

Title: Orthopedic Screw

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KEYWORDS: Screw, Bio-absorbable, Structural Rigidity, Stress Shielding, orthopedic

DOMAIN: Bio-medical device

SUMMARY:

The orthopedic screw facilitates bone fracture repair and promotes osteointegration. The distinguishing feature of the developed screw lies in its unique design and each component of the screw serves a crucial role in bone repair. It consists of an outer and an inner part, where the outer part facilitates screw insertion and the inner part is a stiffener that reinforces structural stability. The screw can be inserted and removed with minimally invasive procedures.

ADVANTAGES:

1. Fabrication of screw from multi-material:
 - a. Bioabsorbable and bioinert screw.
 - b. Enhanced shock absorbance and stress shielding.
2. Improvement in the healing factor of the bone under fracture conditions.
3. The unique design of the screw provides easy removal of the screw.

APPLICATION: Fixation of plates and bone fracture with the orthopedic screws.

SCALE OF DEVELOPMENT: A lab-scale functional prototype is available at the lab-scale and various structural quality testing are performed on the screw.

TECHNOLOGY READINESS LEVEL: TRL 5

IP STATUS: Indian Patent Application No. 201811043289, Indian Patent No. 499461