

## Peer Review File

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### Reviewer A

In the Conclusion of the Abstract: the authors state that: A more comprehensive surgical release may therefore provide patients with better neurodevelopment and cognitive functioning outcomes later in life” ... Where from have they concluded this?? They didn’t perform any functional neurological assessment in their study. In the same context: In line 225, the authors talk about “The cosmetic and functional outcomes ...” in spite of they didn’t perform any functional evaluation after surgery !

We are very sorry for our incorrect writing. Neurodevelopment and cognitive functioning outcomes are still under follow-up and cannot be summarized in this paper for the time being, so we have revised the description as follows. we have modified our text as advised (see Page 2, line 63-65).

In line 93 and 94: ”We report our retrospective experience ...” no need to describe your “experience” to be retrospective.... All experiences are retrospective, there is no prospective experience!

we have modified our text as advised (see Page 2, line 63-65).

In line 194: “Judging from the CT images, postoperative recovery was well” ... how could the CT tell the authors that the recovery was well? Do the authors mean the shape of the skull??

Yes, what we mean is the shape of the skull has recovered well.

In lines 151 and 152, the authors stated that: cranial computed tomography (CT) scan was usually performed before the operation, one week after the operation and at the last follow-up, while in lines 200 and 201, they talk about the findings of CT skull after 3 months postoperatively.

The last follow-up of this case is 3 months postoperatively.

In lines 202-204, the authors are talking about a specific case with corrected flattening of the “left” frontal, parietal and occipital bones... the context should mention that was in particular case and not as a generalized statement of all study cases.

Yes, this is a particular case in our study.

The age of operative interference ranged from 5 to 23 months .... Did the authors notice any effects of the age of the child on the results of surgery?

There is no denying that age plays a role in the results, but only a small number of patients in our data were older than 12 months.

In 20 cases, no any complication was reported by the authors.... This can be strange unless the complicated cases were excluded from the study !

None of the patients in the article developed the following complications: dehiscence, dural injuries, air embolism, surgical site infection, and seizures. However, all patients will receive intraoperative blood transfusions.

## **Reviewer B**

The authors advocate bifronto-and superior orbital osteotomies, and release of bifrontal and supraorbital bone(s), ipsilaterally and contralaterally, with or without, in milder cases ,advancement on the, supra orbital rims with fixation of the released frontal and supra orbital rim bones. The freed segments of skull bone are remodeled, then allowed to "free float " to reach its optimal position, or propped forward, remodeled orbital rim bone. The outcome measurements at the end of the study period showed improvement, but still some reduction of the advancement of the rim from normal (>50mm) may be seen around the supra orbital rims (particularly around the rims ipsilateral to the fused coronal suture). The approach was well tolerated and gave improved results, without significantly added operative time.

The approach described in this paper is commendable, however, a similar approach initially was reported on and published nearly 50 years ago, by Daniel Marchac in Paris , as the "free floating orbital rim technique", however he often left off the remodeling of the orbital rim opposite the fused coronal suture at that time. The "gain" was less operative time and similar results to unilateral advancement rim fixation of the orbital rim techniques. Multiple others, also advocated a bilateral approach, elevating all ,or just the medial aspect, of the contralateral ,medial ,"normal" supraorbital rim , depending on the degree of deformity.. This ultimately leaves less of an advancement of the contralateral orbital rim, than fixation approaches (which become more useful in advanced age infants and more severe deformity.) This has been supplanted by "overcorrection" of the "to be" advanced orbital rims ( either in unilateral advancement , or bilateral advancement of the rims ) with fixation in an overcorrected position of the specifically designed resorbable periorbital plates ( Leibinger among others), to account for the possible fall back in the region of the orbital roof/rim over time ,(Multiple other surgeons have been using designed resorbable plates to support the continued overcorrection of the recessed projection of the orbital rim ipsilateral to the fused coronal suture, as well as the advancement of the contralateral orbital rim.. The later approaches take a little longer, but tend to yield a more symmetrical periorbital appearance in to later life. In sum , the recommendations of the authors are similar to

previously published works, but represent a reasonable approach to the management of the periorbital anomalies seen in unilateral coronal synostosis. It would be appropriate for the authors to acknowledge others doing similar surgery, the short term follow up, and need to review in 4-5 years time to determine definitive correction.

Dear you very much for your advice. As you mentioned, long-term follow-up results will be more meaningful, which is what we are currently working on, and relevant articles will be published in the future.

### **Reviewer C**

The authors describe the results (symmetry and intracranial volume (ICV)) after surgery for unicoronal synostosis (UCS).

Abstract. How is it possible that the difference in ICV of the cases before surgery (1027 ml) and after surgery (1081 ml) gives a p-value of 0.0000 while at the same time the difference between cases and controls before surgery (1027 vs 1131) only gives a p value of 0.023? Were the controls few?

Paired t test was used for preoperative and postoperative comparison, while independent sample t test was used for experimental group and control group.

It is unlikely that the preop difference between cases and controls is true. Compare J Arab et al Craniofac Surg 2016;27(5):e454-457 and Fischer et al J Plast Surg Hand Surg 2015; 49(1): 62-64. These articles describe normal ICV in single suture synostosis before surgery but a tendency to growth restriction over time, possibly due to the surgery itself. Can be used to deepen the discussion.

As Arab reported, no clinical studies demonstrated the impact of surgical trauma on cranial

growth. To reveal the reliability of this observation further studies including long-term follow-up at 5 to 6 years of age are required, which is what we are currently working on, and relevant articles will be published in the future.

The case in Fig 3 is not an isolated UCS. It is obviously a combined synostosis. At least the right lambdoid suture is also closed. That could also explain the ICV values for the cohort!

Dear you very much for your advice.

Clavien Dindo is usually not suitable for registration of complications in pediatric patients. Clavien Dindo regards blood transfusion as a complication and often blood transfusion is mandatory for a cranioplasty, despite the fact that all went well. Other systems are more suited like the Leeds and Oxford Scales (Paganini et al J Plast Surg Hand Surg 2019; 53(6): 321-327).

None of the patients in the article developed the following complications: dehiscence, dural injuries, air embolism, surgical site infection, and seizures. However, all patients will receive intraoperative blood transfusions.

The control group size? Ages? Sex? How was it collected? Could it be cases of hydrocephalus among the controls?

Normal controls were derived from our patients with mild head trauma and matched by age. The control group are also 20 cases.

The entire motivation for using such extensive techniques as in the manuscript need to be motivated. There are several other techniques available, some significantly less extensive (Mellgren et al *Plast Reconstr Surg*(2023); 1DOI: 0.1097/PRS.0000000000010530). Additionally to the suggested ref there, are works by Hopper et al, and works on craniotomy and helmet that gives excellent results.

There is no denying that other methods do have good efficacy, but we still recommend surgical treatment for children with surgical indications.

The discussion, leading to the conclusion, very much focus on brain volume and neurocognitive development. First, if ICV is important the controls are equally important as the cases. The ICV measurements then need to be treated better; methods? Inter observer variation? And so on.

Second, the developmental conclusions are merely speculations. They can remain in the text but definitely need to be reduced. The only result that stands is the symmetry measurements before and after.

Dear you very much for your advice. We have removed some inappropriate conclusions. We have removed some inappropriate conclusions.

#### **Reviewer D**

Your concept of doing a calvarial release (CVR) in addition to a frontoorbital advancement and remodelling (FOAR) is an interesting one. Your results in the symmetry and volume measurements do show improvement. It would be very useful to compare the outcomes where only FOAR was performed (I am sure you probably have a cohort of these patients before the present innovation) to the present combined FOAR/CRV group. If there are statistically significant differences, it will be very meaningful.

Dear you very much for your advice. Due to the small sample size at present, correlation analysis cannot be carried out for the time being. However, we are currently accumulating the sample size in this respect, and hope to continue to publish relevant articles in the later stage.