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Case Report

Temporal aneurysms and migraine surgery

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ABSTRACT

The present study reports two cases of chronic migraines associated with superficial temporal artery aneurysms. The patients received aneurysm's ligation, with no other surgical maneuvers. In the six months following surgery, both patients were disease-free and did not experience any migraine attacks.

Evidence-based medicine ranking: Level V

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Since Guyuron's initial report,¹ the surgical approach has proven to be a viable treatment option for patients suffering from drug-resistant migraine.^{2,3} In cases of temporal localization, the most frequently used surgical approach involves neurolysis of the auriculotemporal and/or zygomatic nerves, the possible sectioning of these nerves with/without partial muscle avulsions and covering with adipose tissue.⁴⁻⁶

Aneurysms of the extracranial carotid artery (ECCA) and its branches are rare, with a reported incidence of 0.2 % 5 % of all carotid artery surgeries.⁷ There are various causes of these aneurysms. Most common cause is atherosclerosis which is seen among elderly patients. Other causes are congenital, trauma, and infections. The preferred method of treatment is surgical.⁷

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The present study reports two cases of chronic migraines associated with aneurysms of the superficial temporal artery. The patients received aneurysm's ligation, with no other surgical maneuvers.

Case reports

Case 1

The patient was an 26-year-old woman, who suffers from migraine without aura since menarche. The diagnosis was confirmed by a board-certified neurologist, after failure of several attempts of different medical therapies. The patient reported no history of trauma, infection or any previous surgical intervention. The Migraine Disability Assessment Scale (MIDAS) score was used to evaluate the degree of disability. The pain was typically pulsating and localized in the ipsilateral temporal area. Attacks, severe and disabling, were about 12 days per month. The patient was not taking prophylactic therapy. Physical examination revealed a pulsatile dilated vessel in the right-sided temporal region

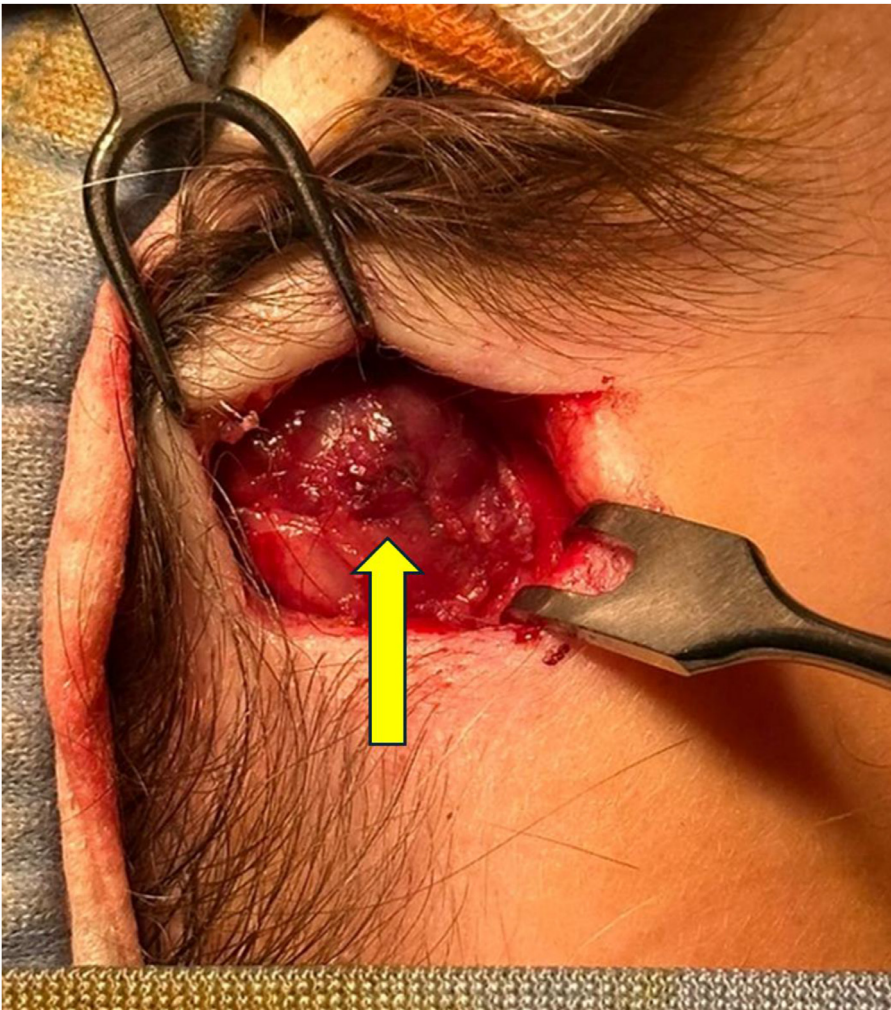


Figure 1. 26-year-old patient. Pseudo-aneurysm of the right superficial temporal artery (yellow star).

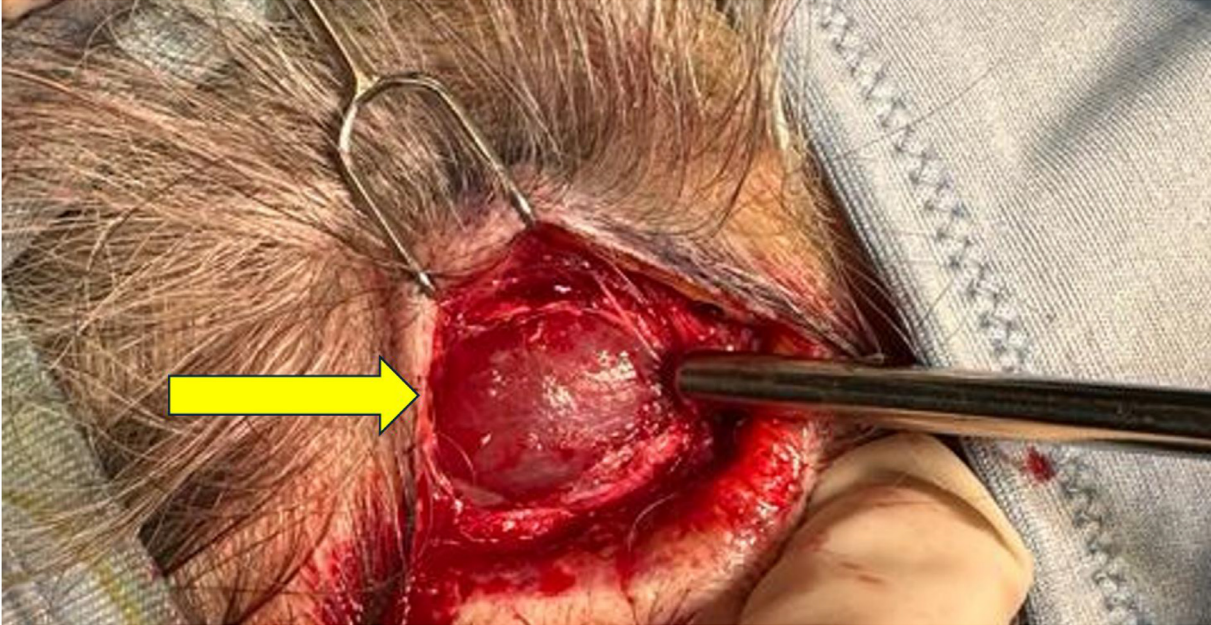


Figure 2. 68-year-old patient. Pseudo-aneurysm of the right superficial temporal artery (yellow star).

(Figure 1). Ultrasound examination was indicative of a pseudoaneurysm (size, 3.0 × 1.2 cm). Subsequently, aneurysm ligation was performed under local anesthesia, via a temporal access of 3 cm. No other surgical maneuvers were performed. The patient made an uneventful postoperative recovery. Over the next six months, no further attacks were recorded and the patient was completely migraine-free.

Case 2

The patient was a 68-year-old woman, with a 36-year history of migraine headache. The diagnosis was confirmed by a board-certified neurologist, after failure of several attempts of different medical therapies. The patient reported no history of trauma, infection or any previous surgical intervention. The MIDAS score was used to evaluate the degree of disability. The patient was not taking prophylactic therapy. Attacks, severe and disabling, were about 8 days per month. The pain was typically pulsating and localized in the ipsilateral temporal area. Physical examination revealed a pulsatile dilated vessel in the right-sided temporal region (Figure 2). Ultrasound examination was indicative of a pseudoaneurysm (size, 2.8 × 1.6 cm). Also in this case, the aneurysm was ligated under local anesthesia, through a 3-cm temporal incision. The patient made an uneventful postoperative recovery. Over the next six months, no further attacks were recorded and the patient was completely migraine-free.

Currently, the prevailing theory of migraine's pathogenesis embraces the role of inflammation and neural release of peptides in the development of migraine headache in addition to the vascular theory, and migraine is thus considered to be a neurovascular condition. Several studies have shown that certain parts of the brain play a critical role in the pathophysiology of migraine including the trigemino-vascular system and extracranial vasodilation.⁸

In our case, simple ligation of the aneurysm resulted in complete remission of symptoms in both patients. The novelty of this therapeutic approach consisted in achieving healing following the simple ligation of the aneurysmal vessel, without the other procedures (myotomies, neurolysis) currently described in these cases. This is probably due to the resolution of the mechanical microtrauma caused by the pulsations of the ectatic vessel in the adjacent fibers of the auriculo-temporal nerve, which acted as a trigger-point triggering the attacks. In addition, the direct elimination of nociceptive stimuli caused by the dilation of the vessel walls could have played a role. Recent studies have shown that specific ultrastructural abnormalities characterize the vessel walls of migraine patients.^{9,10} In our opinion, the specific role of these anomalies should be the subject of further dedicated studies.

Conflict of Interest statement

The authors declare that they have no conflicts of interest to disclose.

Compliance with ethical standards

Statement of human and animal rights, or ethical approval

This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent

For this type of study informed consent is not required.

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None.

Ethical approval

Not required.

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