



# A case of stage IB<sub>1</sub> cervical cancer radical hysterectomy by fluorescent laparoscopic navigation combined with indocyanine green (ICG) sentinel lymph node excision

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**Abstract:** This video presentation demonstrates the progress of a patient diagnosed with stage IB<sub>1</sub> cervical squamous cell carcinoma by the FIGO stage and undergoing radical hysterectomy of cervical cancer under fluorescence laparoscopy. After disinfecting the tissue, a 0.5 mL ICG tracer was injected into the cervix at 3 and 9 o'clock to trace the sentinel lymph node. Bilateral internal iliac sentinel lymph nodes were removed under a fluorescence microscope, and pelvic lymph node dissection was performed. Then, the circular ligaments on both sides of the uterus were removed, the broad ligaments on both sides were opened, and the uterosacral ligament, main ligament, and bilateral parametrium tissues were removed. Finally, the vaginal wall was incised 3 cm below the outer cervical opening without a uterine manipulator. The vaginal stump on both sides of the excised specimen was clipped, the excised specimen was removed through the vagina, and the vaginal stump was sutured with the edge of the v-loc absorbable suture.

**Keywords:** Cervical cancer; fluorescent laparoscopic; indocyanine green (ICG); sentinel lymph node excision

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## Introduction

Cervical cancer ranks fourth in the world in female malignancies. In 2015, about 270,000 patients died, 90% of which occurred in low- and middle-income countries (LMIC), with a mortality rate about 18 times greater than developed countries (1). The results of most previous studies on the treatment of cervical cancer are similar, and it is believed that laparoscopic surgery and open surgery have the same efficacy, and laparoscopic surgery has a short hospital stay, less blood loss, faster recovery time and fewer postoperative complications. Last year, one prominent study showed a comparison of routine surgical options for early cervical cancer (2). It was found that minimally invasive radical hysterectomy had a higher recurrence rate and a lower survival rate than open abdominal radical hysterectomy, which can be described as shocking and subversive. Since laparoscopic surgery is widely used in Mainland China, Chinese obstetrics and gynecology experts designed the

study to follow Ramirez, who did the laparoscopic and open surgery as a true world study on early cervical cancer and found that we should continue to improve the operation and the technology of laparoscopic surgery.

Here, we performed fluorescent laparoscopic sentinel lymph node biopsy and radical cervical cancer resection in a woman diagnosed with stage IB<sub>1</sub> cervical cancer (3) (*Figure 1*).

## Operative techniques

For this patient, we performed radical cervical cancer hysterectomy with the laparoscopic multi-hole method and sentinel node removal with fluorescent laparoscopy. Sentinel lymph node is the first station of lymph node metastasis, and it is also the earliest metastasis lymph nodes. First, 0.5 mL ICG was injected into the cervical clockwise clock at 3 and 9 o'clock after a conventional disinfection towel. After 5 minutes, bilateral internal iliac lymph nodes were

developed first (*Figure 2A*), the right side of the peritoneum was opened, and the sentinel lymph nodes developed at the intersection of the external iliac, and internal iliac vessels



**Figure 1** This video shows a fluoroscopic laparoscopic sentinel lymph node biopsy and an extensive total hysterectomy without a uterine manipulator (4).

Available online: <http://www.asvide.com/watch/33034>

were removed (*Figure 2B*). Similarly, the left internal iliac sentinel node was taken for biopsy.

### *Pelvic lymph node dissection*

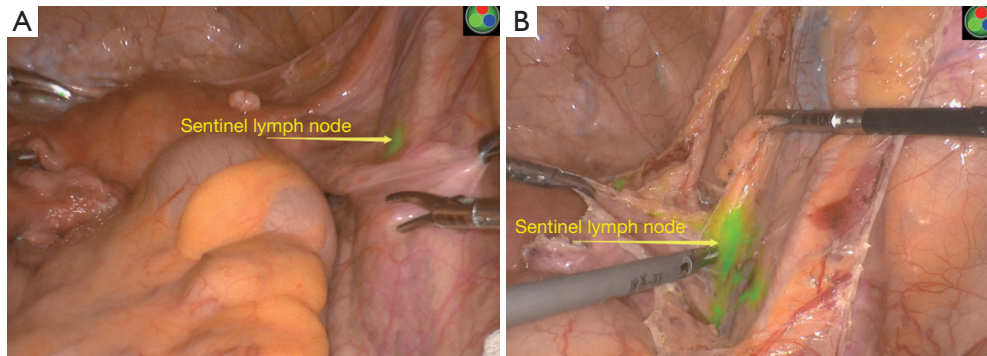
Currently, for cervical cancer patients with negative sentinel lymph node biopsy, no literature has reported that systematic lymph nodes can be left unexcised. Even in the case of negative sentinel lymph node biopsy, systematic pelvic lymph node dissection was performed for patients (*Figure 3A,B*).

### *Uterine arteries ligation*

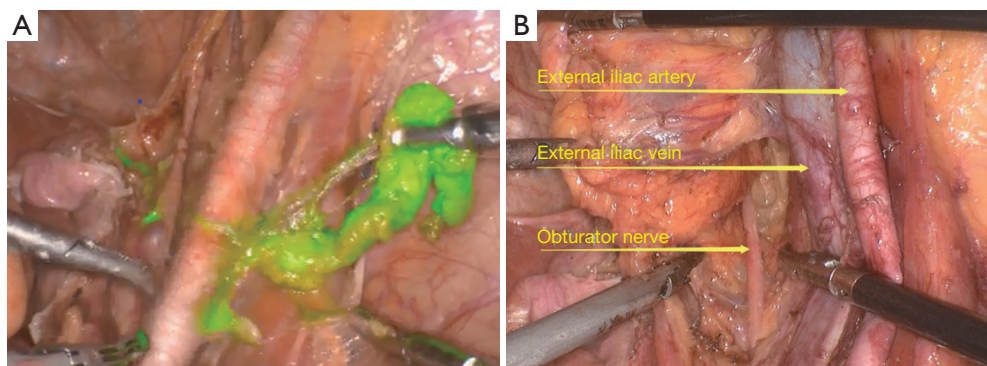
The key to uterine artery ligation is to identify its anatomical location and dissociate it (*Figure 4*).

### *Ureter separation*

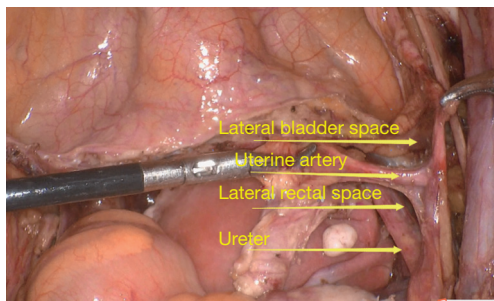
The ureter is an especially important structure in radical



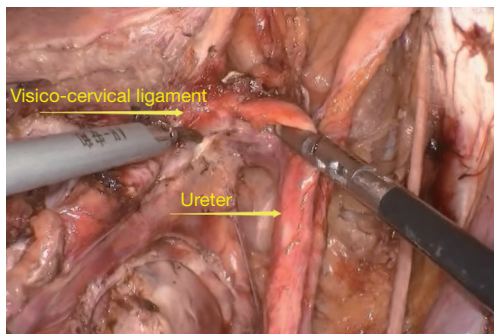
**Figure 2** Sentinel lymph node biopsy. (A) Development of the right sentinel lymph node; (B) resection of the right sentinel lymph node.



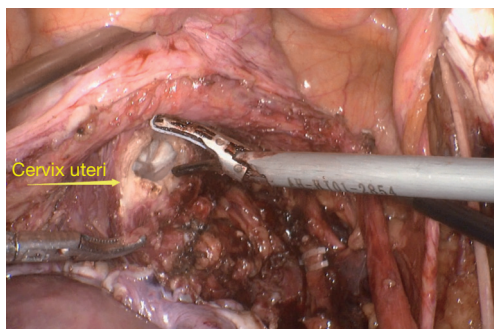
**Figure 3** Right pelvic lymph node dissection.



**Figure 4** Free uterine artery.



**Figure 5** Opening ureteral tunnel.



**Figure 6** Break off the cervix uteri.

cervical cancer surgery. Its dissociation and protection is the key to extensive total hysterectomy (*Figure 5*).

### ***Break off the cervix uteri***

No uterine manipulator was used during the entire procedure of a broad hysterectomy, and it is entirely dependent on the coordination between the assistant and the doctor. During cervix removal, a condom is inserted into the vagina to prevent gas leakage from the abdominal



**Figure 7** Uterus and bilateral fallopian tubes.

cavity (*Figures 6,7*).

### **Comments**

Lymph node metastasis is an important predictor of recurrence and prognosis of cervical cancer. Given the importance of lymph node metastasis, it is of considerable significance to explore preoperative prediction, exact intraoperative location, and judgment of retroperitoneal lymph node metastasis by using ICG for lymph node development. In this paper, the sentinel lymph node biopsy was performed in patients with cervical squamous cell carcinoma, which can be used to guide the feasibility of lymph node resection and predict the clinical value of lymph node metastasis. Then, no uterine manipulator was used during the operation. Cervical cancer cells can spread and metastasize when the lifting device is inserted into the uterus, which can be difficult to detect (5).

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*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Informed consent was obtained from the patient.

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