

# World Journal of *Gastrointestinal Endoscopy*

*World J Gastrointest Endosc* 2022 August 16; 14(8): 474-511



**ORIGINAL ARTICLE****Retrospective Cohort Study**

- 474 Disparities in colonoscopy utilization for lower gastrointestinal bleeding in rural *vs* urban settings in the United States

*Ganta N, Aknouk M, Alnabwani D, Nikiforov I, Bommu VJL, Patel V, Cheriya P, Hollenbeak CS, Hamza A*

**Retrospective Study**

- 487 Percutaneous transluminal angioplasty balloons for endoscopic ultrasound-guided pancreatic duct interventions

*AbiMansour JP, Abu Dayyeh BK, Levy MJ, Storm AC, Martin JA, Petersen BT, Law RJ, Topazian MD, Chandrasekhara V*

**Observational Study**

- 495 New application of endocytoscope for histopathological diagnosis of colorectal lesions

*Inoue F, Hirata D, Iwatate M, Hattori S, Fujita M, Sano W, Sugai T, Kawachi H, Ichikawa K, Sano Y*

**CASE REPORT**

- 502 Hidden local recurrence of colorectal adenocarcinoma diagnosed by endoscopic ultrasound: A case series

*Okasha HH, Wahba M, Fontagnier E, Abdellatef A, Haggag H, AbouElenin S*

**LETTER TO THE EDITOR**

- 508 Laparoscopic and endoscopic cooperative surgery for full-thickness resection and sentinel node dissection for early gastric cancer

*Vanella S, Godas M, Pereira JC, Pereira A, Apicella I, Crafa F*

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Editorial Board Member of *World Journal of Gastrointestinal Endoscopy*, Murali Dharan, FASGE, MRCP, Assistant Professor, Department of Gastroenterology and Hepatology, University of Connecticut Health Center, Farmington, CO 06030, United States. dharan@uchc.edu

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**INDEXING/ABSTRACTING**

The *WJGE* is now abstracted and indexed in Emerging Sources Citation Index (Web of Science), PubMed, PubMed Central, Reference Citation Analysis, China National Knowledge Infrastructure, China Science and Technology Journal Database, and Superstar Journals Database. The 2022 edition of Journal Citation Reports® cites the 2021 Journal Citation Indicator (JCI) for *WJGE* as 0.33.

**RESPONSIBLE EDITORS FOR THIS ISSUE**

**Production Editor:** Yi-Xuan Cai; **Production Department Director:** Xu Guo; **Editorial Office Director:** Jia-Ping Yan.

**NAME OF JOURNAL**

*World Journal of Gastrointestinal Endoscopy*

**ISSN**

ISSN 1948-5190 (online)

**LAUNCH DATE**

October 15, 2009

**FREQUENCY**

Monthly

**EDITORS-IN-CHIEF**

Anastasios Koulaouzidis, Bing Hu, Sang Chul Lee, Joo Young Cho

**EDITORIAL BOARD MEMBERS**

<https://www.wjgnet.com/1948-5190/editorialboard.htm>

**PUBLICATION DATE**

August 16, 2022

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<https://www.wjgnet.com/bpg/gerinfo/242>

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<https://www.wjgnet.com/bpg/GerInfo/239>

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## Hidden local recurrence of colorectal adenocarcinoma diagnosed by endoscopic ultrasound: A case series

Hussein Hassan Okasha, Mahmoud Wahba, Eva Fontagnier, Abeer Abdellatef, Hani Haggag, Sameh AbouElenin

**Specialty type:** Gastroenterology and hepatology

**Provenance and peer review:**

Unsolicited article; Externally peer reviewed.

**Peer-review model:** Single blind

**Peer-review report's scientific quality classification**

Grade A (Excellent): 0  
Grade B (Very good): 0  
Grade C (Good): C, C  
Grade D (Fair): D  
Grade E (Poor): 0

**P-Reviewer:** Hiep LT, Viet Nam; Jin ZD, China

**Received:** January 18, 2022

**Peer-review started:** January 18, 2022

**First decision:** April 17, 2022

**Revised:** April 29, 2022

**Accepted:** July 16, 2022

**Article in press:** July 16, 2022

**Published online:** August 16, 2022



**Hussein Hassan Okasha, Mahmoud Wahba, Abeer Abdellatef, Hani Haggag,** Department of Internal Medicine and Hepatogastroenterology, Kasr Al-Aini Hospitals, Cairo University, Cairo 11451, Egypt

**Eva Fontagnier,** Department of Internal Medicine and Gastroenterology, Tawam Hospital, Al-Ain 00000, United Arab Emirates

**Sameh AbouElenin,** Department of Internal Medicine and Gastroenterology, Military Medical Academy, Cairo 11451, Egypt

**Corresponding author:** Abeer Abdellatef, MD, Lecturer, Department of Internal Medicine and Hepatogastroenterology, Kasr Al-Aini Hospitals, Cairo University, 1 Gamaa Street, Cairo 11451, Egypt. [beero4a@yahoo.com](mailto:beero4a@yahoo.com)

### Abstract

#### BACKGROUND

Almost half of the patients with colorectal cancer (CRC) will experience local-regional recurrence after standard surgical excision. Many local recurrences of colorectal cancer (LRCC) do not grow intraluminally, and some may be covered by a normal mucosa so that they could be missed by colonoscopy. Early detection is crucial as it offers a chance to achieve curative reoperation. Endoscopic ultrasound (EUS) is mainly used in CRC staging combined with cross-section imaging study. EUS can provide an accurate assessment of sub-mucosal lesions by demarcating the originating wall layer and evaluating its echostructure. EUS fine-needle aspiration (FNA) provides the required tissue examination and confirms the diagnosis.

#### CASE SUMMARY

We report a series of five cases referred to surveillance for LRCC with negative colonoscopy and/or negative endoscopic biopsies. EUS-FNA confirmed LRCC implanted deep into the third and fourth wall layer with normal first and second layer.

#### CONCLUSION

Assessment for LCRR is still problematic and may be very tricky. EUS and EUS-FNA may be useful tools to exclude local recurrence.

**Key Words:** Colorectal cancer; Endoscopic ultrasound; Local recurrence; Fine-needle aspiration; Deep implanted CRC; Case report

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**Core Tip:** The local recurrence of colorectal adenocarcinoma that has been implanted deeply in the submucosal layers is usually missed by colonoscopy, despite that some cases show submucosal elevation. Endoscopic biopsies often give negative results, so endoscopic ultrasound fine-needle aspiration can be used to confirm the diagnosis and give patients a better chance for proper management.

**Citation:** Okasha HH, Wahba M, Fontagnier E, Abdellatef A, Haggag H, AbouElenin S. Hidden local recurrence of colorectal adenocarcinoma diagnosed by endoscopic ultrasound: A case series. *World J Gastrointest Endosc* 2022; 14(8): 502-507

**URL:** <https://www.wjgnet.com/1948-5190/full/v14/i8/502.htm>

**DOI:** <https://dx.doi.org/10.4253/wjge.v14.i8.502>

## INTRODUCTION

In patients with curatively resected colorectal cancer (CRC), local recurrence is often considered a clinical dilemma difficult to treat, may cause markedly disabling symptoms, and usually has a bad prognosis[1,2]. Several factors were incriminated in the recurrence as positive surgical margins, especially with inadequate excision, inadequate nodal dissection, implantation of exfoliated malignant cells into the deep layers, and changed biological characters at the site of large bowel anastomosis[3]. However, while colonoscopy remains the gold standard method of detecting local recurrences of colorectal cancer (LRCC) and metachronous lesions, it is considered an imperfect tool even in the best hands, with missing rates of adenocarcinoma ranging from 1% to 3%[4,5]. Unfortunately, not all local recurrences are detectable at the mucosal surface with false-negative colonoscopy. In these cases, endoscopic ultrasound (EUS) plays an irreplaceable role allowing highly detailed visualization of all the bowel wall layers with all the surrounding structures[6].

The great value of EUS in the evaluation for possible CRC recurrence nowadays comes from its ability to direct fine-needle aspiration (FNA) and fine needle biopsy, thus allowing the acquisition of tissue samples for histological and immunohistochemical examination, and providing a definitive diagnosis.

There are two studies on EUS FNA that showed its high accuracy in the diagnosis of subepithelial and extra-luminal lesions of the colon and rectum[7,8]. In both studies, the accuracy of EUS-FNA was 90%-95% compared with an 82% accuracy for imaging alone[8].

## CASE PRESENTATION

All patients gave their informed written consent before the procedure. All patients had MRI examination before EUS examination.

All examinations were done under deep sedation with IV propofol. All cases had ano-rectal lesions, maximum 15-20 cm from the anal verge, which are easy to be scanned by the side view scope. No right hemicolon masse were included as they are very difficult to be approached by the side view scope. For EUS-FNA, we used Cook 22G needles (Echotip, Wilson-Cook) (Figure 1).

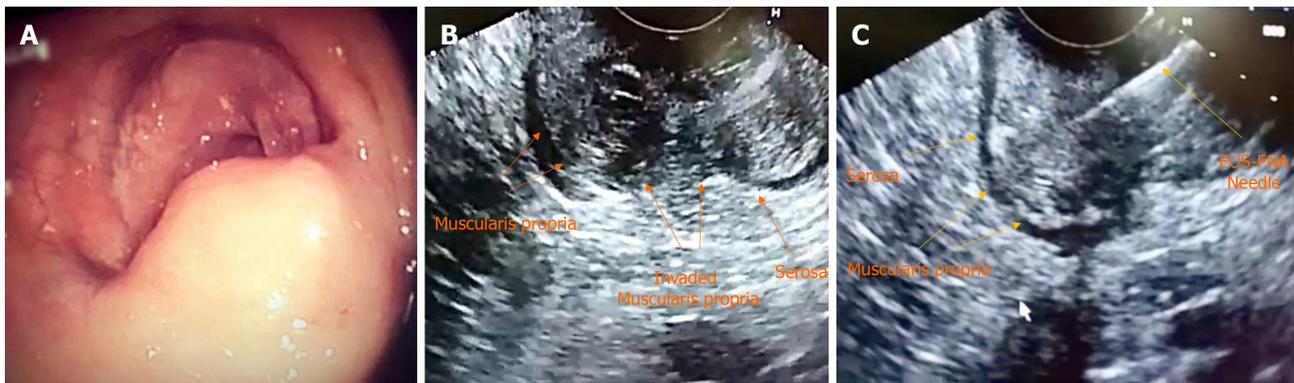
### Chief complaints

**Case 1:** This was a 70-year-old male patient. During LRCC surveillance, no lesions were detected by colonoscopy. The patient experienced unexplained weight loss and was referred for EUS assessment.

**Case 2:** This was a 45-year-old male patient. LRCC surveillance colonoscopy revealed a submucosal lesion at the rectal anastomotic line, and multiple endoscopic biopsies got negative results repeatedly. The patient was referred for EUS examination.

**Case 3:** This was a 45-year-old female patient who presented with difficult defecation. Colonoscopy revealed narrowed rectal anastomotic line, but biopsies were negative.

**Case 4:** This was a 48-year-old male patient. During LRCC surveillance, submucosal elevation at the sigmoido-colonic anastomotic line was noticed by colonoscopy, and endoscopic biopsies showed



DOI: 10.4253/wjge.v14.i8.502 Copyright ©The Author(s) 2022.

**Figure 1 Colonoscopy and endoscopic ultrasonography.** A: Colonoscopic appearance of submucosal lesion at the anastomotic line at the recto-sigmoid junction; B: Endoscopic ultrasound appearance of a hypoechoic mass arising from the 3<sup>rd</sup> layer with interruption of the fourth layer at its base; C: Endoscopic ultrasound guided fine-needle aspiration acquisition. EUS: Endoscopic ultrasound; FNA: Fine-needle aspiration.

negative results.

**Case 5:** This was a 46-year-old male patient. During LRCC surveillance, colonoscopy showed a submucosal lesion with negative endoscopic biopsies.

#### **History of present illness**

**Case 1:** The patient experienced unexplained weight loss and was referred for EUS assessment.

**Cases 2, 4, and 5:** The patients underwent LRCC surveillance.

**Case 3:** The patient presented with difficult defecation.

#### **History of past illness**

**Cases 1-5:** The patients had a history of CRC surgical excision.

#### **Personal and family history**

**Cases 1-5:** No notable personal or family medical history.

#### **Physical examination**

**Case 1:** Unremarkable apart from unexplained weight loss.

**Cases 2-5:** Unremarkable physical examination.

#### **Laboratory examinations**

**Case 1:** No other abnormalities were noted apart from mild microcytic hypochromic anemia.

**Cases 2-5:** No other abnormalities noted.

#### **Imaging examinations**

**Case 1:** EUS assessment revealed a 2.8 cm × 4 cm homogenous mass at the rectal anastomotic line, arising from the fourth wall layer. FNA was performed, and pathological examination confirmed adenocarcinoma.

**Case 2:** EUS examination showed a 1.9 cm × 2.9 cm homogenous mass, arising from the fourth layer. FNA was performed, and pathological assessment confirmed adenocarcinoma recurrence.

**Case 3:** EUS was conducted and revealed a homogeneous mass measuring 3 cm × 3.3 cm, arising from the fourth layer. FNA was carried out, and adenocarcinoma local recurrence into the deep submucosal layers confirmed.

**Case 4:** EUS revealed a heterogeneous mass measuring 2.3 cm × 4.2 cm arising from the third layer. FNA was performed, and pathological studies confirmed adenocarcinoma recurrence.

**Case 5:** EUS was carried out and revealed a 1.2 cm × 2.4 cm homogeneous mass, arising from the fourth layer at the ano-rectal anastomotic line. FNA was performed, and the result confirmed adenocarcinoma.

## FINAL DIAGNOSIS

We report five case series referred to surveillance for LRCC with negative colonoscopy and/or negative endoscopic biopsies. EUS-FNA confirmed LRCC implanted deep into the third and fourth wall layer with normal first and second layer.

## TREATMENT

**Case 1:** The patient underwent Lt hemi-colectomy for local recurrence and was referred to medical oncology.

**Case 2:** Partial colectomy was carried out.

**Case 3:** The patient received chemotherapy for cancer colon.

**Case 4:** The patient was referred to medical oncology.

**Case 5:** The patient received chemo-radiotherapy for ano-rectal cancer.

## OUTCOME AND FOLLOW-UP

In all cases, the patients were referred to medical cancer institute.

## DISCUSSION

CRC is one of the common and lethal malignancies worldwide and is considered the second leading cause of cancer deaths in the United States[9]. Most of CRC patients underwent surgical excision aiming at curative treatment, and up to 40% of patients with the locoregional disease will develop recurrent cancer, of which 90% will occur within 5 years[10,11].

The postoperative surveillance of patients treated for CRC is a clinical challenge, first due to distorted anatomy and scarring and second because of intent to prolong survival by diagnosing recurrent and metachronous cancers at a curable stage. LRCC surveillance strategies combined different modalities, including clinical assessment, tumor marker carcinoembryonic antigen, computed tomography (CT) scans, and endoluminal imaging, including colonoscopy, sigmoidoscopy, EUS, and CT colonography. The optimal surveillance strategy is still not clearly defined.

A number of studies have shown EUS to be very accurate in detecting LCRR, with EUS-FNA being able to provide tissue confirmation[12,13].

Several guidelines and organizations recommend EUS in post-treatment surveillance for resected colon and rectal cancer. The NCCN guidelines state that flexible sigmoidoscopy with EUS or MRI should be done every 3 to 6 mo for 2 years, then every 6 mo to complete 5 years for patients with rectal cancer undergoing transanal excision only[14]. The United States Multi-Society Task Force include EUS as an alternative to sigmoidoscopy in the testing strategy for patients at higher risk of recurrence[15].

In patients with a curative resection for rectal cancer, the current US Multi-Society Task Force recommendation suggests EUS at 3-6 mo for the first 2 years after resection as a reasonable option[16]. It is noteworthy that not all recurrences are evident at the mucosal surface, so in those cases the benefit of EUS will be restricted in highly detailed visualization and assessment of all the bowel wall layers with all the surrounding structures[6].

Our study showed a rare clinical scenario of hidden implanted adenocarcinoma in the third and fourth layer with an intact mucosal layer, so it was not evident intraluminally and missed by colonoscopy, and endoscopic biopsies were false-negative repeatedly. This may be explained by the presence of cancer cells at the anastomotic line or trapping of cancer cells in the staple line, resulting in local recurrence, especially in patients who underwent double-stapling anastomosis[6,17].

Therefore, EUS-FNA gained the optimal diagnostic procedure and defined the proper treatment plan.

EUS can act not only as a method for the evaluation of precancerous polyps and subepithelial lesions found during screening of CRC, but also it has a great role in follow-up after resection of rectal carcinoma for early detection and tissue confirmation of locally recurrent cancer colon, by allowing the collection of specimens for histological and immuno-histochemical analysis, and overcoming some of the inherent user bias[18].

## CONCLUSION

Assessment for LCRR is still problematic and may be very tricky, so we recommend using EUS-FNA to exclude local recurrence, since it could be deeply implanted and missed by routine imaging tools and colonoscopy.

## FOOTNOTES

**Author contributions:** Wahba M and Abdellatif AA were involved equally in writing the manuscript; Fontagnier E and Hagag H were involved equally in collecting the data; Elenin SA read and revised the manuscript; Okasha HH revised and approved the final manuscript; all authors have read and approved the final manuscript.

**Informed consent statement:** The study was approved by our institution's Research Ethical Committee, and all patients gave their informed written consent before inclusion in the study, according to the ethical guidelines of the 1975 Declaration of Helsinki.

**Conflict-of-interest statement:** All authors declare no competing interests for this article.

**CARE Checklist (2016) statement:** The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

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**Country/Territory of origin:** Egypt

**ORCID number:** Hussein Hassan Okasha 0000-0002-0815-1394; Mahmoud Wahba 0000-0001-5263-9103; Eva Fontagnier 0000-0001-5746-5480; Abeer Abdellatif 0000-0001-9945-9767; Hani Haggag 0000-0003-4209-1943; Sameh AbouElenin 0000-0002-0633-3004.

**S-Editor:** Wang LL

**L-Editor:** Wang TQ

**P-Editor:** Wang LL

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