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THE HUMAN SOFT PALATE FUSES MORE RAPIDLY THAN HARD PALATE SUGGESTING REGIONAL REGULATION OF DEVELOPMENT

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In humans, hard palate development occurs between 7-12 weeks post conception with the fusion of the epithelial lined maxillary prominences creating a midline epithelial seam. The failure of fusion or seam removal in hard palate leads to cleft palate or cyst formation. The mechanism of soft palate formation is less well defined. Evidence exists supporting both fusion and the alternative mechanism of merging. The aim of this study is to densely sample the late embryonic-early fetal period between 54-74 days post-conception to determine the mechanism and timing of soft palate closure. We confirm the presence of an epithelial seam extending throughout the soft palates in 57-day specimens suggesting fusion. Cytokeratin antibody staining confirmed the epithelial character of the cells in the midline seam. The seam is rapidly degraded and exists only in the posterior soft palate by 64 days. Our data shows that the soft palate follows a developmentally more rapid fusion compared to the hard palate. Differential development of the hard and soft palate suggests that the two regions of the palate have their own internal clocks regulating the timing of seam removal.