

## **Prevalence of Secondary Cleft Lip Revisions: Analysis of National Database**

Anna D Lee, BS<sup>1</sup>; Catherine Alder, BS<sup>1</sup>; Molly Murphy, BS<sup>1</sup>; Jasmine Chaij, BA BS; Antonio Porras, PhD; Jason Yu, DMD MD<sup>1</sup>; Brooke French, MD<sup>1</sup>; Kristen Lowe, DDS<sup>1</sup>; Phuong D Nguyen, MD<sup>1</sup>; David Mathes, MD<sup>1</sup>; David Khechoyan MD<sup>1</sup>

<sup>1</sup>Children's Hospital Colorado, Department of Pediatric Plastic Surgery

### **Introduction:**

Primary cleft lip repair is performed to restore normal upper lip anatomy, form and function. Existing literature addresses various surgical approaches to the primary and secondary cleft lip repairs, yet few studies evaluate the national prevalence of secondary cleft lip revisions. This retrospective analysis evaluated the incidence of secondary cleft lip revisions.

### **Methods:**

This retrospective study used TriNetX, a national deidentified aggregate database encompassing over 110 million patients across 78 different healthcare organizations in the United States (US). The study evaluated patients less than 12 months of age who had an initial unilateral (CPT-40700) or bilateral cleft lip repair (CPT-40701 or CPT-40702) from 1/1/2000 to 9/16/2023. Patients identified to have had a subsequent cleft lip revision (CPT-40720) were categorized by the year of their initial cleft lip repair. Patient demographic data were extracted and analyzed through TriNetX, which divided the US into four regions: Northeast, Midwest, South, and East. Logarithmic interpolation analysis was performed using PRISM software.

### **Results:**

A total of 5,726 patients under 12 months of age underwent primary cleft lip repair. Among these patients, 551 (9.6%) required subsequent cleft lip revisions. In the group of patients who underwent cleft lip revision, 63% were male and 60% were white. Geographically, the Midwest had the highest revision rate (55%), followed by the South (21%), West (17%), and Northeast (6%).

The incidence of primary cleft lip repairs has increased from 36 patients in 2000 to 466 patients in 2022. The incidence of secondary cleft lip revision has varied with a peak in the year 2016 at 47. The prevalence of cleft lip revisions peaked in 2006 at 32.8% and have been in progressive decline to 9.8% in 2023 ( $p=0.0006$ ,  $R^2=0.93$ ).

### **Conclusion:**

While the incidences of primary cleft lip repair and secondary revisions have varied, there has been a statistically significant decrease in the prevalence of secondary revisions over the past 23 years. These findings may suggest that the effectiveness of primary cleft lip repair techniques has improved over time, resulting in fewer patients requiring secondary cleft lip revisions. Also, the increased availability of pre-operative naso-alveolar molding (NAM) prior to cleft lip repair may have also contributed to the decrease in the incidence of secondary cleft lip revisions.