

Nonsyndromic craniosynostosis treatment

Cohen et al. presented in 2008 the approach to patients with [nonsyndromic craniosynostosis](#), outlining the place of both open, conventional approaches and newer, minimally invasive, endoscopic assisted craniosynostosis correction ¹⁾.

A multidisciplinary approach, including neurosurgeons, neurologists, and pediatricians, and appropriate training of the clinical surgical staff can minimize the risks and decrease the complications in the treatment of craniosynostosis, leading to a satisfactory outcome ²⁾.

Klement et al. technique for treatment of sagittal synostosis was the Foreshortening and Lateral Expansion of the Cranium Activated by Gravity (FLAG) procedure. The authors identified 106 patients with a median age of 0.8 years. Sagittal synostosis was most common (n = 65, 61%). Seventeen percent underwent distraction of the cranial vault; the remainder underwent traditional remodeling procedures. The average operative time was 131 minutes, blood loss was 296 mL (30 mL/kg), and intraoperative transfusion was 332 mL (34 mL/kg). There were 2 postoperative complications. Six patients required an additional major operation years later, most commonly for increased intracranial pressure. The authors separately analyzed 50 patients with sagittal synostosis treated with the FLAG procedure. There were no postoperative complications, and only 4 patients required reoperation. The average operative time for the FLAG procedure was 97.3 minutes. Intracranial volume increased by 191.45 mL (28.3-427.5 mL) with 28% average relative cranial vault expansion (4.5%-93.2%). Surgical correction of craniosynostosis using the FLAG technique is safe and effective with minimal morbidity and long standing results. Treatment should involve a structured approach, which minimizes operative times and decreases complication rates ³⁾.

A retrospective [chart review](#) was performed for patients with [nonsyndromic craniosynostosis](#) who underwent minimally-invasive non[endoscopic suturectomy](#) between 2019 and 2020.

Thirteen patients (11 males; 2 females) were operated including 5 Metopic, 5 Sagittal, 2 coronal, and 1 lambdoid craniosynostosis. The average age at surgery was 4.35 months. The average length of surgery was 71 minutes. Averaged intraoperative estimated blood loss was 31.54 mL. Eleven patients received a blood transfusion (most before performing the skin incision) with a mean amount of 94.62 mL of blood transfused during surgery. The mean hemoglobin at discharge was 10.38 mg/dL. There was only 1 intraoperative mild complication. The mean intrahospital length of stay was 1.77 days with no postoperative complications noted. All patients initiated remodeling orthotic treatment following surgery. Long-term follow-up scans were available for 8 patients (5 metopic, 2 sagittal, and 1 lambdoid) with an average follow-up of 9 months. In all cases, there was a significant improvement in the skull width at the [synostosis](#) location as well as in the skull proportions and symmetry. The above outcomes are similar to those published in the literature for endoscope-assisted strip-craniectomies.

Suturectomies assisted with [cranial orthosis](#) remodeling for the treatment of all types of [nonsyndromic craniosynostosis](#) can be performed without an [endoscope](#) while maintaining minimal-invasiveness, good surgical results, and low complication rates ⁴⁾.

Repair of craniosynostosis is recommended to avoid potential neurodevelopmental delay. Early intervention at 3 to 4 months of age allows minimally invasive approaches, but requires postoperative molding helmet therapy and good family compliance. Open techniques are deferred until the child is older to better tolerate the associated surgical stress. Cranial vault remodeling is generally well-tolerated with a low rate of complications ⁵⁾.

Studies on [Nonsyndromic craniosynostosis treatment](#) demonstrate decreasing [morbidity](#) and [mortality](#); however, [complication](#) rates still range from 5% to 14%.

Healthy patients with NSC undergoing cranial vault surgery can potentially be safely managed without routine admission to the ICU postoperatively. Key elements are proper preoperative screening, access to ICU should an adverse intraoperative event occur and necessary postoperative surgical care. The authors hope that this experience will encourage other craniofacial surgeons to reconsider the dogma of routine ICU admission for this patient population ⁶⁾.

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