

Surgical Manual



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Surgical manual of the Korean Gynecologic Oncology Group: classification of hysterectomy and lymphadenectomy

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ABSTRACT

The Surgery Treatment Modality Committee of the Korean Gynecologic Oncologic Group (KGOG) has determined to develop a surgical manual to facilitate clinical trials and to improve communication between investigators by standardizing and precisely describing operating procedures. The literature on anatomic terminology, identification of surgical components, and surgical techniques were reviewed and discussed in depth to develop a surgical manual for gynecologic oncology. The surgical procedures provided here represent the minimum requirements for participating in a clinical trial. These procedures should be described in the operation record form, and the pathologic findings obtained from the procedures should be recorded in the pathologic report form. Here, we focused on radical hysterectomy and lymphadenectomy, and we developed a KGOG classification for those conditions.

Keywords: Manuals as Topic; Gynecologic Surgical Procedures; Hysterectomy, Lymph Node Excision

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Conflict of Interest

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(ANIMATED VIDEO)

Surgical Manual for Gynecologic Oncology

<http://goo.gl/aSuRo1>



INTRODUCTION

To date, no surgical manual or standardized anatomical description of gynecologic oncology has been developed by the Korean Gynecologic Oncology Group (KGOG). The members of the Surgery Treatment Modality Committee (Surgery TMC) of the KGOG identified a need for a surgical manual to facilitate clinical trials and to improve communication between investigators by standardizing and precisely describing operating procedures.

We reviewed the current literature on anatomic terminology, identification of surgical components, and surgical techniques, and discussed them in depth in order to create a surgical manual for gynecologic oncology. Here, we focused on radical hysterectomy and lymphadenectomy, and we developed a KGOG classification for those conditions.

ANATOMICAL NOMENCLATURE

To simplify the anatomical terms for classification, we will consistently use the terminology ‘paracervix,’ ‘vesicouterine ligament,’ and ‘uterosacral ligament’ for the structures usually referred to by surgeons as the cardinal ligament (or lateral parametrium), anterior parametrium, and posterior parametrium, respectively [1].

The term ‘paracervix’ (cardinal ligament, Mackenrodt’s ligament, or parametrium) refers to the dorsolateral attachment of the cervix, tissues that surround the uterine artery between the uterine corpus and pelvic sidewall cranial to the ureter, connective tissue, and lymph channels.

The term ‘vesicouterine ligament’ (ventral parametrium) includes the anterior and posterior leaflets. The connective tissue of the anterior leaflet of the vesicouterine ligament; that is, the anterior portion of the so-called ureteral tunnel, can be identified following the complete separation of the uterine artery and superficial uterine vein from the ureter. The posterior leaflet of the vesicouterine ligament is the tissue that resides under the ureter and connects the posterior wall of the bladder and the lateral cervix/upper lateral vagina [2].

The term ‘uterosacral ligament’ (dorsal parametrium) refers to the fibrous tissue and non-striated muscular fibres that are attached to the front of the sacrum and travel from the uterus to the anterior aspect of the sacrum.

Throughout this classification, the term ‘nerve preservation’ refers to identify the hypogastric nerves, the inferior hypogastric nerve plexus (pelvic plexus), and its bladder branches, and indicates allowing the resection of oncologically relevant pericervical structures while preserving the sympathetic and parasympathetic innervations of the pelvic organs [3].

KGOG CLASSIFICATION OF HYSTERECTOMY

The Piver-Rutledge-Smith classification published in 1974 has achieved popularity [4,5]. However, several limitations, including inconsistencies in terminology, drawbacks associated with a uterocentric concept, exclusion of nerve-sparing and fertility-preserving techniques, and difficulties adapting the guidelines to advances in vaginal, laparoscopic, or

Classification of hysterectomy and lymphadenectomy

Table 1. Korean Gynecologic Oncologic Group classification of hysterectomy*

	Extent of resection	Ureter
A: Minimum resection of the paracervix [†]	Paracervix: transected medial to the ureter but lateral to the cervix Uterosacral and vesicouterine ligaments: transected closely to the uterus Vaginal resection: generally less than 10 mm, without removal of the paracervix	Palpation or direct visualization without freeing from its bed
A (T) [‡]	Simple trachelectomy (cervicectomy) Surgical removal of the uterine cervix without removal of the paracervix or vagina, very large conization	
B: Transection of paracervix at the ureter [§]	Paracervix: transected at the level of the ureteral tunnel Uterosacral and vesicouterine ligaments: partial resection Neural component of the paracervix: no resection Vaginal resection: at least 10 mm of the vagina from the cervix or tumor	Unroofed and rolled laterally
B (T) [‡]	Radical trachelectomy (cervicectomy) Surgical removal of the uterine cervix with the paracervix and vagina	
C: Transection of the paracervix at its junction with the internal iliac vascular system [¶]	Transection of the uterosacral ligaments at the rectum Transection of the vesicouterine ligaments at the bladder Resection: 15–20 mm of the vagina from the tumor or cervix and corresponding paracervix	Completely mobilized
C1	With autonomic nerve sparing/preservation	
C2	Without autonomic nerve sparing/preservation	
D: Entire resection of paracervix with vessels	Ultra-radical procedures, mostly indicated at the time of pelvic exenteration	Completely mobilized
D1	Resection of the paracervix at the pelvic side, with vessels arising from the internal iliac system, exposing the roots of the sciatic nerve	
D2	Resection of the paracervix at the pelvic side, with the internal iliac vessels plus the adjacent fascial or muscular structures	

*Modification of the new classification of radical hysterectomy by Querleu et al. [1]. [†]It is similar to type I of the “Piver-Rutledge-Smith (PRS) classification” [4,5].

[‡](T) means trachelectomy (cervicectomy). [§]This is similar to type II under the PRS classification. [¶]This is similar to type III under the PRS classification.

robotic surgery, makes continued use of the classification challenging. To overcome these limitations, Querleu and Morrow [1] proposed a new classification consisting of four types of radical hysterectomy, the Kyoto classification. We decided to create a KGOG classification of hysterectomy and lymphadenectomy based on the Kyoto classification, because it is considered contemporary and adequate for worldwide communication.

The classification has been modified and adapted to Korean circumstances by the Surgery TMC of the KGOG. There are two major changes. One is the deletion of the type B subclassification (B1 and B2), and the other is the inclusion of a fertility-preserving procedure, trachelectomy (cervicectomy), as a subclassification of types C and D.

The reasons for the elimination of the type B subclassification are as follows: (1) It is not easy and is sometimes impossible to differentiate the paracervical lymph nodes from the pelvic lymph nodes. (2) The basic reason for developing this classification is to provide separate descriptions of hysterectomy and lymphadenectomy. (3) Separate clinical indications for each operation have not been identified. (4) The clinical significance of the differentiation within type B is considered minimal. **Table 1** summarises the four types of KGOG classification of hysterectomy.

1. Type A: minimum resection of the paracervix

This is an extrafascial hysterectomy. The paracervix is transected medial to the ureter and lateral to the cervix. The ureter does not need to be unroofed. The uterosacral and vesicouterine ligaments are transected close to the uterus. The length of the vaginal resection is generally less than 10 mm, and the vaginal part of the paracervix is not removed.

2. Type B: transection of the paracervix at the ureter

Partial resection of the uterosacral and vesicouterine ligaments is the key element of this category. The ureter is unroofed and rolled laterally, permitting transection of the paracervix at the level of the ureteral tunnel. The neural component of the paracervix caudal to the deep uterine vein is not resected. At least 10 mm of the vagina from the cervix or tumor is resected.

3. Type C: transection of the paracervix at the junction with the internal iliac vascular system

Following complete mobilization of the ureter, transection of the uterosacral ligament at the rectum and transection of the vesicouterine ligament at the bladder are characteristics of type C. In addition, 15 to 20 mm of the vagina from the tumor or cervix and the corresponding paracolpos is resected, depending on the extent of vaginal and paracervical involvement and the surgeon's preference. Type C is divided into two types: C1, with autonomic nerve preservation; C2, without autonomic nerve preservation.

In type C1, the uterosacral ligament is transected after separation of the hypogastric nerves. The bladder branches of the pelvic plexus are preserved in the lateral ligament of the bladder (i.e., the lateral part of the bladder pillar). If the caudal part of the paracervix is transected, careful identification of bladder nerves is subsequently required. In type C2, the paracervix is transected completely, including the part caudal to the deep uterine vein.

4. Type D: entire resection of paracervix with vessels

This rare type of surgery is characterised by additional ultraradical procedures, primarily indicated at the time of pelvic exenteration. In this type of surgery, the entire paracervix is resected. Type D is divided into two types: D1, resection of the entire paracervix along with the internal iliac vessels; D2, resection of the entire paracervix, with the internal iliac vessels and adjacent fascial or muscular structures.

Type D1 is a resection of the entire paracervix at the pelvic sidewall along with the internal iliac vessels, exposing the roots of the sciatic nerve. The procedure involves a total resection of the vessels of the lateral part of the paracervix. These vessels (i.e., inferior gluteal, internal pudendal, and obturator vessels) arise from the internal iliac vessel system. Type D2 is the same as D1 plus resection of the entire paracervix with the internal iliac vessels and adjacent fascial or muscular structures (i.e., pubococcygeus, iliococcygeus, coccygeus, and obturator muscles).

LYMPHADENECTOMY

We classified lymphadenectomy by its level and radicality. Anatomically, arteries are the most stable landmarks for lymphadenectomy. Four areas or levels are defined according to the corresponding arterial anatomy: (1) level 1, external and internal iliac (including obturator), (2) level 2, common iliac (including presacral), (3) level 3, para-aortic infra-inferior mesenteric artery (IMA); and (4) level 4, para-aortic infrarenal. If other lymph nodes are resected, specification of the procedure is necessary.

Although lymph nodes can cross borders, the limits between levels 1 and 2, levels 2 and 3, and levels 3 and 4 are the bifurcation of the common iliac artery, the bifurcation of the aorta, and the IMA, respectively.

We also defined types of lymphadenectomy by radicality, lymph node sampling (LNS), systematic lymph node dissection (LND), and debulking. LNS is defined as sampling of a sentinel node, suspicious nodes, or random sampling [6]. In a systematic pelvic LND (PLND), all lymph nodes and fatty tissues between the external and internal iliac arteries, from the bifurcation of the common iliac artery up to the circumflex vein and above the obturator nerve, are removed. A systematic para-aortic LND includes resection of all lymph nodes and fatty tissue surrounding the aorta, inferior vena cava, and renal vessels from the renal vein cranially to the midpoint of the common iliac vessels caudally, and extending laterally to the edge of the psoas major muscle. The range of the minimum number of lymph nodes for an adequate systematic PLND has been previously found to be 10 to 25 [6-11]. The number of LNs required can be modified according to the characteristics of a clinical trial. Debulking of lymph nodes is defined as resection of bulky nodes [9,12].

OPERATION RECORD FORM

An operation record form (ORF) for cervical cancer has been established on the basis of the Synoptic Operative Template for Ovarian Cancer of the National Cancer Center of Korea. A standardized ORF will encourage keeping of full and accurate records with all required information and surgical procedures for clinical trials on cervical cancer. The ORF for cervical cancer includes the following information (**Fig. 1, Supplementary Fig. 1**).

Operation record form for cervical cancer					
General information Patient ID _____ Name _____ Operation date _____ Operator _____ Assistant _____ FIGO staging □ Ia1 □ Ia2 □ Ib1 □ Ib2 □ IIa1 □ IIa2 □ IIb □ IIIa □ IIIb □ IVa □ IVb Preoperative histologic diagnosis □ CIN 1 (mild dysplasia) □ CIN 2 (moderate dysplasia) □ CIN 3 (severe dysplasia & CIS) □ Squamous cell carcinoma □ Adenocarcinoma □ Adenosquamous cell carcinoma □ Neuroendocrine carcinoma □ Others (_____)		□ Hysterectomy □ Type A Minimum resection of paracervix (extrafascial hysterectomy) □ Type B Transsection of the paracervix at the ureter (modified radical hysterectomy) □ Right □ Left □ Type C1 Transsection of paracervix at the junction with the internal iliac vascular system (nerve-sparing radical hysterectomy) □ Right □ Left □ Type C2 Transsection of paracervix at the junction with the internal iliac vascular system without nerve preservation (conventional radical hysterectomy) □ Right □ Left □ Type D1 Resection of the entire paracervix along with the internal iliac vessels □ Bladder □ Rectum □ Inferior gluteal vessel □ Internal pudendal vessel □ Obturator vessel □ Others (_____)		Lymph node enlargement □ No (specify, if yes: _____) □ Yes Nerve preservation procedure identify nerve, if yes □ No □ Yes □ Superior hypogastric plexus □ Right hypogastric nerve □ Left hypogastric nerve □ Right pelvic plexus □ Left pelvic plexus □ Right bladder branch □ Left bladder branch	
Disease status □ Primary disease □ After neoadjuvant chemotherapy □ After chemotherapy □ Recurrent disease □ Others (_____)		□ Type D2 Resection of the entire paracervix, with the internal iliac vessels and adjacent fascial or muscular structure (specify site: _____) □ Aborted (specify the reason: _____) □ Others (_____)		Specimen examination during surgery Size of primary tumor (_____) (cm of largest diameter) Right paracervix width (_____) (cm) length (_____) (cm) Left paracervix width (_____) (cm) length (_____) (cm) Vaginal length (_____) (cm) Anti-adhesive used □ No □ Yes (_____)	
Preoperative tumor marker □ SCC-Ag (_____) □ CA-125 (_____) □ CEA (_____)		Operation type: Lymphadenectomy (KGOG classification) □ None Pelvic LN/Level 1 □ RLNS □ RLND □ Lt LNS □ Lt LND Common iliac LN/Level 2 □ RLNS □ RLND □ Lt LNS □ Lt LND Para-aortic LN (infra-IMA)/Level 3 □ LNS □ LND Para-aortic LN (infra-renal)/Level 4 □ LNS □ LND □ Debulking (specify site: _____) □ Others (_____)		Intraoperative injury □ Ureter (specify, if yes: _____) □ Vessel (specify, if yes: _____) □ Nerve (specify, if yes: _____) □ Others (specify, if yes: _____) Estimated blood loss (_____) (mL)	
Anesthesia □ General □ Spinal □ Epidural □ Local □ Others (_____)		Combined procedures Oophorectomy □ Right □ Left □ Bilateral Salpingectomy □ Right □ Left □ Bilateral Ovarian cystectomy □ Right □ Left □ Bilateral Ovarian transposition □ Right □ Left □ Bilateral Other operation 1 (surgeon: _____) (procedure: _____) Other operation 2 (surgeon: _____) (procedure: _____)		Transfusion □ No □ Yes (p-RBC: _____ pint, Plt conc: _____ pint, FFP: _____ pint, WB: _____ pint) Drain □ No □ Yes Location □ LLQ □ RLQ □ LUQ □ RUQ □ Others (_____)	
Patient's position □ Supine □ Lithotomy □ Others (_____)		Approach Laparotomy □ Lower midline incision □ Extended lower midline incision □ Others (_____) □ Pfannenstiel's incision □ Mayland incision Minimally invasive surgery □ Laparoscopic □ Port numbers (_____) □ Others (_____) □ Robotic □ Port numbers (_____)		Gauze count □ Checked □ Not checked Wound closure Peritoneum □ No □ Yes Fascia □ No □ Yes Subcutaneous □ No □ Yes Skin □ No □ Yes	
Conversion □ No □ Yes from (_____) to (_____) Reason (_____) □ Organ injury □ Other organ invasion □ Others (_____)		Intraoperative findings Frozen biopsy □ No □ Yes (specify, if yes: _____) Acetab □ No □ Yes (_____) (mL) Adhesion □ No □ Yes (specify, if yes: _____) Suspicious invasion to adjacent organs □ No □ Yes □ Vagina (_____) □ Paracervix (_____) □ Vesicouterine ligament (_____) □ Uterosacral ligament (_____)		Remarks <div style="border: 1px solid black; height: 100px; width: 100%;"></div>	
Operation type: Hysterectomy (KGOG classification) □ Cauterization □ LLETZ (LEEP) □ Cold knife cauterization Trachelectomy (cervicectomy) □ Type A(T) Minimum resection of paracervix (simple trachelectomy; simple cervicectomy) □ Type B(T) Transsection of the paracervix at the ureter (radical trachelectomy; radical cervicectomy)					

Fig. 1. Operation record form for cervical cancer. CA-125, cancer antigen 125; CEA, carcinoembryonic antigen; CIN, cervical intraepithelial neoplasia; CIS, cervical carcinoma in situ; FIGO, International Federation of Gynecology and Obstetrics; FFP, fresh frozen plasma; IMA, inferior mesenteric artery; KGOG, Korean Gynecologic Oncology Group; LEEP, loop electrosurgical excision procedure; LLETZ, large loop excision of the transformation zone; LLQ, left lower quadrant; LN, lymph node; LND, lymph node dissection; LNS, lymph node sampling; Lt, left; LUQ, left upper quadrant; Plt conc, platelet concentration; p-RBC, packed-red blood cell; RLQ, right lower quadrant; Rt, right; RUQ, right upper quadrant; SCC-Ag, squamous cell carcinoma antigen; WB, whole blood.

PATHOLOGIC REPORT FORM

The surgery TMC of the KGOG, in conjunction with the Gynecological Pathology Study Group, reviewed and analyzed several pathologic report forms (PRFs) for cervical cancer from domestic and international institutes. Finally, two kinds of PRF for cervical cancer were developed; one is for excision, and the other is for trachelectomy, hysterectomy, and pelvic exenteration. PRFs for cervical cancer include the following information (**Figs. 2, 3, Supplementary Figs. 2, 3**).

Pathologic report form for cervical cancer (excision)	
Operation: <input type="checkbox"/> Cold knife coization <input type="checkbox"/> Loop electrosurgical excision procedure (LEEP) <input type="checkbox"/> Other (specify) _____	
Tumor site: uterine cervix <input type="checkbox"/> Left superior quadrant (12 to 3 o'clock) <input type="checkbox"/> Left inferior quadrant (3 to 6 o'clock) <input type="checkbox"/> Right superior quadrant (6 to 9 o'clock) <input type="checkbox"/> Right inferior quadrant (9 to 12 o'clock) <input type="checkbox"/> Other (specify) _____	
Histologic type: <input type="checkbox"/> Microinvasive (T1a1, T1a2) <input type="checkbox"/> Invasive <input type="checkbox"/> Squamous cell carcinoma <input type="checkbox"/> Adenocarcinoma <input type="checkbox"/> Endocervical, usual type <input type="checkbox"/> Mucinous (gastrointestinal/signet-ring cell) <input type="checkbox"/> Villaglandular <input type="checkbox"/> Endometrioid <input type="checkbox"/> Clear cell <input type="checkbox"/> Serous <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> Other (specify) _____	
Histologic grade: <input type="checkbox"/> Non-keratinizing <input type="checkbox"/> Keratinizing <input type="checkbox"/> G1 <input type="checkbox"/> G2 <input type="checkbox"/> G3 <input type="checkbox"/> Cannot be assessed <input type="checkbox"/> Not applicable	
Tumor size: <input type="checkbox"/> Microinvasive Depth: _____ mm Horizontal extent: _____ mm <input type="checkbox"/> Invasive Greatest dimension: _____ cm Additional dimensions (optional): _____' _____ cm Depth: _____ mm	
Margin: (1) Endocervical Margin: <input type="checkbox"/> Not involved, _____ mm free from margin (specify location, if possible) <input type="checkbox"/> Involved by invasive carcinoma/HSIL/LSIL/AIS (specify location, if possible) (2) Exocervical Margin: <input type="checkbox"/> Not involved, _____ mm free from margin (specify location, if possible) <input type="checkbox"/> Involved by invasive carcinoma/HSIL/LSIL/AIS (specify location, if possible) (3) Deep Margin: <input type="checkbox"/> Not involved, _____ mm free from margin (specify location, if possible) <input type="checkbox"/> Involved by invasive carcinoma/HSIL/LSIL/AIS (specify location, if possible)	
Vascular/lymphatic invasion: <input type="checkbox"/> Absent <input type="checkbox"/> Present <input type="checkbox"/> Indeterminate	

Fig. 2. Pathologic report form for cervical cancer managed by local excision. AIS, adenocarcinoma *in situ*; HSIL, high grade squamous intraepithelial lesion; LSIL, low grade squamous intraepithelial lesion.

Pathologic report form for cervical cancer (trachelectomy, hysterectomy, pelvic exenteration)	
Operation: <input type="checkbox"/> Simple trachelectomy <input type="checkbox"/> Radical trachelectomy <input type="checkbox"/> Total hysterectomy <input type="checkbox"/> Radical hysterectomy <input type="checkbox"/> Pelvic exenteration <input type="checkbox"/> Salpingectomy (right/left/bilateral) <input type="checkbox"/> Salpingo-oophorectomy (right/left/bilateral) <input type="checkbox"/> Lymph node sampling/dissection (specify) _____ <input type="checkbox"/> Other (specify) _____	
Tumor site: uterine cervix <input type="checkbox"/> Left superior quadrant (12 to 3 o'clock) <input type="checkbox"/> Left inferior quadrant (3 to 6 o'clock) <input type="checkbox"/> Right superior quadrant (6 to 9 o'clock) <input type="checkbox"/> Right inferior quadrant (9 to 12 o'clock) <input type="checkbox"/> Other (specify) _____	
Histologic type: <input type="checkbox"/> Microinvasive (T1a1, T1a2) <input type="checkbox"/> Invasive <input type="checkbox"/> Squamous cell carcinoma <input type="checkbox"/> Adenocarcinoma <input type="checkbox"/> Endocervical, usual type <input type="checkbox"/> Mucinous (gastrointestinal/signet-ring cell) <input type="checkbox"/> Villaglandular <input type="checkbox"/> Endometrioid <input type="checkbox"/> Clear cell <input type="checkbox"/> Serous <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> Other (specify) _____	
Histologic grade: <input type="checkbox"/> Non-keratinizing <input type="checkbox"/> Keratinizing <input type="checkbox"/> G1 <input type="checkbox"/> G2 <input type="checkbox"/> G3 <input type="checkbox"/> Cannot be assessed <input type="checkbox"/> Not applicable	
Tumor size: <input type="checkbox"/> Microinvasive Depth: _____ mm Horizontal extent: _____ mm <input type="checkbox"/> Invasive Greatest dimension: _____ cm Additional dimensions (optional): _____' _____ cm Depth: _____ mm	
Distal margin: <input type="checkbox"/> Not involved, _____ mm free from margin (specify location, if possible) <input type="checkbox"/> Involved by invasive carcinoma/HSIL/LSIL/AIS (specify location, if possible)	
Endocervical margin: (required in trachelectomy) <input type="checkbox"/> Not involved, _____ mm free from margin (specify location, if possible) <input type="checkbox"/> Involved by invasive carcinoma/HSIL/LSIL/AIS (specify location, if possible)	
Parametrial invasion: <input type="checkbox"/> Absent <input type="checkbox"/> Present (right/left/bilateral): _____ mm free from margin (optional)	
Vascular/lymphatic invasion: <input type="checkbox"/> Absent <input type="checkbox"/> Present <input type="checkbox"/> Indeterminate	
Other site involvement: <input type="checkbox"/> Absent <input type="checkbox"/> Present: Uterine corpus/Right ovary/Left ovary/Right salpinx/Left salpinx/Vagina/Uterine bladder/Rectum <input type="checkbox"/> Other (specify) _____	
Lymph node metastasis: <input type="checkbox"/> Absent <input type="checkbox"/> Present Greatest metastatic tumor dimension: _____ mm Extracapsular extent: <input type="checkbox"/> Absent, <input type="checkbox"/> Present (_____ mm) Level 1, external and internal iliac (including obturator): Right (/ /), Left (/ /) Level 2, common iliac (including presacral): Right (/ /), Left (/ /) Level 3, para-aortic infra-IMA: (/ /) Level 4, para-aortic infra-renal: (/ /) Other (specify) _____	

Fig. 3. Pathologic report form for cervical cancer managed by trachelectomy, hysterectomy, or pelvic exenteration. AIS, adenocarcinoma *in situ*; HSIL, high grade squamous intraepithelial lesion; LSIL, low grade squamous intraepithelial lesion.

CONCLUSIONS

The purpose of this surgical manual is to facilitate future clinical trials and to improve communication between investigators by standardizing and describing operative procedures. The surgical procedures provided here represent the minimum requirements for participating in a clinical trial. These procedures should be systematically and properly described in the ORF, and the pathologic findings obtained from the procedures should be recorded in the PRF. This manual will be updated as necessary to include various clinical trials and to reflect the latest trends.

ACKNOWLEDGMENTS

For a clearer understanding of this KGOG classification of hysterectomy and lymphadenectomy, a medical animation was produced by the HealthBreeze Corp. and is available on the KGOG website (<http://goo.gl/aSuRo1>).

SUPPLEMENTARY MATERIALS

Supplementary Fig. 1

Operation record form for cervical cancer

[Click here to view](#)

Supplementary Fig. 2

Pathologic report form for cervical cancer (excision)

[Click here to view](#)

Supplementary Fig. 3

Pathologic report form for cervical cancer (trachelectomy, hysterectomy, pelvic exenteration)

[Click here to view](#)

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