

Doppler ultrasound-guided gyrectomy in the management of arterialised developmental venous anomalies

Alperen Elek¹

Erkin Ozgiray²

Celal Cinar³

Mahmut Küsbeci³

Author details can be found at the end of this article

Correspondence to:

Alperen Elek;

alperenelek13@gmail.com

A 20-year-old female patient underwent emergency surgery to remove a haematoma located in the right parietal region. Postoperative diagnostic angiography revealed an arterialised developmental venous anomaly adjacent to the bleeding area (**Figure 1**). The decision was made to resect the anomaly together with the relevant brain parenchyma. Gyrectomy was performed under the strict guidance of real-time Doppler ultrasound imaging (**Figure 2**).

A developmental venous anomaly is a congenital anomaly resulting from the atypical organisation of normal cerebral veins during embryonic development. It drains normal brain tissue into a larger collector vein, typically causing no symptoms. However, in rare cases, this anomaly can have an arterial component with arteriovenous shunts, which may cause intracranial haemorrhage (Oran et al, 2009).

Doppler ultrasound can be used to identify any vascular lesion in soft tissue, whether it has an arterial and/or arteriovenous component. While classical developmental venous anomaly is a venous lesion that may be difficult to identify by Doppler ultrasound alone, an arterialised developmental venous anomaly can be easily detected (Horsch et al, 2014). In this case, Doppler ultrasound allowed the anatomy of the developmental venous anomaly (eg caput medusa and collector vein) to be identified after craniotomy, permitting precise localisation of the lesion and preventing unnecessary tissue removal.

Author details

¹Faculty of Medicine, Ege University, Izmir, Turkey

²Department of Neurosurgery, Faculty of Medicine, Ege University, Izmir, Turkey

³Department of Interventional Radiology, Faculty of Medicine, Ege University, Izmir, Turkey

How to cite this article:

Elek A, Ozgiray E, Cinar C, Küsbeci M. Doppler ultrasound-guided gyrectomy in the management of arterialised developmental venous anomalies. *Br J Hosp Med*. 2024. <https://doi.org/10.12968/hmed.2023.0388>

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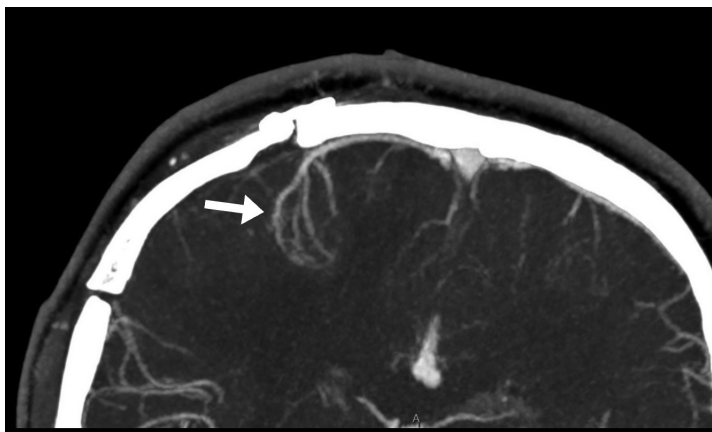


Figure 1. Coronal computed tomography angiogram reveals a typical developmental venous anomaly; caput medusa and collector vein, draining into the superior sagittal sinus (white arrow).

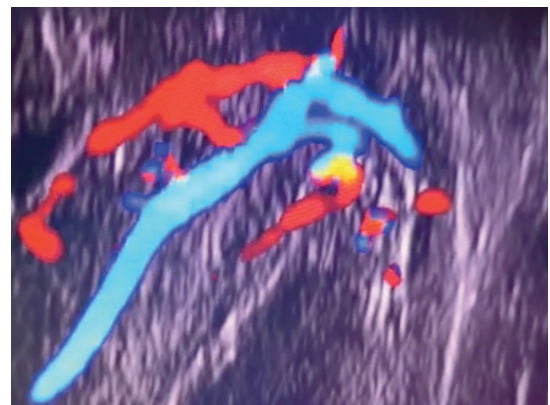


Figure 2. Intraoperative Doppler ultrasound reveals the collector vein (blue) and umbrella-like caput medusa (red), an anatomical structure typical of developmental venous anomaly.