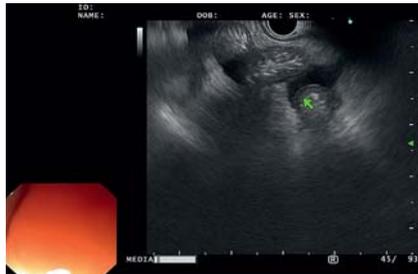


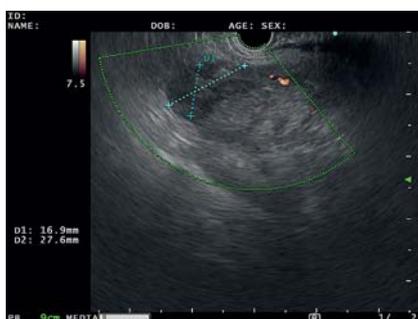
## Endoscopic ultrasound-guided renal biopsy: an alternative to transjugular renal biopsy in high-risk patients



► **Fig. 1** Endoscopic ultrasonography showing interbowel fluid.



► **Fig. 2** Endoscopic ultrasound-guided fine-needle biopsy (FNB) taken from lower pole of left kidney.



► **Fig. 3** Subcapsular hematoma in the lower pole of the left kidney, 27 × 17 mm in size.

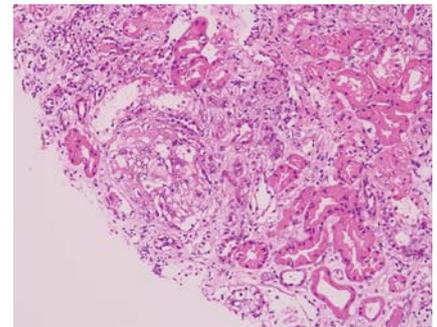
A 32-year-old man with hepatocellular cancer who had undergone right hepatectomy 2 years previously presented with facial puffiness and abdominal distension. Ultrasound showed moderate ascites with normal kidneys. Serum albumin was 2.8 g/dL, hemoglobin 8.4 g/dL, platelet count 74 000/μL, and creatinine 1.7 mg/dL. Urine examination showed 3+ proteinuria and 3+ hematuria, while 24-hour urinary protein was 3030 mg/dL. Transjugular renal biopsy (TJRB) was advised after nephrology consultation, due to the ascites with thrombocytopenia, but the patient was not willing to undergo this procedure. Hence, endoscopic ultrasound (EUS)-guided biopsy with a linear echoendoscope (GIF UCT180; Olympus, Tokyo, Japan) was planned.

Examination revealed significant ascites with interbowel fluid (► **Fig. 1**). The left kidney was sampled via a transgastric approach, as the patient's surgically altered anatomy made scope positioning in the duodenal bulb precarious. A 22G Acquire needle (Boston Scientific, USA) was used to target the cortex of the lower pole of the left kidney, avoiding major medullary vessels. Two passes were made with three actuations each, with a slow-styleset pull-through (► **Fig. 2**; ► **Video 1**). A 2.7 × 1.6 cm subcapsular hematoma was seen (► **Fig. 3**). On visualization up to 10 minutes, no increase in the size of the hematoma could be seen. Ultrasound 12 hours after the procedure still revealed no increase in the hematoma. A 20-mm core was sent for histopathologic analysis and immunofluorescence studies (► **Fig. 4**). The diagnosis of focal segmental glomerulosclerosis was confirmed (► **Fig. 5**).

TJRB is the alternative to percutaneous biopsy in high-risk patients with ascites and thrombocytopenia [1]. EUS-guided fine-needle aspiration cytology of renal masses has been described in case series [2, 3], but sampling for primary diagnosis



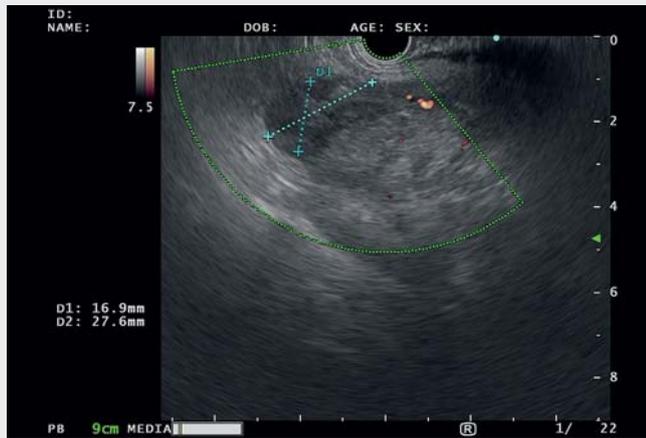
► **Fig. 4** Core specimen (arrow) obtained with a 22G FNB needle.



► **Fig. 5** Histopathologic analysis revealed a sclerosed glomerulus with mesangial widening with fibrosis in the interstitium, suggestive of focal segmental glomerulosclerosis.

of nephrotic syndrome has not been described. Unlike in EUS liver biopsy, where a 19G needle is used [4], in our case a 22G needle was used to reduce risk of bleeding. We were able to achieve an optimal sample for diagnosis using EUS, while avoiding radiation exposure and the use of contrast in a patient with compromised renal function.

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**Video 1** Endoscopic ultrasound-guided kidney biopsy from the lower pole of the left kidney for evaluation of nephrotic syndrome.

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## Competing interests

The authors declare that they have no conflict of interest.

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