

CASE REPORT

Laparoscopic ELAPE: a case report and review of the literature

Haris Kuralic¹, Enes Idrizovic¹

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ABSTRACT

Extralevator abdominoperineal excision (ELAPE) is relatively new method of surgical treatment for low and ultra-low rectal cancers. Combined with the laparoscopic technique, laparoscopic ELAPE (LELAPE) has the potential to reduce invasion and hasten postoperative recovery.

A laparoscopic approach to the resection can result in fewer postoperative complications, and the modified ELAPE reduces the perineal complications, simplifies the operation and accelerates patient recovery. Here, we report the case of a patient who underwent a laparoscopic ELAPE procedure for cancer, which was the first laparoscopic ELAPE procedure in Bosnia and Herzegovina.

Keywords: Extralevator abdominoperineal excision, rectal cancer, perineal dissection, levators.

¹ Clinic for Surgery, University Clinical Center Tuzla, Bosnia and Herzegovina

Haris Kuralic
Email: haris.kuralic@gmail.com
ORCID: 0000-0003-0525-3288

Introduction

Extralevator abdominoperineal excision (ELAPE) or cylindrical abdominoperineal excision (CAPE) has been reported to effectively reduce high rates of bowel perforation and positive circumferential resection margin (CRM) in conventional APR¹.

This technique aims to reduce the rates of CRM+ by expanding the area of resection, including resection of the anal canal, all of the levator ani muscle, and the lower mesorectum².

Conventional abdominoperineal excision for low rectal carcinoma, because of the retained levator muscles, and due to rectal perforation, or the positive circumferential resection margin (CRM), led to the high risk of local recurrence and lower survival. However, an extralevator abdominoperineal excision (ELAPE) may be more feasible through en bloc resection of the levator muscles covering the distal mesorectum and the removal of more tissue in the distal rectum. This technique may increase the incidence of postoperative perineal wound complications, urinary and sexual dysfunction, and the occurrence of chronic pain in regio perinealis³.

Early reports suggest that ELAPE can improve patient prognosis without a significant increase in morbidity with superior oncological outcome, as compared to standard techniques⁴.

Case Report

Under general anesthesia, the patient was first placed in the Trendelenburg position (30°) with a right lateral tilt (15–20°). The operator stood on the right side of the patient, the first assistant on the left, and the camera holder on the cranial side. The pneumoperitoneal pressure was set at 12 mmHg, and the port sites were placed as shown. In detail, a 10 mm trocar was inserted above the umbilicus as the observation site, a 12 mm or 10 mm main

operating port was made about 5 cm below the umbilical level on the right midclavicular line, and a 5 mm assistant trocar was inserted at the umbilical level on the same line. At the planned site for the sigmoid colon stoma, a 5 mm trocar was placed for the assistant, which was later lengthened for the colostomy. Another 5 mm trocar was inserted 2 cm above the pubic symphysis for assistance.

Using a harmonic scalpel, the corresponding part of the mesorectum of the rectosigmoid was resected, while displaying and managing the hem-o-lock clips of the main blood vessels and displaying the left ureter. Further preparation of the mesorectum continued according to the principles of Total Mesorectal Excision (TME), reaching the posterior wall of the uterus, and stopping there. Hemostasis control and toileting were performed (Figure 1 and 2).

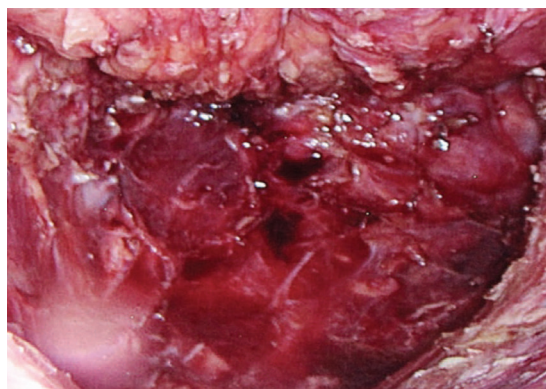


Figure 1. Dissection of the rectum (anterior).

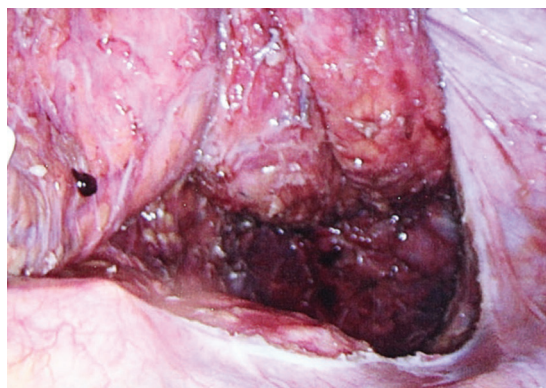


Figure 2. Dissection of the rectum (posterior).

The inferior mesenteric artery and vein were identified, and a section was made between them distally from the origin of the superior rectal artery (Figure 3). Subsequently, dissection of the rectum was performed.

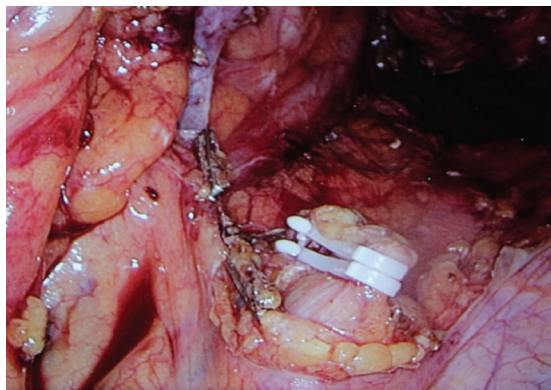


Figure 3. Inferior mesenteric artery secured by Hem-o-lok XL clip.

The rectum was freed from the presacral fascia while preserving the integrity of the presacral venous plexus. The rectum was dissected deep into the pelvis. Laterally, the rectum was dissected to the levator ani muscles, with sectioning of the lateral rectal ligaments and the middle hemorrhoidal arteries and veins. Posteriorly, the rectum was dissected to the tip of the coccygeal bone. Then, the rectum was resected at the level of the rectosigmoid junction (Figure 4).

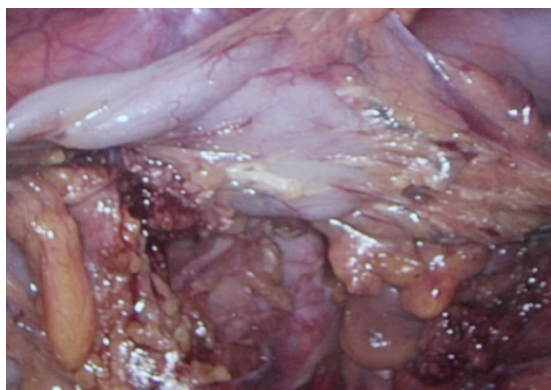


Figure 4. Rectum prepared for resection.

The oral end was brought out as a terminal left-sided iliac colostomy in the area of the left rectus abdominis muscle, at the border of the middle and left third of the interspinal line (Figure 5). (The incision was anterior to the rectal vagina in a cross shape, longitudinally 3-3.5 cm and transversely 2 cm).

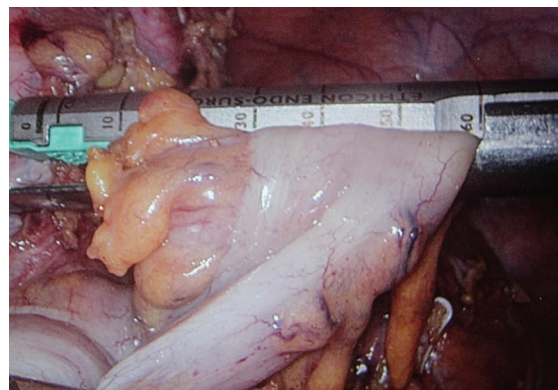


Figure 5. Resection of the rectosigmoid colon with endo GIA stapler.

The perineal steps of the operation were as follows: the patient's position on the table was changed. The patient was placed in the Jackknife position. This was followed by a wide extralevator excision of the anorectum, completing the excision of the rectum. An elliptical incision was made around the anus in the skin and subcutaneous tissue (Figure 6). In the region of the tip of the coccygeal bone, a transverse incision was made along Waldayer's fascia and the anococcygeal ligament. After that, entry was made into the retrorectal space. The posterior wall of the rectum was dissected from the presacral fascia. The middle sacral artery and vein were ligated and severed. Bilateral incisions were made in the rectococcygeal muscles. Access was made to the ischiorectal space. The inferior hemorrhoidal artery and vein were ligated and severed. The lateral walls of the rectum were sharply dissected from the edges of the levator muscles on the left and right. The rectal stump was pulled out, and the rectum freed. The puborectal muscle was cut along the anterior wall of the rectum, and the rectum removed with the anus.

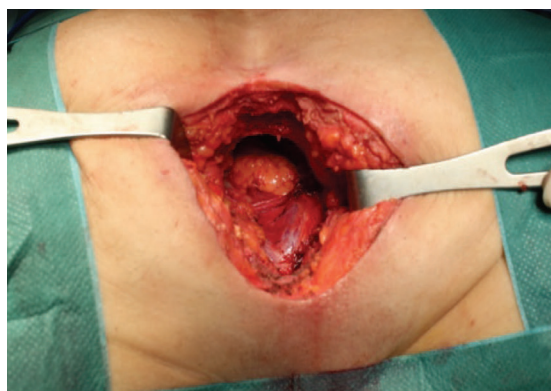


Figure 6, a and b. Perianal extirpation of rectosigmoid colon.



Figure 7, a and b. Closed perianal wound (Jack-knife position) and a stoma was performed on the anterior abdominal wall.

The perineal wound was sutured with individual stitches of subcutaneous tissue and skin with drainage. Douglas' pouch was drained. The incision wounds were sutured. The stoma was performed on the anterior abdominal wall. (Figure 7).

Discussion

The prone jackknife position provides a better surgical field to the surgeon, enabling comfortable manipulation. In addition, the improved visual field helps the surgeon to clearly define the resection range, which in consequence reduces the incidence of intestinal perforation. Meanwhile, vascular and genital nerve injury can be avoided and thus the incidence of intraoperative bleeding and sexual dysfunction reduced⁵.

The extralevator abdominoperineal resection (ELAPE) lays emphasis on precise anatomy and complies with the principle of radical resection of tumors and results in a reduced rate of intraoperative perforation, positive CRM and local recurrence, compared with the conventional abdominoperineal resection(cAPR) procedure⁶.

The prone jackknife position enables sharp, standardized, and direct vision for resection of the rectal stump, which ensuring en bloc excision of the primary tumor, less CRM positivity, and lower perforation rates. Since the levator ani muscles are resected by laparoscopy, the perineal phase of the prone jackknife position is easier. In addition, this modified technique reduces blood loss and operative time, and the oncological benefits are greater than with classic APR⁷.

A positive circumferential resection margin is associated with a high risk of local recurrence and distant metastasis after total mesorectal excision for rectal cancer. The mesorectum is thinner anteriorly than posteriorly, and the risk of a positive resection margin may be higher for anterior than for posterior tumors⁸.

Conventional abdominoperineal resection (APR) has a high rate of local recurrence. Extralevator abdominoperineal excision (ELAPE) can potentially diminish the rate of intraoperative tumor perforation (IOTP) and can provide wider circumferential resection margins (CRM), but at the price of a higher perineal complication rate⁹.

ELAPE could decrease the rate of positive circumferential resection margins and intraoperative perforation and may further decrease local recurrence rate and improve survival.

Conclusion

The surgery was performed without any adverse events. The patient was discharged seven days after surgery, with one day intensive care unit monitoring, with no signs of complications. Clinical follow-up performed at one week, and one and three months after surgery showed a satisfactory result. This case report is limited to the eight patients we have treated in a three year period.

We found no significant differences between the two procedures regarding wound-related complications. In conclusion, it can be said that this procedure is superior to abdominoperineal resection, and should be standardized in our center in the future.

Conflict of interests

The authors have no relevant financial or non-financial interests to disclose.

Patient Consent Form: All participants were informed about subject of the study.

Author's Contributions: Haris Kuralic: Data curation, Visualization, Investigation, Writing. Enes Idrizovic: Data curation, Conceptualization, Investigation. Sara Ganić: Data curation, Investigation.

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