[1]朱亚玲,李闻颖,张翼,等.上颌前牙舌侧差动内收力系三维有限元模型的建立[J].第三军医大学学报,2014,36(05):466-469.

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上颌前牙舌侧差动内收力系三维有限元模型
到：

Title: Construction of 3-D finite element model of maxillary anterior teeth in lingual differential retraction force system

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关键词: 三维有限元; 舌侧内收力系; 应力-应变

Keywords: three-dimensional finite element; lingual retraction force system; stress-strain

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摘要: 目的　基于CT法建立上颌前牙舌侧差动内收力系的三维有限元模型，对这一复杂正畸矫治力系的生物力学效应进行系统性分析。　方法　通过高精度螺旋CT扫描获得精确的组牙和颌骨图像信息，运用MIMICS软件进行三维重建，同时在Solidworks中建立舌侧托槽与弓丝的三维几何模型，并进行装配，导入ANSYS软件划分网格生成上颌前牙舌侧差动内收力系的三维有限元模型。最后对模型进行加载检测。　结果　建立了细致、逼真的上颌前牙舌侧差动内收的三维有限元模型，在0.015 N·m的力矩和56.6 g的Ⅱ类牵引力作用下上颌前牙牙周膜应力-应变在生理性范围之内。　结论　本研究建立的上颌前牙舌侧差动内收力系三维有限元生物力学模型保证了高度的几何相似性和

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力学相似性，可用于这一复杂正畸矫治力系生物力学效应的系统研究。

Abstract: Objective To construct the three-dimensional (3-D) finite element model of maxillary anterior teeth in lingual differential retraction force system and to determine the biomechanical effect of the maxillary anterior teeth. Methods The geometrical information of the maxillary bone and teeth were obtained from a dry skull, and the lingual appliance were from Solidworks CAD software. The MIMICS software was used to construct the three-dimensional finite element model of maxillary bone. ANSYS were used to mesh the model and construct the 3-D finite element model. Results Our 3-D finite element model of maxillary anterior teeth in lingual differential retraction force system was constructed successfully with details and verisimilitude. Under the 0.015 N • m moment by tip back bend and 56.6 g class II elastics force, the stress and strain distribution were demonstrated within physical remodeling range. Conclusion The 3-D finite element model of maxillary teeth