

EUS-guided fiducial gold marker placement in metastatic colon cancer to the spleen

Ameya Deshmukh¹, Ahmed Mohammed Elmeligui², Hussein Hassan Okasha², Nasim Parsa³, Javier Tejedor-Tejada⁴, Jose Nieto⁵

¹Midwestern University – CCOM, Downers Grove, IL, USA; ²Department of Internal Medicine, Division of Gastroenterology, Hepatology and Endoscopy, Kasr Alainy School of Medicine, Cairo University, Cairo, Egypt; ³Division of Gastroenterology, Hepatology and Endoscopy, University of Missouri School of Medicine, Columbia, MO, USA; ⁴Department of Gastroenterology, Hospital Universitario Rio Hortega, Valladolid, Spain; ⁵Division of Gastroenterology, Hepatology and Endoscopy, Borland Groover Clinic, Jacksonville, FL, USA

A 78-year-old female has a history of colon cancer in remission for 7 years after surgical resection. However, a recent computed tomography/positron emission tomography scan revealed an abnormal isodense splenic mass [Figure 1]. The patient refused splenectomy. EUS-guided fine-needle biopsy and fiducial marker placement were determined to be the optimal next step.

First, a linear echoendoscope was advanced into the stomach where the splenic tumor was visualized. Before both the biopsy and placement of the gold fiducial markers

(Boston Scientific), a comprehensive EUS assessment of tumor size, location, and nearby vasculature was done. The mass was measured to be 2.73 cm × 1.88 cm. A 22G Franseen needle (Acquire™) was used to biopsy the mass using one pass with three actuations through a transgastric approach after Doppler ensured no intervening vasculature along the needle path. Then, placement of the fiducial markers was done with two markers placed on the margins of the tumor. The third marker was placed in the center

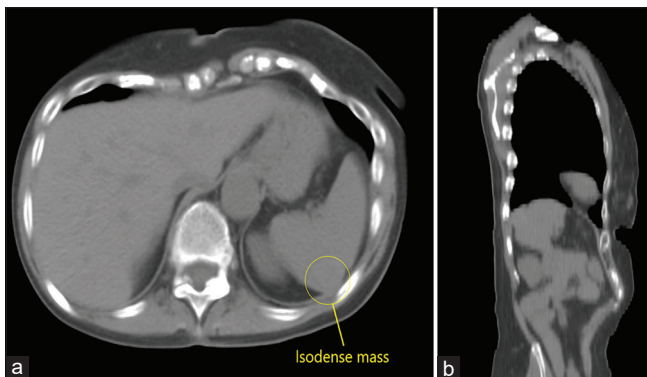


Figure 1. Isodense splenic mass visualized on computed tomography scan. Axial view (a), sagittal view (b)

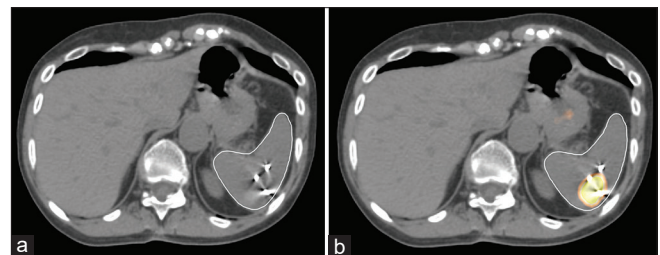


Figure 2. Computed tomography scan displaying successful placement of fiducial gold markers (a). Computed tomography/positron emission tomography scan highlighting both the tumor and fiducial gold markers (b)

Access this article online	
Quick Response Code: 	Website: www.eusjournal.com
	DOI: 10.4103/EUS-D-21-00023

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Deshmukh A, Elmeligui AM, Okasha HH, Parsa N, Tejedor-Tejada J, Nieto J. EUS-guided fiducial gold marker placement in metastatic colon cancer to the spleen. *Endosc Ultrasound* 2022;11:79-80.

Address for correspondence

Dr. Hussein Hassan Okasha, Department of Internal Medicine, Division of Gastroenterology, Hepatology and Endoscopy, Kasr Alainy School of Medicine, Cairo University, Cairo, Egypt. E-mail: okasha_hussein@hotmail.com

Received: 2021-01-13; **Accepted:** 2021-03-23; **Published online:** 2021-06-26

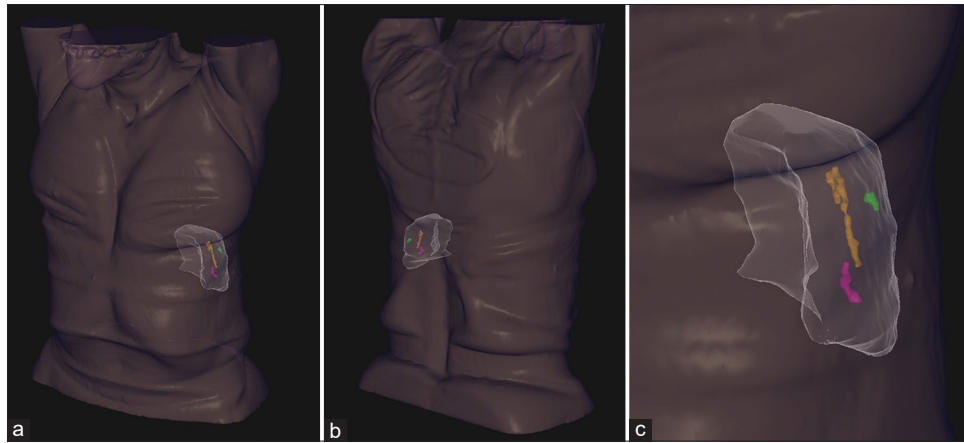


Figure 3. Three-dimensional-image reconstruction showcasing the fiducial gold marker placement. Anterior view (a), posterior view (b), and magnified view (c)

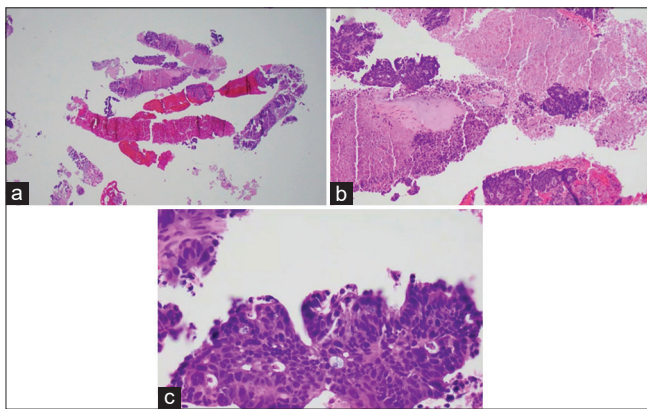


Figure 4. Low-power view demonstrating several fragments of metastatic colon carcinoma with associated necrosis (a). Mid-power view displaying malignant glands and background necrosis (b). High-power view showing high-grade cytologic features plus scattered gland formation (c)

of the mass. All fiducial markers were placed using the preloaded technique. A postprocedure CT scan confirmed the correct placement of the fiducial markers [Figure 2]. Three-dimensional image reconstruction displays the location of the markers more clearly and models the approach for the subsequent radiation therapy [Figure 3]. The patient experienced minimal pain but no bleeding after successful completion of the procedure. Analysis of biopsy samples displayed malignant glands with background necrosis consistent with metastatic colon carcinoma [Figure 4].

The EUS-guided approach streamlines the process allowing for the biopsy and marker placement to occur within the same operative session and allows for greater spatial visualization and tumor assessment aiding in the accurate placement of the markers.^[1,2] The use of preloaded fiducial markers has been shown to decrease the procedure time by approximately 44% when compared to the backloaded method.^[3] This combination of the EUS-guided approach and preloaded fiducial

needles may serve to further decrease the procedure time over more traditional methods of fiducial marker insertion. Furthermore, a recent meta-analysis found the pooled rate of technical success was 98%.^[4] However, additional studies are needed to assess the long-term outcomes of EUS placement of fiducial markers.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initial will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

Hussein Hassan Okasha is an Editorial Board Member of Endoscopic Ultrasound. The article was subject to the journal's standard procedures, with peer review handled independently of this Member and his research groups. There are no other conflicts of interest.

REFERENCES

1. Yang J, Abdel-Wahab M, Ribeiro A. EUS-guided fiducial placement before targeted radiation therapy for prostate cancer. *Gastrointest Endosc* 2009;70:579-83.
2. Coronel E, Singh BS, Cazacu IM, et al. EUS-guided placement of fiducial markers for the treatment of pancreatic cancer. *VideoGIE* 2019;4:403-6.
3. Machicado JD, Obuch JC, Goodman KA, et al. Endoscopic ultrasound placement of preloaded fiducial markers shortens procedure time compared to back-loaded markers. *Clin Gastroenterol Hepatol* 2019;17:2749-58.e2.
4. Coronel E, Cazacu IM, Sakuraba A, et al. EUS-guided fiducial placement for GI malignancies: A systematic review and meta-analysis. *Gastrointest Endosc* 2019;89:659-70.