

An Anatomic Evaluation of the Furlow Double Opposing Z-Plasty Technique of Cleft Palate Repair[†]

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Abstract

The aim of this investigation was to examine velar anatomy following the Furlow double opposing Z-plasty in order to analyse the theoretical effects of this technique. Thirty patients with cleft lip and/or cleft palate who underwent primary Furlow palatoplasties between 1989 and 1994 were reviewed. The mean age at the time of surgery was 6.4 months. Evaluation was performed at a mean time of 2.9 years postoperatively, and consisted of oral examination of the position of the velar dimple and measurements of velar dimensions from standard lateral cephalograms. A comparative statistical analysis of velar length (n = 17) and thickness (n = 14) was performed using 2 historical control groups (non-cleft norms and non-Furlow cleft palate repairs). The Furlow procedure produced posterior dimples in 19 of 26 patients adequately rated on oral examination, suggesting successful repositioning of the velar musculature in transverse orientation. The mean velar length was not significantly different from that of norms (being 0.72 mm less), suggesting that the Furlow Z-plasty results in the attainment of near normal velar length. In contrast, the mean velar length was 0.46 mm greater compared to non-Furlow repairs. Although this difference was not statistically significant, it suggests that the Furlow Z-plasty may be more effective in increasing velar length compared to non-Furlow palatoplasty techniques. Velar thickness was significantly greater compared to both norms (P = 0.002) and non-Furlow repairs (P = 0.001). These data suggest that the Furlow double opposing Z-plasty repositions the velar muscles in transverse orientation, and increases both velar length and thickness, lending weight to the theoretical effects of this procedure. The anatomic basis of these changes and their functional implications are discussed.

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