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

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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)

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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. The use of preloaded fiducial markers has been shown to decrease the procedure time by approximately 44% when compared to the backloaded method. 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%. 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.

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**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.