



# Early-Onset Traumatic Occipital Artery Pseudoaneurysm: A Short Report

Daniel Andrade Gripp<sup>1</sup> Cleiton Formentin<sup>1,2</sup> Joab Alves Nicácio Jr<sup>1</sup> Renato Carvalho Santos<sup>1</sup>  
Ana Carolina Pinheiro Campos<sup>1</sup> Pedro Zambelli Mesquita de Oliveira<sup>3</sup> Jorge Tomio Takahashi<sup>4</sup>  
Marcos Vinícius Calfat Maldaun<sup>1</sup>

<sup>1</sup>Department of Neurosurgery, Sírio Libanês Hospital, São Paulo-SP, Brazil

<sup>2</sup>Department of Neurology, University of Campinas, Campinas-SP, Brazil

<sup>3</sup>Department of Neurology, Pontifícia Universidade Católica de Campinas, Campinas-SP, Brazil

<sup>4</sup>Department of Radiology, Sírio Libanês Hospital, São Paulo-SP, Brazil

Address for correspondence Cleiton Formentin, MD, PhD, Sírio Libanês Teaching and Research Institute, 69 Daher Cutait St – Bela Vista, Sao Paulo-SP 013080-060, Brazil (e-mail: cleitonformentin@gmail.com).

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## Abstract

Here we present a rare case of a 63-year-old male patient who presented to the emergency department 3 days after a fall from standing height, with a painful nonpulsatile mass in the right occipital region. A computed tomography (CT) angiography revealed a contrast-enhanced round vascular lesion measuring 2.5 cm in diameter, continuous with a terminal branch of the right occipital artery, associated with hematoma in the occipital subgaleal region and no intracranial lesions. A diagnosis of traumatic occipital artery pseudoaneurysm was established. Owing to worsening pain and to mitigate the risk of hemorrhage, surgical intervention was recommended. Successful proximal ligation and bipolar coagulation of the parent artery, along with posterior lesion dissection and excision, were performed. The postoperative course was uneventful. A follow-up CT angiography 2 days later showed complete resolution, and the patient was discharged home with significant improvement in symptoms.

## Keywords

- ▶ occipital artery
- ▶ trauma
- ▶ pseudoaneurysm

## Introduction

Posttraumatic occipital artery pseudoaneurysms are rare lesions, more frequently observed in relation to other arterial segments, such as the superficial temporal artery,<sup>1,2</sup> although previous case reports can be found in the literature. These are primarily caused by trauma, with other causes including idiopathic and iatrogenic postsurgical procedures.

The occipital artery, due to its unique anatomy and course, is usually protected by surrounding muscle and soft tissue.<sup>1,3</sup> However, it can become vulnerable to trauma, particularly penetrating and iatrogenic injuries. Treatment is often recommended as patients may experience recurring local pain and to reduce the risk of hemorrhage.

The objective of this study is to present a rare case of a 63-year-old male patient with a traumatic occipital artery pseudoaneurysm, detailing the clinical presentation, imaging findings, surgical management, and postoperative outcome. This study was performed according to the principles of the Declaration of Helsinki. This research was approved by the Research Ethics Committee of the Sírio Libanês Hospital (number 6.879.941).

## Case Report

We present the case of a 63-year-old male patient, without significant comorbidities or a history of anticoagulant medication use, who presented with a painful right

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occipital mass. Three days prior, he had fallen from his standing height and received a noncontrast computed tomography (CT) scan, which showed no intracranial lesions and was discharged home.

Upon returning to the emergency department 3 days after the fall, he complained of worsening localized occipital headache and a mass resembling a subgaleal hematoma in the same region. A CT scan and subsequent CT angiography revealed no intracranial lesions but showed a round, contrast-enhanced lesion related to the right occipital artery, approximately 2.5 cm in diameter, leading to a diagnosis of a pseudoaneurysm of the terminal branch of the occipital artery (► Fig. 1).

Owing to worsening symptoms and the risk of hemorrhage, a surgical procedure under general anesthesia was performed later that same day.

A right linear occipital incision was made, and the lesion was identified in association with a local subacute hematoma. The parent occipital artery was identified and ligated proximally, which appeared to stop the bleeding related to the lesion. Subsequently, complete dissection and excision of the pseudoaneurysm were performed, and the excised tissue was sent for pathology examination. The wound was carefully irrigated and closure was performed in the usual fashion.

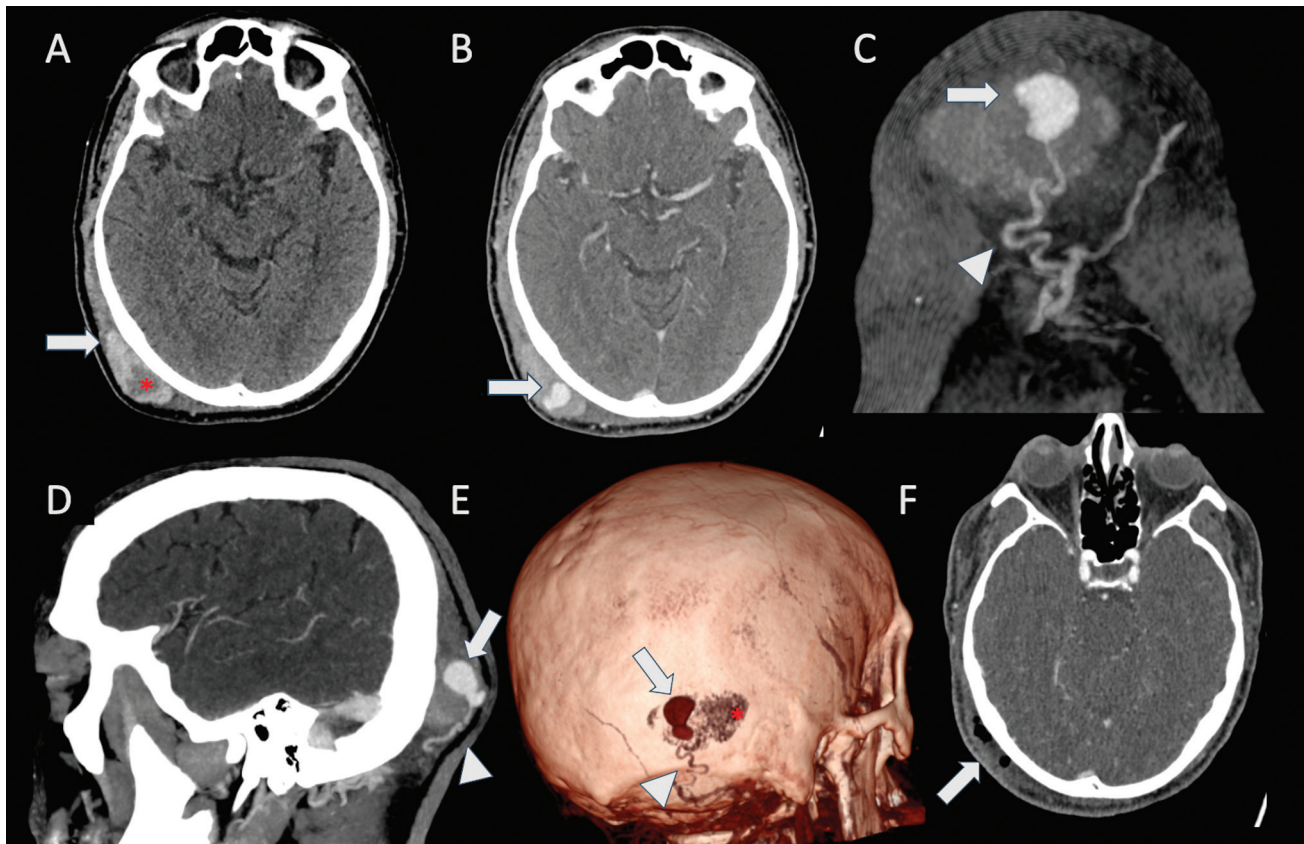
By the following day postoperation, the patient experienced a significant reduction in pain. On the second day, a follow-up CT angiography confirmed the excision of the pseudoaneurysm. The patient was discharged from the hospital on the same day.

## Discussion

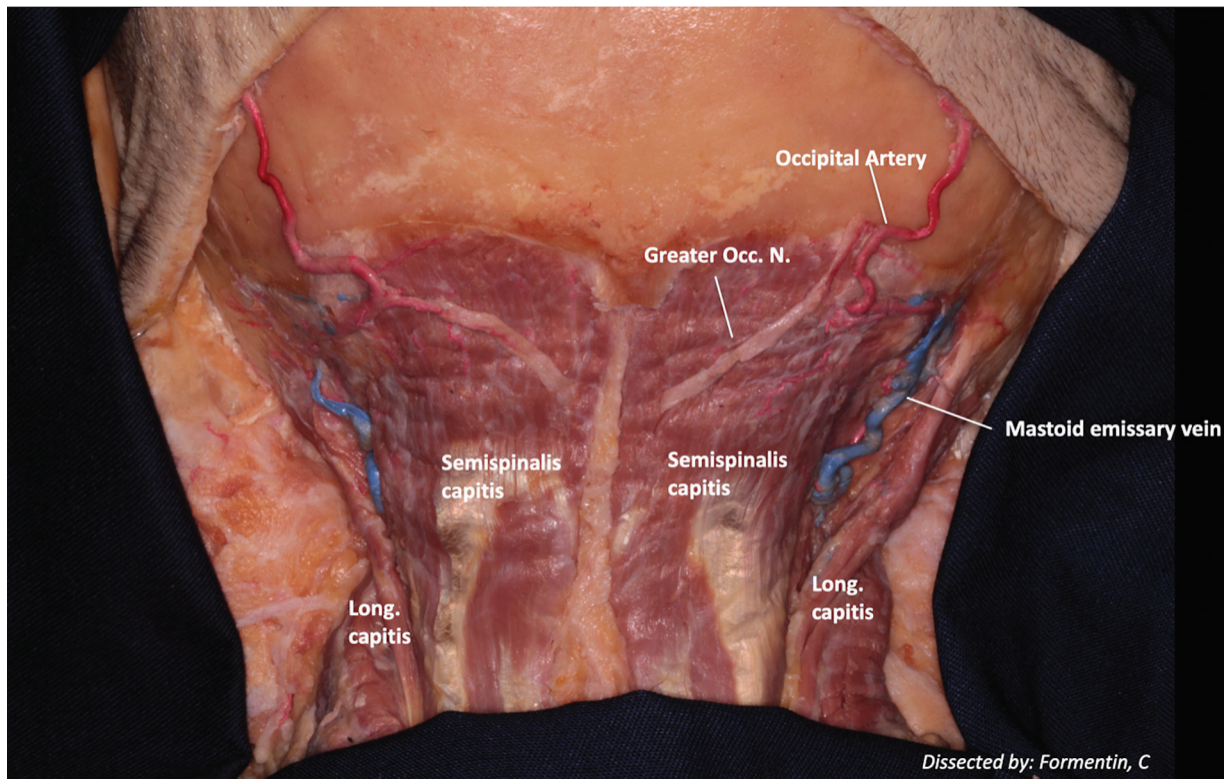
Traumatic extracranial occipital artery pseudoaneurysms are relatively rare lesions, typically resulting from trauma to the arterial wall following falls, blunt, or penetrating injuries.<sup>2,4</sup> Iatrogenic occurrences, such as those following ventriculoperitoneal shunt placement procedures and craniotomies,<sup>5</sup> have also been described in the literature. These lesions often manifest weeks or months after the traumatic event and commonly present as painful local masses.<sup>6</sup>

Pseudoaneurysms typically develop due to arterial bleeding into the vessel wall and are differentiated from true aneurysms by the absence of one or more of the arterial layers, including the intima, media, and adventitia.<sup>7</sup> Blood is typically contained by the surrounding soft tissues.

Given the unique anatomy and course of the occipital artery, it is relatively protected by muscle but may become more vulnerable to trauma at its distal location, above the



**Fig. 1** Axial nonenhanced computed tomography (CT) image shows (A) subgaleal hematoma (arrow) with a hypoattenuating central area (\*). (B) Axial, (C) coronal, and (D) sagittal CT angiography images show a lobulated lesion with enhancement (arrow), consistent with a pseudoaneurysm, continuous with the distal branch of the right occipital artery (arrowhead in C and D). (E) Three-dimensional (3D) reconstruction shows the pseudoaneurysm (arrow), subgaleal hematoma (\*), and distal branch of the occipital artery (arrowhead). (F) Follow-up CT angiography after surgery confirms excision of the pseudoaneurysm (arrow).



**Fig. 2** Image displaying a dissection of a cadaveric specimen illustrating the anatomy and course of the occipital artery. Occ. N., occipital nerve; Long., Longus.

superior nuchal line, where it is mainly surrounded by the galea and soft tissue<sup>8</sup> (► Fig. 2).

The most frequently reported symptoms include local tenderness, pain, headache, pulsatile or nonpulsatile masses, and skin lacerations.<sup>9</sup> Diagnosis can be made through clinical examination and confirmed with imaging modalities such as CT angiography, magnetic resonance imaging (MRI), MR angiography, conventional angiography, and Doppler ultrasound.

Treatment is generally warranted and can involve surgical ligation of the proximal and distal artery with excision of the lesion, often without significant complications. Endovascular methods have also been reported in the literature as alternative treatment options.<sup>10</sup>

## Conclusion

Traumatic pseudoaneurysms of the occipital artery are rare lesions, typically resulting from blunt or penetrating trauma or falls. Despite their rarity, clinical suspicion can be raised based on the patient's history and physical examination, and confirmed with neuroimaging such as CT angiography. Treatment is usually recommended through either surgical intervention or endovascular methods, often resulting in prompt resolution of symptoms.

**Conflict of Interest**  
None declared.

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