

FAST FACTS AND CONCEPTS #251 CAROTID BLOWOUT MANAGEMENT

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Background Carotid blowout is the rupture of the extracranial carotid arteries or their major branches. It is an uncommon but devastating complication of head and neck cancer. Predisposing factors include prior radiation therapy, extensive surgery, wound breakdown, local infection, tumor recurrence, and pharyngocutaneous fistulae. This *Fast Fact* will discuss the approach to patients with carotid blowout, including patients near the end of life whose care goals are focused on safety and comfort. See *Fast Fact* #297 for a discussion about terminal hemorrhage in general.

Diagnosis The ‘carotid blowout syndrome’ (CBS) ranges from asymptomatic exposure of a carotid artery to acute hemorrhage. CBS is described as **threatened** (evidence on physical and radiologic examinations suggestive of inevitable hemorrhage if no immediate action is taken, such as an exposed artery); **impending** (episode of transcervical or transoral hemorrhage or “sentinel bleeding,” typically caused by a pseudoaneurysm, that either resolves spontaneously or with packing/pressure); or **acute** (hemorrhage that cannot be stopped by packing or pressure). The gold standard for diagnosing CBS is angiography, and it is the preferred diagnostic modality because of its potential therapeutic capabilities (endovascular stenting, for instance, can occur during the same procedure) (5). Diagnostic angiography has an overall 8.5% complication rate, including a 2.6% rate of neurologic complications such as stroke (7). Computed tomographic and magnetic resonance angiography can also be helpful in identifying and characterizing *threatened* lesions (6).

Management Prior to the era of endovascular intervention, treatment for CBS was surgical ligation of the bleeding artery causing high morbidity (stroke) and mortality (5). A newer technique, endovascular stenting is associated with far fewer immediate complications (6, 7).

- *Threatened CBS*. Early endovascular stenting is indicated, before frank hemorrhage occurs.
- *Impending/Acute CBS*. The optimal management requires quick recognition and often advanced trauma life-support. Initial management should consist of resuscitation and stabilization of the patient, including control of the airway, control of bleeding with pressure, and fluid resuscitation. Placing multiple dressings over the bleeding site is inadequate and inappropriate. It is best to place a gloved finger over the site of hemorrhage, applying *focused pressure*, to temporarily control the bleeding until definitive treatment is undertaken (6). Stabilization allows for accurate diagnostic angiography and subsequent endovascular treatment. If interventional radiology therapies are unavailable or unsuccessful, emergent surgical intervention is indicated.

Approach to the Patient at the End-of-Life All the above interventions may be appropriate depending on the patient’s goals and prognosis. However, patients near the end-of-life may want medical care solely focused on symptom alleviation without life-prolongation. If CBS is thought to be likely for a dying patient, careful discussion with the patient/family, in collaboration with surgery and radiology, about the patient’s goals and preferences, is critical. For instance, preventative arterial stenting may be acceptable to an ambulatory patient receiving hospice care, whereas emergency transport and interventions may be unacceptable and unlikely to substantially improve a patient’s quality or length of life if that patient is already bed-bound and in the final days/weeks of her or his life.

For dying patients at high-risk of bleeding professional and family caregiver preparation is important to minimize panic and distress from copious amounts of blood, and to ensure patient comfort during bleeding. There is no consensus about how to best identify patients for deliberate education and emergency planning, as for some patients this may unnecessarily worry them. At minimum, patients who have had a sentinel bleed should have a plan (10). An emergency care plan should include the following elements:

- Ready availability of *dark colored linens/towels* to cover and absorb blood (less distressing than seeing bright red blood on white linens); *gloves, face/eye protection* (in case of brisk arterial

spraying), and other *universal precautions*. *Suctioning equipment* for clearing the mouth or tracheostomy of blood is desirable, if available.

- *Symptom drugs and explicit instructions on how to use them.* For brisk bleeding, rapid patient sedation is indicated to palliate fear, dyspnea, and suffocation. Drug and route choice will depend on patient location (home vs. hospital vs. inpatient hospice) and intravenous access, but when available the approach is similar to providing continuous, deep sedation (see *Fast Facts* #106, 107). Much published expert opinion recommends doses in the range of 5-10 mg of midazolam subcutaneously initially (see Reference 10 for a complete discussion of published drug dosing practices). Opioids for pain and dyspnea are also indicated. For massive hemorrhages, there may not even be time to administer comfort meds prior to patients losing consciousness.
- *A plan for whom to call*, and whether and where to transport the patient, if at home.

References

1. Maran AGD, et al. Radical neck dissection: a 19-year experience. *J Laryngol Otol.* 1989; 103:760-4.
2. Citardi MJ, et al. Management of carotid artery rupture by monitored endovascular therapeutic occlusion (1988-1994). *Laryngoscope.* 1995; 105:1086-92.
3. Mazumdar A, et al. Update on endovascular management of the carotid blowout syndrome. *Neuroimag Clin N Am.* 2009; 19:271-81.
4. Change FC, et al. Patients with head and neck cancers associated postirradiated carotid blowout syndrome: endovascular therapeutic methods and outcomes. *J Vasc Surg.* 2008; 47:936-45.
5. Cohen J, et al. Contemporary management of carotid blowout. *Curr Opinion Otolaryngol Head Neck Surg.* 2004; 2:110-15.
6. Powitzky R, et al. Carotid blowout in patients with head and neck cancer. *Ann Ot Rhin Laryng.* 2010; 119(7):476-84.
7. Morrissey DD, et al. Endovascular management of hemorrhage in patients with head and neck cancer. *Arch Otolaryngol Head Neck Surg.* 1997; 123:15-9.
8. Lesley WS, et al. Preliminary experience with endovascular reconstruction for the management of carotid blowout syndrome. *AJNR Am J Neuroradiol.* 2003; 24:975-81.
9. Broomfield SJ, et al. Endovascular management of the carotid blowout syndrome. *J Laryng and Otol.* 2006; 120:694-97.
10. Harris DG, Noble SI. Management of terminal hemorrhage in patients with advanced cancer: a systematic literature review. *J Pain Symp Manage.* 2009; 38:913-27.

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