Absorbable Biologically Based Internal Fixation

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KEYWORDS

• Absorbable • Biologics • Silk • Polylactic acid • Polyglycolic acid • Fracture • Screw • Pins

KEY POINTS

- Absorbable internal fixation has advanced to become a potential reliable alternative to metallic devices.
- The most commonly used materials for absorbable fixation are polyglycolic acid (Biofix), a copolymer of polyglycolic and polylactic acid (Polyglactin 910), and polyparadioxanone (Orthosorb).
- Intrinsically stable fractures protected with casts or other modalities may be adequately managed with absorbable devices.
- Unstable foot and ankle fractures where a screw or pin is subjected to repetitive shear forces should not be treated with absorbable devices; fixation failure may result.
- New options for absorbable devices made from silk may be able to overcome current limitations and address a broader range of fixation needs.

INTRODUCTION

Materials used for the repair of bone can categorized as either natural or synthetic. Natural materials include bone, derivatives of bone, collagen (a natural polymer), and surgical gut. Synthetic materials are classified as either nonabsorbable, such as metals and metal alloys, or absorbable, which consist of ceramics and polymers.[1] Several types of absorbable internal fixation devices have been used, and the most successful are composed of alpha polyesters. The most commonly used polyesters are polyglycolic acid (PGA) marketed as Biofix, a copolymer of PGA and polylactic acid (PLA) known as Polyglactin 910, and polyparadioxanone (PDS), frequently recognized as Orthosorb.[2–4] Other materials used as fixation implants or as coatings on one

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