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Translation of the article

Endoscopic submucosal tunnel dissection for a giant adenoma of the cecum (case report)

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ABSTRACT *Endoscopic removal of giant adenomas of the cecum is associated with high risk of perforation and conversion to laparoscopic procedure.*
Endoscopic submucosal dissection for cecal adenomas had technical limitations due to the adjacent ileocecal valve and appendix opening, perpendicular operating angle.
Case presentation of the possibility of successful removal of a large laterally spreading cecal adenoma by the method of endoscopic submucosal tunnel dissection (ESTD) never been described before for this tumor site and size.
Patient 54 years old, an LST-G adenoma (5 cm in diameter, according to Kudo – IIIL, according to Sano – II) was detected in the dome of the cecum during colonoscopy. ESTD.
The postoperative period without any unfavorable events; the patient was discharged on the 5th day after surgery.
The morphological conclusion: tubulo-villous adenoma with moderate epithelial dysplasia, R0. ESTD is suitable for cecal giant adenomas.

KEYWORDS: *adenoma, tunnel method, the submucosal dissection, the cecum*

CONFLICT OF INTEREST: *The authors declare no conflict of interest.*

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INTRODUCTION

Among many endoscopic methods of removal of colorectal adenomas, such as loop electro excision, “cold” polypectomy, mucosectomy-endoscopic submucosal dissection is the method of choice for neoplasms exceeding 20 mm, combining the advantages of a high-tech method that allows to get a high-quality surgical specimen with minimal risk of complications.

However, in cases of removal of large adenomas (exceeding 40-50 mm in diameter), especially in the right colon, where there is a thin wall of the intestine, the size of the formation is a risk factor not only for perforation and conversion, but also for fragmentation of the tumor.

An alternative to classical ESD (CESD) inlarge tumors can be the method of the tunnel ESD, the technique of which eliminates the dependence of the results on the size andlocation of the tumor.

Currently, the ESTD is performed mainly in Japan and South Korea.

According to the results of a few publications, the use of the ESTD reduces the mean operative time from 118.8±71 to 79.6±26.5 minutes and reduces the incidence of intraoperative perforations in comparison with CESD from 10-12% to their complete absence [8].

However, the rare publications presented cannot reflect the significant advantages of the tunnel ESD method.

In this connection, the presentation of this clinical case is interesting and relevant, since there is

no description of the use of the ESTD inlarge cecal adenomas in theliterature.

CLINICAL CASE

A patient, aged 54 years old, appealed to the Ryzhikh National Medical Research Center of Coloproctology with a diagnosis oflaterally spreading adenoma of the cecum. In the Center, colonoscopy was performed, according to which in the caecum, at a distance of 2 cm from the ostium of the appendix was detected thelateral spreading adenoma of the granular type (LST-G) of size up to 5 cm in diameter, pink in color, soft-elastic consistency, patching figure corresponds to IIIL-IV types according to Kudo S., vascular pattern as per Sano Y. corresponds to type II.

Forceps biopsy was not performed to avoid the development of edema and fibrosis of the submucosallayer, which can cause unsatisfactory tumor lifting.

According to ultrasound and computed tomography of the abdomen, there were no signs of malignancy of the neoplasm andlesions of pericolic lymph nodes.

Given the benign nature of the neoplasm, it was decided to perform endoscopic submucosal tunnel dissection in the patient.

Preparation of the patient for the surgery was carried out by 3-day diet, with a restriction of plant food, as well as two-stage administration of polyethylene glycol.

The quality of preparation of the colon was evaluated according to the Boston scale.

Operation

The surgery was performed under non-inhalation general anesthesia and anxiolytics.

A pediatric colonoscope with a smaller diameter than the standard one was used to perform ESTD, since its diameter (11.6 mm) is most suitable for this method in comparison with the diameter of a standard colonoscope (13.2 mm).

The first stage was to form a “submucosal pillow” by injecting a solution of hyaluronic acid stained with indigo carmine, in order to better visualize the submucosallayer and reduce the risk of perforation (Fig.1).

Thelifting was 5 mm, which is sufficient for performing ESTD.

Next, a fringing incision of the mucosa was made at the distal border of the tumor (according to conventional morphological designations, a distance of over 1 mm from the tumor border to the peripheral edge of resection is satisfactory for radical removal of the tumor) (Fig. 2).

The main stage of the surgery was the creation of a “tunnel” in the submucosallayer. The incision was made with the distal end of the endoscope using a special cone-shaped cap, the traction of the distal border of the tumor resection was performed, followed by dissection of the submucosallayer within the edging incision.

The next stage was the formation of a tunnel by dissecting the submucosallayer under the tumor throughout its entirelength (Fig. 3).

The identifiedlarge vessels were preemptively coagulated with hemostatic forceps, just due to the formed tunnel, which allowed a good visualization of the submucosallayer.

At the same time, the tunnel was expanded in the submucosallayer by dissecting it from the center to the peripheral borders of the resection. After that, a circular incision of the mucouslayer around the tumor was performed, which was then removed *en bloc* (Fig. 4).

The final stage of the surgery was the control of vessels in the site of the defect to prevent postoperative bleeding (Fig.5).

After extraction, the surgical specimen was fixed on a special tablet and sent for morphology. Macroscopically, the tumor size was 45 × 37 mm, without fragmentation (Fig. 6).

The operative time was 115 minutes. No postoperative adverse events occurred. The patient was discharged on the 5th day after surgery.

The morphological conclusion: tubulo-villous adenoma with moderate epithelial dysplasia, with areas of inflammatory infiltration of the base. The tumor is resected at the level of the submucosal layer, the edges of the resection are intact (the minimum distance from the adenomatous structures to the peripheral edge of the resection is 1.5 mm).

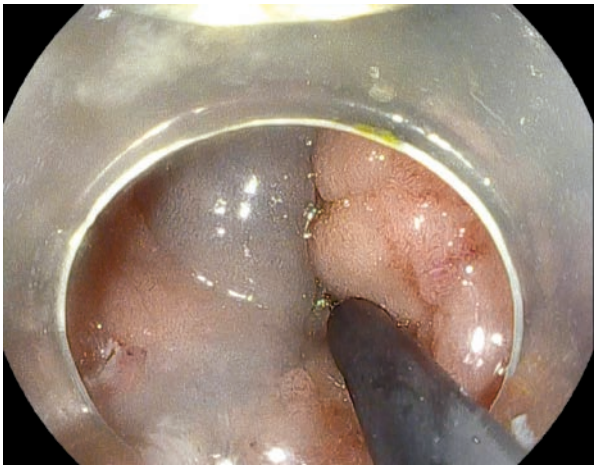

Figure 1. *Injection of gelofuzin solution with indigocarmine into the submucosal layer*

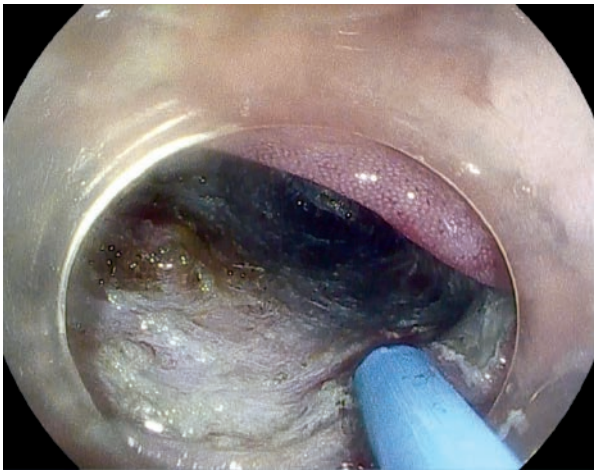

Figure 2. *Primary incision at the proximal edge of the tumor and the formation of a tunnel in the submucosal layer under the tumor*

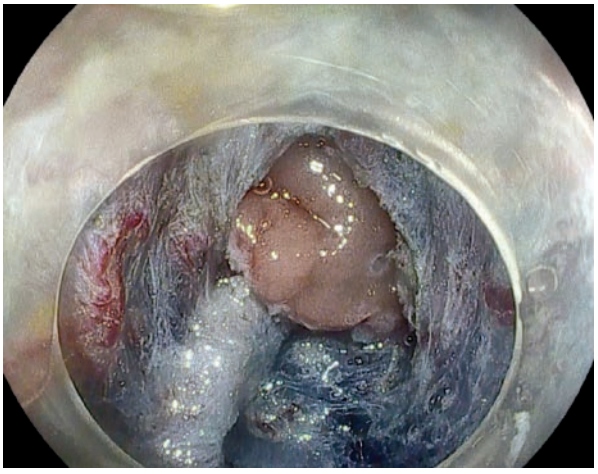

Figure 3. *Completion of the tunnel formation with its gradual expansion to the peripheral borders of the resection*

DISCUSSION

Localization of adenomas in the cecum to this day remains quite a difficult task for endoscopists when performing submucosal dissection.

These difficulties are associated with the certain reasons:

1) the right colon is located far from the endoscope manipulator, and therefore its operational capabilities arelimited;
2) a high risk of perforation is associated with the thin intestinal wall;
3) it is often not always possible to establish the optimal position of the patient on the operation table due to the mobility of the cecum;
4) the cecum islocated perpendicular to the endoscope, so the angle of manipulation is difficult to realize [6].

Also, the location of the tumor in the immediate vicinity of the ileocecal valve or the ostium of the vermiform process creates difficulties for its removal *en bloc* and can cause conversion to transabdominal surgery [7].

Up to now, we have not found such clinical case in either foreign or domesticliterature.

In general, publications on this topic arelimited to the description of cases with the tumor site in the rectum. This is due to anatomical features, due to the fact that the rectal wall has a large thickness, while the presence of perirectal fat in the non-peritonized part of the rectum eliminates the risk of perforation into the abdominal cavity [9]. Therefore, traditionally, the implementation of new methods of endoscopic removal of gastrointestinal neoplasms starts with the upper parts (esophagus, stomach) and rectum. Thus, Yang, et al. presented the results of successful use of the ESTD in 19 patients with rectal adenomas. The authors have shown that the ESTD contributes to better visualization of the submucosallayer, which allows differentiating and preventive control of large vessels in the submucosallayer using hemostatic forceps, which reduces the risk of intraoperative bleeding.

It should be noted that they did not receive intraoperative bleeding in any case, while the incidence of this complication in the CESD is 2-3% [2]. The use of an endoscopic maneuver for creating a tunnel contributed to better control of the

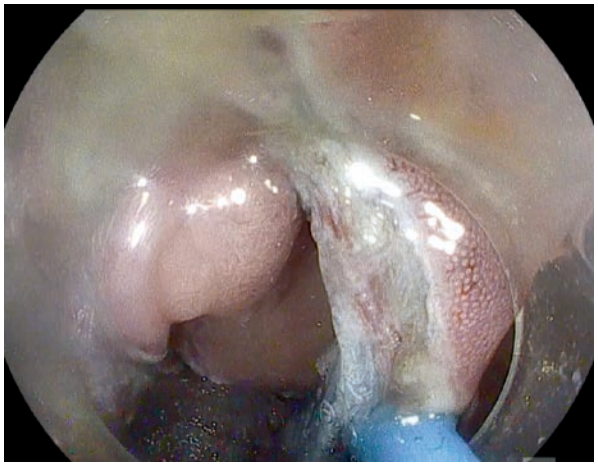

Figure 4. *Completion of the circular incision around the tumor and its complete excision*

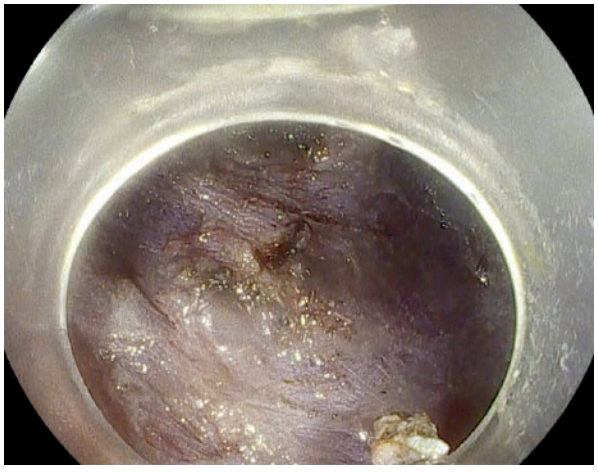

Figure 5. *Electrocoagulation hemostasis of postoperative defect*

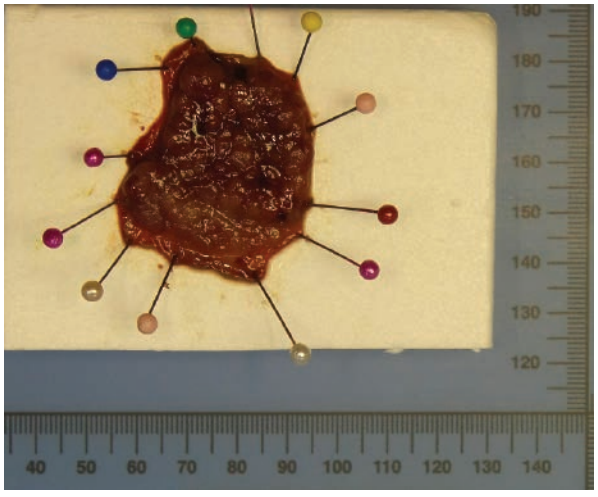

Figure 6. *Extracted histological specimen*

depth of resection in the submucosal layer, and as a result allowed to reduce the risk of intraoperative perforations to zero. At the same time, all 19 patients, according to the pathomorphological study, underwent R0 procedures, while the classical ESD allows to obtain R0 resection margins only in 77% of cases [2, 6].

CONCLUSION

The method of endoscopic submucosal tunnel dissection can be an attractive alternative to the standard methods of ESD in large colorectal adenomas.

The advantages of this method reduce the dependence of the surgery on the risk of conversion, complications and damage to the surgical specimen.

AUTHORS CONTRIBUTION

Concept and design of the study: *Oleg M. Iugai*
Collection and processing of the material: *Oleg M. Iugai, Dmitry A. Mtvralashvili, Yuri E. Vaganov*
Writing of the text: *Oleg M. Iugai, Alexey A. Likutov*
Editing: *Yuri E. Vaganov*

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