Experience of 106 cranial distraction for Craniosynostosis; Evaluate surgical outcome and complications

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PURPOSE: The purpose of this study was to assess the long-term clinical outcomes following cranial advancement and/or remodeling with cranial distraction techniques for the treatment of craniosynostosis.

MATERIALS AND METHODS: The authors performed a retrospective outcome assessment of 106 cases treated with cranial expansion by distraction techniques for both syndromic and non-syndromic (brachycephaly, plagiocephaly, scaphocephaly, trigonocephaly and oxycephaly) craniosynostosis between 1998 and 2015. Surgical duration, blood transfusion, complications, and long-term clinical outcomes were assessed.

RESULTS: Of 106 patients with cranial distraction, 49 have syndromic craniosynostosis (Apert; n=18, Crouzon; n=15, Pfeiffer; n= 14, others; n=2), and 57 have non-syndromic craniosynostosis (scaphocephaly; n = 17, trigonocephaly; n =5, plagiocephaly; n = 11, brachycephaly; n = 16, oxycephaly; n = 6, others; n=2). The mean age of surgery was 9.5 months (4 months to 5 years). Mean follow up period was 97 months (6 to 203 months). There was no death.

Complications included 3 cerebrospinal fluid leak, 2 local infections, 6 device exposures, and 1 epidural abscess. In two cases cranial distraction was discontinued. For 4 cases (3.8%), major reoperation was performed. The amount of blood transfusion (73% of traditional method) and operating time (76% of traditional method) are fewer than traditional method.

CONCLUSION: In this experience of cranial distraction for frontal advancement and total vault remodeling, rates of morbidity, mortality, the amount of bold transfusion and reoperation were significantly lower than those rates in traditional method, reported in the literature. Based on our study outcome, we believe that cranial expansion by distraction techniques may be as effective as traditional method, and less invasive surgical techniques than traditional method for the treatment of craniosynostosis.

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