Stress analysis of different wall thickness of implant fixture with various boundary levels

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摘要

Abstract

The aim of the present work is to develop 3D nite element models of implant xture with different wall thicknesses to predict maximum stress concentration sites and distribution contours after loading. A maximum lateral force of 150 N was applied to simulate horizontal occlusal forces. When the xtures were constrained to simulate different boundary levels, the maximum equivalent stress (max EQV) was always located at the implant-bone interface. Max EQV increased when the wall thickness or boundary level was reduced to a certain extent. The xture with a wall thickness of 0.97 mm demonstrated the smallest stress increase ratio when the boundary level was lowered. Our results indicated that both wall thickness and the boundary level played important roles in maintaining a welldistributed stress level within the xture. The stress concentration decreased when the xture wall became thicker, however, this effect was less signi cant when the surrounding bone level was reduced.