

RESEARCH ARTICLE

Characteristics of Gynecologic Oncology Patients in King Chulalongkorn Memorial Hospital - Complications and Outcome of Pelvic Exenteration

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Abstract

Background: Pelvic exenteration is a procedure which includes enbloc resection of pelvic organs followed by surgical reconstruction. Aims include both cure and palliation but data for pelvic exenteration in Thailand are very limited. **Objective:** This study was conducted to evaluate characteristics of patients, operative procedure outcomes and complications. **Materials and Methods:** This retrospective review covered all of the charts of exenteration patients during January 2002 to December 2011. Baseline characteristic of the patients were collected as well as details of clinical results. **Results:** A total of 13 cases of pelvic exenteration were included. Most underwent total pelvic exenteration (9 cases) and the remainder posterior and anterior exenteration. Their primary cancers were ovarian, cervical and vulva. Mean operative time was 532 minutes (SD 160.2, range 270-750) and estimated blood loss was 2830 ml (1850, 1000-8000). Mean tumor size was 7.33 cm (3.75, 4-15). Mean hospital stay was 35.2 days (29.8, 13-109). The most common post operative complication was urinary tract infection. Overall disease free survival with a negative surgical margin was significantly better than in positive surgical margin patients ($p=0.014$). **Conclusions:** Surgical margin was the most significant prognostic factor for disease free survival, in line with earlier studies.

Keywords: Pelvic exenteration - gynecologic cancer - outcome - surgical margin - progression

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Introduction

Pelvic exenteration is a radical surgery which includes the en bloc resection of the pelvic organs and followed by surgical reconstruction (Hockel et al., 2006; Diver et al., 2012). The en bloc resection includes internal reproductive organs, rectosigmoid colon, urinary bladder and distal ureters. Pelvic exenteration is classified into 3 types; anterior pelvic exenteration, posterior pelvic exenteration and total pelvic exenteration. This procedure was first reported by Alexander Brunschwig (Brunschwig, 1948). The first case of pelvic exenteration was performed in order to palliate the advanced stage cancer patient. Nowadays, pelvic exenteration is performed in both curative and palliative intent. Role of palliative pelvic exenteration is still controversy because of high morbidity and mortality rate of the procedure (Guimaraes et al., 2011). In gynecologic cases, pelvic exenteration is normally performed in selected cases of recurrent cervical cancer and advanced pelvic cancer (Diver et al., 2012). This procedure is quite complicated which require multidisciplinary team approach; therefore, pelvic

exenteration is usually performed in tertiary care centers. Post-operative management is also very complicate and need the special team to take care (Diver et al., 2012; Kuhrt et al., 2012).

There are some retrospective trials that reviewed characteristics of the patients, operative outcome and operative complication. Most common gynecologic cancer in the exenteration patient is cervical cancer (Baiocchi et al., 2012). Overall survival is better in curative intent group rather than palliative intent group. Post-operative and intra-operative complications were found in nearly 50% of the procedures (Baiocchi et al., 2012; Schmidt et al., 2012). Perioperative mortality rate at previous time was 23%. Thanks to the improvement of post-operative care, nowadays the mortality rate has decreased from 23% to 2-14% (Lawhead et al., 1989; Houvnaeghel et al., 2004; Berek et al., 2005; Sharma et al., 2005).

However, the exenteration data in Thai patients are limited. This study is conducted in order to evaluate the characteristics of the patients, operative procedures, outcomes and complications of the pelvic exenteration in gynecologic malignancy cases in our institute.

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Materials and Methods

After approval from ethical committee was received, this retrospective study was conducted. All the pelvic exenteration procedures in gynecologic malignancy cases from 1 January 2002 to 31 December 2011 were review. Patient characteristics were reviewed in the aspect of age, BMI, diagnosis, ASA score, nature of disease, cell type and disease free interval. In operative aspect, type of pelvic exenteration, operative time, estimate blood loss, pre-operative hemoglobin level, post operative hemoglobin level, number of PRC unit transfusion, length of ICU stay, length of hospital stay and post operative complication were collected. Type of exenteration is classified as anterior pelvic exenteration, posterior pelvic exenteration and total pelvic exenteration.

Anterior pelvic exenteration is defined as removal of pelvic peritoneum, distal ureters, urinary bladder, reproductive organs and draining lymph nodes.

Posterior pelvic exenteration is defined as removal of pelvic peritoneum, rectum, distal colon, reproductive organs and draining lymph nodes.

Total pelvic exenteration is defined as removal of rectum, distal colon, bladder, distal ureters, internal reproductive organs, draining lymph nodes and pelvic peritoneum (Magrina, 1990; Lopes, 1993).

Indication of surgery was also reviewed. Progression free interval and survival time were also evaluated. After all data were collected, statistic process was performed by SPSS version 17. All data were calculated with mean, mode, median percentage and SD.

Results

All 13 cases of pelvic exenteration during 1 January 2002 and 31 December 2011 were reviewed. From total 13 pelvic exenteration cases, there were 9 cases of total exenteration, 3 cases of posterior exenteration and one case of anterior exenteration (Table 1). Most of the cases are recurrence (10 cases, 76.9%). The rest of them are primary cases (3 cases, 23.1%). Mean disease free interval before the operations were 30.38 months (SD 50.9 months, range 0-168 months). Mean age of the patients was 52.0 years (8.22, 37-60 years). Mean BMI was 22.04 kg/m² (3.38, range 16.4-27.8 kg/m²). Most of them did not have underlying disease and most of their ASA statuses were 1 or 2 (7 patients were ASA 1, 5 patients were ASA 2). Their primary diseases were cervical cancer (5 cases, 38.5%), ovarian cancer (7 cases, 53.8%) and vulva cancer (1 case, 7.7%). Their histologic cell type were squamous cell carcinoma (3 cases, 23.1%), adenocarcinoma (2 cases, 15.4%), serous carcinoma (1 case, 7.7%), mucinous cystadenocarcinoma (1 case, 7.7%), endometrioid adenocarcinoma (1 case, 7.7%), clear cell carcinoma (4 cases, 30.8%) and missing data for one case (Figure 1).

According to the operation data, Mean operative time was 532 minutes (160.2, 270-750 minutes). Estimate blood loss was 2830.83 ml (1850.39, 1000-8000 ml). Mean preoperative hemoglobin was 10.99 mg/dl (1.32, 8.7-13.5) and postoperative hemoglobin was 10.62 mg/dl (2.85, 7.1-15.1). Owing to the operative blood loss, all of the patients

were transfused. Mean unit of pack red cell transfused was 4.69 units (0.6, 2-9). Mean tumor size was 7.33 cm (3.75, 4-15 cm). For operative technique, urinary diversion was conducted in several types. Bricker technique was performed in 6 cases (46.2%), Mainz operation was conducted in 3 cases (23.1%) and the rest of the cases did not performed urinary diversion procedure. For intestinal diversion procedure, Hartman operation was performed in 5 cases (38.5%), J-pouch was conducted in 3 cases (23.1%), side to end anastomosis was created in 3 cases (23.1%) and intestinal operation was not performed in 2 cases (15.4%) Nearly most of the patients were admitted in intensive care unit after the procedures. Average ICU admission duration was 3.23 days (1.36, 0-5 days). Mean hospital stay period was 35.23 days (29.80, 13-109 days). All of the patients whom admitted more than 1 month had postoperative complication.

In the aspect of surgical outcome, there were 4 cases of complete cytoreduction (30.8%). Optimal resection which defined as the remaining residual is less than 1 cm in diameter after complete the operation was found in 3 cases (23.1%) and 2 cases were suboptimal resection (15.4%). Pathological results were found that 7 cases (53.7%) were negative surgical margin and 6 cases (46.2%) were positive or closed margin. Post-operative complications were found in some patients. Most common complication was urinary tract infection which comprised 6 cases (46.2%) and 2 of them were sepsis. Other problems were also occurred such as stromal problem, gut obstruction, rectovaginal fistula and enterocutaneous fistula which occurred one case in each complication. Details of postoperative complication were shown in Table 2. Adjuvant treatment was administered to more than half of the patients. One of the patient received concurrent chemo-radiotherapy and 7 patients (53.8%) received adjuvant chemotherapy.

When we focus on survival, total overall disease free survival until the data collection time was 22.12 months

Table 1. Shows Number of Pelvic Exenteration Operation in Each Cancer

Tumor	Anterior PE	Posterior PE	Total PE	Total
Cervix	0	0	5	5
Ovarian	1	3	3	7
Vulva	1	0	0	1
Total	2	3	8	13

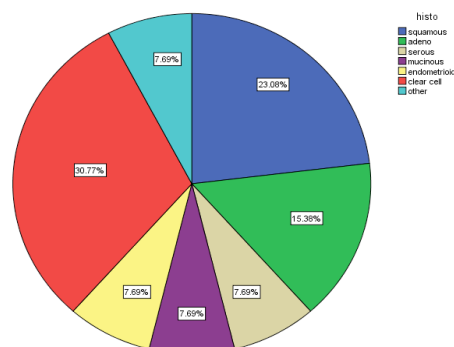


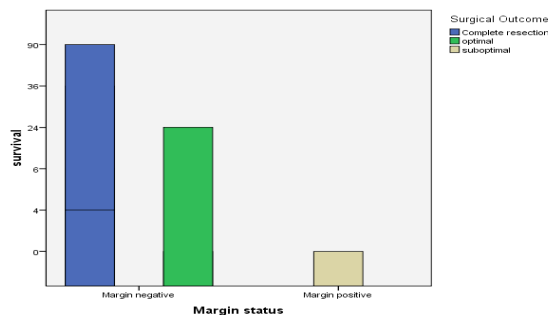
Figure 1. Shows Information of Histopathologic Results

Table 2. Shows Details of Complication from Pelvic Exenteration

Complications	No.	%
Urinary tract infection	6	46.2
Sepsis	2	15.4
Stromal problem	1	7.7
Gut obstruction	1	7.7
Rectovaginal fistula	1	7.7
Enterocutaneous fistula	1	7.7

Table 3. Shows Survival Difference between Surgical Margin Positive and Negative

	Positive margin	Negative margin	P value
Overall survival (Mo)	5.67±1.15	32.0±35.01	0.014

**Figure 2. Shows Survival Different between Margin Positive and Margin Negative Group**

(29.78, 4-90 Months). In the group of margin positive the overall survival was only 5.67 months (1.15, 5-7 months). The overall survival of margin negative group was 32.0 months (35.01, 4-90 months). The overall survival between margin negative and positive group was different ($p=0.014$) (Table 3 and Figure 2).

Discussion

Pelvic exenteration is the salvage operation including remove affected pelvic organ in order to get rid of the remaining tumors. In gynecologic cases, pelvic exenteration usually performed in advanced or recurrence cancer patients. Aims of pelvic exenteration are both for cure and palliation. There were widely discussed about role of palliative exenteration which seemed to be controversial.

There are some previous studies about pelvic exenteration (Pawlik et al., 2006). Most of the pelvic exenteration procedures are used as an option of treatment for rectum, cervical cancer and other pelvic malignancies such as bladder and ovarian cancer (Eisekop et al., 1991; Eisenkop et al., 2001). In cervical cancer cases, the most common indication for pelvic exenteration is the central recurrence after radiation and the aims of treatment are both for cure and palliation. Some of the procedures aim for palliation or relieve symptoms from cancer such as fistula or pain (Landoni et al., 1997). Role of pelvic exenteration for palliation is still controversy. Some authors disagree with this intent of exenteration because of the complexity, high morbidity rate and high mortality rate of the operation. Conversely, some authors support the

palliative intent of exenteration because it may improve quality of life in advanced stage cancer patients (Decker et al., 1976; Lopez et al., 1987; Brophy et al., 1994). In our institute, pelvic exenteration is performed in both curative and palliative intent.

Patient selection is a very important factor to minimized post-operative complication. Tumor involvement of other pelvic organs can cause symptoms such as pain, leg edema, constipation and fistula (Sasson et al., 2000). Chronological age is not an absolute contra-indication for the procedure. Well selected elderly patients may have the same outcome as younger patients (Lichtinger et al., 1986; Matthews et al., 1992). In our series, median age of the patients is 50 years and the oldest patient was 60 years old. Most of the patients in our series are quite fit. Their ASA statuses were I or II. Most of them did not have serious underlying disease.

There are some proposed contraindications to pelvic exenteration. The patients who have these contraindications should not be operated for curative intent, but for palliative purposed some contraindication can be accepted. The absolute contraindications consist of distant metastasis, pelvic side wall involvement, tumor extension through the sciatic foramen and metastasis to para-aortic lymph nodes. For relative contraindication, they included ureteric obstruction, poor candidate for surgery because of medical condition or co-morbidity and poor candidate because of inability to care for stomas. Therefore, if the procedure aims for cure, the imaging such as CT scan or MRI should be performed to detect the contraindications of the operation (Marley et al., 1989; Soper et al., 1989; Tarrazo et al., 1998; Sasson et al., 2000).

From previous reviews, pelvic exenteration used to have a high post-operative complication rate and ranged from 32-84% in some series (Soper et al., 1989; Lopez et al., 1993). Most common complication includes wound or pelvic complication, fistula and gut obstruction (Orr et al., 1983; Roberts et al., 1987; Krabill et al., 1988). Complication from urinary conduit is still having both short term and long term complication such as leakage, obstruction and infection (Crowe et al., 1999). In aspect of survival, nearly most of the studies report 5 year survival rate was 20-60% after pelvic exenteration (Soper et al., 1989; Crowe et al., 1999). Status of surgical margin is the most important prognostic factors for survival (Krabill et al., 1988). In positive margin cases, 5 year survival significantly decreased. There is a study showed that survival rate was only 25% in the patients who have positive margin versus 44% in patients who have negative margin (Talledo, 1985).

From the previous study, there were many studies reviewed the pelvic exenteration in many aspect. Our review found that the resection margin is a significant factor for determination of the survival of the patient. The patients whose margin was negative had longer survival than whose margin positive. Our finding correlated with the previous studies which found that surgical margin status was important risk factors to predict recurrence of the disease (Park et al., 2007; Zoucas et al., 2010).

Park et al. (2007) reviewed pelvic exenteration cases in an institute in Korea. Their studies showed that mean

operative time was 559 minutes which is comparable to our result (532 minutes). The median operative blood loss from their review was 1200 ml which is less than our review (2830 ml). Other results such as length of hospital stay and ICU admission are also comparable. The most common complication is infection which is similar to our data. But the second most common in their review is fistula formation which was less common in our review. In the aspect of survival, median disease free survival is similar in both study which are 24 months in their study and 22.12 months in our study. Unsurprisingly, most common factor which influenced survival in both studies was resection margin status. These results suggest that if pelvic exenteration is performed in order to cure the disease, resection margin should be free of tumor. In margin positive group, survival rate was significantly decreased.

In conclusion, although, Pelvic exenteration continues to have an important role in multimodality approach to the patients with recurrence or advanced pelvic malignancy, data for pelvic exenteration in gynecologic oncology patients still limited. This paper reviewed pelvic exenteration data of advanced and recurrence gynecologic oncology case in single institution. The application of these data for another hospital should be adjusted for suitability of each circumstance.

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