

OSTEOGENIC SCREW SYSTEM FOR STIMULATING BONE GROWTH

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Value Proposition: *Osteogenic device that provides a focal current through a bone construct to induce bone formation and fusion in patients.*

Technology Description

Researchers at Washington University in St. Louis have developed an osteogenic screw system that can perform the task of rigidly immobilizing two vertebral bodies (most commonly cervical and lumbar spine) in either a standard plate screw construct or a pedicle screw and rod system, with the additional ability to induce electric current through the vertebral bodies and fusion graft by an external magnetic field. The electrical current that directly passes through the instrumentation and bone construct would assist in inducing bone formation in patients who may otherwise not fuse. The current would be focally passed through the fusion site of choice by utilizing screws which are variably anodized. The conductive portion of the screw would be covered with a highly conductive anodized element such as titanium nitride and the insulated portions would be covered with an insulating type of anodized surface such as titanium oxide,

Compared to current osteogenic technologies, this new device provides total control over the osteogenic process and allows for the use of a relatively small implant that would not require removal as in current direct stimulation models.

Stage of Research

Prototype - Developed a TiO₂/Ti screw electrode

Applications

- Cervical, thoracic, or lumbar fusion
- Spinal surgery

Key Advantages

- Increases the likelihood of fusion across the bony construct
- Provides total control over the osteogenic process
- Delivers focal current through a bone construct via induction through an external magnetic source

Patents

Patent granted - [US9844662B2](#)

Related Web Links – [Eric Leuthardt Profile](#); [Leuthardt Lab](#)