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Hidden Local recurrence of colorectal adenocarcinoma diagnosed by Endoscopic ultrasound

Hussein Hassan Okasha, Mahmoud Wahba, Eva Fontagnier, Abeer Awad Abdellatif, Hany Hagag, Sameh Abou Elenin

1 **Abstract**

2 BACKGROUND

3 Almost half of the patients with colorectal cancer (CRC) will experience local-regionally recurrence

4 after standard surgical excision. Many local recurrences of colorectal cancer (LRCC) do not grow

5 intraluminal, and some may be covered by normal mucosa so that they could be missed by

6 colonoscopy. Early detection is crucial as it offers a chance to achieve curative reoperation.

7 Endoscopic ultrasound (EUS) is mainly used in CRC staging combined with cross-section imaging

8 study. EUS can provide an accurate assessment of sub-mucosal lesions by demarcating the

9 originating wall layer and evaluating its echostructure. EUS fine-needle aspiration (FNA) provides

10 the required tissue examination and confirms the diagnosis.

11

12 CASE SUMMARY

13 We report five case series referred to surveillance for LRCC with negative colonoscopy and/or

14 negative endoscopic biopsies. EUS-FNA confirmed LRCC implanted deep into the third and fourth

15 wall layer with normal first and second layer.

16

17 CONCLUSION

18 Assessment for LCRR is still problematic and may be very tricky, EUS and EUS-FNA may be useful

19 tool to exclude local recurrence.

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21 **Key Words:** Colorectal cancer; Endoscopic ultrasound; Local recurrence; Fine-needle aspiration;

22 Deep implanted CRC; Case report

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28 **Core Tip:** The Local recurrence of colorectal adenocarcinoma that has been implanted deeply in

29 submucosal layers usually missed by colonoscopy, despite some cases shows submucosal elevation,

30   endoscopic biopsies give negative result, so EUS done and FNA confirmed the diagnosis and give

31   patients better chance for proper management.

32

33   **<u>INTRODUCTION</u>**

34   In patients with curatively resected CRC, local recurrence is often considered a clinical dilemma

35   difficult to treat[1, 2], may cause markedly disabling symptoms, and usually has a bad prognosis.

36   Several factors were incriminated in the recurrence as positive surgical margins, especially with

37   inadequate excision, inadequate nodal dissection, implantation of exfoliated malignant cells into the

38   deep layers, and changed biological characters at the site of large bowel anastomosis[3]. However,

39   while colonoscopy still remains the gold standard method for detecting LRCC and metachronous

40   lesions, it is considered as an imperfect tool even in the best hands, with missing rates of

41   adenocarcinoma ranging from 1 to 3 % [4, 5]. Unfortunately, not all local recurrences are detectable at

42   the mucosal surface with false-negative colonoscopy. In these cases, EUS plays an irreplaceable role

43   allowing highly detailed visualization of all the bowel wall layers with all the surrounding

44   structures[6].

45   The great value of EUS in the evaluation for possible CRC recurrence nowadays comes from its

46   ability to direct FNA and fine needle biopsy (FNB), thus allowing the acquisition of tissue samples

47   for histological, immunohistochemical examination, and providing a definitive diagnosis.

48   There are two studies on EUS FNA that showed its high accuracy in the diagnosis of subepithelial

49   and extra-luminal lesions of the colon and rectum[7, 8]. In both studies, the accuracy of EUS-FNA was

50   90-95% compared with an 82% accuracy for imaging alone[8].

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55   **<u>CASE PRESENTATION</u>**

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

57   examination before EUS examination.

58   All examinations were done under deep sedation with IV propofol. All cases had ano-rectal lesions,

59   maximum 15-20 cm from the anal verge, so easy to be scanned by the side view scope. No right

60 hemicolon masse were included as it is very difficult to be approached by the side view scope. For
61 EUS-FNA, we used Cook 22G needles (Echotip, Wilson-Cook).
62
63 *Chief complaints*
64 **Case 1:** Male patient, 70 years old. During LRCC surveillance, no lesions were detected by
65 colonoscopy. The patient was experienced unexplained weight loss and referred for the EUS
66 assessment.
67
68 **Case 2:** Male patient, 45 years old. LRCC surveillance colonoscopy was revealed a submucosal
69 lesion at the rectal anastomotic line, and multiple endoscopic biopsies got negative results
70 repeatedly. The patient referred to the EUS examination.
71
72 **Case 3:** Female patient, 55 years old, presented with difficult defecation. A colonoscopy was
73 revealed narrowed rectal anastomotic line, but biopsies were negative.
74
75 **Case 4:** Male patient 48 years old; during LRCC surveillance, submucosal elevation at the sigmoido-
76 colonic anastomotic line was noticed by colonoscopy, and endoscopic biopsies showed negative
77 results.
78
79 **Case 5:** Male patient 46 years old; during LRCC surveillance, colonoscopy showed a submucosal
80 lesion with negative endoscopic biopsies.
81
82   *History of present illness*
83 Case 1: The patient was experienced unexplained weight loss and referred for the EUS assessment.
84 Case 2, 4 and 5: The patient underwent LRCC surveillance.
85 Case 3: The patient presented with difficult defecation.
86
87   *History of past illness*
88   Case 1, 2, 3, 4 and 5: The patient had a history of CRC surgical excision.
89

90   *Personal and family history*

91   Case 1, 2, 3, 4 and 5: No notable personal or family medical history.

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93   *Physical examination*

94   Case 1: unremarkable a part from unexplained weight loss.

95   Case 2, 3, 4 and 5: unremarkable physical examination.

96

97   *Laboratory examinations*

98   Case 1: No other abnormalities noted a part from mild microcytic hypochromic anemia.

99   Case 2, 3, 4 and 5: No other abnormalities noted.

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103   *Imaging examinations*

104   Case 1: The EUS assessment, which revealed a 2.8 x 4 cm homogenous mass at the rectal

105   anastomotic line, arising from the fourth wall layer, FNA performed, and pathological examination

106   confirmed adenocarcinoma.

107   Case 2: The EUS examination showed a 1.9 x 2.9 cm homogenous mass, arising from the fourth

108   layer, FNA was performed, and pathological assessment confirmed adenocarcinoma recurrence.

109   Case 3: EUS was conducted and revealed homogeneous echo texture mass 3 x 3.3cm, arising from

110   the fourth layer, FNA was carried out, adenocarcinoma local recurrence into the deep submucosal

111   layers confirmed.

112   Case 4: The EUS revealed heterogeneous mass 2.3 x 4.2 cm arising from the third layer, FNA was

113   performed, and pathological studies confirm adenocarcinoma recurrence.

114   Case 5: EUS was carried out and revealed 1.2 x 2.4 cm homogeneous echotexture mass, arising from

115   the fourth layer at the ano-rectal anastomotic line, FNA was performed, the result confirmed

116   adenocarcinoma.

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118   *FINAL DIAGNOSIS*

119   In all cases, based on the findings, LRCC was diagnose.

120

121   *TREATMENT*

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

123   oncology.

124   Case 2: Partial colectomy was carried out.

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

126   Case 4: The patient referred to medical oncology.

127   Case 5: The patient received chemo-radiotherapy for Ano-rectal cancer.

128

129   *OUTCOME AND FOLLOW-UP*

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

131

132   **DISCUSSION**

133   CRC is one of the common and lethal malignancy worldwide and is considered as the second

134   leading cause of cancer deaths in the United States[9]. Most of them underwent surgical excision

135   aiming at curative treatment, [10] and up to 40% of patients with the locoregional disease will develop

136   recurrent cancer, of which 90% will occur within 5 years[11].

137   The postoperative surveillance of patients treated for CRC is a clinical challenge, firstly due to

138   distorted anatomy and scarring and secondary because intent to prolong survival by diagnosing

139   recurrent and metachronous cancers at a curable stage. LRCC surveillance strategies combined

140   different modalities, including clinical assessment, tumor marker carcinoembryonic antigen (CEA),

141   computed tomography (CT) scans, and endoluminal imaging, including colonoscopy,

142   sigmoidoscopy, EUS, and CT colonography (CTC). Although the optimal surveillance strategy is

143   still not clearly defined.

144   A number of studies have shown EUS to be very accurate in detecting LCRR, with EUS-FNA being

145   able to provide tissue confirmation[12, 13].

146   Several guidelines and organizations recommend EUS in post-treatment surveillance for resected

147   colon and rectal cancer as NCCN guidelines that stated that flexible sigmoidoscopy with EUS or

148 MRI should be done every 3 to 6 months for 2 years, then every 6 months to complete 5 years for
149 patients with rectal cancer undergoing transanal excision only[14], also United States Multi-Society
150 Task Force include EUS as an alternative to sigmoidoscopy in the testing strategy for patients at
151 higher risk of recurrence[15].

152 In patients with a curative resection for rectal cancer, the current US Multi-Society Task Force
153 recommendation suggests EUS at 3-6 months for the first 2 years after resection as a reasonable
154 option [16]. It is noteworthy that not all recurrences are evident at the mucosal surface, so in those
155 cases the benefit of EUS will be restricted in highly detailed visualization and assessment of all the
156 bowel wall layers with all the surrounding structures[17].

157 Our study shows a rare clinical scenario of hidden implanted adenocarcinoma in the third and
158 fourth layer with intact mucosal layer, so it was not evident intraluminal and missed by
159 colonoscopy and endoscopic biopsies were false-negative repeatedly. This may be explained by the
160 presence of cancer cells at the anastomotic line or trapping of cancer cells in the staple line, resulting
161 in local recurrence, especially in patients who underwent double-staplinganastomosis[17, 18].

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

164 The great role of EUS not only as a method for the evaluation of precancerous polyps and
165 subepithelial lesions found during screening of CRC, but also it has a great role of follow up after
166 resection of rectal carcinoma for early detection and tissue confirmation of locally recurrent cancer
167 colon, by allowing the collection of specimens for histological and immuno- histochemical analysis,
168 and overcoming some of the inherent user bias[19].

169

170 **<u>CONCLUSION</u>**
171 Assessment for LCRR is still problematic and may be very tricky, so we recommend using EUS-FNA
172 to exclude local recurrence. It could be deeply implanted and missed by the routine imaging tools
173 and colonoscopy.

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