



Reduced-port laparoscopic surgery for rectal cancer

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Abstract: Although laparoscopic surgery for rectal cancer was less invasive than open surgery, there were several puncture holes and one small assisted incisions. This paper introduced the reduced-port laparoscopic surgery (RPLS) for rectal cancer, without increasing the difficulty of the operation, reducing the trauma and improving cosmesis.

Keywords: Reduced-port laparoscopic surgery (RPLS); rectal cancer

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Introduction

Laparoscopic surgery for rectal cancer has developed rapidly in recent 10 years because of its low invasiveness, good short-term and long-term outcomes, good cosmesis, and cost-effectiveness (1-3). Conventional laparoscopic surgery need 4–5 puncture holes and one 3–4 cm assisted incision and will leave 5–6 surgical scars. To reduce surgical invasiveness and improve cosmesis, surgeons proficient in conventional laparoscopic and endoscopic surgery have recently developed more advanced single-port laparoscopic surgery (SPLS) techniques as well as natural orifice transluminal endoscopic surgery (NOTES). NOTES has not been widely used in clinical practice because of the limitation of operative approach, incision closure and special equipment. Since 2008, Bucher (4) and Remzi (5) firstly used single port laparoscopic technology in the field of colorectal cancer. SPLS for colorectal cancer has become a hot spot for research because of its more prominent minimally invasive advantages and better cosmetic results. But SPLS for rectal cancer also has not been widely used in clinical practice because the operation of SPLS for rectal cancer was difficult and the abdominal cavity drainage tube could not be placed or placed through the incision which led to poor drainage effect and increased the incidence of incision infection and incision hernia. Reduced-port laparoscopic surgery (RPLS) for rectal cancer which had one incision and one port concentrated multiple punctures

of conventional laparoscopic surgery into the auxiliary incision and retained the right lower abdomen port. RPLS had less invasive than conventional laparoscopic surgery and was easier to master than SPLS. The peritoneal drainage tube could place through the right lower abdomen port. So RPLS was accepted by more clinicians and was one of the options for rectal cancer (6,7).

Clinical summary

The patient was female, 42 years old, height 166 cm, weight 53 kg and BMI 19.2. She presented with hematochezia for five days. The tumor was rectal adenoma canceration. Tumor size was about 1.5 cm × 1.5 cm. The distance of tumor from the anal verge was 6 cm. Chest, upper and lower abdomen, enhanced CT did not find distant metastasis. Pelvic MRI showed a thickening of the rectal, mild reinforcement.

Preoperative assessment

The case should be carefully selected in the early stage of RPLS. We routinely select patients with moderate to lean body size (BMI <23) and with a higher demand for cosmesis. T stage of tumor should be less than T3, and the tumor size should not be too large. The patient had no abdominal and pelvic operation history, no cardiopulmonary dysfunction and no other traditional laparoscopic surgery



Figure 1 The location of the trocar.

contraindications.

Anesthesia, patient position, incision and port placement and operation procedure

The umbilicus or lower abdomen median longitudinal incision was 3 cm long. The retractors were placed in incision.

General anesthesia was adopted. The patient was placed in the supine position, with moderate legs separated, the right arm fixed on the right side of the body and the left arm abducted 90 degrees. The patient was put in the Trendelenburg position at 30° and tilted right side-down at an angle of 15°. The umbilicus or lower abdomen median longitudinal incision was 3 cm long. The retractors were placed in incision. The surgical sterile rubber glove was fixed to the outer ring of the incision retractor and the 5, 12, 5 mm trocars entered the abdominal cavity via thumb, middle finger, pinkie finger of the surgical sterile rubber glove respectively (*Figure 1*). After pneumoperitoneum by CO₂ gas, the peritoneal cavity was examined to determine whether RPLS was possible and to ensure that there were no peritoneal metastasis. The 12 mm trocar was placed in the right lower abdomen. When dissecting the inferior mesenteric vessels, the surgeon stood on the right side of the patient, the assistant stood on the left side and the second assistant stood between the legs of the patient (*Figure 2*). After dissecting the inferior mesenteric vessels, surgery and assistant position unchanged, the second assistant stood on the side of the patient's head (*Figure 3*). After getting sufficient distal margin, the rectum was divided using an Endo GIA Stapler. The bowel was extracted through the incision retractor, after removing the covering glove. After



Figure 2 The position of the surgeon.

delivery of the specimen, anastomosis was made with a 28 mm stapling device. The pelvic drainage tube was placed through the right lower abdomen port (*Figure 4*).

Postoperative management

Anastomotic leakage is one of the most serious and major complication in rectal surgery. The pelvic drainage tube was very important in the early diagnosis of anastomotic leakage. The drainage tube should be kept unobstructed, and the volume and character of the drainage fluid were closely observed after the operation. The patient was semi supine 6 hours after the operation and began ambulation on first days after the operation.

Comment

The average age of colorectal cancer patients in china was 10 years younger than that of European and American countries, and about 40% patients were younger than 40 years old (8). We need to pay attention to the radical cure for rectal cancer patients, also the cosmesis.

RPLS that we carried out for rectal cancer concentrated multiple punctures of conventional laparoscopic surgery into



Figure 3 The position of the surgeon.



Figure 4 The position of Incision and drainage tube.

the auxiliary incision and retained the right lower abdomen port, reduced the puncture hole and damage and had good cosmetic effect. The operation was easier than SPLS due to the retention of the right lower quadrant 12 mm port. The pelvic drainage tube that placed through the right lower abdomen port was appropriate and conducive to the early discovery and treatment of the anastomotic fistula. The operation was completed by conventional laparoscopic instruments, so that it was easy to spread. RPLS was safe, feasible and one of the options for rectal cancer.

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Footnote

Conflicts of Interest: All authors have completed the ICMJE

uniform disclosure form (available at <http://dx.doi.org/10.21037/jxym.2017.04.04>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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References

1. 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.
2. Schwenk W, Haase O, Neudecker J, et al. Short term benefits for laparoscopic colorectal resection. *Cochrane Database Syst Rev* 2005;(3):CD003145.
3. Kuhry E, Schwenk W, Gaupset R, et al. Long-term outcome of laparoscopic surgery for colorectal cancer: a cochrane systematic review of randomised controlled trials. *Cancer Treat Rev* 2008;34:498-504.
4. Bucher P, Pugin F, Morel P. Single port access laparoscopic right hemicolectomy. *Int J Colorectal Dis* 2008;23:1013-6.
5. Remzi FH, Kirat HT, Kaouk JH, et al. Single-port laparoscopy in colorectal surgery. *Colorectal Dis* 2008;10:823-6.
6. Ishii Y, Hasegawa H, Endo T, et al. Reduced-port laparoscopic surgery for rectal cancer: feasibility based on our early experience. *Asian J Endosc Surg* 2013;6:249-52.
7. Kawahara H, Watanabe K, Ushigome T, et al. Umbilical

- incision laparoscopic surgery with one assist port for anterior resection. *Dig Surg* 2010;27:364-6.
8. Xiong W, Wang Y, Li G. Current status and clinical trials

of laparoendoscopic single-site colorectal surgery. *Nan Fang Yi Ke Da Xue Xue Bao* 2014;34:576-81.

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