**Title:**

Open cranial vault remodeling vs Endoscopic suturectomy with post-operative helmet therapy for non-syndromic craniosynostosis

**Authors:**

LAU Hung Yan, CHENG King Fai Kevin, HO Wai Shing Wilson, LUI Wai Man

**Institution(s):**

Division of Neurosurgery, Department of Surgery, Queen Mary Hospital, Hong Kong SAR

Department of Surgery, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR

Department of Neurosurgery, Hong Kong Children’s Hospital, Hong Kong SAR

**Abstract:**

***Objective:***

To review the perioperative outcomes of pediatric patients with non-syndromic craniosynostosis treated with open cranial vault remodeling or endoscopic suturectomy with postoperative helmet therapy.

***Method:***

Endoscopic suturectomy is an emerging approach to treat craniosynostosis, with post-operative helmeting to aid early correction of head shapes. This was an 11-year retrospective review of pediatric patients with non-syndromic craniosynostosis who received either open cranial vault remodeling or endoscopic suturectomy in Queen Mary Hospital and Hong Kong Children’s Hospital from 2010 to 2021. Patients’ demographics, operative indications, and age at operation were analyzed. Outcomes measured included length of operation, blood loss, need for blood transfusion, duration of hospital stay, and perioperative morbidity. Helmet therapy was designed for eligible patients. Through phone survey and out-patient follow-up, cosmetic outcomes, parents’ satisfaction, complications, and compliance to helmet therapy were analyzed.

***Result:***

16 patients were identified, with 3 (18%) and 16 (81%) patients undergoing surgery by endoscopic and open approaches respectively. Syndromal patients with craniosynostosis were excluded. Compared to open cranial vault remodeling, patients receiving endoscopic suturectomy had a younger mean age at operation, shorter operative time, smaller wound size, lower transfusion rate, and faster recovery. There were no significant differences in terms of peri-operative morbidities.

***Conclusion:***

Both open and endoscopic surgeries with helmeting are feasible approaches to treat craniosynostosis. Early endoscopic suturectomy with post-operative helmet therapy represents a safe and effective approach with outcomes as promising as open cranial vault remodeling to treat craniosynostosis.