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The relationship between patency of the maxillary sinus and craniofacial growth in the rabbit.

Kraut JM, **Kronman JH**.

Tufts University School of Dental Medicine, Boston, Mass.

Numerous researchers report the interaction between deviant respiratory patterns (airway obstruction) and craniofacial growth. Many of these studies consisted of cephalometric evaluations of children with enlarged adenoids, obstruction turbinates, or other nasal obstructions. Other experimental studies of the airway's influence on growth include studies that have induced nasal obstruction in animals by plugging the external nares. No investigations were found that examined the role of the paranasal sinuses in craniofacial growth by filling a sinus in growing animals. Furthermore, nothing appears in the literature that considers the paranasal sinuses in the oronasopharyngeal functional matrix theory. The purpose of this study was twofold: (1) to determine the effect of decreasing the pneumatization of the maxillary sinus on ultimate craniofacial growth and development, and (2) to determine the effect on future morphology by obturating a growing sinus. New Zealand white weaning rabbits were used as the experimental animals. Unilateral maxillary sinuses were injected in 18 animals--nine animals were injected on the right side and nine on the left. Eight rabbits served as controls: five received left-side and three right-side sham injections. Dorsal view cephalometric radiographs were taken at (1) the start, (2) at three progress intervals, and (3) at the end of the experiment. Dried skull direct measurements also were performed at the conclusion of the experiment. No statistical significance was found when comparing right and left sides within groups or when comparing any measurement between groups. This demonstrated that filling the maxillary sinuses had no effect on craniofacial growth; the sinuses grew normally in all animals.

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