

Short communication

Traumatic pseudoaneurysm of the superficial temporal artery

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Abstract

Pseudoaneurysm of the superficial temporal artery is rare. It is typically caused by blunt force to the temporal region, and presents as a painless, preauricular, pulsatile mass during the following weeks. We think that its infrequent incidence and unusual presentation warrants an increase in awareness to aid accurate and timely diagnosis. We present a case that developed a few weeks after a head injury, and its subsequent management.

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Introduction

Pseudoaneurysm is a haematoma that is contained by the surrounding adjacent tissues, and has persistent communication to its vessel of origin. It is sometimes referred to as a false aneurysm (in contrast with a true aneurysm in which there is weakness in the wall of the vessel), and resultant dilatation involves all three constituent layers of the wall. Thomas Bartholin first described it arising from the superficial temporal artery in 1740.¹ It is rare, accounting for only 1% of all traumatic aneurysms diagnosed,¹ and typically occurs in young men, but may also be seen in older people who are prone to falls.² It is an unusual cause of temporal swelling, and we provide a brief overview of its aetiology and treatment.



Fig. 1. Lateral view of left temporal swelling (published with the patient's consent).

Case report

A 26-year-old man presented with a non-changing, non-tender, well-defined, firm, pulsatile 1.0 cm x 0.5 cm temporal lump (Figs. 1 and 2), that he had first noticed two weeks after a collision with a bench. Pulsatility diminished with the application of pressure over the proximal superficial temporal artery.

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Fig. 2. Frontal view of temporal swelling (published with the patient's consent).

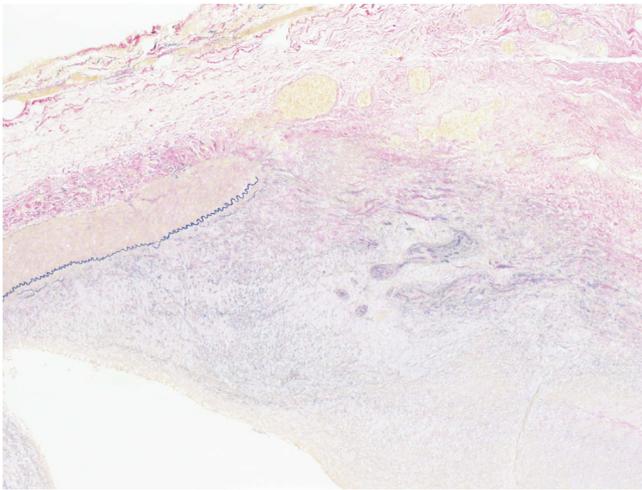


Fig. 3. Histological examination showing a thick-walled muscular artery in which there is maturing granulation tissue effacing the intima and extending into the media with destruction and loss of the internal elastic laminae (elastic Van Gieson stain, magnification x 265).

Magnetic resonance angiogram showed the lesion to be a 9 mm vascular mass that arose from the frontal branch of the left superficial temporal artery. Ultrasound Doppler showed a 1.0 cm x 0.4 cm structure with to-and-fro flow, which was in keeping with the diagnosis of a pseudoaneurysm.

The lesion was excised without complication through proximal and distal ligation of the artery under general anaesthesia. Histopathological analysis confirmed the diagnosis as traumatic pseudoaneurysm (Fig. 3).

Discussion

More than 95% of aneurysms of the superficial temporal artery are secondary to injuries caused by either blunt or penetrating forces,^{3,4} and the remainder are often the result of surgical injury.⁵ The anterior branch of the artery is by far the most commonly affected,⁶ where it emerges as a terminal branch of the external carotid at the base of the parotid gland. It is susceptible at the point where it courses unprotected over the prominent superior temporal crest through the natural gap that exists between the frontalis and temporalis muscles (and where it lies directly against the skull).

Injury can cause a partial transection, or severe contusion, that can result in necrosis of the anterior wall of the artery. A haematoma then forms that is confined by the intact overlying skin, and will eventually be organised into a fibrous pseudocapsule that allows the artery to recanalise.^{5,7} This slow dilatation of the weak capsule of the haematoma is why the mass is characteristically pulsatile.⁴

Young men are more typically affected, but pseudoaneurysms are also seen in older people who are prone to falls.² A single non-tender, compressible, pulsatile swelling develops about 2–6 weeks after injury,⁴ and patients may complain of headache or, rarely, earache or palsy of the forehead.⁵

Diagnosis can be made on clinical grounds. If investigations are requested, then ultrasound is reported to be the most accurate, because it shows the dilatation of the blood vessel and the presence of blood flow.⁷ Computed tomography (CT) and angiography may also be helpful, particularly in confirming the vessel of origin.⁸

The treatment of choice is excision under local or general anaesthesia, and other options include local sclerosis (with a risk of necrosis of distal tissues), and coil embolisation (with a risk of stroke, ischaemia of the lower limbs, and aneurysm of the groin).⁹ Interventional radiological treatment, with CT angiography, has a lower than 5% risk of complications, including stroke.¹⁰ Pseudoaneurysms do not respond to compression.

It must also be noted that when treating a pseudoaneurysm of the superficial temporal artery there is a small risk to the frontozygomatic branch of the facial nerve as a result of its proximity.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patient's permission

Ethics approval not required. The patient signed written informed consent, which included the use of their clinical photographs.

References

1. Fukunaga N, Hanaoka M, Masahira N, et al. Traumatic pseudoaneurysm of superficial temporal artery. *Am J Surg* 2010;**199**:e1–2.
2. Cremonese JC, Grosh JD. Traumatic aneurysms of the superficial temporal artery. *J Trauma* 1980;**20**:986–8.
3. Peick AL, Nicholas WK, Curtis JJ, et al. Aneurysms and pseudoaneurysms of the superficial temporal artery caused by trauma. *J Vasc Surg* 1988;**8**:606–10.
4. Bailey IC, Kiryabwire JW. Traumatic aneurysms of the superficial temporal artery. *Br J Surg* 1973;**60**:530–2.
5. Pipinos II, Dossa CD, Reddy DJ. Superficial temporal artery aneurysms. *J Vasc Surg* 1998;**27**:374–7.
6. Guida PM, Moore SW. Aneurysms and arteriovenous fistulas of the temporal artery. *Am J Surg* 1968;**115**:825–7.
7. Fox JT, Cordts PR, Gwinn 2nd BC. Traumatic aneurysms of the superficial temporal artery: case report. *J Trauma* 1994;**36**:562–4.
8. Ishikawa E, Sugimoto K, Yanaka K, et al. Giant aneurysms of the superficial temporal artery: case report and review of the literature. *Surg Neurol* 2000;**53**:543–5.
9. Isaacson G, Kochan PS, Kochan JP. Pseudoaneurysms of the superficial temporal artery: treatment options. *Laryngoscope* 2004;**114**:1000–4.
10. Heiserman JE, Dean BL, Hodak JA, et al. Neurologic complications of cerebral angiography. *Am J Neuroradiol* 1994;**15**:1401–7.