Postnatal, structural and morphological changes of the palate
Postnatale, strukturelle und morphologische Modifikationen des Gaumens

Jelena Krmpotić-Nemanić, Ivan Vinter, Dubravko Jašovec, Ana Marušić
Drago Perović Department of Anatomy, Zagreb University School of Medicine, Slata 11, HR-10000 Zagreb, Croatia

Summary

We studied postnatal changes of the hard palate on our collection of skulls, ranging in age from birth to late adulthood. In contrast to the palate mucosa, the palate structure is morphologically and functionally completely independent structures. Changes in the morphology of the palate are a serious complication in prosthetics and teeth implantation. Our results suggest that plicae palatinae and rugae palatinae, as well as ridges and spines of the hard palate, are constant formations in adult human skulls. In some cases, the folds also in adult human skull were found in adult female specimens as a constant formation but were missing in 6% adult male specimens. These results suggest that plicae palatinae and rugae palatinae, as well as ridges and spines of the bony palate are morphologically and functionally completely independent structures. Changes in the morphology of the palate are a serious complication in prosthetics and teeth implantation.

Material and Methods

We measured the following parameters on 68 skulls (age range from 2 months to 90 years) from our skull collection: a) height of the alveolar process, b) width of the hard palate at the level of the canines, c) width of the hard palate at the level of the 2nd molars, and d) length of the hard palate. In our sample, the posterior margin of the alveolar process to the posterior end, including the lamina palaestens, in the age of the fetus was 35 years of age, the nasal process of the maxilla is its permanent course. We expected the corresponding tissue to be represented by a mucoperiosteum - or indirectly by a fibrous mucosa."

To clarify the time of appearance and disappearance of the plicae palatinae transversae, and relate this to the dimensions, configuration and the surface type of the bony palate, we studied postnatal changes of the hard palate on our collection of skulls, ranging in age from birth to late adulthood. In contrast to the palate mucosa, the palate structure is morphologically and functionally independent structures. Changes in the morphology of the palate are a serious complication in prosthetics and teeth implantation.

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Literature


Results

In the period preceding the first dentition (the period from the newborn to the end of the first year of life), in the hard palate, we found that there were the absence of the alveolar processes. The alveolar processes developed plicae palatinae transversae. With the onset of the first, deciduous dentition, from the end of the first year of life, the hard palate displayed the finest appearance of vertical ridges and spinae (Figure 3). The alveolar process appeared and the dome of the palate lowered. On both sides of the midline between the incisor, balloon-like, semicircular form formation appeared. Containing the palatal glands and the openings of small vessels and nerves. The osseous folds limit on either side a sulcus for the palatal vessels and nerves - sulcus palatinus. There are also the sulci palatini transversae which runs in the surface of the palate. The length of the palate was measured in the midline, from the posterior margin of the alveolar process to the posterior end, including the lamina palaestens, in the age of the fetus was 35 years of age, the nasal process of the maxilla is its permanent course. We expected the corresponding tissue to be represented by a mucoperiosteum - or indirectly by a fibrous mucosa."

Figure 1. Measurements of the hard palate of the fetus (left) and adult human (right). A) Height of the alveolar ridge of the hard palate. B) Width of the hard palate at the level of the canines, c) Width of the hard palate at the level of the 2nd molars, and d) Length of the hard palate.

Figure 2. Bony palate and maxilla bone of a 2-month-old infant. Right palatal arch is visible on medial view.

Figure 3. Bony palate of 2 year-old male child. The relief of the bony palate is already developed.

Figure 4. Bony palate of an 8 year-old male child. The relief of the bony palate is prominent.

Figure 5. Bony palate of a 36 year-old male. The bone relief of the palate is prominent.

Figure 6. Bony ridge at the posterior end of the palate in a 7 year-old male/female.

Figure 7. Bony palate of a 77 year-old male with preserved alveolar ridge ridge after a 5 year-old female with preserved alveolar ridge bone. In both cases, the alveolar processes are intact, and the bone relief of the palate is prominent.

Figure 8. Bony palate of a 56 year-old female (top) and 68 year-old female (bottom). Regardless of the age, the palate is smooth when the alveolar processes are missing.