Preoperative Selective Embolization for Carotid Body Tumors

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Abstract

Problem Addressed: Since 2002, four patients ages 20-40, mean 28.3, have been treated at National Naval Medical Center (NNMC) with five carotid body tumors. All four underwent cervical angiography with superselective embolization.

Methods and Measures: All underwent preoperative superselective embolization the day before with polyvinyl alcohol (PVA) microspheres. Superselective embolization was performed through the internal carotid artery via the carotid branch. Most embolizations were performed with a 5-French sheath with a 5-French Glide catheter; rarely was a 6-French sheath with a 5-French Cordis MBD catheter used. Embolization was performed with Frazier, PDA-10, and catheters using PVA particles, size unspecified. Angiography itself carries a small risk of cerebral infarction. Embolization of small embolization particulate can damage cranial neurovascular integrity. The diagnostic component of the procedure allowed detailed elucidation of feeder vessels and abolishing venous system shunts.

Results: Superselective embolization was usually performed with particles <150 micrograms. Angiography itself carries a small risk of cerebral infarction. Embolization of small embolization particulate can damage cranial neurovascular integrity. Superselective embolization allows improved visualization of the tumor's feeding vessels and obliteration of the tumor's venous system. These post-embolization patients had an EBL of 430 cc versus 123 cc in patients without preoperative superselective embolization.

Discussion

Compared to previously published case series, our patient population seen at this single tertiary referral center is younger, thereby providing an impetus to discover methods to decrease surgical morbidity and mortality in a population with fewer decades of life expectancy. As part of preoperative preparation, interventional radiology superselective embolization of tumor feeder vessels preceded carotid body tumor resection. The patient did not suffer any morbidity/intravascular thrombus from the interventional radiology procedure and were noted to have noticeably less estimated blood loss during surgery as compared to the intraoperative tumor resection. Superselective embolization is felt to have significantly decreased the EBL by reducing tumor size, obliterating feeder vessels, and abolishing venous system shunts.

Complementary information is provided in Table 2. The diagnostic component of the procedure allowed detailed elucidation of feeder vessels and evaluation of the bilateral cervical and cerebral vascular system. The therapeutic component allowed for successful embolization of feeder vessels in all four cases. In the case of patient 4, the size of the tumor was successfully reduced in order to avoid the patient's tolerance of balloon tamponade. Therefore, the major feeder vessels were embolized in order to achieve the embolization of all feeder vessels that were not postulated. Further information can be found in table 2.

Bibliography