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Muhammad Mohsin Khan,
Muhammad Mujahid Sharif,
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Massive extra dural collection post cranioplasty causing rapid deterioration of the patient

Muhammad Mohsin Khan[1], Muhammad Mujahid Sharif[2], Bipin Chaurasia[3]

[1] Hamad General Hospital, QATAR
[2] PIMS, PAKISTAN
[3] Neurosurgery Clinic, Birgunj, NEPAL

ABSTRACT

Introduction. Cranioplasty is a standard neurosurgical procedure these days where surgeons repair a defect or deformity of a skull. This procedure can lead to fatal experiences after surgery. We encounter a similar experience we want to share.

Case report. we present a case of 37 years 37-year-old patient who developed epidural fluid collection after cranioplasty. The patient deteriorated after surgery which we managed carefully and recovered later.

Conclusion. Post-cranioplasty patients should be under observation and neurological deterioration should be kept in mind. Surgical intervention is not always needed and can be managed conservatively.

Keywords
cranioplasty,
extradural haematoma,
road traffic accident

Corresponding author:
Bipin Chaurasia

Neurosurgery Clinic,
Birgunj, Nepal

trozexa@gmail.com

INTRODUCTION

Cranioplasty is a standard neurosurgical procedure these days where surgeons repair a defect or deformity of a skull. Cranioplasty, contrary to popular belief, is an ancient procedure. We have proof that surgeons in the 14th and 15th centuries carried out cranioplasty using metals like gold and copper. Contrary to popular belief, Cranioplasty is not just a cosmetic repair of cranial defects; cosmetics is only one part of its wide-ranging benefits. It returns the intracranial environment back to its normal physiology and helps in healing and repairing of neurological deficits. It is part of the rehabilitation process following a patient's neurological injury. Substantial enhancements in neuropsychological deficits, prevention of convulsions and partial prevention of cerebral atrophy are also achieved. New literature coming up shows that cranioplasty may improve the patient's psychological status, social performance, and neurocognitive functioning.1 But the procedure comes with its own sets of complications. They include needing more operations, seizures, infections, hydrocephalus, Epidural fluid collection and even death. Epidural fluid collection (EFC) that occurs after cranioplasty is not a common side effect, and alot of them EFC regress

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naturally if given time, so we expect that the true incidence is miscalculated. 2,3 This complication of fluid collection in the epidural space is not described comprehensively in the literature, its importance is yet to be established, and there is not much data available on this issue. We report this case as extradural collection post cranioplasty leading to neurological deterioration.

Case presentation

37-year-old patient developed epidural fluid collection after cranioplasty. This patient presented with the history of road traffic accident, GCS at the scene 6/15, was intubated in the emergency department, CT scan done and showed acute subdural haemorrhage. Left side decompressive craniectomy and evacuation of subdural hematoma was done. Patient shifted toward later on, tracheostomy was done for the patient, patient condition was static and did not improve. He was planned for cranioplasty. After cranioplasty patient was shifted to recovery room, where he developed fixed pupil, CT SCAN was repeated which showed large underlying intracranial collection of CSF density containing haemorrhagic component (Figure 1). There was significant mass effect and midline shift to the right side by approximately 3 cm. Emergency surgery and evacuation of left parietal collection was done. Post op GCS was E1 M2 Vt. patient stayed in medical ICU for monitoring purposes his stay in ICU was uneventful and was transferred back to ward.

DISCUSSION

Cranioplasty nowadays is a very common neurosurgical procedure, and is viewed as safe and straight forward. But, even with cutting-edge techniques, a considerably higher complication rate is associated with cranioplasty as compared .4,5Among minor complications, EFC is known to be very uncommon. Chang et al 2 in a series of 213 patients, stated that 13 of the patients (6.1%) faced fluid collection complications. Lee et al.3 examined incidence and factors that predict the fate of Extra axial Fluid Collection after Cranioplasty. Of the 59 patients studied in the series, EFC was occurred in 22 patients (37.3%).but these studies don't give us the reason or any pathophysiology of development of this fluid collection. The exact mechanism after cranioplasty why this collection in the epidural space happens is not known but the hypothesis is that this is not a single mechanism but a complex results of several different mechanisms. cerebrospinal fluid (CSF) can leak from the Dural tear that can be formed during the surgery. calcification of the dura can cause it to get stiff and in turn prevent the brain to expand, which in turn would cause the epidural dead space to develop. One other important mechanism that has been postulated that is pneumocephalus, which is the air trapped inside the brain , this air bubble in the extradural space acts as a predecessor to inflammatory response , which leads to exudate forming up . Aoki6 stressed the significance of air bubble(pneumocephalus) in acute epidural hematoma.

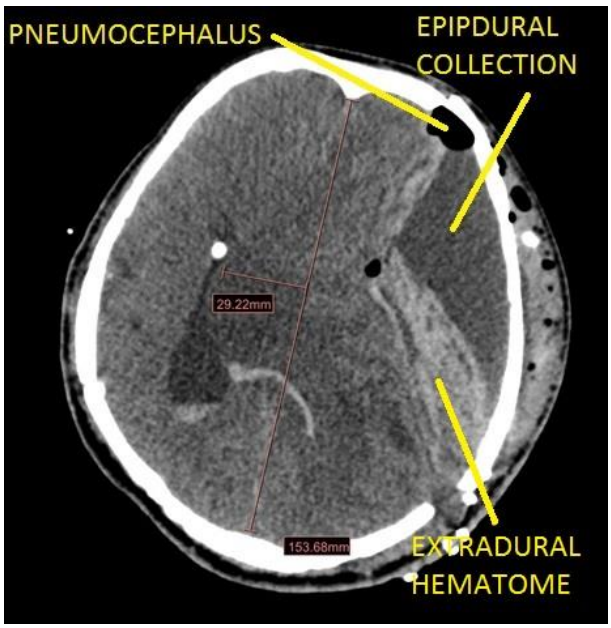

Figure 1. Post cranioplasty CT scan showing extradural collection and massive midline shift.

Conclusion

Post cranioplasty patient should be under observation and neurological deterioration should be kept in mind, early detection of fluid and blood collection can be life saving for the patient .surgical intervention is not always needed , can be managed conservatively.

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