Sagittal craniosynostosis case series

2021

Kang et al. described our technique of biparietal meander expansion (BME) technique for SSS for patients older than 1 year and retrospectively reviewed the perioperative course as well as the subjective experience of patients and caregivers during follow-up.

The BME technique incorporates bilateral serpentine craniotomies and fixation of the consecutively expanded bone tongues with crossing sutures for patients with SSS older than 12 months of age at surgery. We reviewed patients undergoing this surgical technique for correction of SSS and collected data about the clinical course and performed a patients reported outcome measure (PROM) for patients or caregivers to evaluate subjective experience and outcome after surgical treatment.

BME was performed in 31 patients (8 females; median age: 43 months; range 13-388). The mean length of operation was 172.7±43 minutes (range 115-294). Patients experienced no immediate complications or neurological morbidity after surgery. Considering a total of 21 completed PROM questionnaires, the head shape after surgery was evaluated as either “better” (57%) or “much better” (43%) compared to preoperatively. Eighty-one percent of patients or caregivers answered that the patient experiences no limitation in daily activities. Although 42.8% perceived the hospital as strenuous, 90.5% would choose to undergo this treatment again.

BME is a feasible technique for older SSS patients resulting in immediate stability of the remodelled calvarium with a more normal head shape. The survey among caregivers or patients revealed a favourable subjectively experienced outcome after this type of surgical treatment of SSS in the more complex context of an older patient cohort [1)].

2019

A total of 94 patients (aged 6 to 18 years) with sagittal synostosis were asked to indicate their headache frequency. Based on their age at referral, the patients had undergone either frontobiparietal remodeling or an extended strip craniotomy. Data on funduscopy, optical coherence tomography, occipitofrontal head circumference, and presence of vertex bulge on radiography were collected retrospectively.

Univariate analysis showed that extended strip craniotomy, the occurrence of ophthalmic signs, and a smaller occipitofrontal head circumference at last follow-up were related to more frequent headaches ($p = 0.01$, $p = 0.04$, and $p < 0.01$, respectively). On multivariate analysis, only type of surgery and occipitofrontal head circumference at last follow-up remained significant predictors ($p = 0.04$ and $p < 0.01$, respectively).

Although the reported rate of frequent headaches in this study is within the norm reported for the normal population, this study shows that after correction for sagittal craniosynostosis, frequent headaches are independently related to type of surgery and to occipitofrontal head circumference at last follow-up. Headaches in the sagittal craniosynostosis population may be related to papilledema and/or an increased total retinal thickness. Therefore, the authors recommend that occipitofrontal head circumference be routinely measured and that patients be asked about the occurrence and

frequency of headaches during their checkup at the clinic.

CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, III [2].

2018

An outcome study of surgically treated isolated sagittal synostosis patients operated between 1977 and 1998 was conducted at the Craniofacial Center of Oulu University Hospital, Oulu, Finland with an average follow-up time of 26.5 yr. Patients' socioeconomic situation, satisfaction with their own facial appearance and attractiveness as rated by 2 independent panels was evaluated and compared to controls.

The self-satisfaction with the patients' own appearance scored a mean of 75 mm on a visual analog scale of 100 mm between the patients and 76 mm with the control group. The subjective satisfaction of the patients with their own appearance failed to correlate with the rating of their appearance by the panels. The panels rated the patients' appearance to be on average 6 to 7 mm out of 100 mm visual analog scale less attractive than the controls. Data on socioeconomic situation, including marital status, housing, education, employment of the patients, and controls are presented.

Isolated sagittal synostosis patients treated surgically were as happy with their facial appearance as were individuals in an age and gender-matched control group. Two independent panels found the patients' appearance to be only somewhat less attractive. Analysis of the socioeconomic situation and general health revealed that patients equaled that of controls [3].

2016

96 consecutive patients with sagittal synostosis underwent surgery at CHU Sainte-Justine between January 2000 and May 2012. The mean age at surgery was 4.9 ± 1.5 months (range 2.8-8.7 months). Patients who had surgery before 2005 constituted the control group. Those who had surgery in 2005 or 2006 were considered part of an implementation phase because furosemide administration was not routine. Patients who had surgery after 2006 were part of the experimental (or furosemide) group. Transfusion rates among the 3 groups were compared. The impact of furosemide administration on transfusion requirement was also measured while accounting for other variables of interest in a multiple logistic regression model.

The total transfusion rate was significantly reduced in the furosemide group compared with the control group (31.3% vs 62.5%, respectively; p = 0.009), mirroring the decrease in the postoperative transfusion rate between the groups (18.3% vs 50.0%, respectively; p = 0.003). The postoperative transfusion threshold remained similar throughout the study (mean hemoglobin 56.0 g/dl vs 60.9 g/dl for control and furosemide groups, respectively; p = 0.085). The proportion of nontransfused patients with recorded hemoglobin below 70 g/dl did not differ between the control and furosemide groups (41.7% vs 28.6%, respectively; p = 0.489). Surgical procedure, preoperative hemoglobin level, estimated blood loss, and furosemide administration significantly affected the risk of receiving a postoperative PRBC transfusion. When these variables were analyzed in a multiple logistic regression model, furosemide administration remained strongly associated with a reduced risk of being exposed to a blood transfusion (OR 0.196, p = 0.005). There were no complications related to furosemide administration.

A significant part of the postoperative anemia observed in patients who underwent sagittal craniosynostosis surgery was due to hypervolemic hemodilution. Correction of the volemic status with furosemide administration significantly reduces postoperative PRBC transfusion requirements in these patients [4].

From 1977 to 1996, 210 patients suffering from scaphocephaly, have been operated on in our institutions. The surgical technique depended on the patients age. Single wide sagittal synostectomy was performed in 155 babies aged less than 3 months, obtaining good cosmetic results. Patients older than 3 months needed more complex and aggressive procedures to achieve similar results. The conclusions is that sagittal suturectomy is the proper treatment in younger patients under 3 months of age, and that a greater effort must be made to diagnose and treat these patients early [5].

1)
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