ELECTRICAL BONE GROWTH STIMULATION OF THE APPENDICULAR SKELETON AND AS AN ADJUNCT TO A SPINAL FUSION (REQUIRES PREAUTHORIZATION)

III.24

DESCRIPTION

Both invasive and noninvasive electrical bone growth stimulators are used as an adjunct to spinal fusion surgery, with or without associated instrumentation, to enhance the chances of obtaining a solid spinal fusion. Noninvasive devices may also be used to treat a failed fusion. Patient compliance may be an issue with externally worn devices.

Delayed union refers to a decelerating bone healing process, as identified in serial x-rays (In contrast, nonunion serial x-rays show no evidence of healing.) When lumped together, delayed union and nonunion are sometimes referred to as "ununited fractures."

Fracture Healing Systems, have an FDA indication as a treatment of fresh, closed, posteriorly displaced distal radius (Colles') fractures and fresh, closed, or grade I open tibial diaphysis fractures in skeletally mature individuals when these fractures are orthopedically managed by closed reduction and cast immobilization and treatment of established nonunions, excluding skull and vertebra.

Low-intensity pulsed ultrasound had been principally investigated as a technique to accelerate healing of fresh fractures, but more recently has been assessed as a treatment of fracture nonunions. Ultrasound can be delivered noninvasively with the use of a transducer applied to the skin surface overlying the fracture site. Ultrasound treatment can be self-administered with one daily 20-minute treatment, continuing until the fracture has healed.

DATES

Original Effective
06-01-2010

Last Review
05-20-2015

Next Review
05-20-2016
POLICY

SPINAL ELECTRICAL
Invasive and noninvasive methods of electrical bone growth stimulation are scientifically validated as an adjunct to spinal fusion surgery in patients at a high risk for fusion failure, defined as any one of the following criteria:

- one or more previous failed spinal fusion(s);
- grade III or worse spondylolisthesis;
- fusion to be performed at more than one level;
- current smoking habit;
- diabetes;
- renal disease;
- alcoholism.

APPENDICULAR SKELETON ELECTRICAL
Non-invasive electrical bone growth stimulation is scientifically validated as treatment of fracture nonunions or congenital pseudoarthroses in the appendicular skeleton (the appendicular skeleton includes the bones of the shoulder girdle, upper extremities, pelvis, and lower extremities). The diagnosis of fracture nonunion must meet ALL of the following criteria:

- at least 3 months have passed since the date of fracture; AND
- serial radiographs have confirmed that no progressive signs of healing have occurred; AND
- the fracture gap is one cm or less; AND
- the patient can be adequately immobilized and is of an age likely to comply with non-weight bearing.

Investigational applications of electrical bone growth stimulation include, but are not limited to, the treatment of fresh fractures or delayed union.

Invasive electrical bone growth stimulation for the appendicular skeleton is Investigative.

APPENDICULAR SKELETON ULTRASONIC
Low-intensity pulsed ultrasound treatment is scientifically validated when:

- as a treatment of nonunions and/or delayed fractures of all bones, except the skull and vertebra; or
- used as an adjunct to conventional management (i.e. closed reduction and cast immobilization) for the treatment of fresh (acute), closed fractures in skeletally mature individuals who are at high risk for delayed fracture healing or nonunion. (See Policy Guidelines)

All other uses of low-intensity pulsed ultrasound treatment for fracture healing are Investigative

GUIDELINES
Failed spinal fusion is defined as a spinal fusion which has not healed at a minimum of 6 months after the original surgery, as evidenced by serial x-rays over a course of 3 months.

Delayed Union is defined as decelerating fracture healing process, as evidenced by serial x-ray series.

Risk Factors for delayed and nonunion acute fractures: Diabetes, steroid therapy, osteoporosis, history of smoking, history of alcoholism.

REFERENCES

2011

2012

2012

2012

2013