

## Introduction

Craniectomy is occasionally required in neurosurgical practice, not just as a decompressive tool following cerebral infarction or traumatic brain injury, but also when managing deep seated post operative infection, or the removal of osseous tumours. There are a number of reconstructive options available to the surgeon, but a common complication to all is infection. There are, of course, other complications that are possible following cranioplasty, such as post operative haematoma and hydrocephalus.

We undertook a retrospective review of our practice to better quantify the risks of all complications.

## Methods

Retrospective chart analysis of all patients undergoing cranioplasty from 2006-2015 at our institution.

## Results

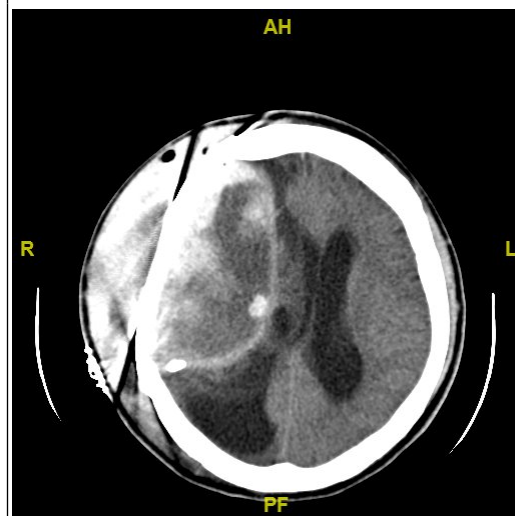
177 patients underwent cranioplasty during the time period in question. The underlying aetiologies for initial craniectomy were predominantly following decompressive surgery for trauma (84), for stroke (embolic/thrombotic/haemorrhagic) (24), or for infection- either primary or post craniotomy (37).

Whilst acrylic, autologous bone and titanium mesh were utilised, the majority underwent implantation of an in house fabricated custom titanium plate (155/177).

19 patients acquired a deep seated infection, 16 of whom required plate removal.

15 patients developed a total of 17 other complications. This included nine who developed symptomatic haematomas under the plate, four of whom required an urgent return to theatre to evacuate. Three patients requested revision surgery due to discomfort, prominent mesh, or poor cosmesis respectively. Two requested intervention for temporalis muscle bunching - either revision or botox, and three patients developed hydrocephalus following cranioplasty requiring shunting. There was no mortality associated with the procedure.

**Large post operative extradural haematoma**



Patient presented post cranioplasty with reduced GCS - urgent CT demonstrates a large haematoma under the plate which was evacuated, allowing the patient to make a good recovery.

## Conclusions

Of the 177 patients, nearly ten percent suffered a complication other than infection - 11 of which required further intervention in an operating theatre. Seven of these (large haematomas and hydrocephalus) were potentially life threatening.

Whilst infection is the most discussed post operative problem, these other risks are by no means insignificant and underline the importance of meticulous surgical technique.

Whilst titanium plates have an overall lower rate of reoperation than autologous bone, our population has still seen 15% of patients return to an operating theatre to manage one of their complications. These figures should be brought to the attention of patients and their relatives during the consent process to allow them to make adequately informed decisions about their care.

## Learning Objectives

By the conclusion of this session, participants should be well informed as to the potential risks of a cranioplasty following an audit of a decade's practice in a major trauma centre and busy neurosurgical service

## References

**Complications of Cranioplasty.** Sahoo NK, Tomar K, Thakral A, Rangan NM. J Craniofac Surg. 2018 Mar 12. doi: 10.1097/SCS.00000000000004478

**A randomised controlled trial comparing autologous cranioplasty with custom-made titanium cranioplasty: long-term follow-up.** Honeybul S, Morrison DA, Ho KM, Lind CRP, Geelhoed E. Acta Neurochir (Wien). 2018 May;160(5):885-891. doi: 10.1007/s00701-018-3514-z. Epub 2018 Mar 15.