fig. 1A,B). The 5-year survival rate was 43.8% (7/16). Progression-free survival and overall survival data according to different variables are shown in Table 2.

4. Discussion

Pelvic exenteration remains one of the most valuable surgical options for patients with recurrent or locally advanced pelvic cancers. Reported mortality rates following pelvic exenteration range between 0.5–17% in the literature. Notably, our

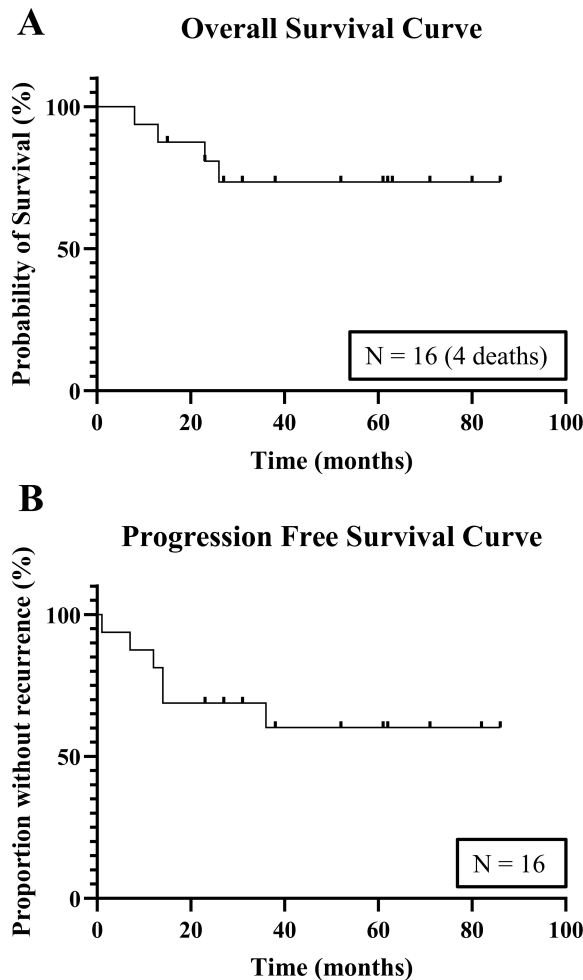


FIGURE 1. Survival profile. (A) Overall Survival (OS) curve. (B) Progression Free Survival (PFS) curve.

cohort, although small, spans 10 years and is the first to report no patient death within 90 days post pelvic exenteration, underscoring the potential for improved surgical outcomes.

Straubhar *et al.* [18] reported that the interval from primary treatment to recurrence did not significantly impact overall survival (OS) or progression-free survival (PFS). In contrast, our data reveals an increased overall survival in patients experiencing a longer interval before recurrence (preoperative PFS), highlighting the importance of primary treatment.

Both OS and PFS were adversely impacted by an advanced age of over 60. Interestingly, our results show that lower albumin level did not negatively impact the OS and PFS, which contradicts Nielsen *et al.* [21], who reported increased morbidity associated with low albumin levels. This discrepancy may stem from our small sample size and the specific characteristics of our patient population. Notably, our longest-surviving patient had an overall survival of 88 months after exenteration despite a massive blood loss of 8400 mL. This favourable survival profile likely stems from a better prognostic profile including a 1B1 tumour, absence of lymphovascular space invasion (LVSI), subsequent central recurrence, negative lymph node status and R0 resection.

As expected, patients with an ASA score of 3 experienced shorter OS and PFS compared to those with fewer comorbidities, reaffirming the importance of preoperative assessments. In our cohort, the median estimated blood loss (EBL, 1650 mL) was greater than that reported in the literature [20–22], indicating that improved vascular control strategies, including centripetal dissection, better development of pelvic spaces, and proximal vascular control, could minimize operative morbidity in PE and improve surgical outcomes for patients.

Among the thirteen patients identified with cancer on histology, twelve cases achieved clear margins (R0 resection). Interestingly, LVSI did not appear to negatively impact overall survival in our cohort, challenging the prevailing view of LVSI as a poor prognostic factor. However, it is crucial to acknowledge the limitations of concluding our data due to our small sample size.

Our institution is a tertiary centre that follows a multidisciplinary approach to cancer management. All PE cases were thoroughly reviewed in dedicated Multidisciplinary Team (MDT) meetings involving urologists, colorectal surgeons, plastic surgeons, oncologists and gynaecologic oncologists. This collaborative framework ensures that patients receive individualised, safe and optimised treatment plans. Despite the challenging nature of PE surgery and significant postoperative morbidities in our cohort, there was no mortality within 90 days after PE. Our 10-year experience suggests that careful patient selection is critical for PE surgery and the survival profile. Specifically, at the time of PE, patients younger than 60 years seem to have a better probability of increased life expectancy than those older than 60. Furthermore, patients with fewer pre-existing comorbidities were more suitable candidates for PE, as those with an ASA score of 3 had poorer outcomes. Another important consideration is the optimisation of preoperative hemoglobin levels, which may contribute to improved survival outcomes. These findings reinforce the importance of a comprehensive preoperative assessment to enhance postoperative recovery and long-term survival.

5. Conclusions

This study underscores the importance of pelvic exenteration as a valuable surgical option for patients with recurrent or advanced gynaecological cancers. The absence of mortality within 90 days postoperatively in our cohort highlights the potential for improved outcomes through careful patient selection, optimised perioperative management, and a multidisciplinary approach. The limitations and weaknesses of this study are related to the retrospective design, single centre setting, and the reliance on electronic medical records, which introduce the potential for selection bias and missing data, which may impact the accuracy and completeness of our findings. Although our findings reveal that factors such as younger age than 60 years, preoperative hemoglobin greater than 100 g/L and better preoperative health condition may play crucial roles in better overall survival, the limitations of our small sample size (only 16 patients) necessitate cautious interpretation. The small cohort size restricts the generalisability of our findings and limits the ability to conduct statistical analyses.

Future studies with larger cohorts, including analyses using national databases, are essential to gain a more comprehensive understanding of the safety and survival outcomes associated with pelvic exenteration in gynaecological cancer patients. Prospective studies with larger cohorts will be crucial in refining patient selection criteria and optimising perioperative management strategies.

AVAILABILITY OF DATA AND MATERIALS

The data that support the findings of this study are available from the corresponding author upon reasonable request.

AUTHOR CONTRIBUTIONS

RX—Project development; Data collection; Data analysis; Manuscript writing. GG—Data collection; Data analysis; Manuscript writing. PP—Project development; Manuscript editing.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was registered as the Cambridge University Hospital Service Evaluation project. As per local guidelines, formal ethics committee approval was not required for this work. Because this study was a retrospective service evaluation, the Cambridge University Hospital Research Ethics Committee waived informed consent for this work (Project Reference: PRN11549).

ACKNOWLEDGMENT

Not applicable.

FUNDING

This research received no external funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- [1] Brunschwig A. Complete excision of pelvic viscera for advanced carcinoma; a one-stage abdominoperineal operation with end colostomy and bilateral ureteral implantation into the colon above the colostomy. *Cancer*. 1948; 1: 177–183.
- [2] da Silva IA, Carneiro ICDRS, de Santana ME, Ferreira IP. Postoperative complications associated with pelvic exenteration in women with gynecological cancer: an integrative review. *Cogitare Enfermagem*. 2023; 28: e82317.
- [3] Tortorella L, Casarin J, Mara KC, Weaver AL, Multinu F, Glaser GE, *et al*. Prediction of short-term surgical complications in women undergoing pelvic exenteration for gynecological malignancies. *Gynecologic Oncology*. 2019; 152: 151–156.
- [4] Tortorella L, Marco C, Loverro M, Carmine C, Persichetti E, Bizzarri N, *et al*. Predictive factors of surgical complications after pelvic exenteration for gynecological malignancies: a large single-institution experience. *Journal of Gynecologic Oncology*. 2024; 35: e4.
- [5] Lewandowska A, Szubert S, Koper K, Koper A, Cwynar G, Wicherek L. Analysis of long-term outcomes in 44 patients following pelvic exenteration due to cervical cancer. *World Journal of Surgical Oncology*. 2020; 18: 234.
- [6] Stanca M, Căpilna DM, Căpilna ME. Long-term survival, prognostic factors, and quality of life of patients undergoing pelvic exenteration for cervical cancer. *Cancers*. 2022; 14: 2346.
- [7] PelvExCollaborative. A review of functional and surgical outcomes of gynaecological reconstruction in the context of pelvic exenteration. *Surgical Oncology*. 2024; 52: 101996.
- [8] PelvExCollaborative. Pelvic exenteration for advanced nonrectal pelvic malignancy. *Annals of Surgery*. 2019; 270: 899–905.
- [9] Matsuo K, Mandelbaum RS, Adams CL, Roman LD, Wright JD. Performance and outcome of pelvic exenteration for gynecologic malignancies: a population-based study. *Gynecologic Oncology*. 2019; 153: 368–375.
- [10] Li C, Li Z, Zhang J, Zhang X, Sieto G, Li S, *et al*. Retrospective study of combined pelvic exenteration in the treatment of primary and recurrent pelvic malignant tumors. *Journal of Gastrointestinal Oncology*. 2024; 15: 299–311.
- [11] Peacock O, Waters PS, Kong JC, Warriar SK, Wakeman C, Eglinton T, *et al*. Complications after extended radical resections for locally advanced and recurrent pelvic malignancies: a 25-year experience. *Annals of Surgical Oncology*. 2020; 27: 409–414.
- [12] Karkia R, Tailor A, Ellis P, Madhuri T, Scala A, Read J, *et al*. Minimally invasive pelvic exenteration for gynaecological malignancy: a single-centre case series and review of the literature. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2022; 274: 56–61.
- [13] Moolenaar LR, van Rangelrooij LE, van Poelgeest MIE, van Beurden M, van Driel WJ, van Lonkhuijzen LRCW, *et al*. Clinical outcomes of pelvic exenteration for gynecologic malignancies. *Gynecologic Oncology*. 2023; 171: 114–120.
- [14] Glane LT, Hegele A, Wagner U, Boekhoff J. Gynecologic oncology: pelvic exenteration for advanced or recurring cervical cancer—a single center analysis. *Cancer Diagnosis & Prognosis*. 2022; 2: 308–315.
- [15] Lyell NJ, Kitano M, Smith B, Gleisner AL, Backes FJ, Cheng G, *et al*. The effect of preoperative nutritional status on postoperative complications and overall survival in patients undergoing pelvic exenteration: a multi-disciplinary, multi-institutional cohort study. *The American Journal of Surgery*. 2019; 218: 275–280.
- [16] Pathiraja P, Sandhu H, Instone M, Halder K, Kehoe S. Should pelvic exenteration for symptomatic relief in gynaecology malignancies be offered? *Archives of Obstetrics and Gynaecology*. 2014; 289: 657–662.
- [17] Fleisch MC, Pantke P, Beckmann MW, Schnuerch HG, Ackermann R, Grimm MO, *et al*. Predictors for long-term survival after interdisciplinary salvage surgery for advanced or recurrent gynecologic cancers. *Journal of Surgical Oncology*. 2007; 95: 476–484.
- [18] Straubhar AM, Chi AJ, Zhou QC, Iasonos A, Filippova OT, Leitao MM III, *et al*. Pelvic exenteration for recurrent or persistent gynecologic malignancies: clinical and histopathologic factors predicting recurrence and survival in a modern cohort. *Gynecologic Oncology*. 2021; 163: 294–298.
- [19] Kuzma T, Glaze S, Duan Q, Duttchen K. Preoperative hypoalbuminemia is associated with increased mortality in patients undergoing surgery for gynaecologic malignancy—a retrospective cohort study. *Journal of Obstetrics and Gynaecology Canada*. 2023; 45: 395–401.
- [20] Esmailzadeh A, Fakhari MS, Saeedi N, Shokouhi N, Almasi-Hashiani A. A systematic review and meta-analysis on mortality rate following total pelvic exenteration in cancer patients. *BMC Cancer*. 2024; 24: 593.
- [21] Pleth Nielsen CK, Sørensen MM, Christensen HK, Funder JA. Complications and survival after total pelvic exenteration. *European Journal of Surgical Oncology*. 2022; 48: 1362–1367.
- [22] Yu JH, Tong CJ, Huang QD, Ye YL, Chen G, Li H, *et al*. Long-term outcomes of pelvic exenterations for gynecological malignancies: a single-center retrospective cohort study. *BMC Cancer*. 2024; 24: 88.

How to cite this article: Ruiling Xu, Georgina Gower, Pubudu Pathiraja. Pelvic exenteration for gynaecological cancer: a 10-year cohort analysis from a tertiary centre in the UK. *European Journal of Gynaecological Oncology*. 2026; 47(2): 22-27. doi: 10.22514/ejgo.2026.014.