Craniosynostosis systematic reviews

In 2020 the abnormal shape of the skull must raise the suspicion of craniosynostosis, even if it occurs in isolation. Surgical management before one year of life is associated with a better prognosis [1].

In 2019 in a systematic review of the impact of surgery timing for craniosynostosis on neurodevelopmental outcomes, it was difficult to draw firm conclusions from the results due to multiple confounding factors. There is some inconclusive evidence that earlier surgery is beneficial for patients with sagittal synostosis. The picture is even more mixed with other subtypes. There is no evidence that later surgery is beneficial. The authors recommended that future research use agreed-upon parameters for age-at-surgery cut-offs, follow-up times, and outcome measures [2].

In a systematic review of Mundinger et al. in 2016 distraction osteogenesis was an effective cranial vault remodeling technique for treating craniosynostosis. No statistical differences were found with respect to operative time, blood loss, need for transfusion, or intensive care unit resources compared with cranial remodeling surgery. Outcome studies with longer follow-up periods specifically investigating cost, relapse, and reoperation rates are necessary to effectively compare this treatment modality as an alternative to cranial remodeling surgery [3].

In a systematic review of interventions for minimizing perioperative blood transfusion for surgery for craniosynostosis:

The production of high-quality evidence on the interventions to minimize blood loss and transfusion in children undergoing surgery for craniosynostosis is difficult. Most of the literature is nonrandomized and non-comparative. Several areas remain unaddressed. Erythropoietin and tranexamic acid are comparatively well studied; intraoperative cell salvage (CS), acute normovolemic hemodilution, and aprotinin are less so. There is only 1 comparative study on the use of fibrin glue and drain reinfusion, with no studies on preoperative autologous donation and aminocaproic acid. Tranexamic acid is clinically effective in reducing allogeneic blood transfusion. There is some evidence that CS and erythropoietin may be clinically effective. None of the interventions studied are shown to be cost-effective because of a lack of evidence [4].

1)
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2)
Mandela R, Bellew M, Chumas P, Nash H. Impact of surgery timing for craniosynostosis on neurodevelopmental outcomes: a systematic review. J Neurosurg Pediatr. 2019 Jan 25;23(4):442-454. doi: 10.3171/2018.10.PEDS18536. PMID: 30684935.
3)
Mundinger GS, Rehim SA, Johnson O 3rd, Zhou J, Tong A, Wallner C, Dorafshar AH. Distraction Osteogenesis for Surgical Treatment of Craniosynostosis: A Systematic Review. Plast Reconstr Surg. 2016 Sep;138(3):657-669. doi: 10.1097/PRS.0000000000002475. PMID: 27127836.

4)

White N, Bayliss S, Moore D. Systematic review of interventions for minimizing perioperative blood transfusion for surgery for craniosynostosis. J Craniofac Surg. 2015 Jan;26(1):26-36. doi: 10.1097/SCS.0000000000001108. PMID: 25569385.