

Large Pseudoaneurysm of Superficial Temporal Artery Presenting as a Tumour: A Case Report

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Abstract

Case Report

Pseudoaneurysm of the superficial temporal artery is a rare condition, with few cases reported in the literature. Trauma is the most common cause. Clinical features and investigations are key to diagnosis. Most cases present as pulsatile, small sized masses. Treatment is mainly surgical. Minimally invasive interventions by embolization or injection of thrombin may be done. We present a 78-year-old male with post-traumatic pseudoaneurysm of the left superficial temporal artery that measured 8 x 6 x 2 cm. Mass was non-pulsatile and firm, mimicking a neoplastic mass. He had associated chronic subdural haemorrhage. He was managed by surgical excision of the aneurysm and ligation of the feeding vessels.

Keywords: Pseudoaneurysm, Trauma, diagnosis, haemorrhage.

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INTRODUCTION

The Superficial Temporal Artery (STA) is a terminal branch of the external carotid artery. It continues behind the neck of the mandible, passes upwards over the root of the zygomatic process where it can be palpated. The STA divides into two: the frontal and parietal branches. The frontal branch supplies the forehead and anastomoses with the ophthalmic artery while the parietal branch supplies the temporal and parietal regions and may form anastomoses with the posterior auricular and the occipital arteries. Side branches of the STA include the transverse facial, anterior auricular, and middle temporal arteries.

Aneurysms of the STA may be true aneurysms or pseudoaneurysms. Pseudoaneurysm of the STA is a rare condition, with few cases reported in the literature [1, 2]. Traumatic³ and non-traumatic 4–6 causes have been described. Clinical features and investigations are key to diagnosis. Treatment is mainly surgical. However, minimally invasive interventions have been described.

We report a peculiar case of pseudoaneurysm of STA following a blunt head injury. The swelling resulting from the aneurysmal sac was unusually large, firm, and not pulsatile hence masquerading as a neoplastic mass. There was also associated subdural

haematoma. Earlier reports on this pathology were noted to be isolated pathologies that were small-sized and pulsatile [1, 7]. Permission to publish this case report was obtained from the patient.

CASE REPORT

A 78yr old male presented with complaints of swelling on the forehead and irrational behavior of four weeks' duration. He was knocked down four weeks prior to presentation by a motorcycle. He hit his forehead on the ground with resultant swelling of the forehead. The swelling gradually increased in size until the time of presentation. There was no history of loss of consciousness, seizures, or bleeding from any craniofacial orifices. Examination at presentation revealed a Glasgow Coma Scale score of 14/15 (E=4, V=4, M=6), pulse of 94 beats/min, and blood pressure of 140/100 mmHg. He had a scalp swelling over the left frontotemporal region measuring 8 x 6 x 2 cm with an overlying scab (see Figure-1 below). The swelling was not pulsatile, not differentially warm and, not tender. The swelling was in the line of the anterior branch of the left superficial temporal artery. The supraorbital artery on the ipsilateral side enlarged into the swelling. Cranial MRI scan showed bilateral hyperintensities over both hemispheres on T2. It also showed soft tissue swelling with a sac over the left frontotemporal region with mixed intensities (see Figure-2 below).



Fig-1: Pseudoaneurysm of Superficial Temporal Artery

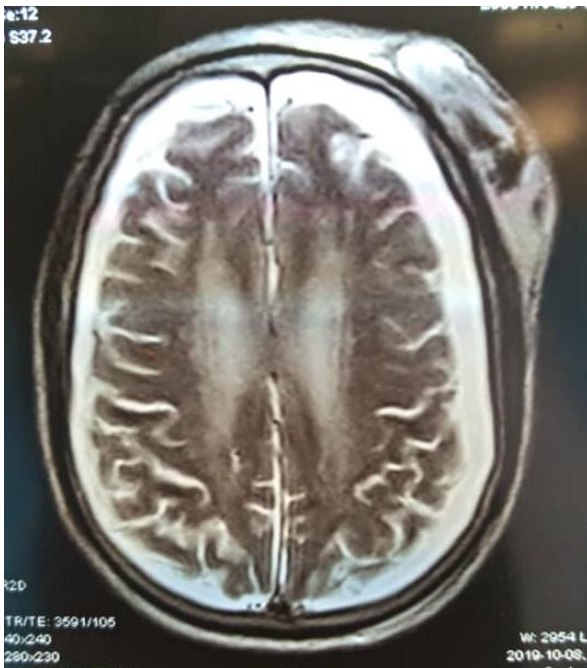


Fig-2: MR Imaging Showing Mixed Intensity Changes on T2



Fig-3: Excised Aneurysmal Sac

A diagnosis of pseudoaneurysm of a left superficial temporal artery with chronic subdural hematoma was made. Excision of the pseudoaneurysm was done under general anaesthesia. Local infiltration with 1% Xylocaine with Adrenaline 1:200,000 was done around the anterior branch of the left superficial temporal artery and left supraorbital artery. The anterior branch was coagulated with bipolar diathermy and the supraorbital artery was ligated with Vicryl 3/0. The left subdural hematoma was evacuated through a burr hole placed on the cranium where the pseudoaneurysm was excised, while the hematoma on the right side was evacuated through a fresh scalp wound. Intraoperative findings were thickened wall of the sac with opening through the scab on the anterior wall and shining posterior wall that involved the pericranium (see Figure-3 above). Postoperatively the patient had an uneventful recovery. He was discharged on the tenth postoperative day. He was satisfied with the outcome of his surgery at the time of his first post-operative clinic visit (See Figure-4).



Fig-4: Post-operative outcome

DISCUSSION

Aneurysm of the STA is an uncommon lesion. It was first reported by Bartholin in 1740 [1, 8]. Both true and false aneurysms of the STA have been described. In about 70% of cases, these aneurysms are caused by blunt trauma [1, 9]. Interval from trauma to development of aneurysm has been estimated to be 2 – 6 weeks [1, 9] however reports of cases occurring within 4 days of trauma or with up to 3 aneurysmal swellings along the STA have been reported [2]. Non-traumatic causes of STA aneurysm include arteriosclerosis or congenital and vasculitis [1, 11]. In a report of three spontaneous cases, 8 spontaneity was defined as the absence of head injury requiring medical attention. However, it is known that STA aneurysm could follow a variety of impacts such as motor and industrial accidents, fistfights and, blows [12]. The duration of growth of the “spontaneous” cases was 3–10 years. This is long enough to forget a provoking impact. Iatrogenic causes are also identified [11].

Our index case is peculiar. The aneurysm was 8cm in the longest dimension. This was despite the resolution of haematoma following trauma. In our literature search, this was the largest aneurysm documented as well as the one with intracranial injury component. These peculiarities of the aneurysm could be attributed to our patient’s age and the extent of trauma sustained. Although elderly patients can heal

most wounds, young experimental animals have been shown to heal more rapidly than old ones [14]. All phases of wound healing are slowed in such elderly patients. Considering that the injured vessel is continually exposed to the intravascular pressure, the slower proliferative and maturation phases of wound healing could result in a larger radial expansion. Also, the impact of trauma that our patient suffered may have been quite significant resulting in intracranial injury. This could explain the finding of chronic subdural haemorrhage on radiological imaging.

In our management of this patient, we anticipated significant bleeding from the aneurysmal blood vessels. We infiltrated around the feeding vessels with 1% Xylocaine with Adrenaline 1:200000. This is aimed at causing vasoconstriction hence reducing blood loss while aiding with hydro-dissection. Adrenaline infiltration has been used in emergency management of ruptured pseudoaneurysm of the superficial temporal artery [15].

Investigation of STA aneurysm is by Doppler scanning which will demonstrate arterial signal that would be attenuated by a proximal compression. It may also show a thrombus in cases of pseudoaneurysm. Doppler may also be used to assess outcomes after minimal interventional treatment [13]. Computed Tomography (CT) scan, CT angiography, digital subtraction angiography, carotid angiography have been used as investigative modalities. However, in resource-poor settings and when the patient presents as an emergency, such investigations may be unnecessary [15]. Our patient was investigated using an MRI. This modality was adopted because it was what was available and could give a good soft-tissue resolution.

Treatment approaches that can be adopted in the management of superficial temporal aneurysm include compression, thrombin injection, deployment of coils and surgical resection. Digital intermittent compression has been done however there are limitations especially in patients with large lesions like our patient [16]. Ultrasound-guided compression has also been reported to have unsatisfactory results [13]. Arterial coil embolization may be done but this may fail in patients with complex geometry of the proximal artery [13]. Thrombin injection as well as direct puncture embolization using N-Butyl-2-Cyanoacrylate has been successful [13]. These minimally invasive treatment modalities were considered unsuitable for our index patient because of the size of the lesion as well as the underlying subdural haematoma. The gold standard remains surgical excision and that was the modality adopted in our patient. This should include the transfixion of the artery proximal and distal to the aneurysm. One major complication of this lesion is rupture and attendant haemorrhage [15].

CONCLUSION

The superficial temporal aneurysm is a rare condition commonly following trauma. The diagnosis is mainly clinical. Efforts should be made to differentiate a large non-pulsatile STA aneurysm which may mimic a neoplastic mass. Surgical excision is the treatment of choice. Minimally invasive treatment may be done. Rupture with hemorrhage is a key complication. To the best of our knowledge, our patient had a successful excision of the largest aneurysm of the superficial temporal artery documented in the literature. He also had associated intracranial injury.

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