



## Case report

# Simultaneous intracranial acute and chronic subdural hematoma on one side: A rare case report

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## ABSTRACT

**Introduction:** While acute and chronic subdural hematomas (SDH) are relatively common, co-occurrence is rare. Here, we report a case of unilateral simultaneous acute and chronic SDH.

**Case presentation:** A 74-year-old man with comorbid diabetes mellitus and hypertension presented with decreased consciousness (Glasgow Coma Scale (GCS) 4; E1M2V1) with stable hemodynamics. Isochoric pupils and right motoric lateralization were found upon neurological examination. CT scan of the brain without contrast showed acute and chronic SDH in the left frontotemporoparietal area with a midline shift 2 cm to the right. An evacuation craniectomy of the SDH was performed. Postoperative care included mechanical ventilation, monitoring, fluid balance maintenance, and medication. The patient showed improvement during follow-up and was weaned off mechanical ventilation on the 5th day after surgery.

**Clinical discussion:** SDH with a thickness of 10 mm or more and mass effect requires surgical management. Various techniques can be used for surgical evacuation. The prognosis of chronic SDH patients depends on their clinical condition when admitted, with early diagnosis and intervention resulting in improved prognosis.

**Conclusion:** This rare case highlights the significance of promptly recognizing and addressing symptoms such as headache and decreased consciousness, especially in older patients with underlying health conditions. Good prognosis is dependent on prompt evaluation, including a head CT scan for recurrent headaches, and immediate treatment when necessary.

## 1. Introduction

Subdural hematoma (SDH) is defined as the accumulation of blood between the dura mater and arachnoid layer. SDH is categorized as chronic, subacute, or acute based on the time it occurred [1]. Chronic SDH is the most common, especially in older people; trauma is the most common risk factor for acute SDH. Hypertension and the use of antiplatelets or anticoagulants are also considered important risk factors [2]. Clinical presentation of chronic SDH may vary; the patient might exhibit a variety of symptoms, including seizure, vertigo, disorientation, or headache, or may show none at all [3]. In the presented case, chronic and acute SDH incidents were found to have occurred simultaneously, located on one side of the head. Here, we report a case of simultaneous acute and chronic SDH in line with the SCARE criteria 2023 [4].

## 2. Case presentation

A 74-year-old man was admitted to the emergency room with decreased consciousness, beginning one day before admission. There was a history of headaches, ongoing for three weeks, but no history of head trauma. The patient suffered uncontrolled diabetes mellitus and hypertension. The patient underwent ventriculoperitoneal (VP) shunt surgery four years previously at another hospital for an unknown cause. Upon review, he was hemodynamically stable, scoring Glasgow Coma Scale (GCS) 4 (E1M2V1), with isochoric pupils and right motoric lateralization. A brain CT scan without contrast showed a hyperdense mixed lesion on the left medial side and a hypodense lesion on the left lateral side, revealing acute and chronic SDH in the left frontotemporoparietal region, with midline shifting 2 cm to the right (Fig. 1). The

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patient underwent a complete blood test to rule out extracranial causes of decreased consciousness. These tests indicated normal blood glucose, anemia (Hb 8.4 mg/dL), and thrombocytopenia (100,000/uL). The patient was diagnosed with simultaneous acute and chronic SDH in the left frontotemporoparietal region, anemia, and thrombocytopenia.

A primary intervention was with oxygenation, intravenous fluid, and mannitol. Following this, an emergency craniectomy for hematoma evacuation was performed within two hours. The patient was intubated in a supine position under general anesthesia before a question mark incision was made in the left temporoparietal region. Next, a craniectomy was performed with a craniotome, the bone flap was removed, and the dura mater was identified. A U-shaped durotomy was performed, and the SDH capsule was seen (Fig. 2A). Following the excision of the SDH capsule, a yellowish fluid—the result of the chronic SDH—was evacuated (Fig. 2B). A second layer of the SDH capsule was identified, and the acute SDH was evacuated (Fig. 2C, D, and E). Finally, a duraplasty was performed.

Postoperative care involved supportive mechanical ventilation, neurological monitoring, fluid balance maintenance, and electrolytes in the intensive care unit. Antibiotics, analgesics, proton pump inhibitors, mannitol, and anti-fibrinolytics were given for three days. During follow-up, the patient showed clinical improvement, with an increased GCS score and the capability of understanding instructions. On the 5th day post-operation, the patient was weaned from supportive mechanical ventilation.

### 3. Discussion

SDH usually occurs due to the rupture of bridging veins, leading to the accumulation of subdural blood. Acute SDH is generally linked with high-energy impact and trauma and normally appears 24 h after the triggering event. On the other hand, chronic SDH is usually related to light impact or has no significant cause; symptoms typically arise within two weeks of an apparent trigger [5]. In such cases, the chief complaint of the patient is usually decreased consciousness, the most frequent symptom reported in patients with chronic SDH.

While most SDH cases are caused by rupture of bridging veins, 20–30 % of cases are estimated to be caused by ruptured arteries [6]. Various factors have been identified as risks for SDH, including cerebral atrophy due to aging and heart disease, coagulopathy, anticoagulation medication, chronic alcoholic use, neurosurgical procedures, rupture of aneurysms and arteriovenous malformations, decreased cerebrospinal fluid (CSF) pressure, and infection [7]. This patient had undergone a VP shunt four years previously; while a decrease in CSF pressure can be a cause of SDH, the length of time between the surgery and the current episode suggests the two are not related.

Clinical presentation of SDH varies greatly. Acute SDH causes coma in approximately half of cases, and in about 12–38 % of patients, transient intervals occur, followed by a progressive neurological decline until coma [7]. In this case, the patient's family denied the presence of head trauma, meaning the acute SDH possibly occurred due to age and other medical conditions. Chronic SDH usually appears with the insidious onset of headache, cognitive impairment, light-headedness, apathy, and mental status changes. Focal neurological deficits may be contralateral or ipsilateral to the lesion side, and symptoms may be temporary or fluctuate [8].

Neuroimaging is very important for the evaluation and diagnosis of chronic SDH; however, laboratory tests are also important [9,10]. Here, CT scan showed a large hematoma in the subdural space, so a complete blood count was performed, and anemia (8.4 mg/dL) and thrombocytopenia (100,000 u/L) were diagnosed. Accumulation of blood can cause consumptive coagulopathy and a decreased platelet count.

The management of both acute and chronic SDH is through surgical procedures to alleviate the condition and address the symptoms. The main aim is to relieve the cause of the presented symptoms. SDH with a thickness of 10 mm or more that shows mass effect is a candidate for surgical management [1,11]. Surgical evacuation of SDH can be performed with various techniques, including burrhole trepanation, craniotomy, and decompression craniectomy [12]. The evidence shows that using a drain helps reduce the possibility of recurrence [13].

The prognosis of chronic SDH patients depends greatly on their clinical condition when admitted [11]. Early diagnosis and intervention mean better prognosis; however, comorbidities such as diabetes mellitus and hypertension also have a significant impact [11,13]. In our case, diagnosis and intervention were conducted as soon as possible, which impacted the result for the patient.

### 4. Conclusion

This very rare case emphasizes the importance of recognizing and immediately evaluating symptoms such as headache and decreased consciousness, especially in older patients with comorbidities. Fast diagnosis and examination support, especially in the form of neuroimaging from the time the patient experiences recurring headaches, are critical, due to the potential requirement for treatment as soon as possible.

### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this

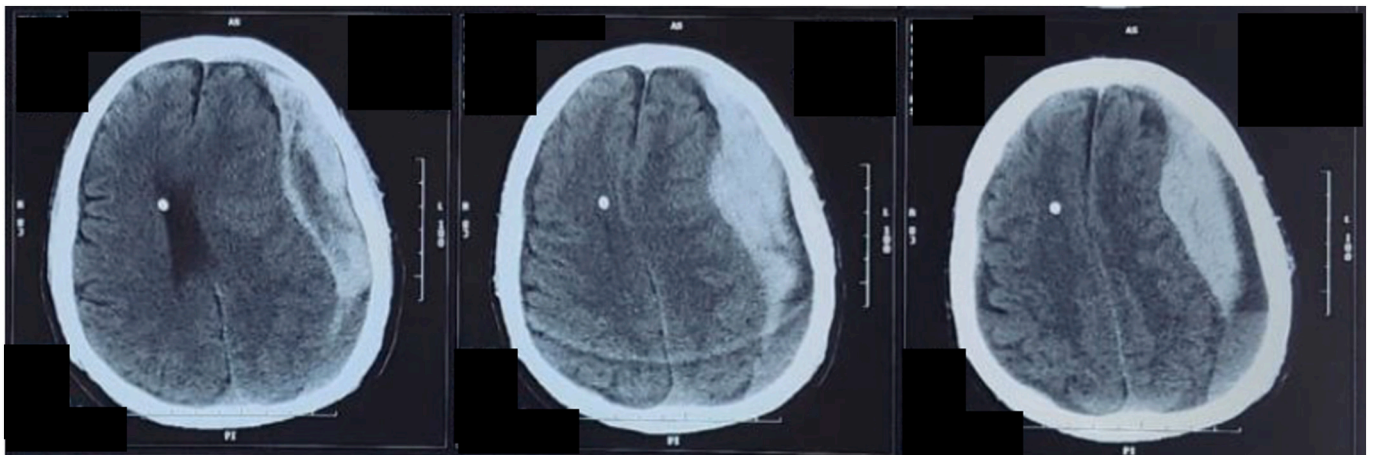
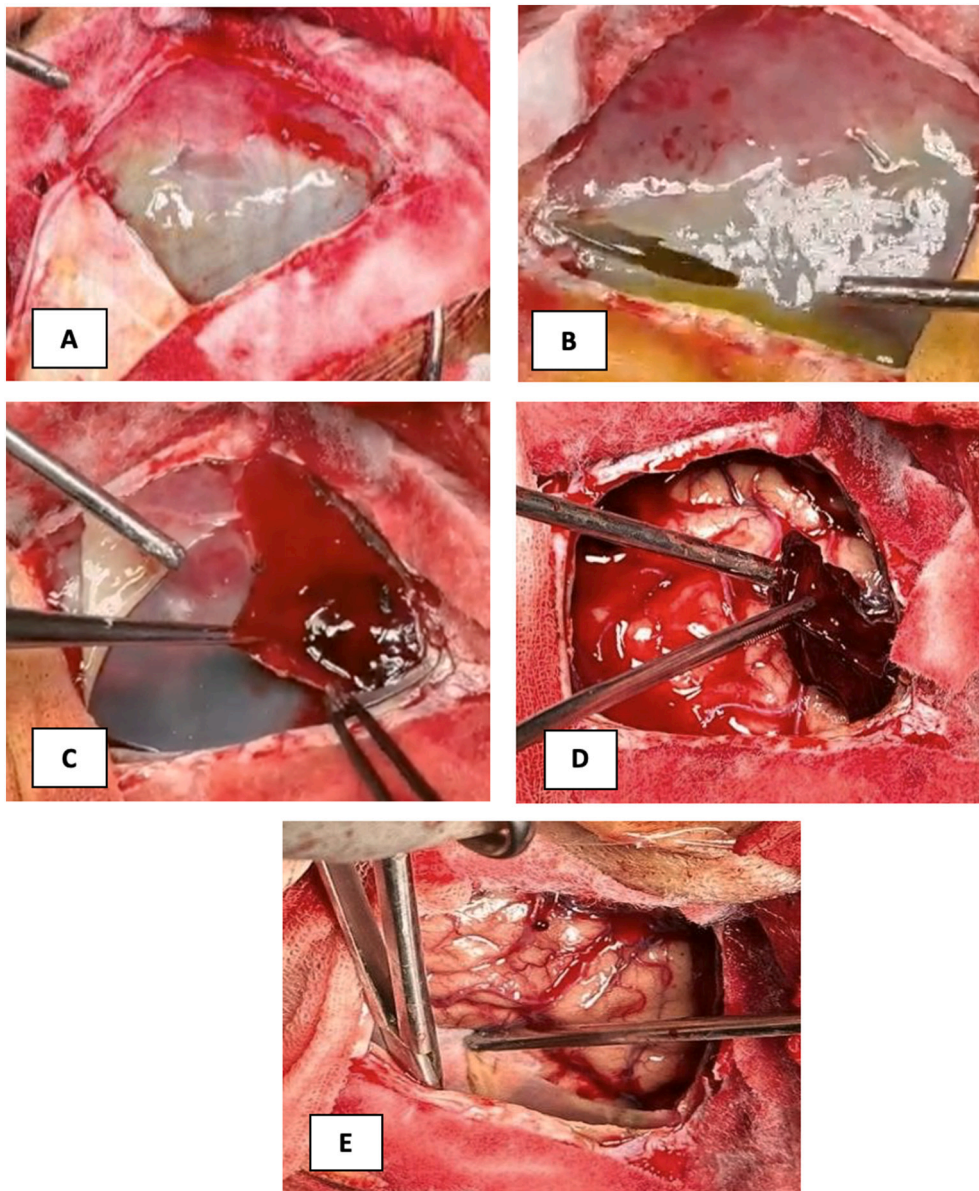


Fig. 1. Head CT scan results without contrast (axial view).



**Fig. 2.** Intraoperative findings. A: First layer of subdural hematoma capsule. B: Opening first layer capsule showed yellowish fluid. C: Second layer opening. D: Evacuation of acute hematoma. E. First and second capsules evacuated.

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The study is exempt from ethical approval in our institution.

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**Author contribution**

DW and FP: study concept and surgical therapy for this patient. RAA, KJS, and MF: Data collection and Writing-Original draft preparation. DW: senior author and the manuscript reviewer. MF: Editing and Writing. All authors read and approved the final manuscript.

**Conflict of interest statement**

Nothing to declare.

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