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IMPACT OF ORTHODONTIC MINI-SCREW ANGLULATION RELATIVE TO DIRECTION OF FORCE APPLICATION ON STABILITY, MOVEMENT, AND THE PERI-IMPLANT INTERFACE

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The purpose of this study was to determine the impact of insertion angle of orthodontic mini screws on the stability and resistance to movement of the mini screw, and on the peri-implant interface. Three orthodontic mini screws were placed in each tibia of six New Zealand white rabbits bilaterally (N=36), with randomized angulation (65° away, 65° toward, or 90° to the direction of applied force). After two weeks, two orthodontic mini screws within each tibia were loaded with a 200g Nitinol closed-coil spring for up to 14 days. No statistically significant differences were found among the variably angulated loaded and unloaded orthodontic mini screws in the amount of movement or change in angulation demonstrated over the experimental period. Micro CT analysis revealed no clinically significant differences in the amount of cortical bone-to-implant contact. Mini screw placement angulation seems to have minimal impact on stability and migration of orthodontic mini screws over time.