EXTENDED ABSTRACT

Journal of Labor and Childbirth

Craniosynostosis; Surgical Outcomes, Follow Up and Results

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Keywords: Craniosynostosis, Surgical Outcome, Suturectomy, reconstruction, follow up.

Abstract:

Background: Craniosynostosis, defined because the premature fusion of cranial sutures. It can affect one or multiple sutures; if it affects one suture then it's commonest on interparietal suture. The incidence is about 1 in 2500 births and present many challenges in treatment. The surgery depended to the patients' cranial premature fusion. In Afghanistan, these children remained untreated in order that they got the complications of this problem like Brain atrophy.

Introduction

It is supported the results of research project and subsequent forming of opinion by a multidisciplinary working party, composed of representatives of the medical specialties involved within the treatment of craniosynostosis, related professional disciplines, and other parties involved. The wishes of oldsters and health professionals regarding the organization of health look after craniosynostosis were inventoried. The guideline document addresses the important issues for the support of oldsters with a toddler with a craniosynostosis.

Craniosynostosis may be a congenital cranial malformation during which 1 or more cranial sutures have fused already in utero. The cranial sutures separate the skull bone plates and enable rapid climb of the skull within the first 2 years of life, during which growth is essentially dictated by growth of the brain. Cranial sutures are essential to skull growth within the first 2 years (the period of rapid brain growth). Thereafter the method of appositional growth and internal resorption of the skull is that the major process by which the skull increases in size. Premature fusion of cranial sutures impedes normal growth of the skull, leading to characteristic anatomic malformations of the skull. Craniosynostosis occurs in 1 in 2100 to 1 in 2500 births and perhaps either no syndromic (also mentioned as isolated) or syndromic. In syndromic craniosynostosis, other birth defects are present next to the craniosynostosis. In syndromic craniosynostosis, usually quite 1 cranial suture have prematurely fused, typically involving both coronal sutures. The distinction between no syndromic and syndromic is formed on the guidance of dysmorphological evaluation and genetic evaluation. due to advances in genetic diagnostics, no syndromic patients are increasingly recognized as syndromic patients. the invention of the P250R mutation within the FGFR3 gene in patients with a unit- of bilateral suture coronalis synostosis clearly illustrates this phenomenon

Methods:

A prospective outcome assessment of all children pre-operative and post-operative treated with Suturectomy and remodelling procedure for Craniosynostosis performed. during this study syndromic children excluded and every one was non-syndromic cases. All patients treated by Calvarial vault remodelling not by strip Craniectomy. consistent with research, strip Craniectomy has chance of resynostosis so we glided by Calvarial vault remodelling. the top circumference measured and recorded in table for evaluation of results.

The aim of this study was to try to an entire care and treatment for Craniosynostosis from synostosis and shape of the skull and follow the result of the matter in these children.

Results:

During 2018, 8 patients have operated in French medical Institute for Mothers and youngsters (FMIC). The surgical age ranges from 2 months to 10 months and therefore the hospital stay was but 4 day. There was no mortality and post-operative complication. the most operation time was but one hour. During two months follow-up, normalization of cranial shape and size observed.

From 2013 to 2016, 33 patients (19 females, 14 males) with unicoronal craniosynostosis were operated on in our hospital with frontal symmetrisation method and staggered osteotomies. Their average age was 10.24 months (range, 4–37 months), average follow-up time was 23.42 months (range, 5–44 months), and average weight at the time of surgery was 8.97 Kg (range, 5.8–17 Kg). Average hospital stay was 7.84 days (range, 6–18 days) and average ICU stay time was 1.69 days (range, 1–5 days). Average PO beginning was 1.24 days after surgery (range, 1–5 days). Average anesthetic time was 397.72 minutes (range, 270–465 minutes). Average blood loss (intra- and postoperative from drain) that was estimated consistent with volume of packed cell transfused to the patient intra- and postoperative was 213.78ml (range, 60–500 ml), and average estimated blood loss as percentage of total volume was 31.69% (range 9.52-77.58%). Two cases developed postoperative seizure that was controlled with pharmacotherapy. They didn't have any intracranial hemorrhage. One case (3.03%) needed reoperation 4 days postoperative, thanks to frontal flap dislocation and depression. No infection, wound dehiscence, or mortality was seen in our series. consistent with the Whitaker scale, 1 case (3.03%) was of grade IV and needed reoperation.

Also, 1 case (3.03%) had forehead bony irregularity (grade III) that was proposed to be repaired, but the oldsters didn't give consent. In total, 31 cases (93.93%) were grade I and didn't need any longer surgical intervention.

Discussion

Treatment goals of the craniosynostosis are adequate intracranial volume, enough for brain expansion and to attenuate cognitive sequels and achieve normal cranial shape.

the perfect time of surgery is controversial. Most surgeons operate the patient as soon as possible. In no syndromic cases, surgery is completed at around 6 months [3]. Surgical protocol involves a staged approach: (1) suture release, cranial vault decompression, and supra orbital region reshaping and advancement in infancy (6–12 months), (2) plastic surgery for midface abnormality in childhood (6-12 years), and (3) orthognathic surgery in adolescence (14–18 years). Exact timing and sequence of the surgical procedures are contingent upon functional and psychological aspects [3]. The categories of surgery are as follows: (1) Strip craniectomy: the procedure involves cranial reshaping with fused suture removal. This method depends on the brain growth for cranial reshaping and doesn't treat hypoplasia or compensatory cranial changes. (2) Cranial vault remodelling technique: that's amid fused suture release with direct correction of hypo plastic and compensatory cranial changes. The cranium is reshaped with different techniques including burring of the bone, rotating and reattaching the remodelled segments; burring of the bone, rotating and reattaching the remodelled segments; bone bending, separation and barrel stave osteotomies. (3) Distraction cranioplasty: in this approach, the cranium is reshaped based on distraction osteogenesis (new bone formation) and histogenesis (new soft tissue formation) with external and internal devices. (4) Posterior release: in this method, osteotomy in the posterior cranial portion is done. This technique often is associated with distraction osteogenesis and brain expansion that induces anteroposterior diameter growth of the cranium before the fronto-orbital advancement [4]. Each technique has different results. Different craniosynostosis series are reported in the literature. G.M. Zakhary et al. reported that 100 patients were undergoing open transcranial vault reshaping with barrel-stave and orbital bandeau advancement from 1997 to 2011. Average age of the patients was 8.9 months, average weight was 9.51 Kg, and average surgical time was 216.7 minutes. Complications included 2 hematomas, 2 wound infections, 1 subgaleal abscess, 6 dural tears, 3 reoperations due to residual deformity, 4 cases requiring coronal scar revision, 1 sagittal sinus bleeding, and 1 intraoperative death [5].

Conclusions:

Treatment of craniosynostosis is extremely effective and safe, which let the brain to have normal growth. Since surgery is safe so we recommend this procedure for all cases with or without sign and symptoms. Syndromic cases should observe and treated carefully. We had no any complications such as resynostosis, hemorrhage or post-operative infection.