Surgical technique of visceral segmental serosectomy for advanced ovarian cancer

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Abstract: Tumors infiltrating the recto-sigmoid colon are commonly detected during cytoreductive surgery in patients with advanced ovarian cancer. Although radical excision using low anterior resection (LAR) is traditionally needed for optimal cytoreduction in the patients, LAR commonly decrease postoperative quality of life by changes of bowel habit. Since there is increasing evidence that conservative ablation of tumors on the recto-sigmoid colon may be safe and effective like LAR without compromising quality of life, we developed the surgical technique of visceral segmental serosectomy (VSS) as one of conservative ablation methods for complete resection of serosal implants on the recto-sigmoid colon and scrupulous restoration of extended serosal defect after resection. Thus, this video will show the step by step procedure of VSS during cytoreductive surgery for advanced ovarian cancer.

Keywords: Advanced ovarian cancer; recto-sigmoid colon; visceral segmental serosectomy (VSS)

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Introduction

The recto-sigmoid colon is the most common viscera infiltrated by tumors in advanced ovarian cancer (1). Two surgical procedures can be considered to remove tumors on the recto-sigmoid colon as follows; low anterior resection (LAR) and conservative ablation such as Douglas peritoneectomy (2). Although LAR is known to be the definite method for radical excision of tumors infiltrated to the recto-sigmoid colon in patients with advanced ovarian cancer, it has two limitations as follows. First, about 40% of the patients who underwent LAR complain frequency or urgency of stools or stool incontinence, which leads to poor quality of life after surgery (3). Moreover, anastomotic site leakage can develop in about 5% of the patients after LAR despite prophylactic ileostomy (1), which is known to be related with poor prognosis (4,5). On the other hand, conservative ablation can allow microscopic or infiltrative residual tumors after surgery affecting poor prognosis despite preservation of large bowel function (6). However, no gross residual tumor is preferred as the criteria of optimal cytoreduction instead of R0 resection because of too much tumor burdens in advanced ovarian cancer (7,8), and recent studies have shown that conservative ablation may be safe and effective like LAR in the patients (2,9).

Thus, we developed the surgical technique of visceral segmental serosectomy (VSS) as one of conservative ablation methods for complete resection of serosal implants on the recto-sigmoid colon and scrupulous restoration of extended serosal defect after resection, and this video will show the step by step procedure of VSS during cytoreductive surgery for advanced ovarian cancer (Video 1).

Operative techniques

Patient selection

We included patients with stage IIB to IVB ovarian,
fallopian, and primary peritoneal cancer who need resection of tumors involving the recto-sigmoid colon for maximal cytoreduction. For the patients, we preferred VSS when the length of the recto-sigmoid colon where tumors invaded was 18 cm or less without multiple mucosal invasion of tumors. However, we changed VSS into LAR if the length of the recto-sigmoid colon where tumors invaded was more than 18 cm or multiple mucosal invasion was suspicious because of the risk of leakage at the primary repair site due to excessive tension or weakness by multiple or large defect of mucosa layer.

**Operative procedure**

Under general anesthesia, the patient took the lithotomy position. After the midline incision is made from the xiphoid process to pubis, the probability of resection of all visible tumors was evaluated in the first time, and then we mobilized the colon and both ureters for preventing iatrogenic injury. Then, we divided the plane between the uterus and recto-sigmoid colon, and mobilized the recto-sigmoid colon sufficiently from the pelvic cavity by developing the rectovaginal space. After elevating the recto-sigmoid colon, the inferior hypogastric nerve was identified and secured during this procedure.

Next, we performed mesorectal excision for removing seeding nodules on bilateral sides of the rectum. After completion of mesorectal excision, the length of the recto-sigmoid colon where tumors invaded was evaluated, and we did VSS if it was 18 cm or less without multiple mucosal invasion of tumors. If the tumor was infiltrated deeper than the mucosal layer or extended more than 18 cm of the recto-sigmoid colon, it was determined that it was not suitable for VSS. In that case, we performed LAR for excision of the tumor located in the recto-sigmoid colon.

After complete resection of serosal implants on the recto-sigmoid colon, tagging sutures were done at the left and right mediolateral edges of the resection area, and then we performed the tagging suture at the right anterolateral edge. Thereafter, we repaired the right lateral serosa, and then the tagging suture was done at the left anterolateral edge. After we repaired the left lateral serosa, we finally repaired the anterior serosa, which made the recto-sigmoid colon a U-shaped loop. Since air leakage at the anastomotic site on the bubble leakage test is known to increase the risk of postoperative colorectal anastomotic leakage (10), we performed the bubble leakage test at the repair site of VSS.

**Comments**

VSS may be a feasible and easy technique for conservative ablation of tumors infiltrated to the recto-sigmoid colon with complete resection of serosa implants.

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