single-stage, unilateral 2-stage, and bilateral 2-stage repairs. Mean age at the time of single-stage palate repair was 13.3 months. For the 2-stage group, mean ages were 4.2 and 11.8 months for the soft palate and hard palate repairs, respectively. Mean age at most recent speech assessment was 4.72 years for all patients. Speech surgeries were required for 5.9% (n = 2/32) of single-stage patients and 2% (n = 1/47) of 2-stage patients although this difference was not significant. The 2-stage unilateral group showed significant improvement in intelligibility versus the single-stage group (0.59 versus 1.37; P < 0.05), but no significant discrepancy with hypernasality. The 2-stage bilateral group showed significant improvement in intelligibility versus the single-stage group (0.79 versus 2.17; P < 0.05), but no significant discrepancy with hypernasality. Mean age at last audiologic assessment was 6.17 years. No significant difference was noted between groups with respect to hearing loss or tympanostomy rates.

CONCLUSION: Early 2-stage palatal closure is a viable method for improving early speech development in patients undergoing repair of unilateral and bilateral cleft lip and cleft palate. No significant benefit was achieved with respect to audiologic outcomes or tympanostomy rates.

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Quantitative Effects of Cleft Lip and Nose Adhesion on Nostril and Alveolar Discrepancy

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**BACKGROUND:** Although there are considerable data quantifying the effects of nasoalveolar molding on definitive lip repair, less is known about the effect of cleft lip and nose adhesion (CLNA) on the alveolar segments and nostril shape in patients who are unable to undergo craniofacial orthodontics. CLNA approximates the lip segments, resulting in the conversion of a complete cleft lip to an incomplete cleft lip while sparing the tissues and landmarks for eventual definitive lip repair. In resource-constrained environments or situations where patients cannot undergo craniofacial orthodontics, CLNA has been shown to quantitatively improve nostril shape before definitive reconstruction in wide cleft. However, less is known about the effects of CLNA alone on the nostril and alveolar cleft segments dimensions.

**MATERIALS AND METHODS:** After obtaining Institutional Review Board approval, a single-center retrospective review of unilateral cleft lip patients undergoing CLNA was performed. Measurements were taken at the time of CLNA and at formal repair. The following data points were extracted for the cleft and noncleft side: nostril height (NH), nostril width (NW), alveolar height (AH), and alveolar width (AW). Dimensional changes from the time of CLNA and time of formal repair were statistically analyzed using a paired Student’s t test.

**RESULTS:** A total of 1,053 surgical cases were reviewed. Eight patients met criteria for inclusion. Average NH before CLNA was 2.3 mm on the cleft side and 5.6 mm on the noncleft side (P = 0.020). After CLNA, the NH on the cleft versus noncleft side was 4.5 and 5.0 mm, respectively (P = 0.553). Average NW before CLNA was 14.8 mm on the cleft side, compared to 7.3 mm on the noncleft side (P = 0.003). After CLNA, the average NW on the cleft side was 11.2 mm, compared to 7.1 mm on the noncleft side (P = 0.007). CLNA resulted in a significant reduction in NW on the cleft side (P = 0.002). The average AW discrepancy, measured as the gap between alveolar segments, was 9.9 mm before CLNA and significantly decreased to 1.5 mm before definitive repair (P = 0.002). AH discrepancy decreased from 11.4 to 6.5 mm (P = 0.060).

**CONCLUSION:** This study reports quantitative changes with CLNA, a powerful tool for reshaping the nostril and approximating the alveolar segments in cases where nasoalveolar molding is not an option. This study demonstrates that CLNA alone achieves a cleft NH which approaches the noncleft side, improved AH and width discrepancy by closure of the gap between alveolar segments, and significant reduction in NW.

**Latissimus Dorsi-Rib Osteomyocutaneous Flaps for Composite Cranial Defects: A Case Series and Anatomical Study**

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