BACKGROUND: Orofacial clefts are a prevalent birth defect that affects approximately 7.75 neonates out of every 10,000 live births. The optimal timing for repair of the cleft lip has yet to be objectively validated and previous supporting evidence guiding ideal timing may be outdated. Earlier repair takes advantage of the high degree of plasticity within the nasal cartilage and maxilla as a result of high concentrations of circulating maternal estrogen in the infant. Accomplishing the operative repair of the cleft lip in infancy has the capacity to decrease restrictive scar formation, improve aesthetic outcomes, accelerate weight gain, and improve feeding and maternal-infant socialization. In this study, we present unilateral cleft patients prospectively enrolled in an early cleft lip repair (ECLR) multidisciplinary protocol created to facilitate the safe and effective repair of the cleft lip and nostril.

METHODS: ASA class I/II patients with unilateral cleft lip and/or palate undergoing repair <3 months of age were enrolled over 5 years. Chart review abstracted patient demographics, cleft characteristics, cleft width ratio (defined as cleft width divided by commissure length), operative data, anesthetic data, nasal stent data, and complication and readmission rates. Preoperative and postoperative nostril breadth, nostril width, nasal angle, lip length, frontal nasal breadth, and commissure length measured as ratios between cleft and noncleft sides to approximate distance form ideal symmetry. ECLR and unilateral cleft nasoalveolar molding patients were matched for cleft lip severity using their CWR and compared for symmetry outcomes.

RESULTS: The surgical and anesthetic complication rates for 100 ECLR patients were both 2%. Operative and anesthetic times were 123 minutes (SD = 37) and 177 minutes (SD = 34), respectively. Hospital length of stay was 1 day (SD = 0). Age at repair between ECLR and NAM patients was 33 days (SD = 15) and 118 days (SD = 33) \(P \leq 0.001\), respectively. After ECLR, preoperative to postoperative distance from symmetry for all anthropomorphic measurements improved (\(P \leq 0.001\)). Comparing severity-matched ECLR to nasoalveolar molding patients, similar improvements were observed suggesting equivalent results (\(P > 0.05\)).

CONCLUSIONS: ECLR provides a safe and efficacious method for correcting the unilateral cleft lip and nasal deformity.

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Risk Factors for Delayed Diagnosis of Positional Plagiocephaly: A Retrospective Review of 25,322 Patients

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PURPOSE: Studies of positional plagiocephaly have found that earlier intervention with repositioning in mild cases or a molding orthosis in more severe presentations leads to more effective correction of asymmetry. However, patients with positional plagiocephaly continue to be misdiagnosed or diagnosed at an older age. This study aims to understand risk factors for late diagnosis of positional plagiocephaly in order to optimize timely intervention.

METHODS: After obtaining institutional review board approval, retrospective review was performed of all patients diagnosed with positional plagiocephaly between 2019 and 2019 at a Southern California Kaiser Permanente. Patients were identified with ICD-9 and ICD-10 codes. Those with code descriptions inconsistent with positional plagiocephaly were excluded. Patients were separated into 2 cohorts according to early (≤4 months) or late (>4 months) age of diagnosis. Cohorts were compared for variables including demographics, gestational history, other diagnoses including torticollis or hydrocephalus, and history of hospitalizations in first year of life. Data were queried in Excel (Microsoft Co, Redmond, WA), and statistical analysis using Student’s t test or analysis of variance was performed using SAS (SAS Institute, Carey, NC) with significance denoted at \(P < 0.05\).

RESULTS: Twenty-five thousand three hundred thirty-two patients met inclusion criteria. Patients were 61.7% males. 81.5% (\(n = 20,636\)) of patients were diagnosed early and
19.5% (n = 4,686) diagnosed late. Patients diagnosed late were significantly more likely to be Hispanic (51.7% versus 46.9%) and less likely to be Asian/Pacific Islander (15.9% versus 20.3%; \( P < 0.0001 \)). Prematurity (30.5% versus 23.3%; \( P < 0.0001 \)) and multiple gestation birth (4.9% versus 3.6%; \( P < 0.0001 \)) were significantly more common in late diagnoses. Patients with plagiocephaly diagnosed late were significantly more likely to have concomitant hydrocephalus (0.6% versus 0.1%; \( P < 0.0001 \)) and less likely to have torticollis (17.1% versus 21.4%; \( P < 0.0001 \)). A history of NICU hospitalization (20.8% versus 13.0%; \( P < 0.001 \)) was associated with late diagnosis and patients diagnosed late spent significantly more days in hospital in the first 3 months of life (6.8 ± 3.4 versus 3.9 ± 6.6 days; \( P < 0.0001 \)).

**CONCLUSIONS:** Risk factors for late diagnosis of positional plagiocephaly include Hispanic ethnicity, prematurity, multiple gestation birth, or prolonged neonatal hospitalization including NICU stay. Patients with torticollis tend to be diagnosed earlier, suggesting that positional plagiocephaly is easier to diagnose if torticollis is also present. Further education should be provided to pediatricians to screen for positional plagiocephaly, particularly at the 4-month check-up and in patients without torticollis who have other associated risk factors in order to optimize outcomes from conservative treatment or helmet therapy.

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**Secondary Synostosis After Posterior Vault Distraction in Craniosynostosis: Possible Role of Compression From Distraction**

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**INTRODUCTION:** Posterior vault distraction is often performed for correction of brachycephaly associated with craniosynostosis. Secondary fusion of initially patent cranial suture is seldom observed after surgical correction, and its incidence is reported to be between 10% and 37%. But its incidence, mechanism, and influence on cranial growth are not well described specifically after posterior vault distraction. Especially, the influence of compression to the patent suture during distraction on secondary synostosis is yet to be elucidated. This retrospective study was conducted to investigate these questions.

**METHODS:** To elucidate the influence of compression effect during distraction on secondary synostosis, patients with lambdoid synostosis were selected, in whom patent coronal suture lies perpendicular to the direction of force exerted by the posterior distraction. Retrospective chart review was performed on 5 patients with bilateral lambdoid and sagittal synostosis and 1 patient with bilateral lambdoid synostosis who underwent posterior vault distraction between 2002 and 2018 at National Center for Child Health and Development, Tokyo, Japan. CT images were used to determine the patency of cranial sutures, and head circumference was used to evaluate cranial growth.

**RESULTS:** Posterior vault distraction was performed at median age of 12 months (range, 6–15). On CT images, the coronal suture was patent before operation, but it was partially or totally fused at median of 5 months (range, 1–7) after operation in all the patients. At the latest follow-up at median of 36 months (range, 13–131), synostosis of the coronal suture progressed to total and remained fused in all the patients. The median head circumference was 62 percentile (range, 44–90) before operation. It increased to approximately 100 percentile at median of 9 months (range, 8–14) after operation except for 1 patient whose data were not available, and it continued to increase along the growth curve afterward.

**DISCUSSIONS:** The initially patent coronal suture was fused in all of the 6 patients with lambdoid synostosis after posterior cranial vault distraction. Several possible explanations exist for this phenomenon, including decompression of intracranial pressure after cranial expansion and surgical invasion on cranial bone. But high incidence in the present study compared with the past literature suggests that the compression on the coronal suture during distraction may play important role in the secondary synostosis. The impact of secondary synostosis on cranial growth seems minimal, considering the fact that the normal rate of head growth was observed even after the coronal suture remained fused. The