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Figure 1. Ptosis and loss of right eye adduction on leftward horizontal gaze consistent with a right cranial nerve III palsy.

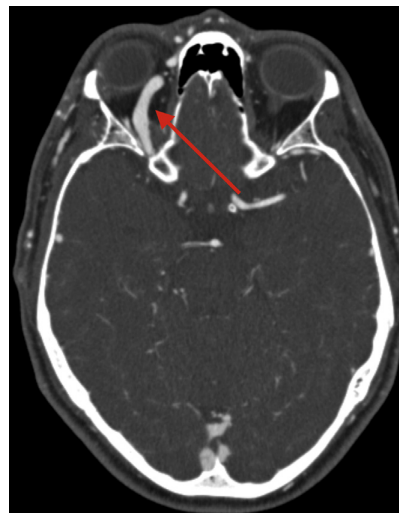


Figure 2. CT angiography (axial view) showing abnormal dilatation of the ophthalmic vein (arrow), causing local mass effect.

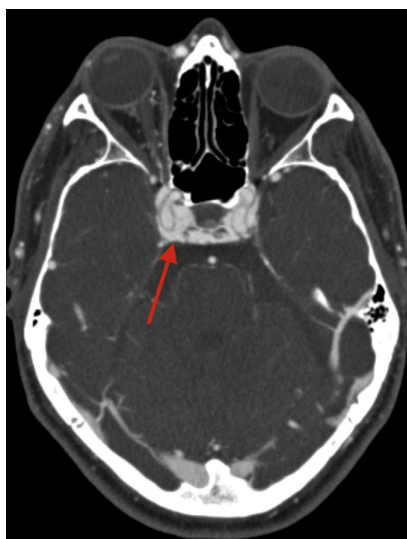


Figure 3. CT angiography (axial view) demonstrating arterial phase filling of the cavernous sinus (arrow).

[Ann Emerg Med. 2021;77:179.]

A 36-year-old man presented to the emergency department with double vision. Four weeks before, he had been struck in the face and he underwent open reduction and internal fixation of a mandibular fracture. He had intact cranial nerves in the immediate postoperative period. On examination, he displayed preserved visual acuity, a right-sided cranial nerve III palsy with an inferiorly abducted right eye, loss of medial and upward gaze, significant right-sided ptosis, and asymmetric mydriasis (Figure 1 and Video E1 [available online at <http://www.annemergmed.com>]). A bruit was auscultated over the affected eye.

For the diagnosis and teaching points, see page 220.

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DIAGNOSIS:

Traumatic carotid-cavernous fistula. Computed tomographic angiography of the brain revealed arterial filling of the cavernous sinus, consistent with a right-sided carotid-cavernous fistula and a dilated right ophthalmic vein (Figures 2 and 3). Interventional radiology was consulted and formal angiography confirmed a 2-mm arterial venous fistula arising from the right internal carotid artery, with retrograde filling of the right cavernous sinus. Coil embolization was successfully performed, with complete resolution of the patient's cranial nerve III deficit at 6-week follow-up.

Carotid-cavernous fistula is a rare complication of traumatic facial injuries estimated to affect less than 0.30% of patients, most commonly those who sustain basilar skull fractures.^{1,2} Carotid-cavernous fistulas are classified according to mechanism, flow state, and structures involved, with greater than 75% of cases a result of trauma that frequently causes direct communication between the internal carotid artery and cavernous sinus.² Prompt recognition of a carotid-cavernous fistula is crucial because progressive blindness and severe bleeding may occur if it is untreated. Although rare, life-threatening complications such as intracranial hemorrhage and massive epistaxis have been reported.³

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