



Providing Choice & Value

Generic CT and MRI Contrast Agents



**FRESENIUS
KABI**

CONTACT REP

AJNR

**Introduction to Digital Subtraction
Myelography for CSF-Venous Fistula
Detection**

Ian T. Mark, Ajay A. Madhavan, John Benson, Jared
Verdoorn and Waleed Brinjikji

This information is current as
of July 18, 2025.

AJNR Am J Neuroradiol 2025, 46 (1) 219

doi: <https://doi.org/10.3174/ajnr.A8587>

<http://www.ajnr.org/content/46/1/219>

Introduction to Digital Subtraction Myelography for CSF-Venous Fistula Detection

 Ian T. Mark,  Ajay A. Madhavan,  John Benson,  Jared Verdoorn, and  Waleed Brinjikji



ABSTRACT

The purpose of this video is to introduce digital subtraction myelography for CSF-venous fistula (CVF) detection.¹⁻³ CVF is the most recently identified and likely the most prevalent type of spinal CSF leak that leads to spontaneous intracranial hypotension^{4,5} CVFs are occult on conventional MRI and CT, necessitating the use of myelography for the diagnosis. This video highlights one such technique, which is important because an increasing number of centers are starting to diagnose CVF.

Disclosure forms provided by the authors are available with the full text and PDF of this article at www.ajnr.org.

REFERENCES

1. Kim DK, Brinjikji W, Morris PP, et al. **Lateral decubitus digital subtraction myelography: tips, tricks, and pitfalls.** *AJNR Am J Neuroradiol* 2020;41:21–28 [CrossRef Medline](#)
2. Hoxworth JM, Trentman TL, Kotsenas AL, et al. **The role of digital subtraction myelography in the diagnosis and localization of spontaneous spinal CSF leaks.** *AJR Am J Roentgenol* 2012;199:649–53 [CrossRef Medline](#)
3. Mark I, Madhavan A, Oien M, et al. **Temporal characteristics of CSF-venous fistulas on digital subtraction myelography.** *AJNR Am J Neuroradiol* 2023;44:492–95 [CrossRef Medline](#)
4. Schievink WI, Moser FG, Maya MM. **CSF-venous fistula in spontaneous intracranial hypotension.** *Neurology* 2014;83:472–73 [CrossRef Medline](#)
5. Mamlouk MD, Callen AL, Madhavan AA, et al. **Spinal CSF leaks: the neuroradiologist transforming care.** *AJNR Am J Neuroradiol* 2024;45:1613–20 [CrossRef Medline](#)

Received October 6, 2024; accepted after revision November 4.

From the Mayo Clinic, Department of Radiology, Rochester, Minnesota.

Please address correspondence to Ian Mark, MD, Department of Radiology, Mayo Building, 2-50W, Rochester, MN 55905; e-mail: Mark.Ian@mayo.edu; @iantmark; @mayoradiology

 Indicates open access to non-subscribers at www.ajnr.org

<http://dx.doi.org/10.3174/ajnr.A8587>