Concurrent Single-Incision Laparoscopic Right Hemicolectomy and Sigmoidectomy for Synchronous Carcinoma: Report of a Case

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Abstract Synchronous colorectal tumors that require surgical treatments are rare. Preliminary experience with concurrent single-incision laparoscopic right hemicolectomy and sigmoidectomy for synchronous carcinoma is reported. A 61-year-old woman presented to our department for the close examination of a bloody stool. Colonoscopy revealed two masses in the right-sided transverse colon and sigmoid colon and another slightly elevated lesion in the transverse colon, and all biopsies from these three lesions demonstrated adenocarcinoma. Under the diagnosis of transverse colon cancers and sigmoid colon cancer, we performed simultaneous single-incision laparoscopic sigmoidectomy and right hemicolectomy. First, a lap protector was inserted through a 2.5 cm transumbilical incision. Three 5 mm ports were placed in the lap protector. We successfully performed sigmoidectomy and right hemicolectomy with lymph node dissection. The patient was discharged on the thirteenth postoperative day. Postoperative follow-up did not reveal any umbilical wound complications. SILS should be the treatment of choice for concurrent laparoscopic surgery for also the other diseases.

Keywords Single-incision laparoscopic surgery · Concurrent laparoscopic surgery · Laparoscopic colectomy

Introduction

Synchronous colorectal tumors are defined as two or more primary tumors identified in the same patient and at the same time. Malignant synchronous colorectal lesions are very rare,

showing the following incidence: 0.17–0.69 % in case of two to three synchronous lesions and 0.19 % in case of four to five synchronous lesions [1]. Standard treatment for colorectal adenomas is endoscopic mucosal resection and only 5 % of synchronous colorectal lesions require surgical treatments.

Recently, single-incision laparoscopic colectomy (SILC) has been described through case reports and small case series [2–5]. Single-incision technique results in improved cosmesis with the potential for decreased pain and fewer incisional hernias. Preliminary experience with concurrent single-incision laparoscopic right hemicolectomy and sigmoidectomy for synchronous carcinoma is reported.

Case Report

A 61-year-old woman presented to our department for the close examination of a bloody stool. She had a history of appendectomy for acute appendicitis. Colonoscopy revealed two masses in the right-sided transverse colon and sigmoid colon and another slightly elevated lesion in the transverse colon, and all biopsies from these three lesions demonstrated adenocarcinoma. An abdominopelvic computed tomography scan showed enhanced wall thickening in the transverse and sigmoid colons and no distant metastasis. Under the diagnosis of transverse colon cancers (T3N0M0 Stage IIA, TisN0M0 Stage 0) and sigmoid colon cancer (T2N0M0 Stage I), we performed simultaneous single-incision laparoscopic sigmoidectomy and right hemicolectomy. The patient's body mass index was 21.6. Her consent to single-port surgery was obtained.

Surgical Technique

Under general anesthesia, the patient was placed in the modified lithotomy position. First, a lap protector mini (LP; Hakkou

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Fig. 1 **a** Operative procedures performed with usual laparoscopic instruments through EZ access and **b** the anastomosis performed extracorporeally using staplers

Shoji, Japan) was inserted through a 2.5 cm transumbilical incision, and the wound was protected. Next, an EZ-access (Hakkou Shoji, Japan) was mounted to LP and three 5 mm ports were placed in EZ-access. Almost all the procedures were performed with usual laparoscopic instruments such as the

Fig. 2 **a** All the soft tissue anterior to the inferior mesenteric vessels completely removed, and **b** all the soft tissue anterior to the superior mesenteric vein and around the middle colic artery completely removed

Fig. 3 The surgical specimen of the sigmoid colon **a** and the transverse colon **b**; sigmoid colon cancer and two transverse colon carcinomas

Harmonic ACE (Ethicon Endo-Surgery, Cincinnati, OH, USA), and the operative procedures were much the same as in usual laparoscopic colectomy using a flexible 5 mm scope (Fig. 1a).

At first, we performed sigmoidectomy. The sigmoid colon was mobilized using a medial approach. All the soft tissue anterior to the inferior mesenteric artery was completely removed (D3 lymph node dissection). Then the roots of the sigmoid and left colic arteries were divided, and the superior rectal artery was preserved (Fig. 2a). The inferior mesenteric vein was also divided. The specimen was extracted through the small incision. Resection was achieved following extracorporealization, and the anastomosis was performed extracorporeally using staplers (Fig. 1b). Subsequently, right hemicolectomy was carried out using same ports. First, the right colon was mobilized using a medial approach. The ileocolic vessels were

Fig. 4 Umbilical incision after 2 months

divided at the root of these vessels, and all the soft tissue anterior to the superior mesenteric vein was completely removed. Next, the right branch of the middle colic vessels and the accessory right colic vein were also divided at the root of them. All the soft tissue around the middle colic artery was completely removed (D3 lymph node dissection) (Fig. 2b). After performing mobilization of the colon, the specimen was extracted through the small incision. Resection was achieved following extracorporealization, and the anastomosis was performed extracorporeally using staplers. The total operative time was 427 min and the blood loss was 130 ml.

Macroscopically, the specimen of the sigmoid colon tumor was 1.7 cm×1.5 cm (Fig. 3a), and microscopically, the tumor consisted of moderately differentiated tubular adenocarcinoma. There were 16 harvested lymph nodes and there were 4 positive lymph nodes. The pathologic staging of the tumor was T3N2M0 Stage IIIC. The specimen of the transverse colon tumors was 3.5 cm×3.2 cm and 2.1 cm×1.5 cm in size, respectively (Fig. 3b). Microscopically, the tumors consisted of papillary adenocarcinoma and well-differentiated tubular adenocarcinoma. There were 44 harvested lymph nodes and there were no positive lymph nodes. The pathologic staging of the tumor was T3N0M0 Stage IIA and TisN0M0 Stage 0. The patient's total hospital stay was 13 days and she was discharged without any complications (Fig. 4).

Discussion

Many surgeons have attempted to reduce the number and size of ports in laparoscopic surgery to decrease parietal trauma and improve cosmetic results, and recently single-incision laparoscopic surgery (SILS) has been developed [2–5], which completes laparoscopic procedures by trocars located at one umbilical incision. SILS can be performed using refinements of existing technology, and surgeons can perform SILS without any new instruments, specific competence, or training. Single-incision laparoscopic colectomy (SILC) for colon cancer has preliminarily been described by Bucher et al. [6], and has been described through case reports and small case series [2–5]. It is still controversial regarding its benefits but cosmesis. Papaconstantinou et al. have described that SILC can improve patient recovery through a decrease in early postoperative pain

and shorter length of hospital stay when compared with established laparoscopic techniques [7].

Synchronous colorectal neoplasias are defined as two or more primary tumors identified in the same patient and at the same time. Synchronous colorectal cancers that require a simultaneous surgical treatment are extremely rare, and there are only a few reported cases of synchronous colorectal cancer treated in conventional laparoscopic procedure but SILS [8].

In this case, we successfully performed concurrent single-incision laparoscopic sigmoidectomy and right hemicolectomy for synchronous colon cancers with a 2.5 cm transumbilical incision. This is the first reported case of simultaneous single-incision laparoscopic sigmoidectomy and right hemicolectomy with lymph node dissection. The safety and efficacy of concurrent SILC was preliminarily established. SILS should be the treatment of choice for concurrent laparoscopic surgery for also the other diseases.

References

1. Noshi K, Kure S, Irahara N, Shima K, Baba Y, Spiegelman D et al (2009) A prospective cohort study shows unique epigenetic, genetic, and prognostic features of synchronous colorectal cancers. *Gastroenterology* 137:1609–1620
2. Hirano Y, Hattori M, Kitamura H, Maeda K, Douden K, Hashizume Y (2011) Hybrid single-incision laparoscopic sigmoidectomy: the effective use of small incision. *J Laparoendosc Adv Surg Tech A* 21:625–627
3. Takemasa I, Sekimoto M, Ikeda M, Mizushima T, Yamamoto H, Doki Y et al (2010) Transumbilical single-incision laparoscopic surgery for sigmoid colon cancer. *Surg Endosc* 24:2321
4. Ramos-Valadez DI, Patel CB, Ragupathi M, Bartley Pickron T, Haas EM (2010) Single-incision laparoscopic right hemicolectomy: safety and feasibility in a series of consecutive cases. *Surg Endosc* 24:2613–2616
5. Katsuno G, Fukunaga M, Nagakari K, Yoshikawa S, Ouchi M, Hirasaki Y (2011) Single-incision laparoscopic colectomy for colon cancer: early experience with 31 cases. *Dis Colon Rectum* 54:705–710
6. Bucher P, Pugin F, Morel P (2009) Single-port access laparoscopic radical left colectomy in humans. *Dis Colon Rectum* 52:1797–1801
7. Spizzirri A, Coccetta M, Cirocchi R, La Mura F, Napolitano V, Bravetti M et al (2010) Synchronous colorectal neoplasias: our experience about laparoscopic-TEM combined treatment. *World J Surg Oncol* 8:105
8. Papaconstantinou HT, Sharp N, Thomas JS (2011) Single-incision laparoscopic right colectomy: a case-matched comparison with standard laparoscopic and hand-assisted laparoscopic techniques. *J Am Coll Surg* 213:72, discussion 80–82