

## **POSTERIORLY WIDE CLEFTS BENEFIT OF DELAYED HARD PALATE CLOSURE: AN ORTHODONTIC PERSPECTIVE**

### **A subgroup analysis within an ongoing RCT of primary surgery in unilateral cleft lip and palate patients**

**Aim:** To investigate if a surgical protocol with delayed hard palate closure, taking into account cleft size and morphology at birth, has an influence on dento-occlusal relations before orthodontic treatment start.

**Design:** a subgroup analysis within an ongoing multicentre randomised clinical trial of primary surgery (Trial 1 in the Scandcleft project).

**Subjects and Methods:** a total of 122 plaster models of UCLP infants, who received primary cheilo-rhinoplasty and soft palate closure at age 4 months and were randomly assigned to hard palate closure at age 12 or 36 months, operated by a single surgical team, were digitised. A novel 3D analysis including linear, area and ratio measurements was used to define cleft dimensions and shape. Occlusal relations were scored on the 8 years models using the Modified Huddart Bodenham Index and the Goslon Yardstick. Differences in occlusal scores between the two surgical protocols were assessed by unpaired t-test for the MHB and chi-square test for the Goslon data. Next, adjustment for covariates describing cleft size and morphology was done by multiple linear and logistic regression analysis.

**Main outcome measurements:** differences in MHB and Goslon scores among the two surgical groups adjusted for cleft size.

**Results:** the crude analysis showed no difference between the two surgical groups in Goslon Yardstick scores at 8 years but a better MHB ( $P=.006$ ) score for the group who received delayed hard palate closure. When adjusting for covariates describing the ratio between cleft size and palatal size

(3DICSR) and posterior cleft dimensions at the tuberosities level patients who underwent delayed hard palate closure received 3.65 points (CI: 1.81; 5.48) better MHB score ( $P < .001$ ) and presented with a trend for a reduced risk of receiving a Goslon 4-5 ( $P: .052$ ). When the cleft size at tuberosity level was larger than 9 mm the difference in Goslon score among the surgical groups was highly significant ( $P = .033$ ).

**Conclusions:** primary palatoplasty with delayed hard palate closure was associated to better occlusal relations before orthodontic treatment in UCLP patients with large clefts. The findings of the present study suggest that, seen from an orthodontic perspective, when the soft palate is closed first, and the cleft is large, timing of hard palate closure should be planned in relation to posterior cleft size and should be postponed in patients with large clefts.