

CONTROVERSIES SURROUNDING TYPE III RADICAL ABDOMINAL HYSTERECTOMY AND ITS PROCEDURE USING NEW INSTRUMENTS

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Type III radical abdominal hysterectomy (RAH) is standard care for early stage cervical cancer. For the past few decades, there has been a remarkable shift from surgery to radiation, in the treatment choice for stage 1b2 and 2b cervical cancer in Japan. It is still controversial, however because some of those cases recommended RAH as a suitable treatment strategy. About 8% to 10% of RAH are abandoned because of tumor status. Recent preoperative screening cannot always detect them preoperatively. Various kinds of new surgical instruments, such as bipolar scissors and the electro vessel sealing system LigaSure have contributed to reducing the operation time and blood loss, in performing RAH. Furthermore, various kinds of devices are on the market. Surgeons should choose suitable instruments depending on the state of the disease and the patient.

Keywords: Cervical cancer; Abdominal radical hysterectomy; Abandoned surgery; Vessel sealing system; Surgical morbidity

Introduction

Uterine cervical cancer still has the highest incidence and is the leading cause of death among female genital cancers in Asian, African, and Latin American countries. Radical abdominal hysterectomy (RAH) has been the standard care for early stage cervical cancer. This procedure was originally developed in late 1800's, but was accompanied by a severe morbidity and a high mortality rate. Refinement of the procedure including advances in anesthesia, antibiotics, and pre and post surgical care have all brought improvement in the safety performance of RAH. Recently, several new electric surgical devices have provided us with certain opportunities for simplifying surgical procedure, and that has resulted in lower morbidity. Since the introduction of concurrent chemo-radiotherapy (CCRT) in the late 1990's, the indication of RAH has changed somewhat. This article refers to current trends in RAH, and introduces our procedure for RAH using some new devices.

Patients Selection for RAH

The classifications of hysterectomy from type (class) I to V, as de-

finied by Piver et al. [1], is still generally accepted. Type III radical hysterectomy has been employed for International Federation of Gynecology and Obstetrics (FIGO) 1b1 and 2a cervical cancer in western countries, and also applied to stage 1b2 and 2b in Japan. In 1999, several published randomized control clinical trials showing the superiority of CCRT, and the National Cancer Institute advised that CCRT should be considered as standard care for locally advanced cervical cancer including stage 1b2 and 2b [2-4]. From the data on Japanese Society of Gynecologist and Obstetrician (JSGO) tumor committee treatment strategy for stage 1b2 and 2b,

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Table 1. Treatment strategy for stage 1b-2b cervical cancer in Japan (1999) (From JSOG tumor committee report [5])

Procedure	Surgery only	Surgery + radiation and/or chemo	Radiation only	Patients undergoing surgery	Needing adjuvant therapy
Stage 1b1 (n = 763)	408 (53.5)	339 (44.4)	11 (1.4)	747/763 (97.9)	339/747 (45.4)
Stage 1b2 (n = 231)	49 (21.2)	178 (77.1)	4 (1.7)	227/231 (98.2)	178/227 (78.4)
Stage 2b (n = 554)	51 (9.2)	472 (85.2)	29 (5.2)	523/554 (94.4)	472/523 (90.2)
Stage 1b2 + 2b				750/785 (95.5)	650/750 (86.7)

Values are presented as number (%).

Table 2. Treatment strategy for stage 1b-2b cervical cancer in Japan (2009) (From Japanese Society of Gynecologist and Obstetrician tumor committee report [10])

Procedure	Surgery only	Surgery+radiation and/or chemo	Patients undergoing surgery	Needing adjuvant therapy	Radiation (only or CCRT)
Stage 1b1 (n = 1,764)	976 (55.3)	586 (33.2)	1,562/1,764 (88.5)	586/1,562 (37.5)	198 (11.2)
Stage 1b2 (n = 443)	58 (13.1)	293 (66.1)	351/443 (79.2)	293/351 (83.4)	90 (20.3)
Stage 2b (n = 965)	46 (4.8)	427 (44.2)	473/965 (49.0)	427/473 (90.3)	479 (49.6)
Stage 1b2 + 2b			824/1,408 (58.5)	720/824 (87.4)	

Values are presented as number (%).

CCRT, concurrent chemo-radiotherapy.

Japanese gynecologists attempted surgery on more than 95% of patients in 1999 (Table 1). On the other hand, in 2009, less than 60% of cases underwent surgery (Table 2). In 1999, only 5.2% of stage 2b patients received radiation as the primary treatment, but in 2009, 49.6% of them received it (Tables 1, 2). There has been a remarkable shift, from surgery to radiation, as the treatment of choice in stage 1b2 and 2b cervical cancer in Japan over the past 10 years.

Controversies Over the Application of RAH for Stage 1b2 and 2b

The application of RAH for stage 1b2 and 2b is still controversial. There is no difference in survival between surgery or radiation [6,7]. One of the cons of RAH noted among these patients was that more than 85% of RAH patients received post surgical radiation (Tables 1, 2), and the worst morbidity was brought by RAH plus adjuvant radiotherapy [6]. The pro for RAH was that the remaining 10% to 20% of the patients completed treatment with surgery only. An appropriate selection of patients leads to a reduction in the rate of post-surgical radiation [8].

Neo-adjuvant chemotherapy (NAC) is another strategy for this group of patients. There have been many studies insisting on the efficacy of NAC for stage 1B2 and 2b cervical cancer. Nevertheless, if the tumor progressed during chemotherapy, patients lost their

chance to receive RAH. Patients receiving NAC prior to radiotherapy showed a worse prognosis than patients treated by radiation alone [9]. It is still unclear how to select patients for NAC, because it is difficult to predict chemo-sensitivity before treatment.

Abandoned Cases of RAH

Under certain conditions, we have had to cancel RAH during operation. From 8% to 10% of planned RAH (in stage 1b-2a) are abandoned due to extra-uterine tumor spread (e.g., anterior and/or posterior uterine serosal breakthrough, gross pelvic node involvement), or extra pelvic extension (e.g., para-aortic node metastasis, spread to peritoneum) [10]. The prognosis of cases with abandoned RAH depends on the condition of the tumor. There was no difference in survival between radiotherapy and abandoned RAH followed by radiation. Extra pelvic disease had the shortest prognosis because of distant failure. The morbidity was low, even followed by radiation [12]. From the data collected at Kurume University, 7.0% of cases with 1b-2b cervical cancer with squamous histology, abandoned RAH. One third of these cases were abandoned because of para-aortic node involvement, and all of them showed poor prognosis with distant metastasis over a relatively short period (mean 10 months; range, 6 to 22 month). RAH should be avoided in patients with para-aortic involvement due to their poor prognosis. Recent remarkable progress of imaging stud-

ies such as positron emission tomography/computed tomography (PET/CT) or enhanced CT showed high negative predictive value in preoperative screening to identify para-aortic nodes. They did, however, still showed certain false negative cases [13,14].

New Instruments for RAH

Type III RAH requires a number of complicated procedures around

the pelvic floor. Asian women often do not have enough space to work in their pelvic floor. Some new instruments, such as wide wound retractors, bipolar scissors, and vessel sealing systems are helping to simplify the surgical procedure, that leads to safer RAH with less blood loss, and shorter operation time.

There are many kinds of wound retractors on the market. We use Multiflex short arm retractor (Gray Surgical, Bently, WA, Australia). It provides a wide view of the operation field and various blades in a variety of shapes and sizes are available. Bipolar scissors

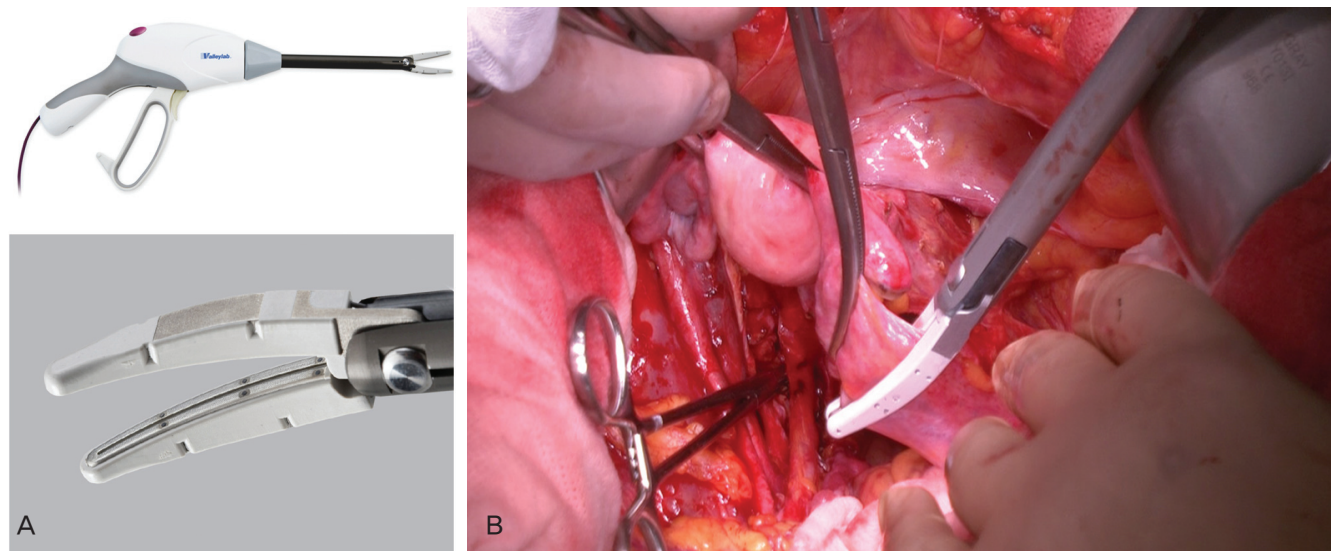


Fig. 1. LigaSure Impact. (A) LigaSure Impact has light angled jaw and scissors, useful for large vessels and pelvic floors. (B) Suspensorium ovary is clamped by LigaSure Impact.

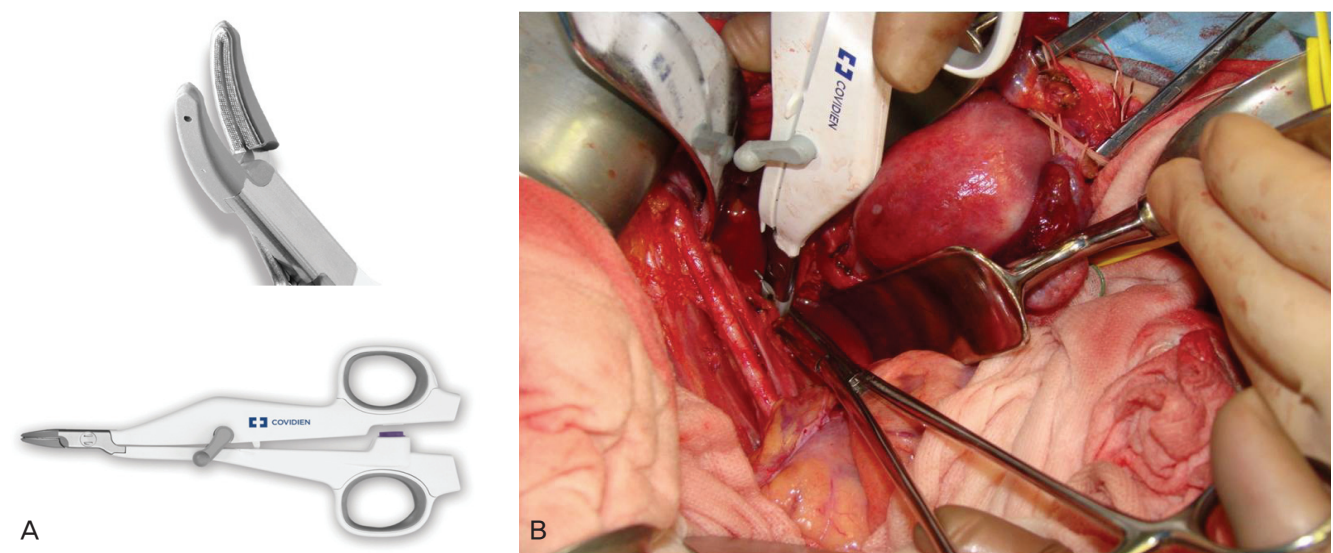


Fig. 2. LigaSure Small Jaw. (A) LigaSure Small Jaw has similar function with LigaSure Impact, also it has suitable size for narrow pelvic space. (B) Transection of cardinal ligament by LigaSure Small Jaw.

(Ethicon, Somerville, NJ, USA) is now commonly used for various gynecologic surgery. In RAH, it is especially useful in separating the bladder and cervix, and lymph node dissection. LigaSure (CO-VIDIEN, Dublin, Ireland) is the most widely used vessel sealing instrument. The efficacy of this vessel sealing system in vaginal hysterectomy has been reported as it reduces operating time, blood loss, and post-operative pain compared with conventional suture ligation procedure [15]. The introduction of LigaSure for RAH has also been reported to be effective in reducing operation time and blood loss [16,17]. LigaSure V has a 5 mm width and 20 cm long body, and the ability to cut after sealing. This is useful in lymph vessel sealing. LigaSure Impact (Fig. 1) also functions as a scissors with an angled (14°) jaw which can rotate 180°. It is the appropriate sealing size for large vessels (widths 4.7 mm), and use in the posterior procedure in the pelvic floor, but it is rather large for lymph vessel sealing. A new smaller instrument LigaSure Small Jaw (Fig. 2) has become available in Japan. It has a suitable sized body (18.8 cm) for lymph vessel sealing and has an appropriate angled jaw (28°) for pelvic floor procedure, such as dissecting the cardinal ligament and recto-vaginal ligament. But multiple sealing steps are necessary for large vessels. The operator should choose the suitable instrument, according to the state of the disease and the patients. Whatever useful device we have, careful and gentle procedure is an essentials to excellent surgery.

Our Procedure of RAH

The followings are the step by step procedures for RAH in our institution. New instruments are helpful in the underline sections.

- Collect washing cytology and check the whole pelvis and abdomen.
- Para-aortic node sampling (below inferior mesenteric artery); Inspect frozen sections (if positive, RAH will be cancelled).
- Round ligament is clamped and cut and development of para-vesical and para-rectal space.
- Dissection of the bladder from the cervix→Confirmation of completion of RAH.
- Suspensorium ovary is clamped and cut.
- Pelvic lymphadenectomy (lymph vessel are sealed in proximal and distal end).
- Ligation and cut of uterine artery.
- Isolation of ureter from broad ligament.
- Dissection of cul-de-sac peritoneum and isolation of rectum and vagina.
- Separation and transection of cardinal ligament.
- Uterosacral ligament is clamped and cut.
- Transection of the rectovaginal ligament (up to two thirds of the ligament. The rest of rectovaginal ligament should be retained as a uterine support).
- Mobilize the bladder (completely).
- Unroofing the ureter and dissection of the anterior leaf of vesico-uterine ligament (LigaSure can be used if a 3 mm distance is secured from the ureter).
- Mobilize the ureter and dissect the posterior leaf of vesico-uterine ligament.
- Transection of the rest of rectovaginal ligament.
- Transection of para-corpium.
- Transection of the vagina and close the cuff.
- Place adhesion barrier and drains in bilateral pelvic floor.
- Place the Supra-pubic catheter.

Conclusion

Since 2000, the trend of avoiding RAH in the treatment of stage 1b2 and 2b cervical cancer has become remarkable. Nevertheless, this issue is still controversial, because under certain conditions, patients with stage 1b2 disease might be good candidates for RAH. Further investigation is necessary to make the final decision of RAH indication for these patients. New devices have brought great contributions to the progress of surgical treatment including RAH. New and advanced technology leading to less invasive surgery may have an impact on the overall decision making process.

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