A MULTIMODALITY CASE REPORT

INFECTIOUS CAROTID BLOWOUT SYNDROME

Complete serial imaging evolution in the treated head and neck

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BACKGROUND: A NECK PRIMED FOR CAROTID BLOWOUT

77-year-old male with heavily treated laryngeal squamous cell carcinoma

2020

Total laryngectomy and bilateral neck dissections

Adjuvant radiation

2021

Local recurrence: salvage pharyngectomy

Second recurrence: salvage pharyngectomy with anterolateral thigh free flap

Proton-beam reirradiation

Since February 2025

Chronic retropharyngeal abscess-fistula with prevertebral osteomyelitis

Treatment-related fibrotic neck deemed non-operable

Chronic tracheostomy and PEG dependence

Long-term suppressive antibiotics

Ongoing immunotherapy

Substrate for infectious carotid blowout:

Multiply operated and irradiated tissue. Chronic deep-neck infection. Carotid-adjacent inflammation.

ACUTE EVENT: MASSIVE NEOPHARYNGEAL HEMORRHAGE

Massive neopharyngeal hemorrhage with hemorrhagic shock

Presentation and stabilization

Syncope with brisk bleeding from nares and mouth, followed by hypotension.

Norepinephrine, nebulized tranexamic acid, and posterior packing. Mechanical ventilation via laryngectomy stoma.

Resuscitation: 5 U pRBC, 2 U FFP, and 1 U platelets. Transfer for endovascular evaluation.

Bleeding source

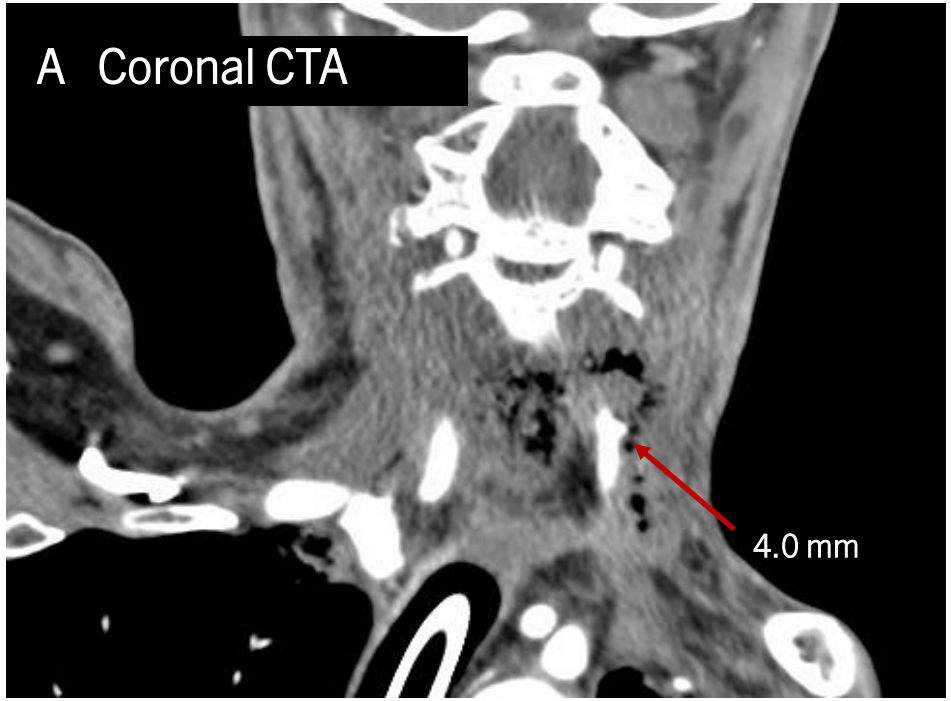
Endoscopy localized bleeding to the neopharynx, favored behind a tonsillar pillar. The fixed neck obscured right versus left.

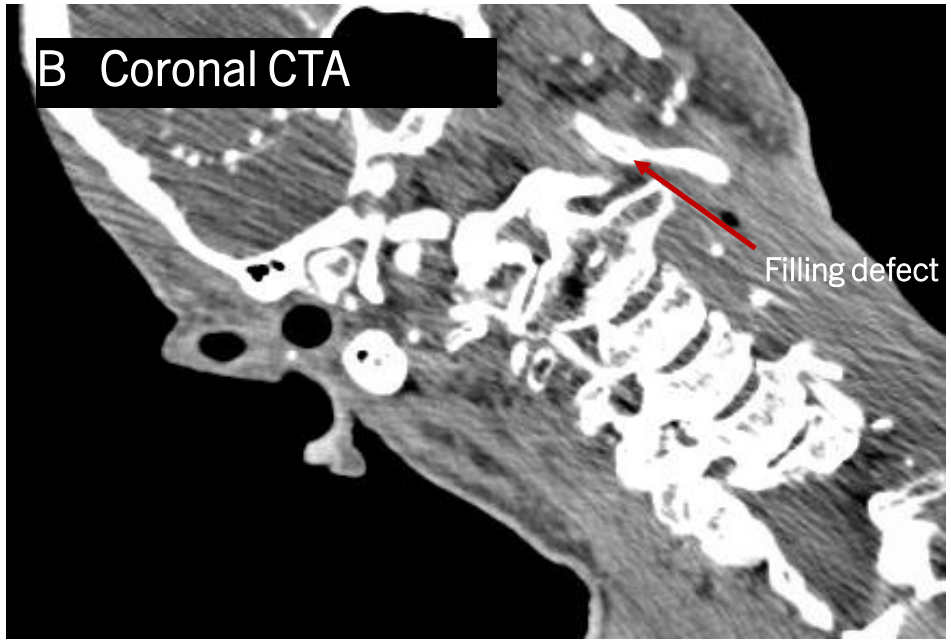
Polymicrobial blood cultures

Pseudomonas aeruginosa (two morphotypes)

Pasteurella multocida

Recurrent “sentinel” bleeds required repeat oral packing





DAY 1 CTA: 4 MM CAROTID PSEUDOANEURYSM

~4 mm pseudoaneurysm

Small, laterally directed left common carotid artery pseudoaneurysm.

No active extravasation

Possible left ICA filling defect versus flow artifact.

Extensive postsurgical and flap changes.

Clinical significance

Sentinel bleeding with a pseudoaneurysm in an irradiated neck raises concern for carotid blowout, even without extravasation.

DAY 2 DSA: PSEUDOANEURYSM CONFIRMED, NO SAFE TARGET

Pseudoaneurysm confirmed

4.9 × 2.5 mm left common carotid artery pseudoaneurysm with a smooth contour and no extravasation.

Mobile chronic left internal carotid dissection flap without flow-limiting stenosis.

Limited collateral supply

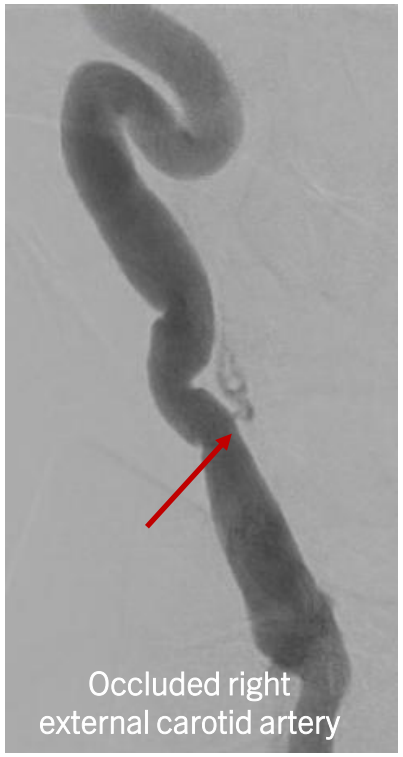
Occluded right external carotid artery and left thyrocervical trunk leave the left external carotid artery as the near-sole or sole supply to the deep face and neopharynx.

No embolization target identified

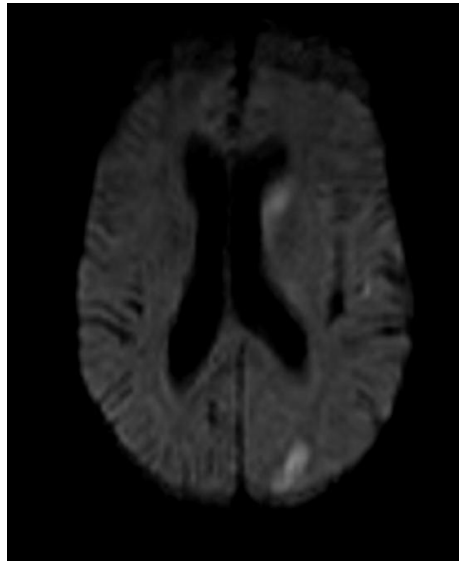
Tortuosity and craniocervical contractures limited superselective catheterization.



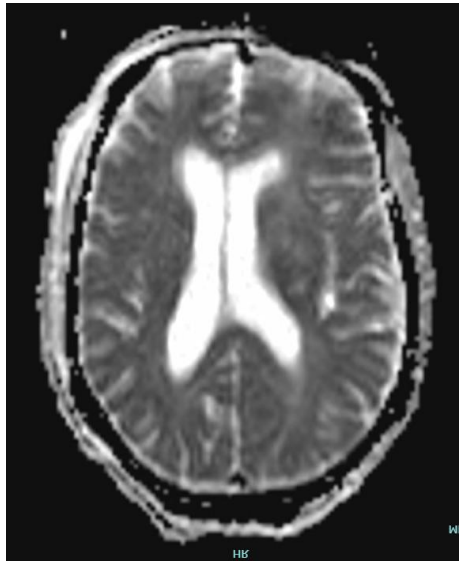




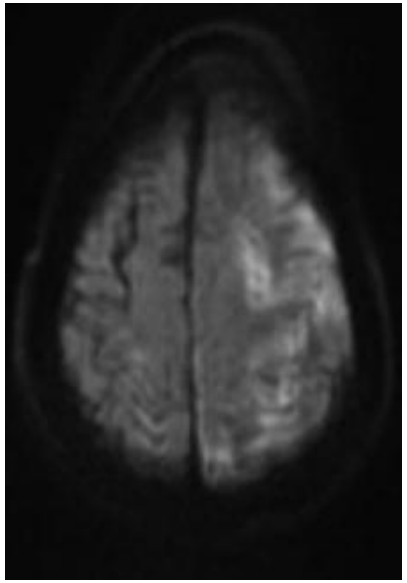
A Axial DWI



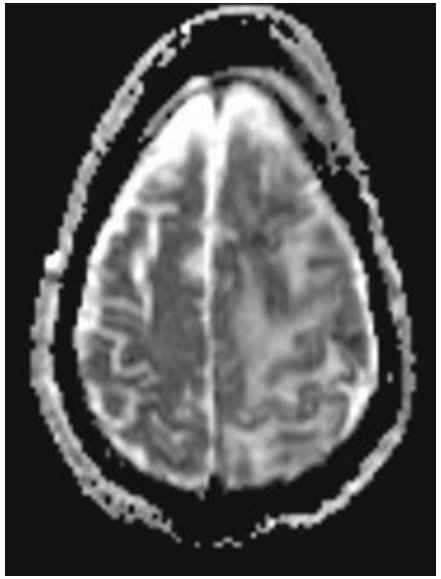
B Axial ADC



C Axial DWI



D Axial ADC



DAY 5 BRAIN MRI: INFARCTION

Late-acute watershed infarction

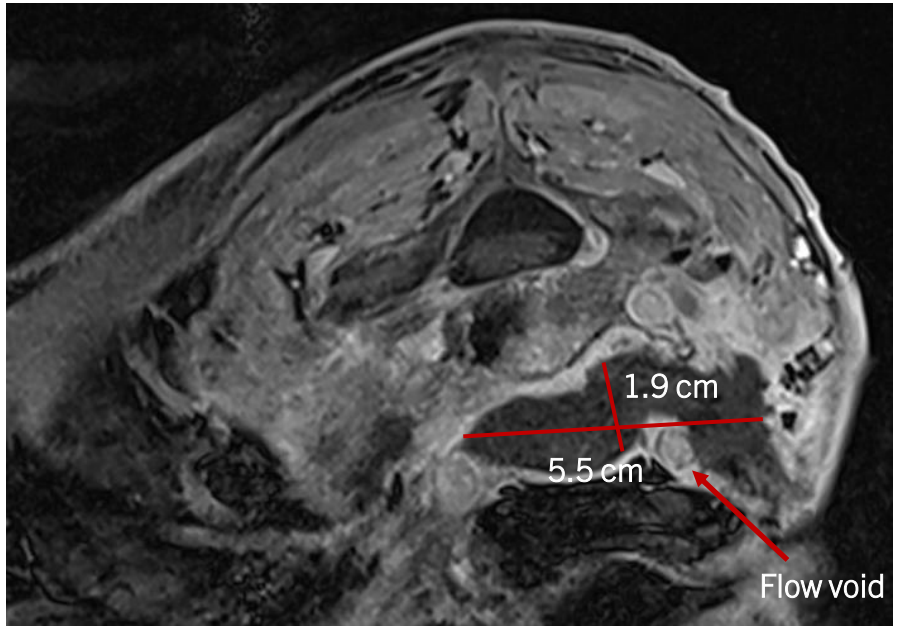
Widespread left-hemisphere involvement: middle cerebral artery border zones, caudate head/body, posterior limb of the internal capsule, and operculum. Cortical and subcortical edema.

Scattered infarcts in the right frontal and parietal lobes. No hemorrhagic conversion.

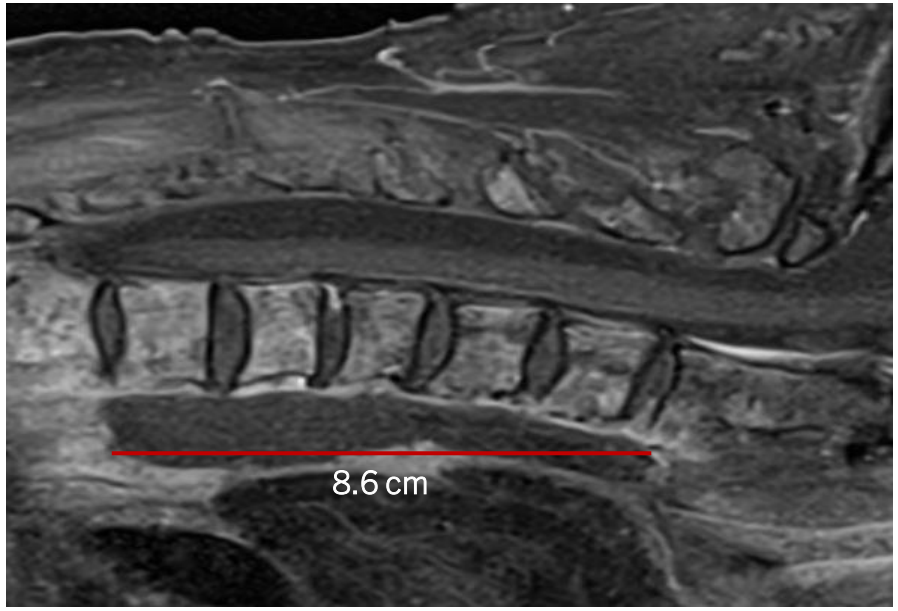
Ischemic mechanism

Hypotension and hemorrhagic shock superimposed on radiation vasculopathy and carotid compromise.

A Axial T1 contrast-enhanced MRI



B Sagittal T1 contrast-enhanced MRI



DAY 5 NECK MRI: ENCASING ABSCESS

5.5 × 1.9 × 8.6 cm

Retropharyngeal abscess

Rim-enhancing collection extends into the danger space, with a probable cutaneous fistula to the left anterior neck.

Carotid encasement

Partial encasement of the left common and internal carotid arteries. Focal loss of flow void/enhancement suggests internal carotid artery thrombosis.

Discitis-osteomyelitis: anterior C2-C3 and posterior C5-C6 disc enhancement/edema, worsening since the prior CT.

Deep infection abutting the artery drives pseudoaneurysm growth and contraindicates stent or surgical repair.

DAY 6 DSA: RAPID PSEUDOANEURYSM GROWTH

9.2 × 9.0 mm

Enlarged from 4.9 × 2.5 mm in 4 days

Left common carotid pseudoaneurysm, still without extravasation on repeat angiography.

No alternative bleeding site

Left external carotid runs before and after packing removal showed no new pseudoaneurysm or bleeding site.

Likely bleeding source

Consensus favored the enlarging pseudoaneurysm. The team aborted presumptive tonsillar embolization to avoid ischemic necrosis of the near-isolated external carotid territory.

DAY 2 DSA



DAY 6 DSA



MANAGEMENT

Multidisciplinary consensus: no beneficial intervention

Tonsillar / external carotid embolization

No target and high risk of deep-face or neopharyngeal necrosis in the near-isolated left external carotid territory.

Covered stent / open repair

Contraindicated in the actively infected field. Graft infection could seed the carotid. Palliative at best.

Endoscopic cautery

Not feasible: irradiated, fixed neck (ENT). Bleeding proximal to the esophagus lay outside endoscopic reach (GI).

Pseudoaneurysm coil embolization

Judged futile because of coil-mass compaction through the wall defect.

Compounding risk: polymicrobial bacteremia, new HFrEF (LVEF 41%), and baroreflex-failure dysautonomia.

Team: neurointerventional radiology, otolaryngology, vascular surgery, neurology, infectious disease, gastroenterology, and medical ICU.

OUTCOME

Progressive neurologic decline

Serial exams deteriorated to GCS 6, with coma and absent brainstem reflexes.

Recurrent sentinel bleeds continued, with no safe rescue option.

Transition to comfort-focused care

After a multidisciplinary goals-of-care discussion, the family elected comfort-focused care.

Day 7 The patient died after extubation.

TAKE-HOME POINTS

Sentinel bleeding is a warning

A pseudoaneurysm in an irradiated neck raises concern for carotid blowout, even without angiographic extravasation.

Rapid growth requires serial imaging

Infectious or radiation-associated pseudoaneurysms can more than double in days. Serial vascular imaging is essential.

CTA, MRI, and DSA are complementary

CTA detects the pseudoaneurysm. MRI defines abscess extent, carotid encasement, thrombosis, and watershed ischemia. DSA characterizes interval growth.

Infection can limit all repair options

Deep neck infection can preclude endovascular and surgical repair. Recognizing when not to intervene is a core management decision.