Morphometrical study of human palatine sutures in newborns, infants and children for distraction osteogenesis treatment purposes [Estudio morfométrico de las suturas palatinas humanas en recién nacidos, infantes y niños con fines de tratamiento por distracción osteogénica]

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Structural and dimensional knowledge of palatal sutures are necessary for early treatment of deficiencies by transverse and longitudinal expansion techniques or distraction osteogenesis (DO). The aim was to study the status and dimensional or morphological changes of palatal sutures from birth to childhood. Forty one bony palates of both sexes, between 0 and 13 yearsandgrouped in newborns (NB/n = 17), infants (IN/n = 12) and children (CH/n=12) were analyzed. All palates were photographed and craniometrics points were scored to determine the longitudinal and transverse dimensions of the palatal sutures: premaxillary (PMX), anterior midpalatal suture (AMPS), posterior midpalatal suture (PMPS), anterior transverse palatal suture (ATPS) and posterior transverse palatal suture (PTPS). In addition, we evaluated the sutural and sexual dimorphism. The results were subjected to tests OneWay - ANOVAandBonferroni t-test. AMPS, PMPS and PTPS no showed synostosis. PMX was observed partially sinostosed in 5.9% of NB and 16.7% of CH, and ATPS in 8.3% of IN and 41.7% of CH. When comparing the sutural length between groups, the differences were significant in all cases ($p < 0.001$). There were no differences in transverse sutures between IN and CH groups ($p=0.32$). Sexual dimorphism wasobserved between AMPS and PTPS groups. The palatal suture system plays an important role during growth by sagittal and transverse available, allowing bidirectional growth of the palate. Longitudinal growth is constant, while the cross shows a

peak until the first 2 years of life and then decreases, suggesting the existence of different potentials growth. These observations may explain the high prevalence of abnormal transverse growth in children. These data are relevant to the appropriate treatment by expansion or DO in palate compression cases, velopharyngeal incompetence or cleft palate.

Bone distraction

Distraction osteogenesis

Growth

Hard palate

Palate bone

Palatine sutures