



Complications of Titanium Cranioplasty – A Retrospective Analysis of 174 Patients

Soumya Mukherjee MA, MBBS, MRCS

Introduction

Titanium cranioplasty (TC) has been associated with high complication rates, but abundant data are lacking. We aimed to determine the incidence and type of complications following TC and risk factors for complications.

Methods

A retrospective review was performed on 174 patients who underwent TC at two London units over a seven year period. Data were collected on demographics, primary pathology, perioperative details, complications and functional outcome. Skull defect size was estimated using 3-dimensional computed tomographic reconstructions.

Results

The overall complication rate was 26.4% (46/174), and plate removal rate 10.3% (18/174). The commonest complication was infection, which accounted for 69% of plate removals. Patients who had undergone craniectomy for trauma had a higher complication rate (35 vs 21%; $p = 0.043$) and plate removal rate (16 vs 7%; $p = 0.049$) than others. There was a non-significant trend towards the association of craniectomy-to-cranioplasty interval of 4-8 months with the lowest complication rate and shortest postoperative hospital stay. Patients with a skull defect larger than 100 cm² had the highest complication rate ($p < 0.001$), highest plate removal rate ($p = 0.039$), and longest postoperative hospital stay ($p = 0.019$). Bifrontal versus unilateral cranioplasty was associated with a significantly higher complication rate (40 vs 14%) and length of hospital stay (5.0 vs 2.9 days). There was no perioperative mortality and no change between pre- and post-operative functional outcome.

Conclusions

In the largest UK study on cranioplasty to-date, we have demonstrated that size of defect, traumatic aetiology and bifrontal insertion are risk factors for complications. Our results suggest that the timing of cranioplasty may be important with late (> 12 months) TC associated with a higher rate of complications, although further prospective studies on the optimal timing of TC are required to establish the observed trend. Our data aid clinicians in consent and preoperative planning.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the complications and their incidence following titanium cranioplasty 2) Discuss factors affecting complication rates

References

[Default Poster]