Simultaneous Laparoscopic Colectomy and Nephrectomy for Synchronous Ascending Colon Cancer and Right Kidney Cancer: Report of a Case

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Laparoscopic surgery has been widely applied to various surgical procedures, becoming standard procedure for colorectal and kidney cancer. Here, we describe a case of simultaneous laparoscopic surgery for synchronous colorectal and kidney cancer. A 70-year-old female was diagnosed with a tumor in the right lower abdomen. An abdominal CT showed tumors in the ascending colon and the right kidney. A colonoscopy demonstrated ascending colon cancer, and the patient was diagnosed with synchronous ascending colon and right kidney cancer. Laparoscopic surgery was performed in cooperation with urologists. A right hemicolectomy was performed first at a lithotomy position. A right radical nephrectomy was then performed after changing to the left lateral position. The operation time was 450 minutes, and the blood loss was 60 ml. Chylous ascites were confirmed, but conservatively improved after surgery. Although synchronous colorectal and kidney cancers have not been confirmed in many cases, it is estimated that such synchronous cancers will increase with the aging of society and development of improved diagnostic imaging techniques. Therefore, simultaneous laparoscopic surgery is a safe and minimally invasive procedure with detailed surgical planning and a sophisticated surgical technique, including ensured port setting and body positioning, in cooperation with urologists.

Key words: laparoscopic surgery, colorectal cancer, kidney cancer

Introduction

In recent years, endoscopic surgery has been widely performed, and for colorectal and kidney cancers, laparoscopic surgery is performed at many medical institutions 1) 2). We describe a successful case of simultaneous laparoscopic surgery for synchronous colorectal and kidney cancers. Since reports on laparoscopic surgery for synchronous multiple cancers is relatively rare, we report our experience here.

Case report

A 70-year-old female visited a nearby hospital because of a tumor in the right lower abdomen in early October, 2013. She had no relevant history to be discussed. An abdominal computed tomography (CT) showed a 70-mm tumor and a 60-mm tumor (maximum diameter) in the ascending colon and the right kidney, respectively, in addition to a swollen lymph node on the right side of superior mesenteric artery (Figure–1). A barium enema showed a stenosis lesion with an apple core sign in the ascending colon. A colonoscopy showed a circumferential ulcerative lesion in the ascending colon, and the biopsy showed moderately-differentiated adenocarcinoma. No distant metastasis was confirmed, and based on the aforementioned data, the patient was diagnosed with synchronous cancers of ascending colon (T3N2aM0, cStage IIIb,
UICC 7th edition) and right kidney (T1bN0M0, cStage I). After consultation with urologists, simultaneous laparoscopic surgery was performed under general anesthesia and at a lithotomy position. After inserting 5 ports, a 12-mm port in the umbilicus, a 11-mm port in the left upper abdomen, and a 5-mm port in the left lower abdomen, respectively, a surgery for the ascending colon cancer was performed first (Figure-2). After desquamation of retroperitoneum, mobilization of the right-sided colon was performed. In this procedure, the outline form of the right kidney covered by Gerota’s fascia could be confirmed (Figure-3). For the treatment of blood vessels, the surgical trunk was exposed to ligate and cut the roots of the ileocolic artery/vein, right colic artery, two accessory right colic veins, and right branch of middle colic artery for D3 lymph node dissection (Figure-4). The incision of the umbilical port was extended to 5 cm to pull out the mobilized colon, and then functional end-to-end anastomosis was performed to complete the right hemicolecystomy. Then, after altering body position to the left lateral position, three ports were added, a 10-mm and a 12-mm port in the right flank region and a 5-mm port under the right costal margin (Figure-2). Dissection of the peritoneum around the liver was performed to mobilize the duodenum and exfoliate the renal hilum. After ligating and cutting the right renal artery and vein, mobilization of the right kidney was performed from the retroperitoneum.
Finally, the right ureter was ligated and cut, and the right kidney was removed from the umbilical incision to complete the surgery. The operation time was 7 hours and 30 minutes, and the total blood loss was 60 ml. Histopathological examination showed: 60×60 mm, moderately differentiated adenocarcinoma, T3N1bM0, Stage IIIB in the ascending colon, and 45 × 50 × 45 mm, clear cell renal cell carcinoma, T1bN0M0, Stage I in the kidney. Although the diet was resumed on postoperative day 3, the diet was suspended because drainage of fluid became chylaceous on postoperative day 6. On postoperative day 18, the diet was restarted because chylous ascites were improved completely, and the patient was discharged from hospital on postoperative day 22. At present, the patient continues to receive adjuvant chemotherapy for colon cancer, and no recurrence has been reported.

**Discussion**

Diagnostic imaging, such as CT, MRI (magnetic resonance imaging) and PET (positron emission tomography), has been dramatically improved in recent years. Combination of these examinations is performed for many cases with the aim of evaluating a primary lesion and distant metastasis before surgery for colorectal cancer. Asymptomatic renal cancer has been found incidentally in many cases, for this reason. The five year survival rate of patients with symptomatic renal cancer has been found to be 30% to 40%, while that of patients with asymptomatic renal cancer is 65%, indicating a relatively favorable prognosis. Therefore, it is important to detect asymptomatic renal cancer. Our case had asymptomatic renal cancer, which was incidentally found by abdominal CT. The renal cancer was ultimately diagnosed Stage I based on histopathological examination, requiring no adjuvant chemotherapy. Shiozawa et al. suggested that synchronous multiple cancers may be found in 5.0% of patients who underwent surgery for colorectal cancer. In addition, most of such multiple cancers would be confirmed in the stomach, followed by lung, prostate, head and neck region, esophagus, kidney and urinary tract, and urinary bladder in this order in male patients. However, in female patients, multiple cancers would be confirmed in the breast followed by the uterus, stomach, and lung in this order. Furthermore, Halak et al. reported that the discovery rate of synchronous renal cancer in patients with colorectal cancer would be 4.85%. It was also suggested that patients with a history of colorectal cancer would have a higher risk of renal cancer, while patients with a history of renal cancer would have a higher risk of colorectal cancer. When colorectal cancer is diagnosed, consideration of the possibility of concomitant development of multiple cancers is required, such as renal cancer. Therefore, evaluation of the primary lesion and distant metastasis using further diagnostic imaging examinations is necessary.

In the past, simultaneous open laparotomy was performed for synchronous multiple colorectal and kidney cancers. For colorectal cancer, laparoscopic surgery began to be performed around 1992, and this surgery is now listed in the guidelines as a standard procedure. In addition, for renal cancer, laparoscopic surgery began to be performed around 1990, and this surgery is considered to be the standard procedure for stage I renal cancer with 7 cm or shorter tumor diameter in the guidelines for urological laparoscopic surgery in 2008. Along with the development of laparoscopic surgery for both cancers, several cases of simultaneous laparoscopic surgery for multiple organs have been reported since 2004. Simon et al. suggested that simultaneous laparoscopic surgery would be a safe and minimally invasive surgery. Because of the anatomical considerations of renal cancer, a procedure to exfoliate Gerota’s fascia from the ascending...
or descending colon is required in the surgery. However, when the colon cancer is located on the same side of the renal cancer, as was seen in our case, this surgical procedure can be unnecessary. Additional trocars should be discussed for individual cases depending on the location of cancer and the patient’s physical characteristics. In our case, because the distance to the right kidney from the conventional colon trocars was very far, three additional trocars were inserted near the right kidney, and surgical procedures such as ligating and cutting the right renal vessels and mobilization of the right kidney were performed safely near the right kidney (Figure-2). Although some reports suggest that no additional trocars were required for patients who had cancers of colon and kidney on the same side\textsuperscript{11)}, you must not hesitate to add some trocars for the safe operation. From a standpoint of an exfoliating procedure and common trocars, many cases of colocalization of the colon lesion and the removed kidney have been reported. However, Veenstra \textit{et al.}\textsuperscript{12) reported that a surgery could be performed safely by adding one additional trocar even for the cases in which a colon lesion and the removed kidney were located on the opposite side. When compared to laparoscopic surgery for single colorectal cancer or single renal cancer, simultaneous laparoscopic surgical techniques should be performed with attention to: 1) setting of necessary and sufficient ports, 2) detailed operation planning with urologists for a change of body position and the order of surgery, and 3) sophisticated surgical techniques\textsuperscript{12). With the development of improved diagnostic imaging techniques and aging of society, it is estimated that concomitant development of colorectal and kidney cancers will increase in the future. Simultaneous Laparoscopic surgery is a safe, useful and minimally invasive technique in the treatment of multiple cancers.

**Conflict of interests**

The authors declare that there is no conflict of interest regarding the publication of this paper.

**References**