

A Facial Lesion with Cord-like Induration and Ring-like Appearance on MRI: A Quiz

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A 63-year-old woman was referred to our department with a 1-month history of discomfort in the right medial canthal region, where a subcutaneous nodule had been suspected. On inspection, no obvious mass was observed; however, palpation revealed a cord-like induration, approximately 8 mm in length, along the course of a vessel (Fig. 1A). Ultrasonography demonstrated a blood flow signal at the corresponding site, although a discrete mass lesion could not be clearly identified. Magnetic resonance imaging (MRI) showed a ring-like structure on T2-weighted images, characterized by a central high-signal area surrounded by a low-signal rim (Fig. 1B), while short tau inversion recovery (STIR) images demonstrated homogeneous high signal intensity (Fig. 1C).

Based on these findings, a vascular lesion was suspected, and diagnostic excision was performed. Following a skin incision directly over the lesion, a dilated vascular structure was identified. The segment corresponding to the palpable cord-like induration was localized, ligated proximally and distally and excised en bloc (Fig. 1D, E). The wound was closed by simple suturing.

What is your diagnosis?

- 1: Thrombosed vein
 - 2: Aneurysm
 - 3: Arteriovenous malformation
 - 4: Intravascular pyogenic granuloma.
- See next page for answer.

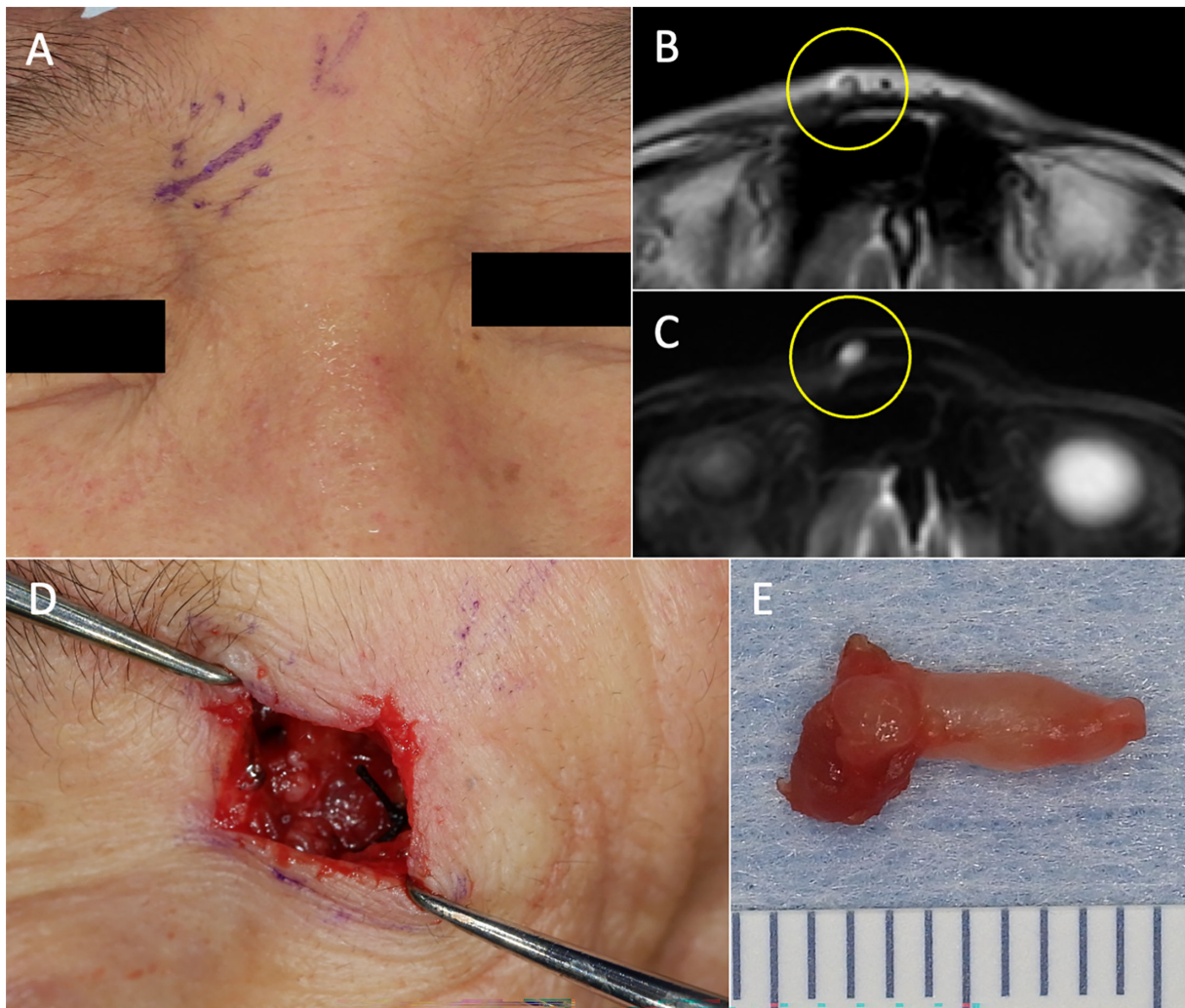


Fig. 1. Clinical, radiological, and intraoperative findings. (A) Preoperative clinical findings. A cord-like induration was palpable in the right medial canthal region. (B) T2-weighted MRI. A ring-like structure consisting of a central high-signal area surrounded by a low-signal rim is observed (yellow circle). (C) STIR MRI. The lesion shows homogeneous high signal intensity (yellow circle). (D) Intraoperative findings. A dilated vascular structure was identified; the involved vessel was ligated and excised. (E) Gross specimen.

ANSWERS TO QUIZ

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Diagnosis: Intravascular pyogenic granuloma.

Histopathological examination revealed a nodular lesion protruding into the lumen of a dilated vein. The lesion was confined within the vascular lumen and was composed of proliferating endothelial cells forming variably sized vascular channels. Immunohistochemical staining demonstrated that these cells were positive for CD31 and CD34. Based on these findings, a diagnosis of intravascular pyogenic granuloma (IVPG) was established.

IVPG is a rare benign intravascular proliferative lesion arising within the venous lumen and is characterized by a polypoid growth projecting into the vascular cavity (1). Ultrasonography and magnetic resonance imaging (MRI) are commonly used for preoperative evaluation; however, these imaging findings are not necessarily specific, and the diagnosis can be challenging. On ultrasonography, IVPG is typically visualized as a well-defined intraluminal mass accompanied by hypoechoic areas and detectable blood flow on color Doppler imaging (2). However, variability in echogenicity and vascularity has been reported, and consistent findings are not always obtained. Furthermore, in small lesions such as the present case, qualitative assessment by ultrasonography may be particularly difficult. On MRI, IVPG generally appears isointense to muscle on T1-weighted images and demonstrates iso- to hyperintensity relative to veins on T2-weighted images (2). Nevertheless, MRI findings also show variability, which may reflect differences in vascular architecture and tissue composition within the lesion. Taken together, imaging findings of IVPG are nonspecific, and establishing a definitive preoperative diagnosis is often difficult (3).

In the present case, T2-weighted MRI demonstrated a ring-like structure consisting of a central high-signal area surrounded by a low-signal rim. The central high-signal area is considered to represent the tumor itself, whereas the peripheral low-signal area may

reflect flow void due to preserved venous blood flow surrounding the lesion. Flow void is known to result from signal loss caused by high-velocity blood flow, turbulence and dephasing (4).

Similar findings have been reported in vascular lesions such as aneurysms and arteriovenous malformations, in which blood flow appears as low signal intensity on T2-weighted images due to flow void (5). In contrast, IVPG is characterized by a low-signal rim reflecting flow void in the periphery rather than within the lesion itself, which may represent a distinctive feature in the present case and may aid in differential diagnosis. On STIR images, the lesion showed homogeneous high signal intensity, which may be explained by relative attenuation of signal differences between the central and peripheral components due to fluid-sensitive contrast.

The ring-like structure observed in this case, characterized by central high signal intensity and a peripheral low-signal rim, suggests an intravascular lesion and may prompt consideration of IVPG in the differential diagnosis. Such imaging findings may be helpful in preoperative evaluation and could facilitate early diagnosis and appropriate surgical management.

REFERENCES

1. Cooper PH, McAllister HA, Helwig EB. Intravenous pyogenic granuloma. A study of 18 cases. *Am J Surg Pathol* 1979; 3: 221–228. <https://doi.org/10.1097/0000478-197906000-00004>
2. Loftus WK, Spurrier AJ, Voyvodic F, Neuhaus SJ, James CL. Intravenous lobular capillary haemangioma (pyogenic granuloma): a case report and a review of imaging findings as reported in the literature. *J Med Imaging Radiat Oncol* 2018; 62: 217–223. <https://doi.org/10.1111/1754-9485.12650>
3. Yang Y, Ye X, Fu B, Li Z, Feng Y, Zhao Y, et al. Intravenous pyogenic granuloma in the internal jugular vein: a case report and literature review. *Medicine* 2021; 100: e24570. <https://doi.org/10.1097/MD.00000000000024570>
4. Bradley WG Jr. Carmen lecture. Flow phenomena in MR imaging. *AJR Am J Roentgenol* 1988; 150: 983–994. <https://doi.org/10.2214/ajr.150.5.983>
5. Tranvinh E, Heit JJ, Hacein-Bey L, Provenza J, Wintermark M. Contemporary imaging of cerebral arteriovenous malformations. *AJR Am J Roentgenol* 2017; 208: 1320–1330. <https://doi.org/10.2214/AJR.16.17306>

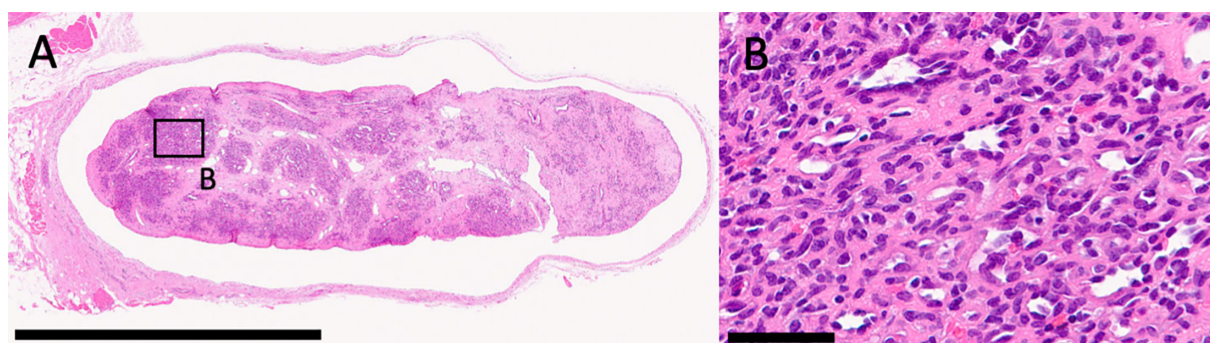


Fig. 2. Histopathological findings. (A) Hematoxylin-eosin staining. A nodular lesion confined within the lumen of a dilated vessel is observed (scale bar: 2.5 mm). (B) Hematoxylin-eosin staining. Proliferation of endothelial cells with capillary-like channels is observed (scale bar: 50 µm).