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Beyond boundaries: Feasibility of curved linear array echoendoscope in appendiceal neoplasm detection

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Abstract

We recently read with great interest a study by Zhang *et al* in the *World Journal of Gastroenterology*. In our practice, we focus specifically on examining appendiceal mucinous neoplasms (AMNs) with endoscopic ultrasound (EUS) using different scopes. AMNs are rare neoplastic lesions characterized by an accumulation of mucin inside a cystic dilatation of the appendix. Clinically, they can present as nonspecific acute appendicitis. AMNs can turn into a life-threatening condition, termed pseudomyxoma peritonei, in which the ruptured appendix causes accumulation of mucin in the abdomen. Therefore, accurate and rapid diagnosis of AMN is essential. EUS is able to confirm and stage AMNs; although, EUS examination was once limited to the rectal and anal regions due to the conventional oblique-view scopes. With the emergence of new forward-view linear echoendoscopes and instruments like EUS miniprbes and overtubes, the scope of examination is changing. Herein, we discuss the feasibility of using the curved linear array echoendoscopes to examine cecal and appendiceal orifice lesions.

Key Words: Appendiceal mucinous neoplasms; Pseudomyxoma peritonei; Endoscopic ultrasound; Curved linear-array echoendoscope; Forward-view linear echoendoscopes; Miniprbes

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Core Tip: Despite their rarity, appendiceal mucinous neoplasms (AMNs) must be considered and excluded during colonoscopy due to their hazardous complications and malignant potential. Endoscopic ultrasound of the colon to detect AMNs has been challenging due to its limits to the distal colon only. New forward-view echoendoscopes as well as conventional curved linear array echoendoscopes can be utilized for management of these lesions.

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INTRODUCTION

Appendiceal mucinous neoplasms (AMNs; or appendiceal mucocèles) are a rare lesion characterized by accumulation of mucin inside a cystic dilatation of the appendix. AMNs can be benign or malignant. Clinically, this disease most frequently has a nonspecific presentation of right iliac abdominal pain resembling acute appendicitis[1]. As a consequence, delayed, accidental or false diagnoses will occur, indicating that accurate and rapid identification of the disease is needed.

AMN can develop into a life-threatening situation if the appendix ruptures and mucin accumulates on the peritoneal surfaces, abdomen, and pelvis. This condition is called pseudomyxoma peritonei (PMP)[2]. Classifying PMP as a primary tumor or subsequent peritoneal disease is challenging due to its distinct biological behavior. The nomenclature of PMP and AMN is controversial because there are multiple and varying classifications with different treatment modalities. In 2020, the Executive Committee of the Peritoneal Surface Oncology Group International reached a consensus and classified epithelial mucinous neoplasms of the appendix into four categories: Serrated polyps; low-grade AMN; high-grade AMN; and mucinous adenocarcinoma (with or without signet ring cells). Low-grade AMN, high-grade AMN, and cystadenocarcinoma hold the most potential to cause PMP[3,4].

Prognosis is mainly dictated by the pathological features of the primary tumor and the existence of peritoneal deposits. Cytoreductive surgery with hyperthermic intraperitoneal chemotherapy is the gold standard treatment for AMNs associated with peritoneal deposits. This combination treatment has significantly improved the prognosis of patients, but it must be performed and administered in specialized centers. Although cytoreductive surgery with hyperthermic intraperitoneal chemotherapy is the gold standard, patient outcomes vary. Some patients fall into the category of a high cure rate and low recurrence rate, while other patients experience an early recurrence and short survival[5-7].

The use of endoscopic ultrasound (EUS) in the diagnosis of gastrointestinal disorders has grown significantly. The development of EUS-guided fine needle aspiration (FNA) and fine needle biopsy (FNB) has led to novel and innovative interventional uses as well[8]. However, oblique-viewing optics make the procedures risky and technically challenging, and application of the curved linear array (CLA) echoendoscopes in the lower gastrointestinal tract has been restricted to the distal sigmoid colon and the rectum. Therefore, novel forward-view forward array echoendoscopes as well as EUS miniprbes (EUS-MPs) have been developed to visualize the cecum and examine subepithelial lesions in the right colon. Unfortunately, sampling challenges have limited their use.

During colonoscopy, a submucosal lesion at the appendiceal orifice is difficult to diagnose due to the numerous differential diagnoses including gastrointestinal stromal tumor, appendiceal prolapse, lymphoma, mucocèle, or other solid lesions. Endoscopic appearance as well as radiological features can lack a certain specificity that hinders accurate and precise diagnosis that is overcome by EUS imaging[9,10].

EUS EXAMINATION OF AMNs

Computed tomography demonstrates that AMNs are well-circumscribed tubular cystic masses in the right iliac fossa displacing the adjacent bowel. Multiphase contrast-enhanced computed tomography reveals a cystic mass with small amounts of peri-appendiceal fat stranding and a progressive enhancement of the mural nodule in the portal venous phase, along with modest ring mural enhancement in the arterial phase[11]. During colonoscopy a diagnosis of AMN should be considered if a swollen appendiceal orifice is present[12]. A unique observation of AMN occurs when the appendiceal orifice is visible in the middle of the mound amid a layer of mucosa that otherwise appears normal. This is known as the volcano sign[13]. In some cases, especially for mucinous adenocarcinomas, mucus oozing from the appendicular opening is an unconventional observation referred to as an atypical volcano sign[14].

EUS imaging can rule out solid lesions like carcinoid, lipoma, or gastrointestinal stromal tumors[15]. EUS findings of AMN reveal an anechoic or hypoechoic lesion with an internal lamellar configuration that appears as the onion skin sign, which is highly specific to AMN[12,16].

In a recent issue of *World Journal of Gastroenterology*, Zhang *et al*[17] published an intriguing paper. The study addressed an interesting perspective regarding the assessment of EUS features of AMN with the use of a CLA echoendoscope. A retrospective analysis was conducted on a database comprising all patients with AMN who underwent EUS examination at their hospital between January 2018 and July 2023. Clinical data from patients as well as EUS features were analyzed. The study comprised 22 patients who had successful and safe ileocecal region examinations with the CLA echoendoscope.

EUS revealed that all 22 lesions were submucosal cystic hypoechoic lesions with distinct boundaries. Linear echoendoscopes (EG-580UT, Fujifilm Company, Tokyo, Japan or 3870UTK, Pentax Company, Mitaka, Japan) were used for all cases. Using endoscopic and ultrasound views as guidance, they inserted the linear echoendoscope. Ultrasonography was utilized to scan the proximal colon if the angle of the colon was too large to display the endoscopic image.

The literature on identifying AMNs with CLA echoendoscopes during right colon examination is limited. Using CLA echoendoscopes to visualize the colon (with exception of the sigmoid colon) is technically challenging due to the oblique-viewing optics of the equipment currently on the market. The evaluation of lesions beyond the sigmoid colon using oblique-viewing CLA echoendoscopes has been documented in a few case reports[10,18]. EUS-FNA was successfully performed on a submucosal bulge located in the transverse colon[19].

A forward-view linear (FVL) echoendoscope prototype was introduced in 2007. Nguyen-Tang *et al*[10] reported a case series of 15 patients needing EUS examinations for lesions on the right side of the colon using a front-view, forward-array echoendoscope. This technique allowed for cecum advancement in 10 min for every patient. FNA was performed as well. They reported no issues related to a shorter instrument length (125 cm). The rigidity of the echoendoscope was a feature that might have made the insertion easier[10].

Larghi *et al*[20] conducted a multicenter randomized trial to directly assess the efficacy of the FVL and CLA echoendoscopes in EUS-guided tissue acquisition of solid lesions in a large patient population throughout the gastrointestinal tract and surrounding organs. The results of their study clearly showed that the identification and acquisition of tissue from solid lesions across the gastrointestinal tract and nearby organs was comparable for the FVL echoendoscope and standard CLA echoendoscope in terms of safety, diagnostic yield, and accuracy[20].

FVL echoendoscopes may be feasible for cecal intubation. Nevertheless, they are not as common or widely available in most endoscopy centers. They also have a more limited scanning range (90°) compared to CLA echoendoscopes (180°) [21]. Moreover, conventional EUS necessitates specialized endoscopes and training in this technique. Therefore, flexible, high-frequency catheter probes, called EUS-MPs, were introduced. These probes can pass through any operating channel of the endoscope, and EUS examination is more convenient with these diagnostic tools. EUS-MPs decrease the learning curve of conventional EUS and allow scanning at higher frequencies (12-20 MHz) which produce high-resolution imaging of the nearby structures.

In 2021, a paper summarized the commercially available EUS-MPs and the multiple studies on their use on the gastrointestinal tract[22]. Hurlstone *et al*[23] reported the use of 12.5 MHz miniprobe ultrasonography for identifying cancer or broad-based polyps in the colon and rectum of 131 consecutive patients. They established staging criteria based on nodal status and tumor infiltration depth. When the histopathological specimen was compared, the accuracy of the T and N categorization using EUS-MPs was 96% and 87%, respectively. The primary drawback of miniprobes is the high cost and fragility, which hinders their integration into endoscopic procedures. Another disadvantage of EUS-MPs in the identification of AMNs is the loss of scanning sensitivity beyond the wall, which is unsuitable for advanced staging[22, 23].

In the recent study by Zhang *et al*[17], the authors cited these reasons for preferring the CLA echoendoscope over FVL echoendoscopes and EUS-MPs. They used the endoscopic and ultrasound views for guidance only, which is unorthodox, when inserting the linear echoendoscope. They injected water into the intestinal lumen to help determine its orientation, using the ultrasound view if the intestinal lumen was not visible under the endoscopic view. A novel instrument that has been developed is the overtube with its changing stiffness that made cecal intubation more convenient. By reducing loop formation, which promotes stability and preserves a 1-to-1 ratio between force applied to the shaft and motion at the colonoscope tip, stability for interventional procedures at the cecum and appendiceal orifice were gained. They were able to perform procedures such as endoscopic submucosal dissection and EUS examinations.

The endoscopist is able to reach the cecum and appendiceal orifice with the colonoscope with the overtube on top and then remove the scope, leaving the overtube in place. The endoscopist can leave a guidewire for extra assistance. Then they can insert the echoendoscope to conduct the EUS examination with or without tissue acquisition[24,25]. This technique was deployed and reported by Cheng *et al*[25]. They published e-video presentations of 2 cases. One case was an EUS-FNA procedure of a subepithelial lesion at the cecum, and the other case was an EUS staging of a right colonic submucosal neoplastic lesion. They inserted a typical linear-array echoendoscope *via* the overtube and over the guidewire using a combined overtube-guidewire approach. After reaching the cecum, the subepithelial lesion was successfully examined by ultrasonography, and EUS was performed successfully in the 2 cases[25].

Another instrument with a similar concept was used in a video presentation published by Shah-Khan *et al*[18] performing a double-balloon endoluminal intervention platform (DEIP)-assisted EUS to assess a 20-mm submucosal lesion at the appendiceal orifice. A DEIP-equipped pediatric colonoscope was advanced to the cecum. After inflating the balloon and leaving the DEIP *in situ*, a radial echoendoscope was pushed into the cecum *via* a slit made in the sheath of the DEIP. The radial EUS showed a hypoechoic lesion originating from the fourth layer (muscularis propria). Then the scope was swapped for a CLA echoendoscope through the DEIP, and an irregular hypoechoic mass was visualized. After executing an FNB on this lesion, the pathology revealed a leiomyoma, sparing the patient from needless surgery[18].

From this discussion, we can appreciate the value and preference to use the CLA echoendoscope. Zhang *et al*[17] emphasized the ability of CLA echoendoscopes to facilitate FNA and FNB for accurate diagnosis and staging of colonic neoplastic lesions especially at the cecum and appendiceal orifice. However, one can argue that EUS-FNA should be avoided to decrease the risk of causing PMP. In our opinion, using the FVL echoendoscopes when AMN is suspected could be less risky and more convenient while requiring less expertise. Unfortunately, the availability of FVL echoendoscopes and their scanning range are limited. Although the study from Zhang *et al*[17] had some limitations, such as being a retrospective study with a small cohort, they did provide an acceptable approach to examine right colonic lesions with conventional CLA echoendoscopes without the added cost of overtubes, miniprobes, or special FVL echoendoscopes that may not be available in most endoscopy centers.

CONCLUSION

AMNs are rare but significant lesions that may be encountered during a colonoscopy. There is a potential life-threatening complications, and the guidelines for management to obtain accurate diagnosis and staging are unclear. EUS examination of cecal and appendiceal orifice lesions can be performed with a wide range of instruments including EUS-MPs and FVL echoendoscopes. However, due to the added cost and the needed expertise, the use of CLA echoendoscopes for the examination of appendiceal lesions is feasible using instruments like overtubes and guidewires.

FOOTNOTES

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REFERENCES

- 1 **Matias-García B**, Mendoza-Moreno F, Blasco-Martínez A, Busteros-Moraza JI, Díez-Alonso M, García-Moreno Nisa F. A retrospective analysis and literature review of neoplastic appendiceal mucinous lesions. *BMC Surg* 2021; **21**: 79 [PMID: 33573654 DOI: 10.1186/s12893-021-01091-9]
- 2 **Shaib WL**, Assi R, Shamseddine A, Alese OB, Staley C 3rd, Memis B, Adsay V, Bekaii-Saab T, El-Rayes BF. Appendiceal Mucinous Neoplasms: Diagnosis and Management. *Oncologist* 2018; **23**: 137 [PMID: 29317549 DOI: 10.1634/theoncologist.2017-0081erratum]
- 3 **Carr NJ**, Cecil TD, Mohamed F, Sobin LH, Sugarbaker PH, González-Moreno S, Taflampas P, Chapman S, Moran BJ; Peritoneal Surface Oncology Group International. A Consensus for Classification and Pathologic Reporting of Pseudomyxoma Peritonei and Associated Appendiceal Neoplasia: The Results of the Peritoneal Surface Oncology Group International (PSOGI) Modified Delphi Process. *Am J Surg Pathol* 2016; **40**: 14-26 [PMID: 26492181 DOI: 10.1097/PAS.0000000000000535]
- 4 **Fish R**, Renehan AG, Punnett G, Aziz O, Fulford P, Selvasekar C, Wilson M, Halstead R, O'Dwyer ST. Referral and treatment pathways for pseudomyxoma peritonei of appendiceal origin within a national treatment programme. *Colorectal Dis* 2018; **20**: 888-896 [PMID: 29920919 DOI: 10.1111/codi.14310]
- 5 **Govaerts K**, Lurvink RJ, De Hingh IHJT, Van der Speeten K, Villeneuve L, Kusamura S, Kepenekian V, Deraco M, Glehen O, Moran BJ; PSOGI. Appendiceal tumours and pseudomyxoma peritonei: Literature review with PSOGI/EURACAN clinical practice guidelines for diagnosis and treatment. *Eur J Surg Oncol* 2021; **47**: 11-35 [PMID: 32199769 DOI: 10.1016/j.ejso.2020.02.012]
- 6 **Chicago Consensus Working Group**. The Chicago Consensus on peritoneal surface malignancies: Management of appendiceal neoplasms. *Cancer* 2020; **126**: 2525-2533 [PMID: 32282073 DOI: 10.1002/encr.32881]
- 7 **González Bayón L**, Martín Román L, Lominchar PL. Appendiceal Mucinous Neoplasms: From Clinic to Pathology and Prognosis. *Cancers (Basel)* 2023; **15**: 3426 [PMID: 37444536 DOI: 10.3390/cancers15133426]
- 8 **Tabacelia D**, Martinuc A, Burtea DE, Saftoiu A, Stroescu C. Hot topics in therapeutic EUS. *Endosc Ultrasound* 2022; **11**: 153-155 [PMID: 35708368 DOI: 10.4103/EUS-D-22-00080]
- 9 **Kawamoto K**, Motooka M, Hirata N, Ueyama T, Kitagawa S, Shimoda Y, Koga M, Nojiri I, Masuda K. Colonic submucosal tumors: a new classification based on radiologic characteristics. *AJR Am J Roentgenol* 1993; **160**: 315-320 [PMID: 8424341 DOI: 10.2214/ajr.160.2.8424341]
- 10 **Nguyen-Tang T**, Shah JN, Sanchez-Yague A, Binmoeller KF. Use of the front-view forward-array echoendoscope to evaluate right colonic subepithelial lesions. *Gastrointest Endosc* 2010; **72**: 606-610 [PMID: 20561620 DOI: 10.1016/j.gie.2010.03.1126]
- 11 **Yu XR**, Mao J, Tang W, Meng XY, Tian Y, Du ZL. Low-grade appendiceal mucinous neoplasms confined to the appendix: clinical manifestations and CT findings. *J Investig Med* 2020; **68**: 75-81 [PMID: 31300469 DOI: 10.1136/jim-2018-000975]
- 12 **Wong U**, Darwin P. Appendiceal mucocele diagnosed in patients with inflammatory bowel disease using endoscopic ultrasound. *Case Rep Med* 2012; **2012**: 849892 [PMID: 22811730 DOI: 10.1155/2012/849892]
- 13 **Shihara M**, Ohki T, Yamamoto M. Preoperative Diagnosis and Surgical Approach of Appendiceal Mucinous Cystadenoma: Usefulness of Volcano Sign. *Case Rep Gastroenterol* 2017; **11**: 539-544 [PMID: 29033775 DOI: 10.1159/000480374]
- 14 **Vashistha N**, Deo A, Singhal D. Gastrointestinal: Mucocele appendix with atypical "volcano sign". *J Gastroenterol Hepatol* 2022; **37**: 45

[PMID: 34053128 DOI: 10.1111/jgh.15541]

- 15 **Martínez-Ares D**, Lorenzo MJ, Souto-Ruzo J, Pérez JC, López JY, Belando RA, Vilas JD, Colell JM, Iglesias JL. Endoscopic resection of gastrointestinal submucosal tumors assisted by endoscopic ultrasonography. *Surg Endosc* 2005; **19**: 854-858 [PMID: 15868257 DOI: 10.1007/s00464-004-9123-3]
- 16 **DaCunha T**, Dharan M. Endosonographic Diagnosis of Rectal Mucocele: The "Onion Skin" Sign. *ACG Case Rep J* 2022; **9**: e00813 [PMID: 35784511 DOI: 10.14309/crj.0000000000000813]
- 17 **Zhang JC**, Ma YY, Lan YZ, Li SB, Wang X, Hu JL. Evaluation of appendiceal mucinous neoplasms by curved linear-array echoendoscope: A preliminary study. *World J Gastrointest Endosc* 2023; **15**: 699-704 [PMID: 38187914 DOI: 10.4253/wjge.v15.i12.699]
- 18 **Shah-Khan SM**, Patel A, Shah-Khan SM, Shahid H, Tyberg A, Kahaleh M, Sarkar A. EUS of a submucosal lesion at the appendiceal orifice using a double-balloon endoluminal intervention platform. *VideoGIE* 2023; **8**: 124-126 [PMID: 36935804 DOI: 10.1016/j.vgie.2022.11.004]
- 19 **Fehring A**, Schmulewitz N. EUS-guided FNA diagnosis of recurrent follicular lymphoma in the transverse colon. *Gastrointest Endosc* 2006; **64**: 652-653 [PMID: 16996367 DOI: 10.1016/j.gie.2006.02.033]
- 20 **Larghi A**, Ibrahim M, Fuccio L, Lekkerkerker S, Eisendrath P, Frazzoni L, Fockens P, La Marca M, van Hooft JE, Deviere J, Costamagna G. Forward-viewing echoendoscope versus standard echoendoscope for endoscopic ultrasound-guided tissue acquisition of solid lesions: a randomized, multicenter study. *Endoscopy* 2019; **51**: 444-451 [PMID: 30497087 DOI: 10.1055/a-0790-8342]
- 21 **Levy MJ**, Abu Dayyeh BK, Fujii LL, Boardman LA, Clain JE, Iyer PG, Rajan E, Topazian MD, Wang KK, Wiersema MJ, Gleeson FC. Prospective evaluation of adverse events following lower gastrointestinal tract EUS FNA. *Am J Gastroenterol* 2014; **109**: 676-685 [PMID: 24469614 DOI: 10.1038/ajg.2013.479]
- 22 **Seifert H**, Fusaroli P, Arcidiacono PG, Braden B, Herth F, Hocke M, Larghi A, Napoleon B, Rimbas M, Ungureanu BS, Săftoiu A, Sahai AV, Dietrich CF. Controversies in EUS: Do we need miniproboscopes? *Endosc Ultrasound* 2021; **10**: 246-269 [PMID: 34380805 DOI: 10.4103/EUS-D-20-00252]
- 23 **Hurlstone DP**, Brown S, Cross SS, Shorhouse AJ, Sanders DS. Endoscopic ultrasound miniprobe staging of colorectal cancer: can management be modified? *Endoscopy* 2005; **37**: 710-714 [PMID: 16032488 DOI: 10.1055/s-2005-870142]
- 24 **Abadir AP**, Park N, Eng D, El Hage N, Sowa P, Samarasena J. Successful use of a novel dynamic rigidizing overtube in a patient with looping during colonoscopy. *VideoGIE* 2021; **6**: 236-238 [PMID: 34027258 DOI: 10.1016/j.vgie.2020.12.011]
- 25 **Cheng S**, Brunaldi VO, Silva GLR, Furuya CK, Minata MK, Matuguma SE, Artifon ELA. Endoscopic-ultrasound evaluation and fine needle aspiration with a linear echoendoscope in the cecum: it is possible. *Endoscopy* 2019; **51**: E270-E271 [PMID: 31083753 DOI: 10.1055/a-0896-2086]



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