

# Posttraumatic pseudoaneurysm of the superficial temporal artery: After paintball game

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## ABSTRACT

A 20-year-old man suffered from a swelling with a painless but cosmetic problem in the right temporal region. Pseudoaneurysm of the superficial temporal artery is rare. It typically occurs after blunt trauma to the temporal region and presents as a painless, preauricular and pulsatile mass during the following 2–6 weeks. The diagnosis is made simply by physical examination and ultrasound. Surgery under local anesthesia is a very effective treatment.

**Keywords:** Paintball game; pseudoaneurysm; superficial temporal artery; trauma.

## INTRODUCTION

The first case of a superficial temporal artery pseudoaneurysm was described by Thomas Bartholin in 1740,<sup>[1]</sup> since then, hundreds of cases have been published in the literature.<sup>[2]</sup> Pseudoaneurysm of the superficial temporal artery is rare, and usually the consequence of blunt or penetrating trauma.<sup>[3]</sup> It is only 1% of all traumatic aneurysms diagnosed and typically occurs in young men, but may also be seen in older falling people.<sup>[4]</sup> Also, sporadic cases of true aneurysms of the superficial temporal artery secondary to atherosclerosis have been described in the literature.<sup>[5]</sup>

Our objective is to report one case of pseudoaneurysm secondary to a blunt head injury with a paintball ball and discuss diagnosis and treatment.

## CASE REPORT

A 20-year-old man applied to the dermatology clinic with a complaint of swelling in the right frontotemporal region, causing cosmetic discomfort. The swelling was 1x0.5 cm in

size and pulsatile (Fig. 1a, b). Although the patient did not complain of headaches, he had been experiencing regional pain when he pressed on the mass for the last two weeks. Pulsatility diminished with the application of pressure over the proximal superficial temporal artery. In his story, four weeks ago, he was shot in the head with a paintball ball during the game.

Ultrasound Doppler showed a vascular signal with the to-and-fro flow, which was compatible with the diagnosis of a pseudoaneurysm. These findings were sufficient, so no further examination was needed.

The lesion was excised without complication through proximal and distal ligation of the superficial temporal artery with a 1.5 cm skin incision under local anesthesia. The patient was discharged on the evening of the operation (Fig. 1c). There were no recurrence or vascular pathological findings in clinical control examinations. Histopathological analysis confirmed the diagnosis as a traumatic pseudoaneurysm (Fig. 1d). The patient's consent was obtained for this study.

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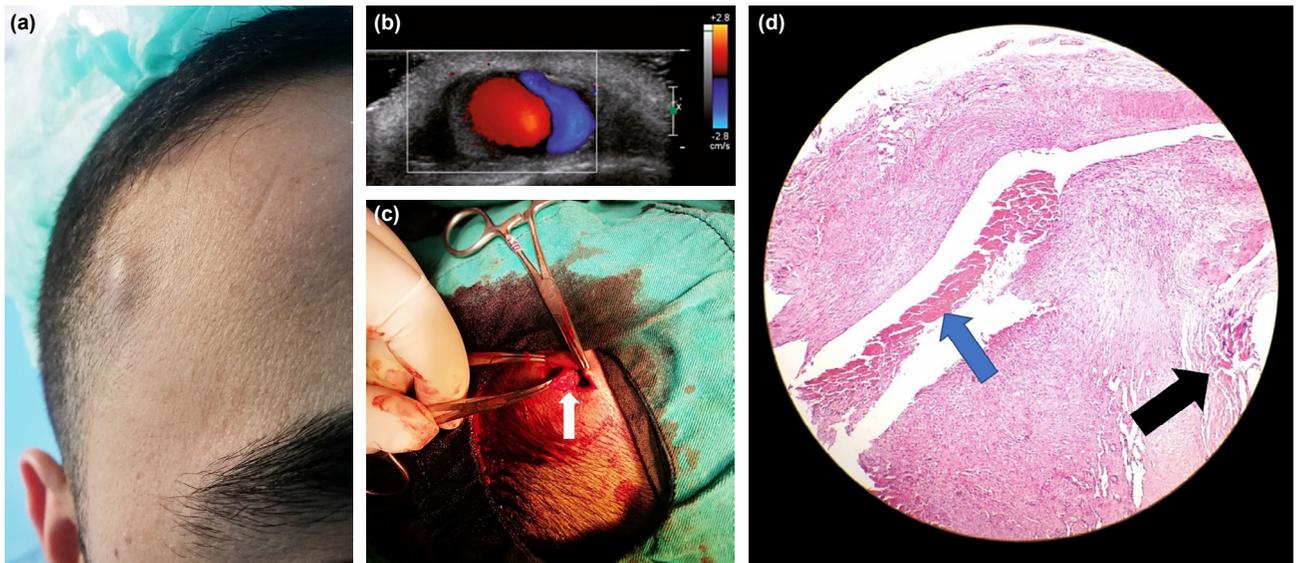
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**Figure 1.** (a) 1x0.5 cm diameter pulsatile swelling in the right temporal area. (b) Yin-Yang sign in Color Doppler Ultrasound. (c) Intraoperative image of pseudoaneurysm (White arrow). (d) Microscopically, it was observed that fibrin in the vascular lumen and thrombus consisting of erythrocytes blood cells were held in the irregular vascular lumen (Blue arrow) and fibroblastic activity neovascularization developed in the vascular lumen in another area (Black arrow).

## DISCUSSION

Superficial temporal artery (STA) aneurysm is rare and usually presents as a pseudoaneurysm with a history of trauma. Rarely true aneurysm formation has been reported.<sup>[6]</sup> More than 95% of aneurysms of the superficial temporal artery are secondary to injuries caused by either blunt or penetrating forces<sup>[3]</sup> and the remainder is often the result of surgical injury.<sup>[5]</sup> These lesions usually occur at the superior temporal line because STA is the most commonly exposed artery among the facial arteries and the anterior arterial branch is uncushioned by a muscle gap and lies directly on the periosteum.<sup>[6]</sup> Thus, the anterior branch of the artery is by far the most commonly affected.<sup>[7]</sup>

It is believed that the arterial wall is injured during trauma or there would be a contusion with subsequent wall necrosis.<sup>[3]</sup> A hematoma then forms and will eventually be organized into a fibrous pseudocapsule that allows the arterial blood flow.<sup>[5]</sup> This arterial blood flow (into and out of the capsule-surrounded hematoma) leads to the slow dilatation of the weak pseudocapsule. These may explain why the swelling is pulsatile.

Diagnosis can be made clinically. Trauma history to the head before 2-6 weeks and pulsatile swelling with physical examination are very important findings. Then, Doppler Ultrasound is reported to be the most accurate because it shows the dilatation of the blood vessel and the presence of blood flow.<sup>[8]</sup> Computed Tomography and angiography are not always needed, but they may also be helpful, particularly in confirming the vessel of origin<sup>[9]</sup> or differential diagnosis includes simple hematomas, abscess, epidermal cyst, soft tissue tumors, neuromas, and foreign body granulomas.<sup>[10]</sup>

Treatment is indicated to prevent bleeding, relieve symptoms and for cosmetic purposes. Surgery (ligature of proximal and distal vessels and excision of the pseudoaneurysm) under local anesthesia in non-complicated cases can be operated safely with excellent results.<sup>[11]</sup> Surgery with misdiagnosis of traumatic aneurysm lesions may lead to poor results. Therefore, traumatic lesions, especially in scalp injuries, should be considered as aneurysms. Diagnosis, treatment and surgical strategy should be planned in the light of this information.<sup>[1]</sup> Some authors have reported good results using embolization for the treatment of these lesions.<sup>[3]</sup> Interventional radiological treatment, with Computed Tomography and angiography, has a lower than 5% risk of complications, including stroke.<sup>[12]</sup>

As a result, aneurysm of these facial lesions with a history of trauma should be kept in mind, especially in areas that match the STA trace. Selective angiography and Doppler USG are very important examinations in the diagnosis, given that USG alone may mislead us.

**Informed Consent:** Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

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**Conflict of Interest:** None declared.

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## OLGU SUNUMU - ÖZET

### Paintball oyunu sonrası gelişen: Travma sonrası süperfisyal temporal arter psödoanevrizması

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Yirmi yaşında bir erkek, sağ temporal bölgede ağrısız ancak kozmetik bir problem oluştuğu için şüphelenen yakındı. Yüzeysel temporal arterin psödoanevrizması çok nadirdir. Genellikle temporal bölgeye künt travma sonrası ortaya çıkar ve izleyen 2–6 hafta boyunca ağrısız, preauriküler, pulsatil bir kitle şeklinde ortaya çıkar. Teşhis sadece fizik muayene ve ultrason ile konur. Lokal anestezi altında yapılan ameliyat çok etkili bir tedavi yöntemidir.

Anahtar sözcükler: Paintball oyunu; psödoanevrizma; süperfisyal temporal arter; travma.

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