Dear Editor,

Terzian and colleagues present an interesting case illustrating a surgical complication that manifested years between the initial surgery and eventual presentation. Pseudoaneurysms and patch infections are both known complications of carotid endarterectomy with patch angioplasty. Chronic infections of vascular grafts have been well described, particularly in the lower extremity bypass, aortic graft, and aorto-enteric fistula literature. They are notoriously difficult to treat and rarely can be cleared with antibiotics alone, almost universally requiring graft excision. It is certainly a much rarer complication in carotid surgery given the “cleaner” field compared to intra-abdominal or lower extremity vascular surgery.

Undergoing carotid ligation, as advocated in the case, involves substantial neurologic risk, with the trauma literature demonstrating a mortality as high as 45% and an 18% risk of stroke-related morbidity in survivors. The morbidity and mortality of carotid ligation in the nontrauma literature is not as a clearly delineated, but mortality has also been reported as high as 50%. Fortunately, this patient had a good outcome and did not suffer any neurologic sequela from carotid ligation.

Additional options other than ligation exist for the treatment of infected carotid artery pseudoaneurysm. Primary closure is an option if debridement of infected tissue leaves adequate carotid artery length, but this is rarely possible due to the small nature of the carotid artery and is typically why carotid endarterectomy incisions require patch closure in the first place. Interposition grafts are another option to decrease the risk of neurologic sequela if a significant amount carotid artery must be excised and primary end-to-end anastomosis cannot be achieved. Given the infected nature of the wound, artificial grafts such as polytetrafluoroethylene or Dacron are not viable options. Autologous vein graft with greater saphenous vein has been described with good results and are typically the first-line choice. Cryopreserved artery and vein are also options in infected fields. However, while cryopreserved vein and artery have shown good results in reconstruction in infected peripheral grafts, there is limited literature on use in carotid surgery, and they might not always be available in an emergent basis.

Our experience with vascular infections includes extensive experience with endocarditis and resultant septic emboli. Appropriate antibiotic selection is paramount in clearing systemic infection and bacteremia. The thrombogenic potential of infected artificial vascular devices must be considered and patient’s need to be examined for signs and symptoms of septic emboli. With carotid vascular infection and pseudoaneurysm, the possibility of cerebral septic emboli must be evaluated. Neurologic complications in these patients are, unfortunately, common and potentially devastating.

Surgical sequelae are always a consideration when symptoms arise at or near the operative site no matter how remote the operation. A thorough history and physical are essential in helping delineate the differential diagnosis and direct the subsequent workup. Early recognition of and consideration for a pseudoaneurysm and infection have led to prompt treatment and decreased morbidity and mortality for the patient. As discussed, when dealing with infections and pseudoaneurysms in the vascular surgery, preoperative planning and consideration of surgical options including, ligation, bypass, and interposition are essential to optimally treat the patient during operative exploration. Extensive experience in routine operations provides the knowledge and technique to optimally treat these “surgical zebras.” Early and timely specialty referral is critical.

Probably, the most important concept that this case illustrates is that whenever there is an abnormality associated with a surgical incision, no matter how remote the procedure, there must be strong consideration given that the problem is a complication related to that procedure. Complications after surgical procedures – including those associated with catastrophic infections, such as the one described – can occur at any time and there must be recognition of the problem to insure appropriate and timely workup and management. In other words, when dealing with surgical complications, and especially infectious complications, “it is never over, until it is over.”

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Never over until it is over: Carotid-cutaneous fistula
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