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Contents

Semimonthly Volume 8 Number 23 December 6, 2020

EDITORIAL

- 5835 Understanding the immunopathogenesis of COVID-19: Its implication for therapeutic strategy
Shimizu Y

OPINION REVIEW

- 5844 What is the gut feeling telling us about physical activity in colorectal carcinogenesis?
Cigrovski Berkovic M, Cigrovski V, Bilic-Curcic I, Mrzljak A

REVIEW

- 5852 Latest developments in chronic intestinal pseudo-obstruction
Zhu CZ, Zhao HW, Lin HW, Wang F, Li YX

ORIGINAL ARTICLE

Case Control Study

- 5866 Correlation between ductus venosus spectrum and right ventricular diastolic function in isolated single-umbilical-artery foetus and normal foetus in third trimester
Li TG, Nie F, Xu XY

Retrospective Cohort Study

- 5876 Clinical efficacy of integral theory-guided laparoscopic integral pelvic floor/ligament repair in the treatment of internal rectal prolapse in females
Yang Y, Cao YL, Zhang YY, Shi SS, Yang WW, Zhao N, Lyu BB, Zhang WL, Wei D

Retrospective Study

- 5887 Treatment of Kümmell's disease with sequential infusion of bone cement: A retrospective study
Zhang X, Li YC, Liu HP, Zhou B, Yang HL
- 5894 Application value analysis of magnetic resonance imaging and computed tomography in the diagnosis of intracranial infection after craniocerebral surgery
Gu L, Yang XL, Yin HK, Lu ZH, Geng CJ
- 5902 Focal intrahepatic strictures: A proposal classification based on diagnosis-treatment experience and systemic review
Zhou D, Zhang B, Zhang XY, Guan WB, Wang JD, Ma F
- 5918 Preliminary analysis of the effect of vagus nerve stimulation in the treatment of children with intractable epilepsy
Fang T, Xie ZH, Liu TH, Deng J, Chen S, Chen F, Zheng LL

- 5926** Scoring system for poor limb perfusion after limb fracture in children
Zhu T, Shi Y, Yu Q, Zhao YJ, Dai W, Chen Y, Zhang SS
- 5935** Overexpression of CD155 is associated with PD-1 and PD-L1 expression on immune cells, rather than tumor cells in the breast cancer microenvironment
Wang RB, Li YC, Zhou Q, Lv SZ, Yuan KY, Wu JP, Zhao YJ, Song QK, Zhu B
- 5944** Application of computer tomography-based 3D reconstruction technique in hernia repair surgery
Wang F, Yang XF
- 5952** Effect of methylprednisolone in severe and critical COVID-19: Analysis of 102 cases
Zhu HM, Li Y, Li BY, Yang S, Peng D, Yang X, Sun XL, Zhang M

Observational Study

- 5962** Genetic diagnosis history and osteoarticular phenotype of a non-transfusion secondary hemochromatosis
Ruan DD, Gan YM, Lu T, Yang X, Zhu YB, Yu QH, Liao LS, Lin N, Qian X, Luo JW, Tang FQ
- 5976** Abdominal ventral rectopexy with colectomy for obstructed defecation syndrome: An alternative option for selected patients
Wang L, Li CX, Tian Y, Ye JW, Li F, Tong WD
- 5988** Surgical treatment of multiple magnet ingestion in children: A single-center study
Cai DT, Shu Q, Zhang SH, Liu J, Gao ZG

Randomized Clinical Trial

- 5999** Efficacy and economic benefits of a modified Valsalva maneuver in patients with paroxysmal supraventricular tachycardia
Wang W, Jiang TF, Han WZ, Jin L, Zhao XJ, Guo Y

CASE REPORT

- 6009** Duodenal giant stromal tumor combined with ectopic varicose hemorrhage: A case report
Li DH, Liu XY, Xu LB
- 6016** Healthy neonate born to a SARS-CoV-2 infected woman: A case report and review of literature
Wang RY, Zheng KQ, Xu BZ, Zhang W, Si JG, Xu CY, Chen H, Xu ZY, Wu XM
- 6026** Pleomorphic adenoma of the trachea: A case report and review of the literature
Liao QN, Fang ZK, Chen SB, Fan HZ, Chen LC, Wu XP, He X, Yu HP
- 6036** Neoadjuvant targeted therapy for apocrine carcinoma of the breast: A case report
Yang P, Peng SJ, Dong YM, Yang L, Yang ZY, Hu XE, Bao GQ
- 6043** Huge encrusted ureteral stent forgotten for over 25 years: A case report
Kim DS, Lee SH

- 6048** Roxadustat for treatment of erythropoietin-hyporesponsive anemia in a hemodialysis patient: A case report
Yu WH, Li XJ, Yuan F
- 6056** Suspected SARS-CoV-2 infection with fever and coronary heart disease: A case report
Gong JR, Yang JS, He YW, Yu KH, Liu J, Sun RL
- 6064** Interpersonal psychotherapy-based psychological intervention for patient suffering from COVID-19: A case report
Hu CC, Huang JW, Wei N, Hu SH, Hu JB, Li SG, Lai JB, Huang ML, Wang DD, Chen JK, Zhou XY, Wang Z, Xu Y
- 6071** Optical coherence tomography angiography characteristics in Waldenström macroglobulinemia retinopathy: A case report
Li J, Zhang R, Gu F, Liu ZL, Sun P
- 6080** Forty-nine years old woman co-infected with SARS-CoV-2 and Mycoplasma: A case report
Gao ZA, Gao LB, Chen XJ, Xu Y
- 6086** Endoscopic fenestration in the diagnosis and treatment of delayed anastomotic submucosal abscess: A case report and review of literature
Zhang BZ, Wang YD, Liao Y, Zhang JJ, Wu YF, Sun XL, Sun SY, Guo JT
- 6095** Small-cell neuroendocrine carcinoma of the rectum — a rare tumor type with poor prognosis: A case report and review of literature
Chen ZZ, Huang W, Wei ZQ
- 6103** Laparoscopic left lateral sectionectomy in pediatric living donor liver transplantation by single-port approach: A case report
Li H, Wei L, Zeng Z, Qu W, Zhu ZJ
- 6110** Malignant meningioma with jugular vein invasion and carotid artery extension: A case report and review of the literature
Chen HY, Zhao F, Qin JY, Lin HM, Su JP
- 6122** Neuronal intranuclear inclusion disease mimicking acute cerebellitis: A case report
Guo JJ, Wang ZY, Wang M, Jiang ZZ, Yu XF
- 6130** Hemophagocytic lymphohistiocytosis caused by STAT1 gain-of-function mutation is not driven by interferon- γ : A case report
Liu N, Zhao FY, Xu XJ
- 6136** Single door laminoplasty plus posterior fusion for posterior atlantoaxial dislocation with congenital malformation: A case report and review of literature
Zhu Y, Wu XX, Jiang AQ, Li XF, Yang HL, Jiang WM
- 6144** Occipital nodular fasciitis easily misdiagnosed as neoplastic lesions: A rare case report
Wang T, Tang GC, Yang H, Fan JK

- 6150** Postoperative secondary aggravation of obstructive sleep apnea-hypopnea syndrome and hypoxemia with bilateral carotid body tumor: A case report
Yang X, He XG, Jiang DH, Feng C, Nie R
- 6158** Uncontrolled central hyperthermia by standard dose of bromocriptine: A case report
Ge X, Luan X
- 6164** Acute celiac artery occlusion secondary to blunt trauma: Two case reports
Li H, Zhao Y, Xu YA, Li T, Yang J, Hu P, Ai T
- 6172** Multiple ectopic goiter in the retroperitoneum, abdominal wall, liver, and diaphragm: A case report and review of literature
Qin LH, He FY, Liao JY
- 6181** Symptomatic and optimal supportive care of critical COVID-19: A case report and literature review
Pang QL, He WC, Li JX, Huang L
- 6190** Primary breast cancer patient with poliomyelitis: A case report
Wang XM, Cong YZ, Qiao GD, Zhang S, Wang LJ
- 6197** Discontinuous polyostotic fibrous dysplasia with multiple systemic disorders and unique genetic mutations: A case report
Lin T, Li XY, Zou CY, Liu WW, Lin JF, Zhang XX, Zhao SQ, Xie XB, Huang G, Yin JQ, Shen JN
- 6206** Novel triple therapy for hemorrhagic ascites caused by endometriosis: A case report
Han X, Zhang ST

ABOUT COVER

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WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

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Endoscopic fenestration in the diagnosis and treatment of delayed anastomotic submucosal abscess: A case report and review of literature

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Abstract

BACKGROUND

Abscess formation is one of the complications after radical resection of rectal cancer; cases with delayed postoperative anastomotic abscess are rare. Here, we report a rare case of postoperative anastomotic abscess with a submucosal neoplasm appearing after rectal surgery. Ultimately, the patient was diagnosed and treated by endoscopic fenestration. In addition, we review the literature on the appearance of an abscess as a complication after rectal cancer surgery.

CASE SUMMARY

A 57-year-old man with a history of rectal malignancy resection complained of a smooth protuberance near the anastomotic stoma. Endoscopic ultrasonography revealed a hypoechoic structure originating from the muscularis propria, and a submucosal tumor was suspected. The patient was subsequently referred to our hospital and underwent pelvic contrast-enhanced computed tomography, which revealed no thickening or strengthening of the anastomotic wall. In order to clarify the origin of the lesion and obtain the pathology, endoscopic fenestration was performed. After endoscopic procedure, a definitive diagnosis of delayed anastomotic submucosal abscess was established. The patient achieved good recovery and prognosis after the complete clearance of abscess.

CONCLUSION

Endoscopic fenestration may be safe and effective for the diagnosis/treatment of delayed intestinal smooth protuberance after rectal cancer surgery.

publication of this case report and accompanying images.

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Core Tip: Delayed postoperative abscess is a rare complication after radical resection of rectal cancer, especially those presenting several years after surgery. Here, we report a rare case of postoperative anastomotic abscess with a submucosal neoplasm appearing who was treated by endoscopic fenestration. In addition, we review the literature on abscess after rectal cancer surgery. Although extremely rare, delayed submucosal abscess should be considered in the differential diagnosis in cases with suspected submucosal tumors in patients after rectal cancer resection with intestinal smooth swelling. Meanwhile, endoscopic fenestration may be safe and effective for the diagnosis/treatment of delayed intestinal postoperative smooth protuberance.

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INTRODUCTION

Currently, laparoscopic radical resection is the standard and mainstay surgical treatment for rectal cancer^[1-3]. Abscess formation is one of the complications after rectal cancer resection and is usually found within a few weeks post-surgery^[4-6]. However, delayed postoperative anastomotic abscess is extremely rare, especially that presenting several years after surgery. Here, we report a rare case of delayed anastomotic submucosal abscess in a patient after rectal surgery who was diagnosed and treated by endoscopic fenestration. Furthermore, we performed a literature review on abscess complication following rectal cancer surgery.

CASE PRESENTATION

Chief complaints

A 57-year-old male patient was referred to our hospital for definite diagnosis and treatment of an intestinal smooth protuberance that appeared more than 3 years after rectal cancer surgery.

History of present illness

Initially, a smooth protuberance was found following a colonoscopy examination during a regular medical examination at a local hospital 3.5 years after rectal cancer surgery. The patient did not complain of any symptoms.

History of past illness

The patient presented with irregular stool and bloody stool since September 2015. He was admitted to a local hospital complaining of lower abdominal pain in February 2016. Colonoscopy revealed a large protuberant lesion located 15-18 cm from the anus, and a biopsy was taken. Endoscopic diagnosis was advanced rectal cancer, and pathological diagnosis was rectal adenocarcinoma (moderately differentiated). Laparoscopic radical resection of rectal cancer was performed in March 2016. Intra- and post-operative pathology confirmed rectal adenocarcinoma (moderately differentiated). Colonoscopy performed during postoperative follow-up at 6 mo, 1 year, 2 years, and 3 years after the operation showed good anastomotic healing (Figure 1A).



Personal and family history

The patient had no specific personal and family history.

Physical examination

The patient did not have positive signs on physical examination.

Laboratory examinations

Laboratory testing including C-reactive protein level and leukocyte count, showed no abnormalities.

Imaging examinations

In November 2019 (3.5 years after operation), a smooth protuberance measuring approximately 15 mm × 15 mm (Figure 1B) was found near the anastomotic site by colonoscopy at the local hospital. The diagnosis was a protuberant lesion near the anastomotic stoma. Subsequent endoscopic ultrasonography (EUS) at the local hospital revealed a hypoechoic structure (Figure 1C) of approximately 1.12 cm × 0.91 cm in the rectal wall. A submucosal tumor (SMT) originating from the muscularis propria was suspected. The patient was referred to our hospital for definitive diagnosis and further treatment. We analyzed the patient's past history and examination and suspected that the protuberance was local recurrence of rectal cancer, postoperative abscess, or SMT. Subsequently, pelvic contrast-enhanced computed tomography (CT) was performed, which revealed no thickening or strengthening of the anastomotic wall (Figure 1D).

Further diagnostic work-up/endoscopic examination

To clarify the origin of the lesion and obtain the pathology, endoscopic resection was performed. After dissecting the mucosal layer by using a dual knife, a soft cystic structure was observed. After opening the sac wall, a yellow viscous liquid can be seen flowing out (Figure 2A). Generally speaking, pus needs bacterial culture for further diagnosis; however, the lesion was at the rectum and highly susceptible to contamination by intestinal faeces and flora. Therefore, we did not culture the pus. We subsequently repeated the suction and irrigation procedures during endoscopic procedure to clean the area of the purulent exudate. The wound was closed using five metal clips finally (Figure 2B).

FINAL DIAGNOSIS

Based on the clinical, imaging, and endoscopic findings, we finally made a definitive diagnosis of delayed anastomotic submucosal abscess following rectal surgery.

TREATMENT

Diagnostic endoscopic fenestration that the patient underwent was also performed as a treatment for the intestinal protrusion lesion. In the process, the purulent exudate was cleaned completely, and the wound was entirely closed using clips.

OUTCOME AND FOLLOW-UP

After the endoscopic fenestration, the patient had no adverse effects and was treated with cephalosporin and glucose for anti-infection and nutrition therapy, respectively. The patient was discharged without complications 2 d after the procedure. Postoperative follow-up examination was performed, showing no evidence of recurrence in both white light endoscopy and narrow-band imaging (Figure 2C and D).

DISCUSSION

We report a case of delayed anastomotic submucosal abscess in a patient after rectal

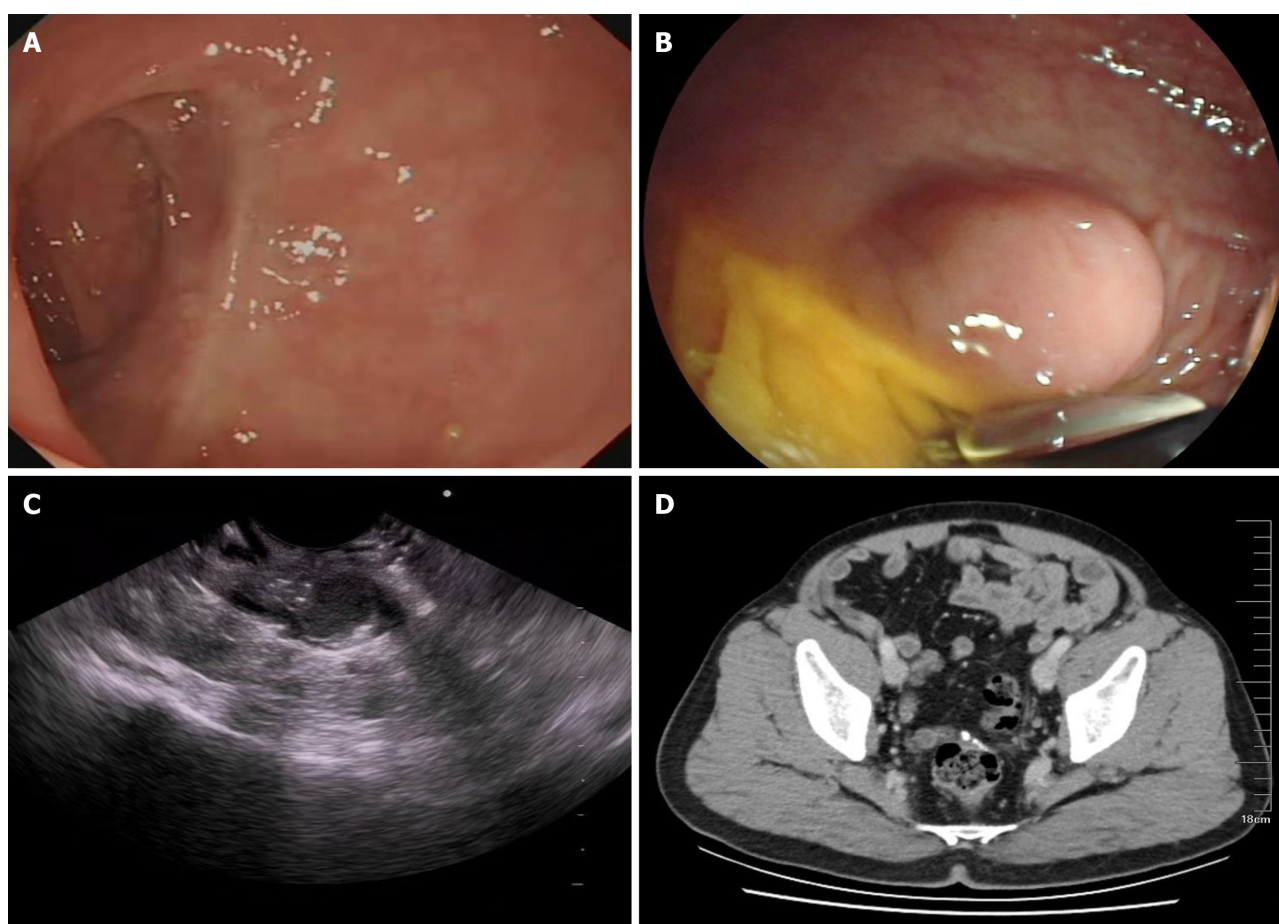


Figure 1 Anastomotic site findings. A: Previous colonoscopy showing no abnormalities near the anastomotic site; B: Last colonoscopy performed at the local hospital showing a smooth protuberance near the anastomotic site; C: Endoscopic ultrasound image showing a hypoechoic structure in the rectum; D: No obvious thickening or strengthening of the anastomotic wall was visible in the contrast-enhanced computed tomography scan of the pelvic cavity.

cancer surgery with a review of the literature. To the best of our knowledge, only 15 cases of abscess formation following rectal cancer surgery have been reported in the literature, including our case (Table 1), and this is the first report of delayed intestinal anastomotic abscess diagnosed and treated by endoscopic fenestration.

Currently, laparoscopic radical resection of rectal cancer has the advantages of less trauma, less bleeding, and rapid recovery of the intestinal function, and remains the most significant treatment for rectal cancer^[2-3]. However, in any invasive procedures, complications cannot be completely avoided. These complications have an important impact on the postoperative recovery of patients. Postoperative complications of rectal cancer resection include postoperative hemorrhage, infection-related complications, and anastomosis-related complications (anastomotic fistula and stricture)^[4-6]. Postoperative abscess is one of the severe complications after rectal cancer surgery. Patients with postoperative abscess are usually symptomatic. Indicators of infection in laboratory tests will also increase accordingly, including C-reactive protein level and white blood cell count^[7-9]. Postoperative abscess is related to the following factors: (1) After anti-infective therapy, viable bacteria are stored in the deep rectal wall, stimulating the rectal wall to form an abscess for a long time; (2) Local hematomas resulting from intra-incisional bleeding are not fully absorbed and develop into abscesses in the event of infection; and (3) Anastomotic fistulas are caused by poor blood supply and excessive tension, which lead to infection and abscess formation around the anastomotic site^[10,11].

In the 15 cases reviewed herein, the patient ages ranged from 32-76 years, with an average age of 56.7 years^[12-24]. The retrieved literature indicated that when patients were diagnosed with postoperative abscess after rectal cancer surgery, they usually presented with abdominal pain, obvious mass, and fever, accompanied by fistula or leakage formation (66.67%). Among the 15 patients (including this case), nine achieved the ideal treatment effect by drainage (60%), and the remaining patients underwent colostomy and cutaneous vasostomy for excretion of the purulent secretions to relieve symptoms in a timely manner. Five (33.33%) of the 15 patients had pelvic abscess after

Table 1 Description of cases with abscess appearing as a complication after rectal cancer surgery

Ref.	Year	Study design	No. of patient	Age, yr	Operation method	Time from surgery to abscess	Chemoradiotherapy before or after surgery	Fistula or leakage formation	Abscess position	Reoperation	Success	Follow-up	Result
Aras <i>et al</i> ^[12]	2016	Case report	1	34	TME; coloanal anastomosis; diverting ileostomy	Postoperation	Before	Leakage	Pelvic	Drainage; intraluminal vacuum associated closure	Yes	45 d	Development of granulation tissue at the pelvic sinus
Honma <i>et al</i> ^[13]	2007	Case report	1	68	LAR	10 d	Before	Leakage	Pelvic	Colostomy	Yes	ND	ND
Martins <i>et al</i> ^[14]	2012	Case report	1	37	Hartmann procedure	14 d	Before	ND	Pelvic	Transrectal endoscopic drainage facilitated by TEM access	Yes	60 d	Reduction in the pelvic fluid
Kollmorgen <i>et al</i> ^[15]	1994	Case report	1	32	LAR; abdominal perineal resection for recurrent rectal cancer	8 d	After	Fistula	Pelvic	Drainage	Yes	90 d	A smaller pelvic abscess cavity recurrence and resolved by ciprofloxacin and proscar
Brehant <i>et al</i> ^[16]	2009	Case report	1	62	Restorative proctectomy with TME, circular stapled low colorectal side-to-end anastomosis, and loop ileostomy	Postoperation; 90 d; 225 d	ND	Leakage	Pelvic	Drainage	Yes	300 d	No abscess recurrence
Rahimi <i>et al</i> ^[17]	2018	Case report	1	61	LAR with a diverting loop ileostomy	14 d	Before; after	Fistula; leakage	Presacral	Drainage	Yes	ND	ND
Scabini <i>et al</i> ^[18]	2009	Case report	2	ND	AR; transanal anastomosis; temporary colostomy	30 d; 60 d	Before	Leakage	Presacral	No; drainage	Yes	ND	ND
D'Hondt <i>et al</i> ^[19]	2009	Case report	1	76	AR; hartmann procedure; completion proctectomy	6 yr	After	ND	Presacral	ENDO-sponge treatment	Yes	150 d	No abscess recurrence
Mandai <i>et al</i> ^[20]	2015	Case report	1	60	LAR	17 and 64 d	ND	ND	Around the anastomotic intestine; in the subdiaphragmatic area	EUS-guided transgastric drainage; naso-cystic drainage	Yes	3 yr	No abscess recurrence
Sadatomo <i>et al</i> ^[21]	2013	Case report	1	64	ND	28 chemotherapy courses	After	Leakage	Intra-abdominal	Drainage	Yes	19 d	No abscess recurrence
Kimura <i>et al</i> ^[22]	2012	Case report	1	50	ISR	Postoperation	Before; after	ND	Dissection area	Drainage	Yes	ND	ND

Ikeda <i>et al</i> ^[23]	2009	Case report	1	60	LAR	6 d	ND	Leakage	In the left inguinal hernial sac	Hernioplasty and resection of the inflamed sac	Yes	ND	ND
Goldman <i>et al</i> ^[24]	1989	Case report	1	76	LAR	30 d	After	Fistula; leakage	Anastomotic; right seminal vesicle	Cutaneous; vasostomy	Yes	2 yr	No abscess recurrence until death due to stroke associated with cerebral metastases
Present case	2020	Case report	1	57	ND	3 and a half years	No	No	Anastomotic	Endoscopic; fenestration	Yes	90 d	No abscess recurrence and well anastomotic healing

ND: Not described; TME: Total mesorectal excision; LAR: Low anterior resection; TEM: Transanal endoscopic microsurgery; AR: Anterior resection; ISR: Intersphincteric resection; EUS: Endoscopic ultrasonography.

rectal cancer surgery; in four (80%) of these patients, drainage was performed, whereas one (20%) was treated by colostomy. All five patients underwent successful abscess treatment (100%); four of these patients were followed (> 45 d), and the results showed improvement in three patients. In the fourth patient, Kollmorgen *et al*^[15] reported an abscess recurrence after drainage of a small pelvic abscess, which improved after anti-infective treatment with ciprofloxacin. This suggests that conservative anti-infective treatment is a feasible option for limited abscess without increased risk of spreading. Presacral abscess was found in four (26.67%) cases, and three (75%) of these cases were treated by drainage. D'Hondt *et al*^[19] reported intermittent fever, massive mucopurulent discharge from a perineal wound, and severe pain during radiotherapy after rectal cancer resection. After admission, CT showed a presacral abscess. Endo-sponge therapy was performed on the presacral abscess after biopsy confirmed no recurrent tumor. The prognosis was good after 5 mo of follow-up. A case reported by Mandai *et al*^[20] showed abscess formation in the para-anastomotic and subphrenic areas after low anterior resection of rectal cancer. The patient was treated by EUS-guided transgastric drainage and naso-cystic drainage innovatively and had no abscess recurrence at the 3-year follow-up. EUS-guided drainage is suggested as a safe and effective method for the treatment of postoperative abdominal abscess.

Patients with postoperative abscess in the abdominal and pelvic cavity are usually symptomatic, whereas those with SMT are asymptomatic^[25-27]. In the present case, the patient had no discomfort until colonoscopic examination detected the abnormality near the anastomotic site. Combined with the history of past illness, the patient was easily misdiagnosed with rectal cancer recurrence or rectal submucosal lesions. At this point, differential diagnosis was difficult, especially with SMT. The clinical features and EUS imaging were strongly suggestive of SMT after local tumor recurrence was disregarded based on pelvic CT findings. Endoscopic fenestration, however, ultimately indicated a rare delayed submucosal abscess rather than SMT.

To date, there is little information on delayed postoperative anastomotic abscess,

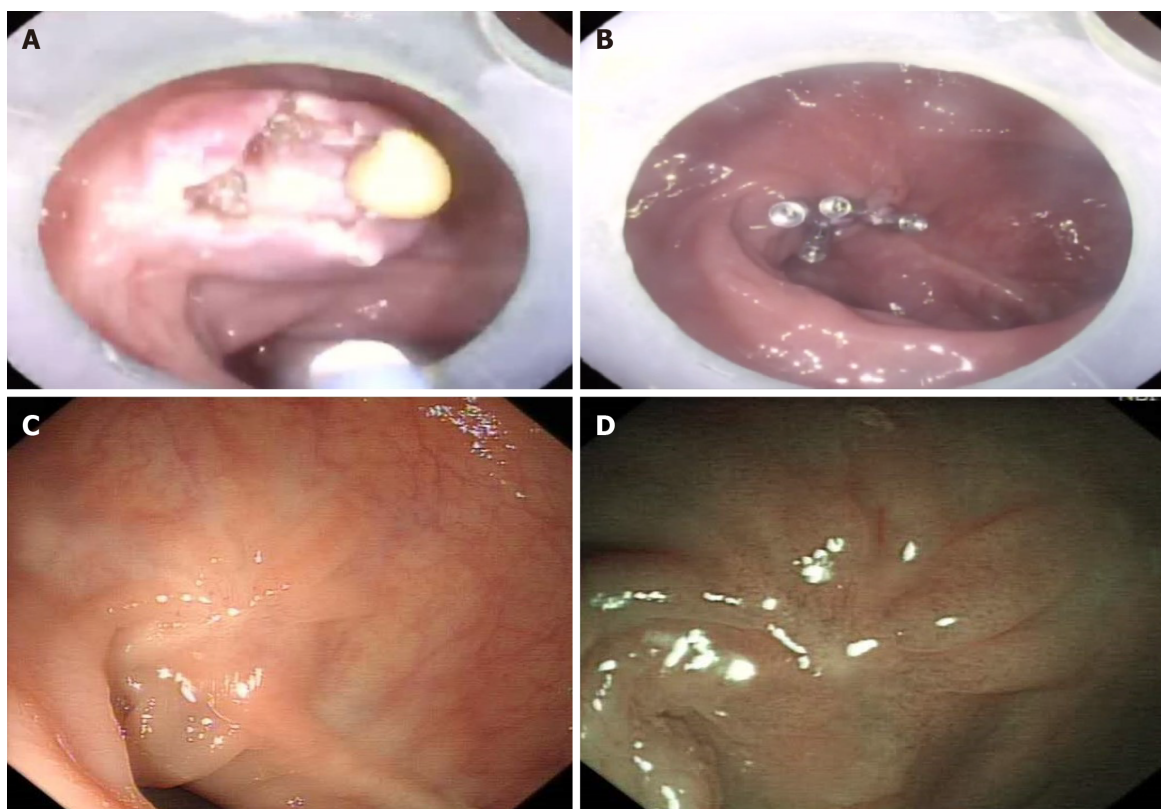


Figure 2 Endoscopic images. A: After opening the sac wall, a yellow viscous liquid can be seen flowing out; B: Colonoscopy image showing the five metal clips clipping the wound after complete clearance of the abscess; C and D: There was no evidence of abscess recurrence in both white light endoscopy and narrow-band imaging after a follow-up period of 11 mo.

especially that appearing several years after an operation. The later an abscess develops, the more complicated the causal relationship between the abscess and previous surgery is, making differential diagnosis more difficult. Patients with postoperative abscess usually present with fever, abdominal pain, and abdominal mass. Inflammatory indicator levels on blood tests usually increase and imaging examination may also suggest inflammatory exudation. However, these conditions may not occur when the abscess is wrapped around the cyst wall and does not spread. Therefore, abscess can mistakenly and easily be ruled out as a diagnosis, thereby delaying the patient's treatment. Currently, there are no guidelines for the treatment of postoperative abscess of rectal cancer. In general and based on the reviewed literature, large abscesses with complex anatomical locations are more commonly treated by drainage. If an abscess is associated with peritonitis, emergency surgical treatment can be performed. However, endoscopic fenestration is a better minimally invasive procedure for enveloping an abscess in the intestinal tract.

Endoscopic fenestration is an intuitive, safe, and reliable diagnostic method when clinical features and imaging findings are uncertain. Endoscopic fenestration has been widely used for intracranial cysts^[28,29]; in recent years, it has also emerged as an effective method for the diagnosis and treatment of gastrointestinal protuberance^[30,31]. Endoscopic fenestration can safely and effectively diagnose abscess, reduce severe complications such as peritonitis, and reduce the use of invasive procedures such as abdominal drainage.

CONCLUSION

Although extremely rare, delayed submucosal abscess should be considered in the differential diagnosis in cases of suspected SMTs based on imaging during the late postoperative period in rectal cancer patients presenting with intestinal smooth swelling. When the protuberance is wrapped around the cyst wall without definite evidence of tumor recurrence or metastasis, endoscopic fenestration can be considered as a safe, effective, and feasible strategy for the definitive diagnosis and treatment of delayed intestinal smooth protuberance in patients after rectal surgery.

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