

EUS-guided radiofrequency ablation: an option for the extrapancreatic region

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Radiofrequency ablation (RFA) achieves tumor necrosis by cell protein denaturation, induced by tissue heating above 45°C to obtain irreversible cellular injury. Energy is supplied by a generator connected to an active electrode tip inserted into the tumor.

RFA was developed in the early nineties for percutaneous or intraoperative treatment of hepatocellular carcinoma (HCC). It is recommended by the EASL–EORTC Clinical Practice Guidelines for early-stage disease (not eligible for surgery).^[1]

Today, RFA is widely used in the treatment of HCC and has been given attention as a potential treatment for many tumors (*e.g.*, kidney, lung, and bone).

Recently, new devices have been used to perform RFA through linear echoendoscopes, for targeting focal pancreatic lesions (neuroendocrine tumors, adenocarcinomas, and pancreatic cysts).^[2–4]

Moreover, the left lobe of the liver can be well visualized using endoscopic ultrasound (EUS), making it amenable to EUS-guided interventional procedures, including ablations.^[5]

A 76-year-old HBV/HCV-cirrhotic female presenting with portal hypertension and ascites had been diagnosed

with HCC on radiological imaging (Barcelona Clinic Liver Cancer Stage A: Child–Pugh B8/Performance status: 1), but she was deemed unfit for surgery. She was, therefore, referred for EUS-guided sampling of hilar lymph nodes, in view of further management of a suspicious HCC in the fourth segment of her liver [Figure 1a–c]. Sampling of the hepatic nodule and the lymph nodes resulted in a diagnosis of well-differentiated HCC and reactive adenopathies [Figure 2].

Considering the easy approach provided by EUS and obstacles to the percutaneous route (large umbilical hernia), the nodule was ablated with EUS guidance (GIF-160 Olympus, Tokyo, Japan) using a 20-mm active tip water-cooled electrode needle (EUSRA™ RF Electrode-VIVA RF Generator, STARmed, Seoul Korea).

The procedure required three passes at five positions, using a multi-pass technique that allowed a larger ablation. Video 1 shows the insertion of the needle inside the HCC and the development of air bubbles near the electrode tip (first pass). Later, a panoramic view shows a large hyperechoic halo occupying the nodule. This marked the conclusion of the procedure, after a total of 30 min of energy application (starting power 30 W).

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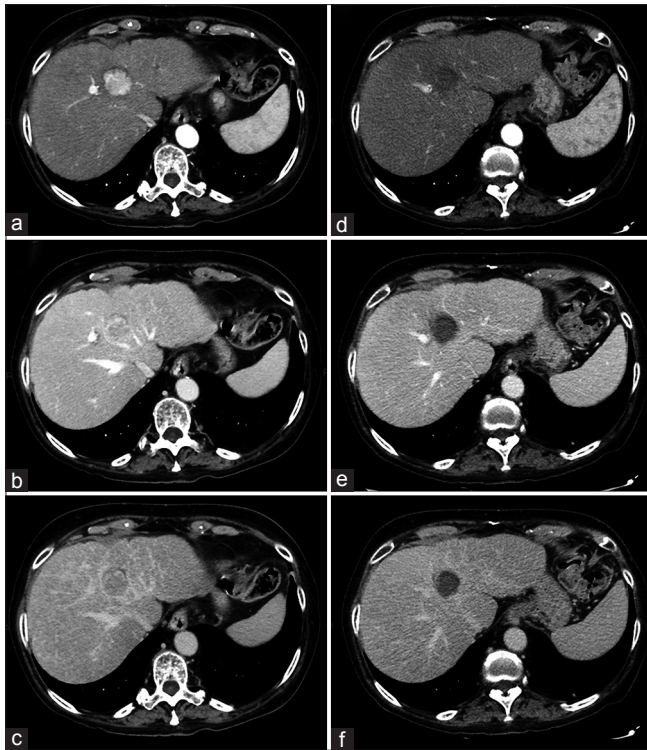


Figure 1. Abdominal computed tomography shows a 30-mm nodule with diffuse hyperenhancement in the arterial phase, and slow wash out in the portal and late phases (a-c). After 1 month, an abdominal computed tomography scan shows a large ablated area in the arterial, portal, and late phases (d-f)

An ultrasound imaging contrast (Sonovue[®], Bracco, Italy) was administered during the procedure for marking the ablated area (nonenhancing tissue) and targeting further insertions. No adverse event was observed, and the patient was discharged on the 3rd postoperative day. One month later, computed tomography scan showed a large ablated area [Figure 1d-f].

This case highlights the possibilities for an EUS-guided transluminal approach to perform RFA of extrapancreatic neoplasms, such as a liver lesion, when percutaneous or surgical treatments are technically challenging or prohibitive.

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

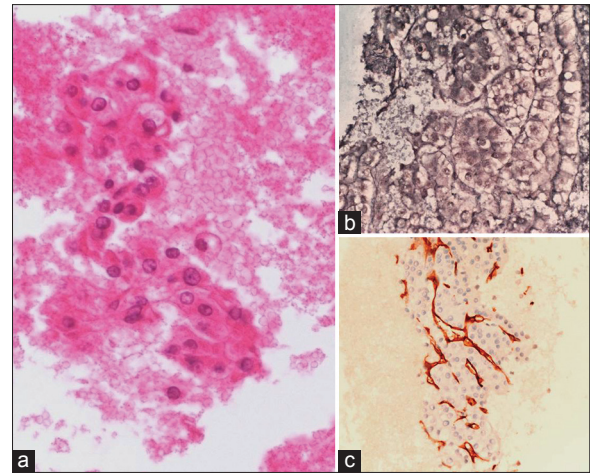


Figure 2. High-power images show pseudoglandular aggregates of atypical epithelial cells (a) (H and E, $\times 400$). Gomori's staining (b) highlights the presence of neoplastic pseudoglandular structures ($\times 400$). CD34 immunostaining demonstrates sinusoidal capillarization (c), a typical change that characterizes the endothelial cells of hepatocellular carcinoma ($\times 200$)

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

There are no conflicts of interest.

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