

Laparoscopic-assisted radical left hemicolectomy for colon cancer

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Introduction

Laparoscopic surgery has been enthusiastically applied to the resection of colorectal cancer for more than many years. Nowadays, more and more colorectal surgeons believe that laparoscopic approach gains quicker functional recovery, achieves comparable (1-3), and even better oncologic results (4,5) for the treatment of patients with colorectal cancer. However, the safety of laparoscopic left hemicolectomy for cancer remains to be established, owing to its exclusion from previous randomized controlled trials. Laparoscopic left hemicolectomy, involving the takedown of splenic flexure, has been more challenging than the other laparoscopic colorectal procedures. Because there is the technical variability between colorectal surgeons, the clinical trial of laparoscopic left hemicolectomy which required the takedown of splenic flexure for the curative resection of cancers and tension-free colonic anastomosis has been rare. This video article aims to describe safe and feasibility of laparoscopic left hemicolectomy, authors would like to share the surgical techniques with you via a case of descending colonic neoplasm who underwent the laparoscopic left hemicolectomy (*Figure 1*) (6).

Discussion

Cancer of splenic flexure is rare, comprising only 2% to 5% of all colorectal cancers (7-10). Very few studies have specifically investigated the use of laparoscopic left hemicolectomy for cancer (11). However, surgical approaches for transverse or descending colon cancer vary considerably depending on the relative location of the tumor. Thus, the purpose of this video article is to show safe and efficiency for the tumor locates in the left hemi-colon.

Laparoscopic left hemi-colectomy is suitable for the tumors locate in distal a third of the transverse colon, splenic flexure, descending colon and upper sigmoid colon. Left hemi-colectomy was defined as a procedure requiring division of the left colic and the left branch of the middle colic vessels at their origins. Generally, left hemi-colectomy was carried out for stage I/II/III tumors. Briefly, the surgeon and camera operator stood on the right side of the patient, with the first assistant positioned to the left or between the legs of the patient. Medial-to-lateral retroperitoneal dissection was performed to allow division of the left colic artery. The inferior mesenteric vein was divided near the inferior border of the pancreas. The omentum was then transected to allow entry into the omental bursa (lesser sac) and mobilization of the splenic flexure. The left branch of the middle colic vessels was identified at the inferior border of the pancreas and divided at its origin. The specimen was extracted through the camera port, which was extended to about 4–5 cm, and the anastomosis was formed extracorporeally by functional end-to-end anastomosis or intracorporeally by side-to-side anastomosis using linear staplers.

The blood supply to distal a third of the transverse colon, splenic flexure, descending colon and upper sigmoid colon has been shown to vary between patients. Specifically, blood is carried by the inferior mesenteric artery through the left colic artery in 89% of cases and by the superior mesenteric artery through the middle colic artery in 11% of cases (12). The optimal surgical treatment for left hemi-colon cancer remains controversial. Some surgeons have argued that subtotal colectomy or extended right hemicolectomy improves oncological outcome (7,13). However, other studies have demonstrated that the prognosis for left hemi-colon cancer is no worse than for other colon cancers,



Figure 1 Laparoscopic-assisted radical left hemicolectomy. Available online: <http://www.asvide.com/articles/709>, [Reprinted with permission (6)].

and that left hemicolectomy is sufficient for a satisfactory oncological outcome (8,9,14). A recent study showed that complete mesocolic excision in the mesocolic plane with central vascular ligation is associated with the removal of more mesocolon and a greater lymph node yield, and might improve 5-year survival (15). In this video article, it was considered the optimal method to remove cancer that inferior mesenteric artery, vein and their branch should be dissected and the vessels for descending colon should be ligated.

Laparoscopic left hemicolectomy involves splenic flexure mobilization, which has been reported to be technically demanding (16) and associated with greater intraoperative blood loss and intraoperative complications (17). Intraoperative complications occurring during laparoscopic left hemicolectomy included bleeding from the pancreas or spleen, which was difficult to repair by laparoscopy and required transfusion. Minimizing intraoperative complications and the need for conversion to open surgery during laparoscopic left hemicolectomy will require careful case selection and experienced surgical teams. So, laparoscopic left hemicolectomy is really difficult for many surgeons, especially for young. First attempt should be on the base of wealthy experiences of laparoscopy techniques. It had better be under guidance of the experienced surgeon. When laparoscopy is hard to go on, we should convert to laparotomy as soon as possible.

Prospective study for short-term and long-term outcomes is needed to demonstrate that laparoscopic left hemicolectomy is more feasible and has significant advantages. Through further research, laparoscopic left hemicolectomy will be established procedure.

Conclusions

If a laparoscopic left hemicolectomy is performed in the experienced center and if it is performed on appropriate patient groups under accurate preoperative diagnosis, it should be a safe and useful treatment for left hemicolectomy cancer.

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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References

1. Laparoscopically assisted colectomy is as safe and effective as open colectomy in people with colon cancer Abstracted from: Nelson H, Sargent D, Wieand HS, et al; for the Clinical Outcomes of Surgical Therapy Study Group. A comparison of laparoscopically assisted and open colectomy for colon cancer. *N Engl J Med* 2004; 350: 2050-2059. *Cancer Treat Rev* 2004;30:707-9.
2. Leung KL, Kwok SP, Lam SC, et al. Laparoscopic resection of rectosigmoid carcinoma: prospective randomised trial. *Lancet* 2004;363:1187-92.
3. Guillou PJ, Quirke P, Thorpe H, et al. Short-term endpoints of conventional versus laparoscopic-assisted surgery in patients with colorectal cancer (MRC CLASICC trial): multicentre, randomised controlled trial. *Lancet* 2005;365:1718-26.
4. Lacy AM, García-Valdecasas JC, Delgado S, et al. Laparoscopy-assisted colectomy versus open colectomy for treatment of non-metastatic colon cancer: a randomised trial. *Lancet* 2002;359:2224-9.
5. Yamamoto S, Watanabe M, Hasegawa H, et al. Oncologic outcome of laparoscopic versus open surgery for advanced colorectal cancer. *Hepatogastroenterology* 2001;48:1248-51.
6. Li Y, Zheng J, Wu D. Laparoscopic-assisted radical left hemicolectomy. *J Vis Surg* 2015;1:15.
7. Aldridge MC, Phillips RK, Hittinger R, et al. Influence of tumour site on presentation, management and subsequent outcome in large bowel cancer. *Br J Surg* 1986;73:663-70.

8. Levien DH, Gibbons S, Begos D, et al. Survival after resection of carcinoma of the splenic flexure. *Dis Colon Rectum* 1991;34:401-3.
9. Kim CW, Shin US, Yu CS, et al. Clinicopathologic characteristics, surgical treatment and outcomes for splenic flexure colon cancer. *Cancer Res Treat* 2010;42:69-76.
10. Nakagoe T, Sawa T, Tsuji T, et al. Carcinoma of the splenic flexure: multivariate analysis of predictive factors for clinicopathological characteristics and outcome after surgery. *J Gastroenterol* 2000;35:528-35.
11. Ceccarelli G, Biancafarina A, Patrìti A, et al. Laparoscopic resection with intracorporeal anastomosis for colon carcinoma located in the splenic flexure. *Surg Endosc* 2010;24:1784-8.
12. Griffiths JD. Surgical anatomy of the blood supply of the distal colon. *Ann R Coll Surg Engl* 1956;19:241-56.
13. Sadler GP, Gupta R, Foster ME. Carcinoma of the splenic flexure--a case for extended right hemicolectomy? *Postgrad Med J* 1992;68:487.
14. Nakagoe T, Sawai T, Tsuji T, et al. Surgical treatment and subsequent outcome of patients with carcinoma of the splenic flexure. *Surg Today* 2001;31:204-9.
15. West NP, Hohenberger W, Weber K, et al. Complete mesocolic excision with central vascular ligation produces an oncologically superior specimen compared with standard surgery for carcinoma of the colon. *J Clin Oncol* 2010;28:272-8.
16. Jamali FR, Soweid AM, Dimassi H, et al. Evaluating the degree of difficulty of laparoscopic colorectal surgery. *Arch Surg* 2008;143:762-7; discussion 768.
17. Akiyoshi T, Kuroyanagi H, Oya M, et al. Factors affecting difficulty of laparoscopic surgery for left-sided colon cancer. *Surg Endosc* 2010;24:2749-54.

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