A 57-year-old woman presented with acute confusion. CT-scan showed a left-sided hemorrhage, and MR-imaging demonstrated an adjacent cavernous malformation (CM) associated with a complex developmental venous anomaly (DVA) continuous with the hemorrhage (figure, A–C). Digital subtraction angiography demonstrated an arteriovenous malformation (AVM) draining into the DVA (figure, D–F). DVAs are typically-benign lesions commonly associated with CMs and rarely, AVMs.1 Concurrency of these 3 malformations is exceptionally rare. Preserving DVA outflow is crucial when AVM extirpation is indicated.2 Our understanding of the role of the venous system and DVAs in the genesis of vascular malformations continues to evolve.2
Study Funding
No targeted funding reported.

Disclosure
The authors report no disclosures relevant to the manuscript. Go to Neurology.org/N for full disclosures.

Appendix Authors

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthony S. Larson, BS</td>
<td>Department of Radiology, Mayo Clinic, Rochester, MN</td>
<td>Design and conceptualized study; analyzed the data; drafted the manuscript for intellectual content</td>
</tr>
<tr>
<td>Harry Cloft, MD, PhD</td>
<td>Department of Radiology, Mayo Clinic, Rochester, MN</td>
<td>Design and conceptualized study; analyzed and acquired the data; drafted the manuscript for intellectual content</td>
</tr>
</tbody>
</table>

Appendix (continued)

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ivan D. Carabenciov, MD</td>
<td>Department of Neurology, Mayo Clinic, Rochester, MN</td>
<td>Design and conceptualized study; analyzed and acquired the data; drafted the manuscript for intellectual content</td>
</tr>
<tr>
<td>Giuseppe Lanzino, MD</td>
<td>Department of Radiology; Department of Neurosurgery, Mayo Clinic, Rochester, MN</td>
<td>Design and conceptualized study; analyzed the data; drafted the manuscript for intellectual content</td>
</tr>
</tbody>
</table>

References
Teaching NeuroImages: The Venous System and Developmental Venous Anomalies: Drivers of Vascular Malformations?
Anthony S. Larson, Harry Cloft, Ivan D. Carabenciov, et al.
Neurology 2021;96:e960-e961 Published Online before print September 11, 2020
DOI 10.1212/WNL.0000000000010815

This information is current as of September 11, 2020

Updated Information & Services
including high resolution figures, can be found at:
http://n.neurology.org/content/96/6/e960.full

References
This article cites 2 articles, 0 of which you can access for free at:
http://n.neurology.org/content/96/6/e960.full#ref-list-1

Subspecialty Collections
This article, along with others on similar topics, appears in the following collection(s):
Arteriovenous malformation
http://n.neurology.org/cgi/collection/arteriovenous_malformation
Intracerebral hemorrhage
http://n.neurology.org/cgi/collection/intracerebral_hemorrhage
Other cerebrovascular disease/ Stroke
http://n.neurology.org/cgi/collection/other_cerebrovascular_disease__s_troke

Permissions & Licensing
Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
http://www.neurology.org/about/about_the_journal#permissions

Reprints
Information about ordering reprints can be found online:
http://n.neurology.org/subscribers/advertise

Neurology ® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2020 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.