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Syndrome of the Trephined, a Rare Complication of Decompression Craniotomy: A Case Report

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Abstract **Case Report**

Post-traumatic brain injury can lead to intracranial hypertension, which is a serious neurological emergency that may require decompressive craniotomy (DC). However, decompressive craniotomies can give rise to complications in some patients during their recovery phase, in particular the "trephine" syndrome, which adversely affects patients' functional rehabilitation. The main symptoms are severe orthostatic headaches, motor deficits, cognitive decline and convulsions. Imaging, particularly CT scans, is essential for making a positive diagnosis and monitoring patient progress. In this study, we describe a case of skin flap syndrome secondary to post-traumatic decompression.

Keywords: Brain, Trauma, Haemorrhage, HTIC, Craniotomy, Skin flap, CT scan.

INTRODUCTION

Post-traumatic brain injury can lead to intracranial hypertension, which is a serious neurological emergency that may require decompressive craniotomy (DC). The substantial mortality-reducing effects of DC have been well demonstrated in cases of traumatic brain injury, as well as in other brain disorders such as ischaemic stroke [1], subarachnoid haemorrhage [2], cerebral venous sinus thrombosis [3], and severe intracranial infectious and/or inflammatory diseases [4, 5]. However, it can give rise to complications in some patients during their recovery phase, in particular the "trephine" syndrome, which adversely affects patients' functional rehabilitation. In this work, we describe a case of skin flap syndrome secondary to post-traumatic decompression.

OBSERVATION

A 38-year-old patient, victim of a road traffic accident, was admitted to the emergency department in a state of unconsciousness, his Glasgow score was 10/15, the patient was intubated and ventilated, the emergency brain scan showed : a left fronto-parietal-temporal subdural haematoma, associated with bilateral frontal and left temporal parenchymal haematomas, haemorrhagic oedematous contusion sites, meningeal haemorrhage, and peri-injury cerebral oedema, all of which were responsible for a mass effect on the medial structures, with collapse of the homolateral lateral ventricles and subfalcoral involvement (left-right shift of 11mm) and left temporal involvement. There were also multiple fractures of the cranial vault and facial bones (Figure 1). The patient underwent emergency craniotomy to remove the subdural haematoma. A follow-up CT scan performed 48 hours after the craniotomy revealed a large convexity of the overlying skin flap, with the persistence of two foci of haematoma in the left frontal and temporal regions, surrounded by significant neighbouring oedema with persistent meningeal haemorrhage. A discrete mass effect on the midline structures and collapse of the homolateral lateral ventricles were observed, but there was no paradoxical hernia (Figure 2). After 45 days of favourable evolution, we observed the emergence of neurological symptoms, consisting of severe orthostatic headaches, with motor deficits and convulsions, The CT scan showed the appearance of a large concavity of the overlying skin flap associated with fronto-parieto-temporal oedema responsible for a mass effect on the medial structures with subfalcoral involvement (left-right shift of 13mm), and regression of the left frontal and temporal haematoma (Figure 3). The patient benefited from hydration with clamping of the CSF drainage, and was constantly placed in the Trendelenburg position.

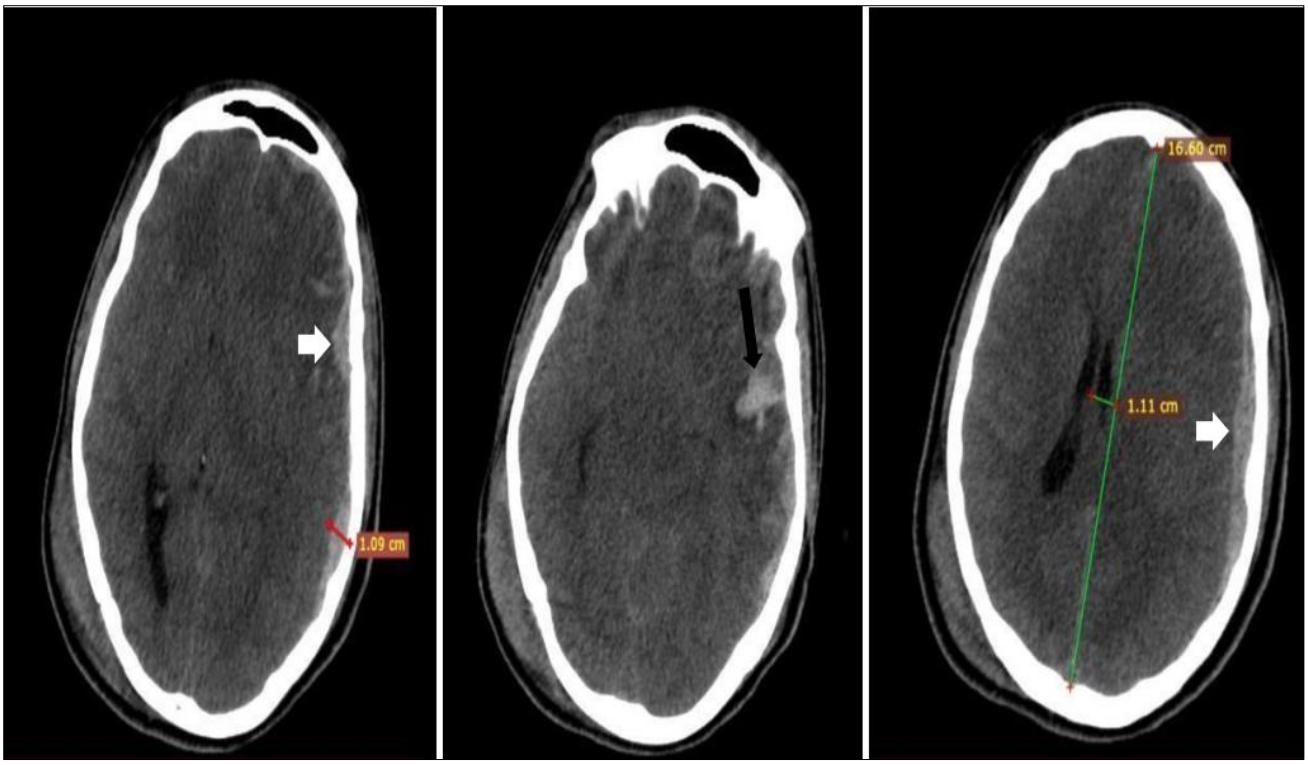

Figure 1: Cerebral CT scan performed on admission, axial sections, parenchymal window: left fronto-parieto-temporal subdural haematoma (white arrow), intraparenchymal haematoma (black arrow)

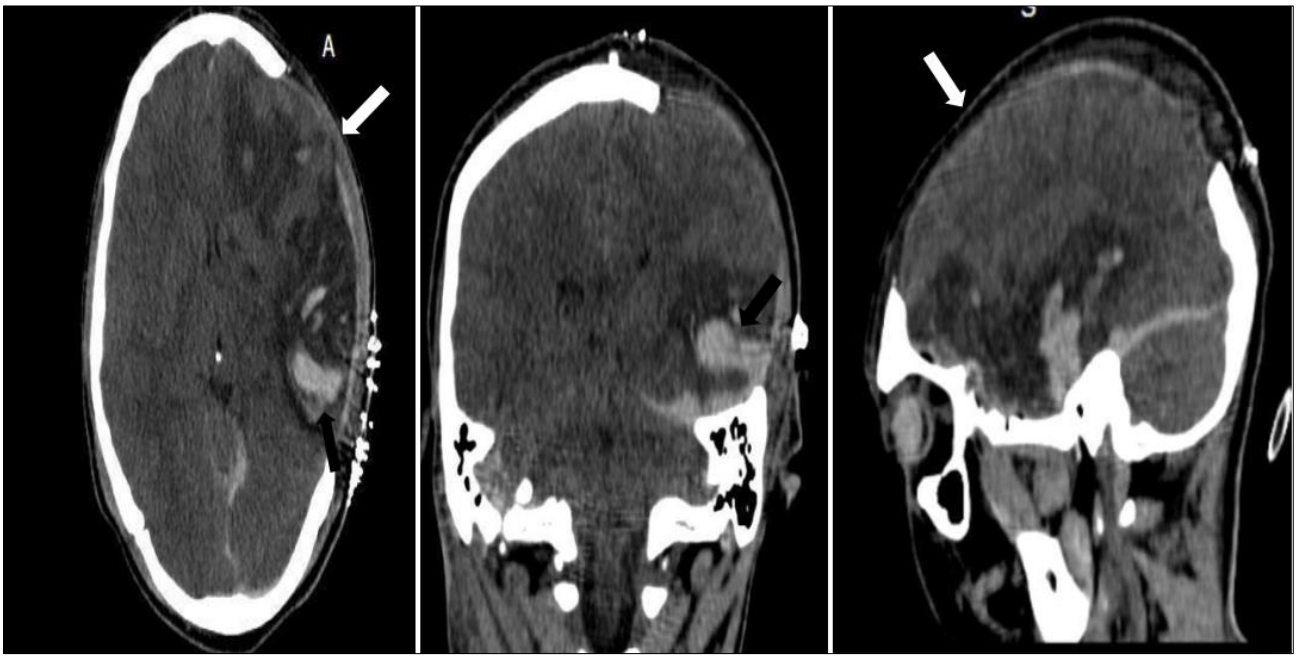

Figure 2: Post-craniotomy brain scan, axial sections and coronal and sagittal reconstruction, parenchymal window: large convexity of the overlying left fronto-parieto-temporal skin flap (white arrow), meningeal haemorrhage (black arrow)

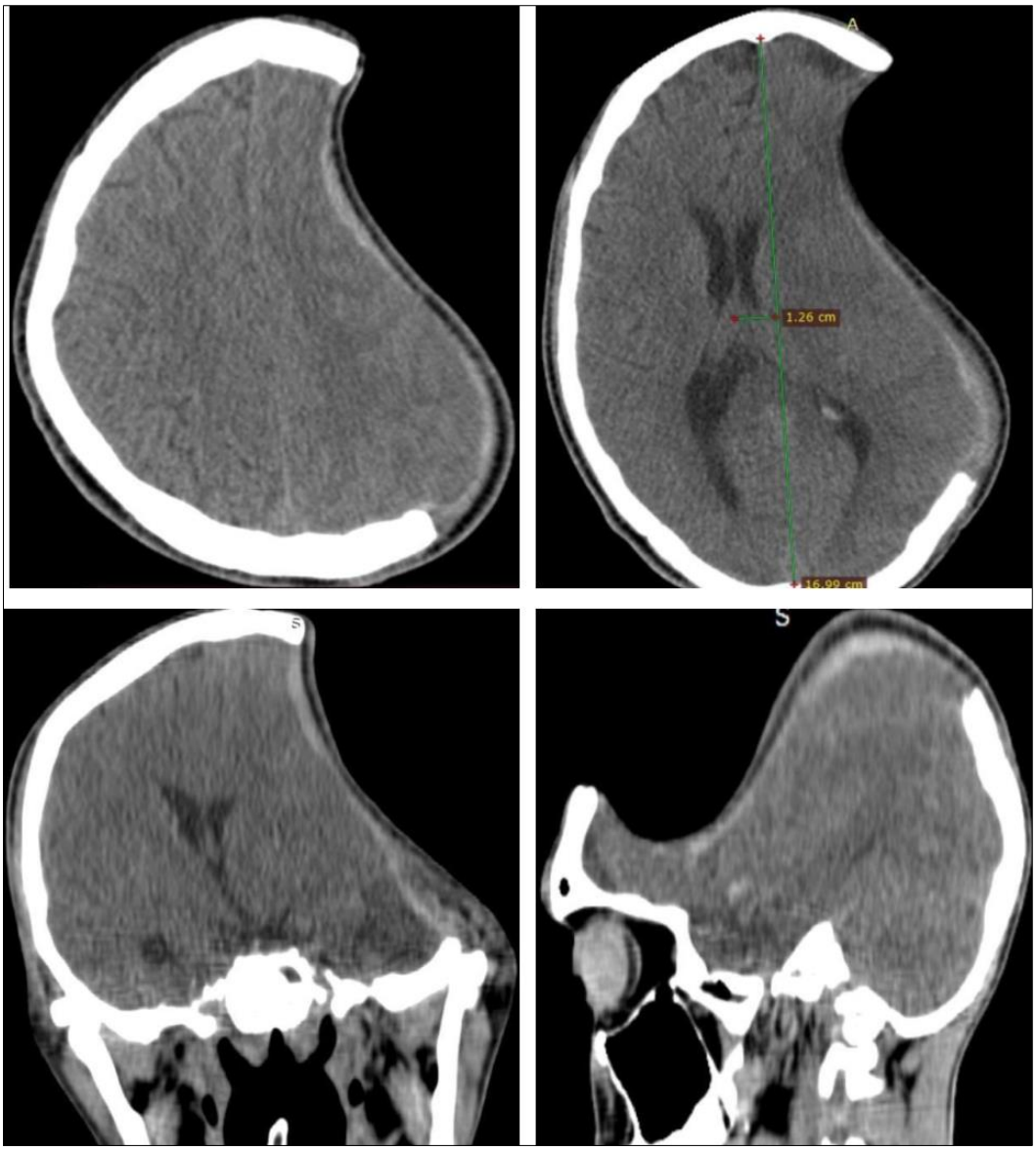

Figure 3: Cerebral CT scan at 45 days post-craniotomy, axial sections and coronal and sagittal reconstruction, parenchymal window: wide concavity of the overlying skin flap associated with fronto-parieto-temporal oedema responsible for a mass effect on the medial structures with subfalcoral involvement

DISCUSSION

Management of refractory intracranial hypertension often requires decompression craniotomy to save patients' lives. Following this surgical procedure, a skin flap covers the craniectomy site. The resorption of cerebral oedema will progressively lead to cerebral collapse with distension of the skin flap. Only a small proportion of the population who have undergone extensive decompressive craniectomy present symptoms, which may hinder the subsequent course of rehabilitation [5]. The main symptoms are severe orthostatic headaches, motor deficits, cognitive decline and convulsions. If left untreated, it can progress to "paradoxical herniation" and eventually lead to coma or death. Imaging, particularly computer tomography, will show a large craniectomy with concavity of the overlying scalp, cerebral oedema opposite, characterised by non-systematic hypodensity with effacement of the sulci, all of which is responsible for a mass effect on the midline with subfalcoral involvement. Treatment consists of cranioplasty with replacement of the cranial flap; surgery may be delayed for a number of reasons, including infection [6]. In the meantime, measures are needed to increase intracranial pressure, such as the Trendelenburg position, hydration and tightening of CSF drainage.

CONCLUSION

Collapsed skin flap syndrome "trephinean syndrome" is a rare complication of decompressive craniotomy, and can adversely affect patients' functional rehabilitation. Rigorous monitoring is necessary to prevent this condition, and early cranioplasty should be considered when patients at risk develop signs with clinical deterioration.

REFERENCES

1. Vahedi, K., Hofmeijer, J., Juettler, E., Vicaut, E., George, B., Algra, A., ... & Hacke, W. (2007). Early decompressive surgery in malignant infarction of the middle cerebral artery: a pooled analysis of three randomised controlled trials. *The Lancet Neurology*, *6*(3), 215-222.
2. Güresir, E., Schuss, P., Vatter, H., Raabe, A., Seifert, V., & Beck, J. (2009). Decompressive craniectomy in subarachnoid hemorrhage. *Neurosurgical focus*, *26*(6), E4.
3. Ferro, J. M., Crassard, I., Coutinho, J. M., Canhão, P., Barinagarrementeria, F., Cucchiara, B., ... & Second International Study on Cerebral Vein and Dural Sinus Thrombosis (ISCVT 2) Investigators. (2011). Decompressive surgery in cerebrovenous thrombosis: a multicenter registry and a systematic review of individual patient data. *Stroke*, *42*(10), 2825-2831.
4. Di Rienzo, A., Iacoangeli, M., Rychlicki, F., Veccia, S., & Scerrati, M. (2008). Decompressive craniectomy for medically refractory intracranial hypertension due to meningoencephalitis: report of three patients. *Acta neurochirurgica*, *150*, 1057-1065.
5. Cooper, D. J., Rosenfeld, J. V., Murray, L., Arabi, Y. M., Davies, A. R., D'Urso, P., ... & Wolfe, R. (2011). Decompressive craniectomy in diffuse traumatic brain injury. *New England Journal of Medicine*, *364*(16), 1493-1502.
6. Annan, M., De Toffol, B., Hommet, C., & Mondon, K. (2015). Sinking skin flap syndrome (or syndrome of the trephined): a review. *British journal of neurosurgery*, *29*(3), 314-318. DOI: https://doi.org/10.3109/02688697.2015.1012047.