Duodenal arteriovenous malformation: endosono-
graphic diagnosis and coil embolization

A 67-year-old man with a history of me-
lena and a hemoglobin level of 4.8 g/dL
was referred to our center for endoscopic
evaluation. He had no significant comor-
bidities and his liver and renal functions
were normal. His anemia was corrected
with multiple blood transfusions. As up-
per gastrointestinal endoscopy showed fresh
blood in the second part of the duo-
denum, a side-viewing endoscopy was
brought out, which revealed a submucosal
bulge with ulceration proximal to the
ampulla (Fig. 1a). Active bleeding from
this lesion was noted during endoscopy
(Fig. 1b). Endosonography with color
Doppler imaging showed arterIALIZATION
of the venous spectral pattern and low re-
sistance arterial flow supplying the lesion,
suggestive of arteriovenous malformation
(AVM) (Fig. 2, Video 1). Subsequent
computed tomography (CT) angiography
confirmed a 6.1 × 6.2-mm AVM in the
medial wall of the second part of the duo-
denum (Fig. 3). A subsequent angiogra-
phy showed that this AVM was supplied
by branches of the gastroduodenal artery
and pancreatoduodenal branches of the
superior mesenteric artery with an early
draining vein. Superselective coil emboli-
ization of branches supplying the AVM
was achieved with no residual blush
(Video 2).

An AVM is a congenital persistent abnor-
mal connection between arteries and
veins. Bleeding from AVMs of the gastroin-
testinal tract is rare. Angiodysplasias/vas-
cular malformations comprise about 5 % of
nonvariceal upper gastrointestinal bleeds
[1]. Bleeding from an AVM often requires
surgical intervention [2]. McCravy et al.
describe a case of gastric AVM that was
successfully managed by endoclip appli-
cation and percutaneous transarterial coil
embolization [3]. Duodenal AVM can be
misdiagnosed as a duodenal varix; Poon &
Poon describe such a case, which was man-
gaged surgically [4]. Endoscopic ultrasound

Fig. 1 a Submucosal ulcerated duodenal bulge proximal to the ampulla in a 67-year-old man, seen
at side-viewing endoscopy. b The actively bleeding lesion in the medial wall of the second part of the
duodenum.

Fig. 2 Endosono-
graphy with color Doppler
imaging of the duo-
denal lesion suggests
arteriovenous malfor-
mation. a Arterializa-
tion of the venous
spectral pattern. b Low
resistance arterial flow
supplying the arterio-
venous malformation.

Video 1

Endosonographic appearance of a vascular
lesion in the medial wall of the second part
of the duodenum showing Doppler signals
suggestive of arteriovenous malformation,
in a 67-year-old man with a history of melena
and a hemoglobin level of 4.8 g/dL.
with Doppler evaluation is a good imaging modality for characterizing vascular lesions involving the wall of the gastrointestinal tract [5]. Bleeding from duodenal AVMs is extremely rare. This case is unique because of the characteristic appearance of the AVM on endoscopic ultrasound and the successful management by angi-embolization.

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**Competing interests:** None

**Shibi Mathew¹, Prakash Zacharias¹, Lijesh Kumar², John Mathews¹, Prashanth Menon¹, Mathew Philip¹**

¹ Department of Medical Gastroenterology, PVS Memorial Hospital, Kochi, Kerala, India
² Department of Interventional Radiology, PVS Memorial Hospital, Kochi, Kerala, India

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**Bibliography**

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**Corresponding author**

Shibi Mathew, MD, DM
Department of Medical Gastroenterology
PVS Memorial Hospital
Kochi
Kerala 682017
India
Fax: +91-484-2348239
shibim77@gmail.com