sternal variations were as follows: xiphoid process with elongated its size or one oval sternal foramen, or sharp bifid ends.

Conclusion: There exist different sternums, last ribs and patella with several morphological expressions, including sizes, shapes, patterns, external contours, etc. Identification of variations of these bones by use of the Anatomage Table is important to study, differentiate and discover several normal or pathological conditions more frequently.

Keywords: Anatomage Table, patella, ribs, sternum, variations

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Evaluation of the multiple tissue factors in cartilage of performed primary and secondary rhinoplasty in patients affected by cleft lip palate

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Objective: Cleft lip and palate (CLP) is one of the congenital craniofacial defects. The aim of our study was to determine the appearance and differences of tissue factors in cartilage of CLP patients during primary and secondary rhinoplasty.

Methods: Cartilage was obtained from CLP patients during primary and secondary rhinoplasty. The primary group consisted of 35 patients, the secondary group consisted of seven patients, and the control group - from 11 subjects. Immunohistochemistry was performed with MMP-2, MMP-8, MMP-9, TIMP-2, IL-1α, IL-10, bFGF, and TGFβ1. The semi-quantitative census method was used for the quantification of structures. The Spearman rank correlation coefficient and Mann-Whitney U test were used for the statistical analysis. A written consent form from the parents was obtained.

Results: MMP-2, -9, IL-1a, and bFGF demonstrated higher number of positive cells in patients, while number of MMP-8, IL-1a, -10 and TGFβ1 cells were higher or equal to the control subjects. A significantly higher number of TIMP-2 positive chondrocytes was observed only in the primary CLP patient group compared to the secondary CLP group (U=53.5; p=0.021). The median value of the primary CLP group has a moderate number of TIMP-2 positive chondrocytes compared to numerous in the secondary CLP group. No statistically significant difference was found between primary and secondary rhinoplasty patients for other tissue factors.

Conclusion: Commonly, cleft affected cartilage rich expression of different tissue factors suggests the stimulation of higher elasticity of cartilage. Statistically significant TIMP-2 elevation in primary operated cartilage indicates the selective tissue remodelation impact for hard tissue.

Keywords: CLP, cartilage, rhinoplasty, immunohistochemistry

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Nerve branches to the human sternoclavicular joint

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Objective: The sternoclavicular joint (SCJ) is important for shoulder motion. The innervation of SCJ is a key to discuss its proprioception and motor control of the pectoral girdle. However, little is known about innervation of the SCJ and possible cause for the disorder of SCJ proprioception. The aim of this study was to clarify the innervation of SCJ and to provide anatomical basis for understanding the proprioception of SCJ contributing to the shoulder motion.

Methods: Six sides of nerve branches to the SCJs were dissected and observed under stereomicroscope, after maceration in trypsin solution to facilitate removing muscle and connective tissue, and pursuing fine nerve branches to the SCJ. The protocol of this study was approved by institutions of the authors.

Results: In all six sides, nerve branches from the medial supraclavicular nerve (MSN) went medially along the clavicle and reached the anterior and/or superolateral part of the articular capsule of SCJ. In four sides, nerve branches from the lateral pectoral nerve (LPN) went medially between the clavicle and first rib, and reached the inferior part of the articular capsule of the SCJ. In other two sides, a similar branch from the LPN did not reach the SCJ but ended at the periosteum of manubrium and/or perichondrium of first costal cartilage.

Conclusion: The SCJ was innervated by nerve branches from the MSN and LPN, or MSN only. Findings of this study suggest that the proprioception of SCJ could be disordered by injury of the clavicle or upper pectoral region.

Keywords: lateral pectoral nerve, medial supraclavicular nerve, peripheral nerve, sternoclavicular joint

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Anatomy education within Australian and New Zealand osteopathic programmes

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Objective: Anatomy plays a key role in health professionals' education. The aim of this study was to analyze the anatomy