

Simultaneous Laparoscopy-Assisted Resection for Colorectal Cancer and Metastases

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복강경 수술을 이용한 결장직장암 및 전이 병소의 동시 절제

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With advancement of minimal invasive surgery, a simultaneous laparoscopy-assisted resection for colorectal cancer and metastasis has become feasible. Hence, we report three cases of simultaneous laparoscopic surgery for colorectal cancer with liver or lung metastasis. In the first case, laparoscopic right hemicolectomy and left lateral segmentectomy of liver was performed for ascending colon cancer and liver metastasis. In the second case, laparoscopic right hemicolectomy and wedge resection of right lower lung was performed for cecal cancer and lung metastasis. In the third case, laparoscopic right hemicolectomy and wedge resection of left lower lung was performed for ascending colon cancer and lung metastasis. In the first two cases, patients quickly returned to normal activity. In the third case, postoperative bleeding was observed, but spontaneously stopped. There was no postoperative mortality. Simultaneous laparoscopic surgery represents a feasible option for colorectal cancer with metastases on the other organs.

Key Words: Colorectal Cancer, Laparoscopic Surgery, Metastasis, Simultaneous

Laparoscopic surgery has been widely used to treat various diseases from benign to malignancy, since it had been started to be used to

remove the gallbladder and the appendix in the 1980s.¹ But simultaneous laparoscopic surgery for multiple organ lesions, especially malig-

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nancies, was limited to been performed because of demanding technical requirements and insufficient experiences.

Up to date, there have been the some cases about simultaneous colon and liver or lung resection using laparoscopic technique.²⁻⁴ We present the cases of simultaneous laparoscopyassisted resection for one case with colorectal cancers and synchronous solitary liver metastases, and two cases with colorectal cancers and synchronous solitary lung metastasis.

Case report

Case 1

A 46-year-old female presented with a 2-week history of dyspepsia. Colonoscopy dis-

closed a 5 cm sized and circumscribed mass with sharp margins and a central ulceration in the cecum. Biopsies confirmed the clinical diagnosis of adenocarcinoma. A computed tomography (CT) scan of the abdomen and pelvis demonstrated a 1.5 cm metastatic tumor of the left lateral segment of the liver (Fig 1A, B). Carcinoembryonic antigen (CEA) level was within normal range. BMI was 20

The patient was placed in the supine position, and an initial incision was made just superior to the umbilicus for insertion of the 12mm camera trocar. Once this was placed, insufflation was started and a diagnostic laparoscopy was performed. This demonstrated the tumor of the cecum and the solitary lesion of the left lateral segment of the liver with no evidence of omental or peritoneal metastasis. Then, four additional trocars were placed; a 10-mm

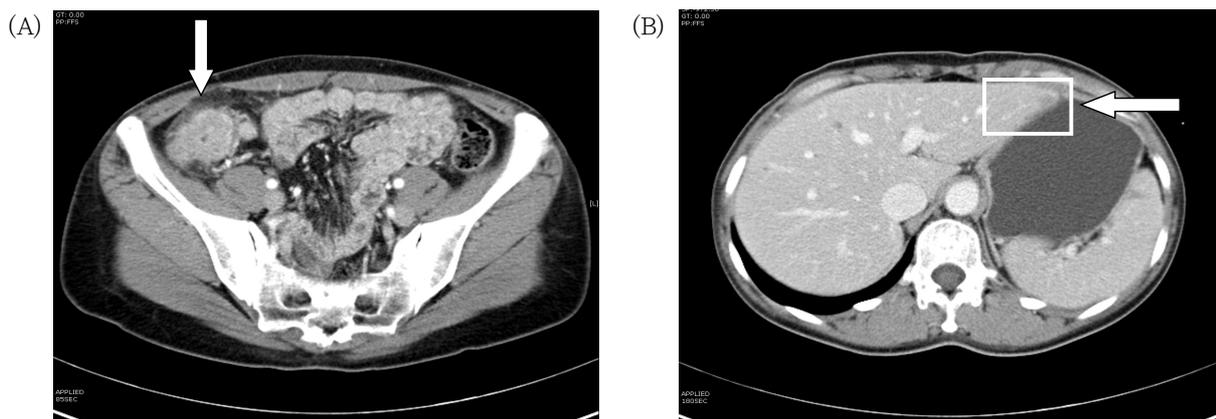


Figure 1. Abdominal CT scan showed wall thickening of the cecum (A), and metastatic nodule in the left lobe of liver (B)

trocar at left lower quadrant, three 5-mm trocars at left upper quadrant, right upper quadrant and right lower quadrant.

Laparoscopic right hemicolectomy was carried out before hepatic resection. The ileocolic vessels were ligation and cut at their origin, and the lymph nodes were dissected along the superior mesenteric vein toward the caudal border of the pancreas. The right branch of the middle colic artery was clipped and cut. Once the entire right colon was freed, it was withdrawn through an enlargement of port site at the umbilicus. The wound was covered with wound protector. The resection of ileum and transverse colon, and anastomosis were accomplished extracorporeally by side to side anastomotic method using two linear-cutter staplers. The anastomotic site was returned to the peritoneal cavity.

The left lateral segmentectomy was started after closure of wound protector using surgical glove. The falciform ligament and left triangular ligament was divided using a harmonic scalpel. The falciform ligament was used to retract and manipulate the left lobe of liver. Liver parenchyma was transected using a Cavitron Ultrasonic Surgical Aspirator (CUSA) and harmonic scalpel, and vessels and intra-hepatic bile ducts were ligated using endoclips.

Total operation time was 260 minutes and estimated blood loss was 300 mL. Postoperative morbidity was not founded in this patient. The patient was discharged home on the 11th day.

Case 2

A 67-year-old male was diagnosed as ascending colon cancer with lung metastasis. Colonoscopy demonstrated adenocarcinoma of the ascending colon. Abdominal CT scan demonstrated wall thickening of the ascending colon without distant metastasis in the intra-abdominal organs. Lung metastasis was diagnosed by a chest CT scan (Fig 2 A,B) and transthoracic needle biopsy for new lesion of the right lower lobe of lung. CEA level was within normal range. BMI was 20.

Laparoscopic right hemicolectomy was carried out in the same approach as case 1. One 12-mm and four 5-mm trocars were placed and anastomosis of ileum and colon was accomplished extracorporeally using two linear-cutter staplers.

After laparoscopic right hemicolectomy was over, video-assisted thoracic surgery (VATS) was performed. The trocars inserted for VATS were 5mm in diameter at the fourth intercostals space and 12mm in diameter at the fifth and seventh intercostals spaces. During observation of the right thoracic cavity via thoracoscopy, metastatic lesion was confirmed in right lower lobe. A Partial resection of right lower lobe was performed using linear-cutter stapler via VATS (Fig 3).

Total operation time was 325 minutes and estimated blood loss was 100 mL. Postoperative morbidity was not founded in this patient. The

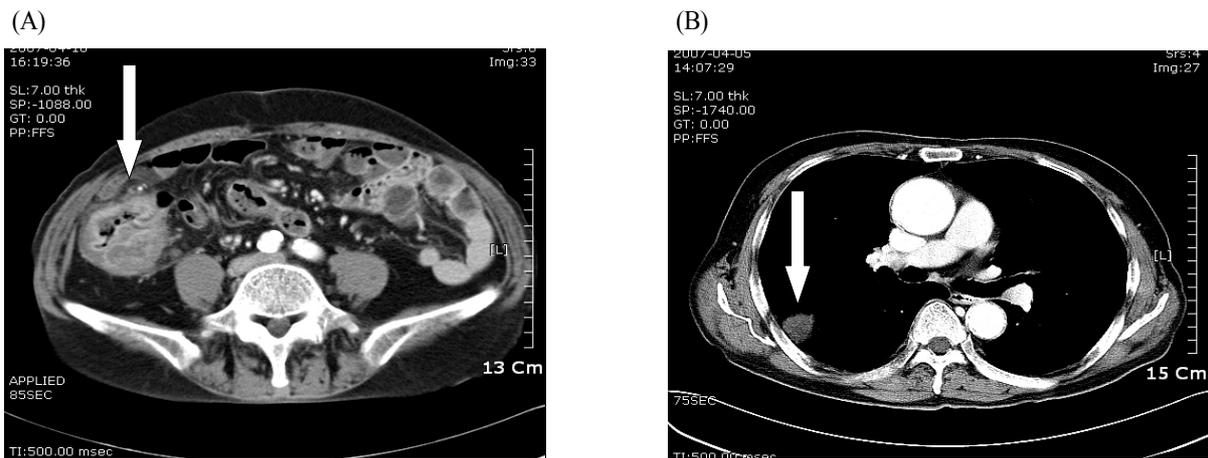


Figure 2. Abdominal CT scan showed wall thickening of the ascending colon (A). Chest CT scan showed metastatic nodule in the right lower lung field (B).

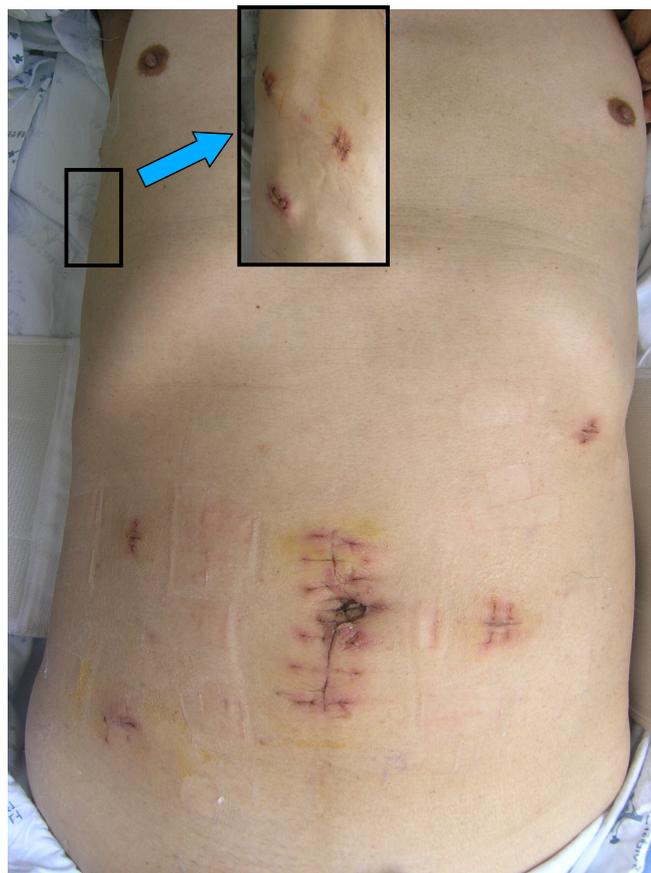


Figure 3. Trocar sites on the abdomen and the chest

patient was discharged home on the 9th day.

Case 3

A 72-year-old male was admitted to hospital suffering from abdominal pain and weight loss. Colonoscopy disclosed a 6 cm sized and circumscribed mass in the ascending colon. Biopsies confirmed the clinical diagnosis of adenocarcinoma. A computed tomography (CT) scan of the chest demonstrated a 1 cm lesion of the left lower lobe of the lung. Carcinoembryonic antigen (CEA) level was within normal range. BMI was 25.

Laparoscopic right hemicolectomy was carried out in the same approach as above-noted 2 cases. One 12-mm and four 5-mm trocars were placed and anastomosis of ileum and colon was accomplished extracorporeally using two linear-cutter staplers.

Then, video-assisted thoracic surgery (VATS) was started. The trocars inserted for VATS were 5mm in diameter at the fourth intercostals space and 12mm in diameter at the fifth and seventh intercostals spaces. During observation of the left thoracic cavity via thoracoscopy, metastatic lesion was confirmed in left lower lobe. A Partial resection of left lower lobe was performed using linear-cutter stapler via VATS.

Total operation time was 275 minutes and estimated blood loss was 600 mL. Minor postoperative bleeding was observed for several times, but 2 days after surgery bleeding was

stopped completely and patient did well without another complication. Postoperative morbidity was not founded in this patient. The patient was discharged home on the 16th day.

Discussion

Synchronous colorectal metastases are detected in 20 to 30% of patient at the time of initial diagnosis of colorectal cancer, and 20% of these patients can receive curative hepatic resection.⁵ The recommended surgical approach to synchronous colorectal cancer with liver metastasis has not been clarified.⁶⁻⁷ Studies recommended the staged approach with initial resection of the primary lesion followed in 2-4 months by hepatic resection.⁸⁻¹⁰ However, an increasing number of studies have reported simultaneous liver and colon resection for synchronous colorectal liver metastasis is as efficient as staged resections in the treatment of patients with colorectal cancer and synchronous liver metastases.¹¹⁻¹²

Recently, laparoscopic surgery has been used widely for various diseases because of reduced hospital stays, recovery times, narcotic analgesia requirements, and short-term complication of laparotomy, such as ileus, reduced incisional hernia rates and improved cosmesis.³ In consideration of their benefits and development of

laparoscopic surgical skills and instruments, simultaneously laparoscopic or thoracoscopic surgery for multiple lesions is able to be performed if laparoscopic surgery was indicated.

Laparoscopic hepatectomy demands a high level of technical skill. Control of major vessel bleeding is difficult and there may be indication of conversion. Due to recent advancement of laparoscopic technique and instruments, difficulties of laparoscopic surgery are decreasing and various instruments have been designed for safe transaction of the liver.¹³⁻¹⁴ We carried out the left lateral segmentectomy using the Cavitron Ultrasonic Surgical Aspirator (CUSA) and harmonic scalpel, and endoclips. Up to date, the stapling technique has using for liver transection, and this technique makes it fast and safe to control hepatic pedicles with an outside chance of complications and is widely employed in both the open approach and the laparoscopic approach.¹⁵

The lung is the second frequently affected metastatic sites in patients with colorectal carcinoma.¹⁶ In the current study, disease-free survival of pulmonary metastasectomy through VATS was not significantly different from that of pulmonary metastasectomy through conventional open thoracotomy.¹⁷ The VATS is a safe procedure which has fewer complications and a reduced hospital stay when compared with an open thoracotomy.¹⁸ Until now, there is not the study about simultaneous resection for colorectal

cancer and lung resection for lung metastasis using laparoscopic approach and VATS.

In our case 1, there was no complication postoperatively and no evidence of recurrence and metastasis to another organ for 3 years. The patients in case 2 and 3, who have been followed up for 5 years and 2 years, have no evidences of recurrence and metastasis to another organ.

In summary, we described a case of synchronous ascending colon cancer and liver metastasis, and two cases of synchronous ascending colon cancer and lung metastases successfully treated with laparoscopic colon and liver resection, or laparoscopic colon resection and VATS. We believe that simultaneous laparoscopic surgery and VATS for colon cancer with a solitary metastasis to another organ is feasible and safe if we select well, and will need more study.

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