

[J Otolaryngol.](#) 1997 Oct;26(5):306-15.[Links](#)

Effect of upper-airway passages on craniofacial growth in an animal model: a pilot study.

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OBJECTIVE: The process of postnatal growth and development of the face and skull is of major interest to otolaryngologists. Surgery is often considered as an option for the treatment of benign and malignant tumours, traumatic facial deformities, and congenital abnormalities of the head and neck in children and adolescents. The extent of surgery and the type of reconstruction is frequently influenced by concerns about the potential effect on future craniofacial growth. Surgery is also sometimes recommended as a method to influence facial growth as in tonsillectomy and adenoidectomy for 'adenoid facies syndrome.' There are a number of different theories concerning the factors that influence the growth of the face and cranium. None of these is universally accepted. The predominant theory is the functional matrix theory. This study was designed to evaluate the validity of this theory in an animal model. A new animal model had to be developed to perform the study. This pilot study was then conducted. **METHOD:** A laryngotracheal separation procedure was performed on juvenile goats. This effectively eliminated the use of the upper airway by the animals, thereby removing one of the major functional matrices from the model. The animals were allowed to grow. A control group was used, and comparisons were made between the two groups. **RESULTS:** The results of the study suggest that the functional matrix theory is not valid in this experimental model. **CONCLUSIONS:** Further research is required to confirm this finding. This would have important implications for our understanding of the biology of craniofacial growth and have clinical ramifications for otolaryngologists and other clinicians with an interest in