

Excision of true facial artery aneurysm using facial nerve monitoring

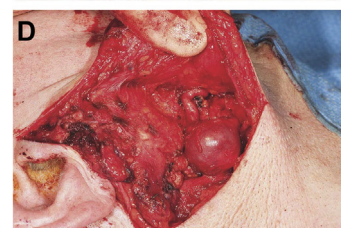
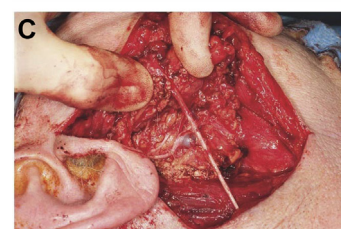
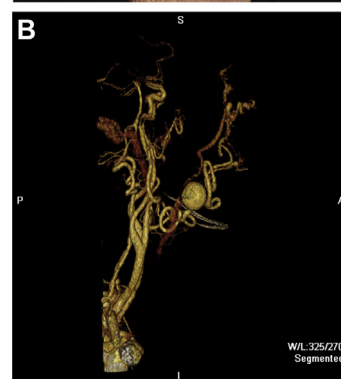
Aoife C. Kiernan, MB BCh BAO,^a John Kinsella, FRCSI,^b and Sean Tierney, FRCSI,^a Dublin, Ireland

Although traumatic pseudoaneurysms of the superficial arteries are not uncommon, true aneurysms of the branches of the external carotid artery are rare, with only a few isolated case reports in the literature.¹⁻⁴ Treatment options include surgical excision and embolization. We describe a novel approach that allows effective treatment while minimizing the risk of complications.

The facial artery runs close to several branches of the facial nerve that are at risk of injury during exposure of the artery. Nerve branches at this level are difficult to identify, but facial nerve monitoring offers the skilled surgeon the ability to identify, to confirm, and to monitor nerve function throughout an operation and is widely used in parotidectomies by ear, nose, and throat surgeons. Audio and visual cues are fed back to the surgeon if there is a change in nerve function.

A 68-year-old man presented to the emergency department with a 4-month history of swelling over his right jaw that had progressed in size during the preceding week (A). He denied any facial trauma. His medical history included hypertension, renal calculi, and appendectomy. Physical examination revealed a 4- × 3-cm nontender, pulsatile mass overlying the angle of the right jaw (A). There was no thrill palpable. He also had a facial nevus flammeus at his right nasolabial fold. Computed tomography angiography showed a 2- × 2- × 2.5-cm true saccular facial artery aneurysm lateral to the body of the mandible (B) with termination of the facial artery in the nevus flammeus. Under general anesthesia without muscle relaxation, a modified Blair incision (C), an S-shaped preauricular-submandibular incision often used in parotidectomy, was used to allow adequate exposure of the facial nerve and to gain access to the aneurysm. Facial nerve monitoring was used throughout the operation. The right facial artery and aneurysm were exposed and isolated, the lesion was excised, and proximal and distal ends of the right facial artery were ligated (D). He developed a hematoma while in the recovery room, requiring a return to the operating room. Oozing from the surface of the parotid was managed by diathermy. Gross examination of the specimen revealed a 22- × 22-mm saccular aneurysm; microscopy showed extensive loss of elastic lamina. He had no facial nerve deficit when observed as an outpatient at 3 months postoperatively and was discharged from outpatient care.

True facial artery aneurysms are extremely rare and generally have an atherosclerotic or congenital etiology, unlike pseudoaneurysms, which are typically secondary to trauma.⁵ More often, they present as a pulsatile swelling; however, they can also be manifested with pain, compressive symptoms, unexplained neurologic symptoms, or bleeding. Given the rarity of this condition on review of the literature, there is no evidence to our knowledge that defines an aneurysmal size that is at increased



From the Department of Vascular Surgery,^a and Department of Ear, Nose, and Throat Surgery,^b Tallaght Hospital.

Author conflict of interest: none.

E-mail: aoifekiernan.ak@gmail.com.

The editors and reviewers of this article have no relevant financial relationships to disclose per the Journal policy that requires reviewers to decline review of any manuscript for which they may have a conflict of interest.

J Vasc Surg Cases and Innovative Techniques 2018;4:126-127

2468-4287

© 2017 The Authors. Published by Elsevier Inc. on behalf of Society for Vascular Surgery. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.jvscit.2017.09.001>

risk of rupture. These aneurysms are predisposed to spontaneous expansion, local symptoms, and rupture, and they create a cosmetic defect, making elective treatment an appropriate treatment choice.

The consensus in the literature on the use of an endovascular approach is mainly based on the experience with pseudoaneurysms of the head and neck, and the evidence supports arterial embolization by interventional radiology⁶⁻⁸ as a treatment option. Endovascular treatment is also established as a safe and effective option in the management of epistaxis.^{6,7} However, complication rates as high as 25% to 39%^{6,7} have been reported and include local inflammation, bleeding, necrosis of skin, neurologic complications, and even aneurysmal rupture. This risk profile may make such treatment modalities less suitable for surface lesions such as facial artery aneurysm.

A viable option for the management of true facial artery aneurysms is direct surgical ligation and excision.⁹ However, if the incision is placed directly over the artery, an unsightly scar is likely, and there is a considerable risk of facial nerve injury. An indirect approach as used in this case, the use of facial nerve monitoring, and a multidisciplinary approach may reduce the risk of complications of surgery for facial aneurysm and should be considered by a surgeon faced with a patient with facial artery aneurysm.

The patient's consent was obtained for publication of clinical images.

REFERENCES

1. Hoshi E, Owaki S, Ogawa F, Fukui J, Ogawa T, Shimizu T. True aneurysm of the facial artery. *Auris Nasus Larynx* 2010;37:539-660.
2. Hampel AH, Villanueva MJ, Encina MS. True aneurysm of the facial artery. Report of a clinical case. *Med Oral* 2001;6:148-50.
3. do Carmo Galindo C, Augusto Lima C, Galindo Filho G, Marcondes Penha F, do Carmo Galindo C. True atherosclerotic aneurysm of the facial artery. *Int J Oral Maxillofac Surg* 2006;35:566-8.
4. Collin J, French K, Davies R, Hughes C. Aneurysm of the facial artery. *Br J Oral Maxillofac Surg* 2015;53:e86.
5. Lanigan DT, Hey JH, West RA. Major vascular complications of orthognathic surgery: false aneurysms and arteriovenous fistulas following orthognathic surgery. *J Oral Maxillofac Surg* 1991;49:571-7.
6. Tseng EY, Narducci CA, Willing SJ, Sillers MJ. Angiographic embolization for epistaxis: a review of 114 cases. *Laryngoscope* 1998;108:615-9.
7. Elden L, Montanera W, Terbrugge K, Willinsky R, Lasjaunias P, Charles D. Angiographic embolization for the treatment of epistaxis: a review of 108 cases. *Otolaryngol Head Neck Surg* 1994;111:44-50.
8. Day AT, Genther DJ, Hui F, Mydlarz WK, Griffith G, Desai SC. Successful facial artery pseudoaneurysm coiling and pedicle preservation following free tissue transfer. *Am J Otolaryngol* 2017;38:103-7.
9. Ealmaan K. True aneurysms of the superficial temporal artery: diagnosis and treatment. *Clin Neurol Neurosurg* 2014;126:64-8.

Submitted Jul 9, 2017; accepted Sep 22, 2017.