全口义齿和应用不同植入物固定的覆盖义齿的有限元分析比较

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摘要:应用有限元分析比较全口义齿及应用不同植入物的覆盖义齿的压力分布情况。无牙下颌病例分为4组：A组（对照组），全口义齿；B组，2个杆卡式覆盖义齿系统；C组，2个“O”环覆盖义齿系统；D组，2个杆卡式覆盖义齿系统和2个远侧“O”环覆盖义齿系统。应用100-N垂直引导于中切牙进行软件分析。得到最小的压力值（兆帕），A组（64.305），C组（119.006），D组（258.650），B组（349.873）。在支持的软组织采用最高的同方向作用力作用于下颌骨皮质。在所有覆盖义齿系统中，“O”环覆盖义齿系统显示了最小的压力分布值。而且，“O”环覆盖义齿系统同时改善了杆卡式覆盖义齿系统的压力分配。

Attached original abstract of paper:

Finite Element Analysis to Compare Complete Denture and Implant-Retained Overdentures With Different Attachment Systems

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Abstract
This finite element analysis compared stress distribution on complete dentures and implant-retained overdentures with different attachment systems. Four models of edentulous mandible were constructed: group A (control), complete denture; group B, overdenture retained by 2 splinted implants with bar-clip system; group C, overdenture retained by 2 unsplinted implants with o'ring system; and group D, overdenture retained by 2 splinted implants with bar-clip and 2 distally placed o'ring system. Evaluation was performed on Ansys software, with 100-N vertical load applied on central incisive teeth. The lowest maximum general stress value (in megapascal) was observed in group A (64.305) followed by groups C (119.006), D (258.650), and B (349.873). The same trend occurred in supporting tissues with the highest stress value for cortical bone. Unsplinted implants associated with the o'ring attachment system showed the lowest maximum stress values among all overdenture groups. Furthermore, o'ring system also improved stress distribution when associated with bar-clip system.