

# A Symptomatic Calcified Chronic Subdural Hematoma in an Elderly Patient: A Case Report

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### ABSTRACT:

*Calcified chronic subdural hematomas are rare forms of chronic subdural hematoma, accounting for 0.3-2.7%. Surgery is adequate for most chronic subdural hematomas, but its effectiveness is uncertain for calcified chronic subdural hematomas.*

*In this case report, we illustrate a case of a 70-year-old male presenting with a motor function deficit in his left limbs over two months and neurological deterioration. A substantial calcified subdural collection was seen on computed tomography in the right parietal hemisphere. This was surgically removed with success and completeness.*

*A chronic subdural hematoma has minimal possibility of becoming calcified. Because of the patient's condition's severity, surgery was the only remaining choice.*

### Key Words:

Calcified chronic subdural hematomas, armoured brain, Matrioska head

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## Introduction

Chronic subdural hematoma is a common phenomenon in elderly patients, but calcified chronic subdural hematoma is an infrequent diagnosis, accounting for about 0.3-2.7%.<sup>1,2</sup> Calcified chronic subdural hematoma was first documented in 1884 (3,4,5); since then, about 100 cases have been reported.<sup>2,6</sup>

Surgical treatment for chronic subdural hematomas is familiar, but there is cynicism about the management of calcified chronic subdural hematomas.<sup>1,2,3</sup> The ideal

surgical approach for this specific type of lesion, commonly known as "armored brain or Matrioska head"<sup>7</sup>, has not yet been determined due to the brain's limited ability to expand after surgery.<sup>6</sup> The thick calcified inner membrane often sticks to the cortical surface of the brain tissue, making dissection challenging and potentially leading to brain discoloration, bleeding, or the onset of new neurological issues.<sup>7</sup>

Multiple authors state that surgery does not lead to improvement in long-standing symptoms. Consequently,

they advise not ruling out surgery for patients who are newborns or very young but advised surgery for those who have an intracerebral hematoma, elevated intracranial pressure, or progressive neurological impairments.<sup>5,7</sup>

### Case report

We report a case of a 70-year-old male, exhibiting declining motor function in his left lower extremities for the last two months, referred from a primary care hospital. This patient had a history of anterior cervical fusion and fixation with titanium screws and anterior plate, along with a right-sided burr hole craniotomy about three months ago due to trauma [Figure 1]. The patient presented in our emergency room, in Glasgow coma score (GCS) E3V4M5, left hemiparesis with motor strength grade 3. The computed tomography (CT) scans documented an extensive subdural collection of the right parietal region with a calcified inner membrane [Figure 2]. Right parietal craniotomy was performed under LA with deep sedation [Figure 3], exposing an "armored dura" with the mold of the underlying hematoma. An arcuate fashion was maintained during the dural opening, exposing the calcified capsule of the chronic subdural hematoma, which has a gummy appearance concerning the inner surface of the dura. A scrupulous dissection made the path for incising the capsule, exposing various stages of subacute hematoma. After removing these partly calcified grayed mud-like components, the thick inner membrane covering the parenchymal surface became visible. Luckily, the arachnoid membrane could be removed entirely without harming the brain beneath since it was unbroken and had not attached itself to the hematoma.

The postoperative period was uneventful, with 15 GCS. At his 2-month follow-up, he could stand with the support of a clutch, only with slight mono paresis of the left lower limb (grade 4 of 5) [Figure 4]. His postoperative CT scan showed clearance of subdural collection and gradual brain re-expansion. [Figure 5].

### Discussion

A subdural hematoma is a medical condition where blood accumulates between the dura mater and the arachnoid layer of the brain when there is a tear in the bridging veins near the sagittal sinus.<sup>8</sup> The condition is often caused by trivial trauma, which can be insignificant that the patient may not remember<sup>9</sup>.

Calcified chronic subdural hematoma (CCSDH) is a type of subdural hematoma characterised by the formation of calcium over more than six months, which von Rokitan-sky first reported during an autopsy. It is common in children and young adults but also elderly patients. Calcification in calcified chronic subdural hematoma can result from "regressive" changes, such as poor absorption in the subdural space, calcium deposition, and hyalinisation of connective tissue rather than an "active" process. Still, this process's exact mechanism remains undefined<sup>10</sup>. The formation of these lesions appears to be influenced by coagulopathy and alcoholism, and neurological illnesses, such as dementia in older people, should be taken into account when making a differential diagnosis of hematoma.

There are different utterances regarding the treatment for calcified chronic subdural hematoma. Observation is recommended for asymptomatic ones, along with those without acute or progressive neurological disorders in the elderly.<sup>1,4</sup> Furthermore, due to the increased risk of bleeding as demonstrated by the vascular proliferation in the capsule of calcified chronic subdural hematoma, patients with intracerebral hematomas or acute or progressive neurological disorders should also be considered for surgery to prevent further brain damage.

After surgery, patients' neurological conditions can improve because removing the calcified chronic subdural hematoma decreases the mass effect of cerebral irritation and enhances cerebral blood flow.<sup>2</sup>

As per previous publications, we confirm that our patient's postoperative neurological recovery confirms the effectiveness of surgical treatment for symptomatic calcified chronic subdural hematoma, especially for those with clinical deterioration. Based on the analysis of the reports available in the literature, we believe that a thicker inner layer compressing the brain may make fluid drainage insufficient to alleviate symptoms and facilitate brain re-expansion. Prolonged compression in recurrent bleeding is considered to be the primary factor that discourages brain expansion. Insufficient information exists in the literature regarding the recurrence rate of calcified subdural haemorrhages, as they are rare.

### Conclusion

The successful and careful piecemeal removal of the calcified portion with a craniotomy is the key to better

surgical outcomes. Based on our expertise, we advocate for surgical intervention in symptomatic patients with chronic calcified subdural hematoma whenever feasible, as it often results in neurological enhancement. Nevertheless, it's crucial to exercise caution during the procedure to prevent the accidental formation of a new subdural hematoma, which could arise from damage to the bridging veins.

Figure 1 Fusion and fixation

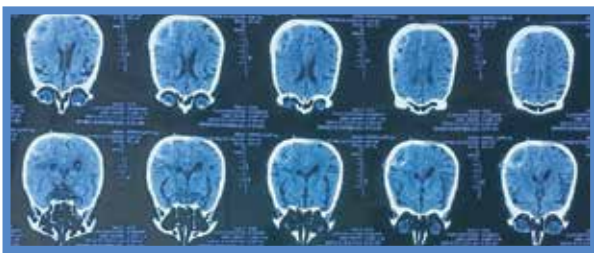


Figure 2 Preoperative CT scan of brain

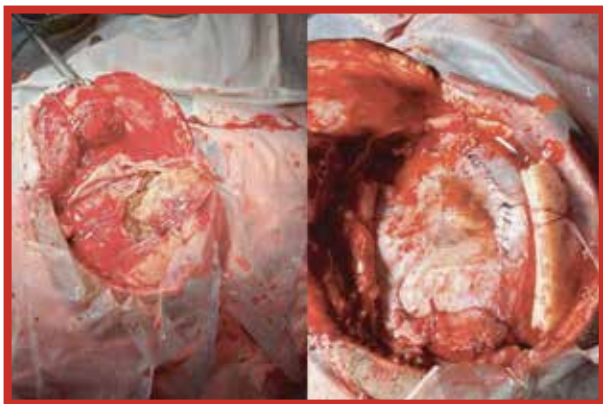


Figure 3.1 Per operative image

Figure 3.2 Per operative image



Figure 3.3 Per operative image

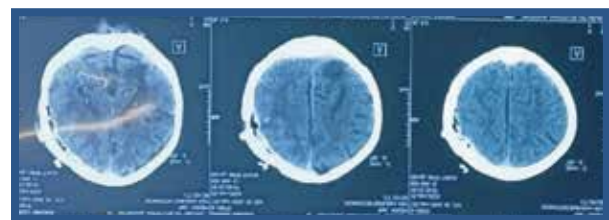


Figure 4.1 Postoperative CT scan

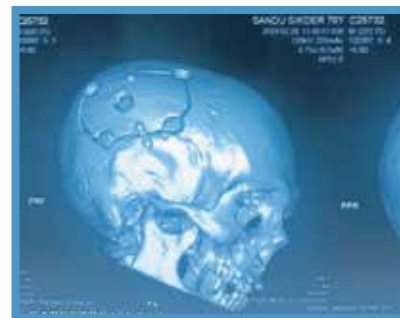


Figure 4.2 Postoperative CT scan 3D reconstruction view



Figure 5 Follow-up image

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## Conflicts of interest

There were no conflicts of interest, according to the authors, during the planning and writing of this paper.

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