

Bioabsorbable Miniplating Versus Metallic Fixation for Metacarpal Fractures.

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Bioabsorbable implants offer an attractive alternative to metallic implants to stabilize small bone fractures in the hand. Self-reinforced bioabsorbable miniplating for metacarpal fractures was studied in bones from cadavers and compared with standard metallic fixation methods. One hundred twelve fresh-frozen metacarpals from humans had three-point bending and torsional loading after transverse osteotomy followed by fixation using seven methods: (1) dorsal and (2) dorsolateral 2-mm self-reinforced polylactide-polyglycolide 80/20 plating, (3) dorsal and (4) dorsolateral 2-mm self-reinforced poly-L/DL-lactide 70/30 plating, (5) dorsal 1.7-mm titanium plating, (6) dorsal 2.3-mm titanium plating, and (7) crossed 1.25-mm Kirschner wires. In apex dorsal and palmar bending, dorsal self-reinforced polylactide-polyglycolide and poly-L/DL-lactide plates provided stability comparable with dorsal titanium 1.7-mm plating. When the bioabsorbable plates were applied dorsolaterally, apex palmar rigidity was increased and apex dorsal rigidity was decreased. Bioabsorbable platings resulted in higher torsional rigidity than 1.7-mm titanium plating and in failure torque comparable with 2.3-mm titanium plating. Low-profile selfreinforced polylactide-polyglycolide and poly-L/DL-lactide miniplates provide satisfactory biomechanical stability for metacarpal fixation. These findings suggest that bioabsorbable miniplating can be used safely in the clinical stabilization of metacarpal and phalangeal fractures.