Portal hypertension is defined by the hepatic venous pressure gradient and is measured via a percutaneous transhepatic route [1]. We describe a novel technique for direct portal pressure measurement using endoscopic ultrasound (EUS). A 27-year-old man with Noonan syndrome and congenital heart disease presented with recurrent gastrointestinal bleeding, which continued despite cardiac surgery. Endoscopic ultrasound-guided portal-systemic pressure gradient measurement revealed a marked improvement of the vascular malformations (Fig. 3a, b) with only occult, but transfusion-requiring bleeding remaining. EUS was repeated with only one vessel large enough to allow coiling.

Given continued uncertainty with regard to the prior hepatic venous pressure gradient and diagnosis, EUS was used to re-measure the portal pressure. The portal vein was accessed using a 22-gauge fine needle aspiration (FNA) needle (Wilson-Cook Medical Inc., Winston-Salem, North Carolina, United States). Portal blood was aspirated through the needle, which was connected to an arterial pressure catheter (Fig. 4a, b, Fig. 5a).

After calibration, the portal pressure measured 11 mmHg, thereby excluding significant portal hypertension. The middle hepatic vein pressure was then measured at 10 mmHg (Fig. 4c, d, Fig. 5b), confirming a 1 mmHg pressure gradient as recorded by interventional radiology. There was no evidence of bleeding and the hemoglobin was stable 4 days later.

Prior EUS-guided portal pressure measurements in porcine models correlated with percutaneous measurements [2–4]. This is the first clinical report demonstrating the feasibility and apparent safety of portal vein and hepatic vein pressure measurements by EUS, thereby allowing diagnosis of arteriovenous malformations as have been reported in Noonan syndrome [5].

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Competing interests: None

Larissa L. Fujii-Lau, Michael D. Leise, Patrick S. Kamath, Ferga C. Gleeson, Michael J. Levy
Division of Gastroenterology and Hepatology, Mayo Clinic, Rochester, Minnesota, USA

References
3 Giday SA, Clarke JO, Buscaglia JM et al. EUS-guided portal vein catheterization: a promising novel approach for portal angiography and portal vein pressure measure-
**Fig. 3**  
(a) Routine endoscopy revealed multiple duodenal serpiginous folds before therapy.  
(b) Their appearance following EUS-guided coil insertion therapy.

**Fig. 4**  
(a) EUS demonstrates the portal vein with power Doppler imaging.  
(b) Fine needle aspiration (FNA) needle position during pressure monitoring.
Bibliography

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Corresponding author
Michael J. Levy
Mayo Clinic
Division of Gastroenterology and Hepatology
200 1st St SW
Rochester
MN 55905
USA
Fax: +1-507-266-3931
levy.michael@mayo.edu