



CASE REPORT

# Delayed contralateral epidural hematoma after decompressive craniectomy for a traumatic acute subdural hematoma



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## KEYWORDS

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therapeutic  
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**Summary** After falling from a height, a 29-year-old male patient developed a traumatic left subdural hematoma (SDH) with brain swelling and a midline shift to the right side, as well as a small epidural hematoma (EDH) (thickness: <1 cm) overlying a contralateral temporal linear fracture. A decompressive craniectomy for SDH evacuation and the placement of an intracranial pressure (ICP) monitoring device were performed. Because of uncontrollable ICP (>35 mmHg) 48 hours after surgery, a left, extended decompressive craniectomy was performed in combination with therapeutic hypothermia for 6 days, including rewarming for 3 days. The patient remained stable for several days. However, the patient developed sudden right pupil dilatation with an uncal herniation on Day 14. Computed tomography revealed a considerable enlargement of the contralateral EDH. An emergency craniectomy was performed for EDH evacuation. In this paper, we describe this rare case, in which the delayed expansion of the contralateral EDH occurred 14 days after the initial surgery, and discuss its clinical management and radiologic findings, in addition to reviewing the literature and presenting the possible mechanism of this complication.

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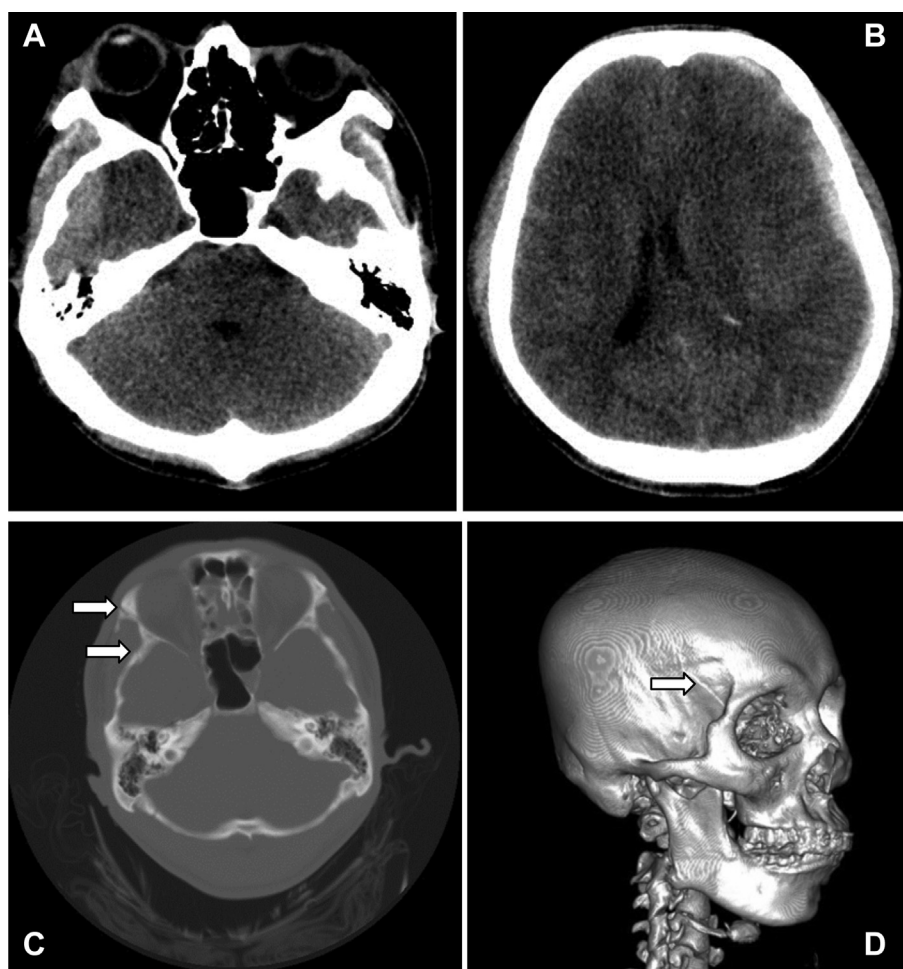
## 1. Introduction

Delayed expansion of a contralateral epidural hematoma (EDH) after decompressive surgery for an acute subdural hematoma (SDH) is rare. It is a life threatening condition requiring emergency evacuation surgery. The longest period for an occurrence of the enlargement of a delayed contralateral EDH following the initial surgery is 96 hours, as reported by Su et al.<sup>1</sup> Here, we report a patient who developed delayed EDH expansion 14 days after the initial surgery, an extensive period never reported in the literature according to our research.

## 2. Case Report

A 29-year-old male patient developed a disturbance of consciousness after falling from a 4-m height. His initial Glasgow Coma Scale score at the emergency room was E2V1M4. Brain computed tomography (CT) revealed a left SDH, a traumatic subarachnoid hemorrhage with a mass effect and a midline shift, and a small right temporal EDH (thickness: <1 cm) overlying a fracture of the right temporal bone (Figure 1). An emergency decompressive

craniectomy for SDH evacuation and the placement of an intracranial pressure (ICP) monitoring device (Camino; Integra Life Sciences Corporation, Plainsboro, NJ, USA) were performed. Two days following the craniectomy, Cushing's triad, including considerable bradycardia and hypertension, and increased ICP up to 35 mmHg were observed. A follow-up CT scan revealed considerable brain swelling on the left side with a midline shift, whereas no enlargement of the contralateral temporal EDH was observed (Figure 2). An extended decompressive craniectomy was performed in combination with therapeutic hypothermia (TH). TH was maintained at a target temperature of 33°C for 6 days, including rewarming to 36°C at a rate of 1°C/d for 3 days. ICP was approximately 15 mmHg during the TH. After regaining a normal body temperature on Day 8, repeat CT revealed residual brain swelling without a midline shift and no obvious enlargement of the right temporal EDH (Figure 3). The osmotic agents used from Day 1 were tapered accordingly, and the patient remained stable for several days. However, 5 days following the completion of TH or Day 14 after his traumatic brain injury, the patient developed sudden right pupil dilatation, and his Glasgow Coma Scale score decreased from E2VTM5 to E1VTM3. A follow-up CT scan revealed a considerable



**Figure 1** Initial computed tomography showing (A) a small right temporal epidural hematoma (thickness: <1 cm), (B) left temporal subdural hematoma with a midline shift, (C) and (D) a right temporal bone fracture (arrows).

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