

# Bitemporal Postoperative Hemorrhage Following Pterional Craniotomy for the Treatment of an Internal Carotid Aneurysm

## *Hemorragia bitemporal após craniotomia pterional para tratamento de aneurisma de carótida interna*

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### Abstract

**Introduction** Postoperative hemorrhage is a well-known complication after intracranial surgeries. It usually occurs at the site of the operation; however, there are many reports of cerebellar hemorrhage following supratentorial craniotomies. Despite that, there are only three cases of multiple postoperative supratentorial hemorrhages (distant from the site of the operation) following aneurysm clipping in the current literature.

**Case Report** A 52-year-old previously healthy woman underwent a left pterional craniotomy for the clipping of an unruptured aneurysm. The surgery was performed without any intraoperative rupture or other occurrences. On the follow-up computed tomography (CT) scan performed 24h after surgery, bilateral posterior temporal lobe hematomas were identified, and they had no relation to the surgical site. The patient developed symptomatic vasospasm, with right-sided hemiparesis. This complication was treated conservatively, and the outcome was good.

**Conclusions** Intracerebral hemorrhage far from the site of the craniotomy is an infrequent complication after neurosurgical procedures, especially in vascular neurosurgery. The present report warns of the occurrence of this entity even in asymptomatic patients.

### Keywords

- ▶ cerebral aneurysm
- ▶ hemorrhage
- ▶ postoperative period

### Resumo

#### Palavras-chave

- ▶ aneurisma cerebral
- ▶ hemorragia
- ▶ período pós-operatório

**Introdução** Hemorragia pós-operatória é uma complicação bem conhecida após cirurgias intracranianas. Geralmente ocorre no sítio cirúrgico, porém há vários relatos de hemorragias cerebelares após craniotomias supratentoriais. Apesar disso, há somente três casos de hemorragias múltiplas supratentoriais (distantes do sítio cirúrgico) após clipagem de aneurisma intracraniano.

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**Relato do Caso** Paciente feminina, de 52 anos, previamente hígida, foi submetida a craniotomia pterional para clipagem de aneurisma não roto. A cirurgia ocorreu sem ruptura intraoperatória ou outra intercorrência. Na tomografia de crânio de controle, realizada 24h após o procedimento, 2 hematomas temporais posteriores foram identificados sem relação com o sítio cirúrgico. A paciente posteriormente desenvolveu vasoespasma sintomático, com hemiparesia direita, mas essa complicação foi tratada conservadoramente, e teve boa evolução clínica, sem déficit residual.

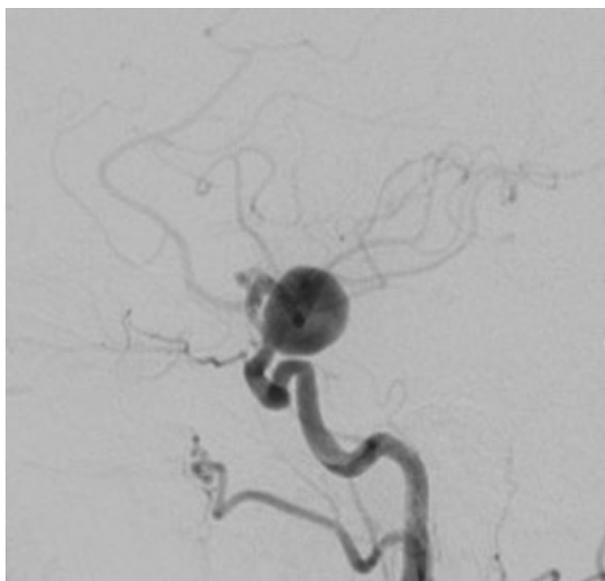
**Conclusões** Hemorragias intracranianas distantes do sítio cirúrgico são complicações infrequentes, especialmente em neurocirurgia vascular. O presente caso adverte para a ocorrência dessa complicação mesmo em pacientes assintomáticos.

## Introduction

Postoperative hemorrhage is a well-known complication after intracranial surgeries.<sup>1</sup> It usually occurs at the site of the operation; however, there are many reports of cerebellar hemorrhage following supratentorial craniotomies.<sup>2</sup> Out of all intracerebellar hemorrhages following supratentorial craniotomies, aneurysm clipping is involved in 32% of the cases.<sup>2</sup> Despite that, there are only three cases of multiple postoperative supratentorial hemorrhages (distant from the site of the operation) following aneurysm clipping in the current literature.<sup>1,2</sup> In this report, the authors describe and discuss the possible pathophysiological events in this rare complication.

## Case Report

A 52-year-old previously healthy woman had an isolated episode of seizure. During the evaluation, magnetic resonance angiography and conventional angiography were performed. A left posterior communicating aneurysm was identified (→ Fig. 1). The patient underwent a left pterional craniotomy



**Fig. 1** Preoperative angiography. Left internal carotid aneurysm (posterior communicating segment).

for aneurysm clipping that was performed without any intraoperative rupture or other occurrences. After the surgery, the patient was completely awake, and had no deficits.

On the follow-up computed tomography (CT) scan performed 24h after surgery, bilateral posterior temporal lobe hematomas were identified, and they had no relation to the surgical site (→ Fig. 2).

A complete hematological examination was performed, and the results were normal. During the follow-up, the CT scans showed the progressive reabsorption of both hematomas, but at the 12th postoperative day, the patient developed a symptomatic vasospasm with right-sided hemiparesis. This complication was treated conservatively, and the outcome was good.

## Discussion

Intracerebral hemorrhage remote from the site of the craniotomy is an infrequent complication after neurosurgical procedures.<sup>3</sup> These hemorrhages are often worrying and life-threatening complications.<sup>2</sup> Different mechanisms have been proposed, some authors consider that aggressive



**Fig. 2** Postoperative tomography. Bitemporal hemorrhage distant from the craniotomy site.

intraoperative cerebrospinal fluid removal can cause a brain shift that contributes to intracerebral hemorrhages. Others suggest that the surgical procedure itself induces coagulative modifications. A history of hypertensive peaks during the recovery period is also involved in this scenario.<sup>1-3</sup>

Despite the fact that none of the previously described pathophysiological mechanisms were involved in our case, the present study warns of the occurrence of this entity even in asymptomatic patients.

## References

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