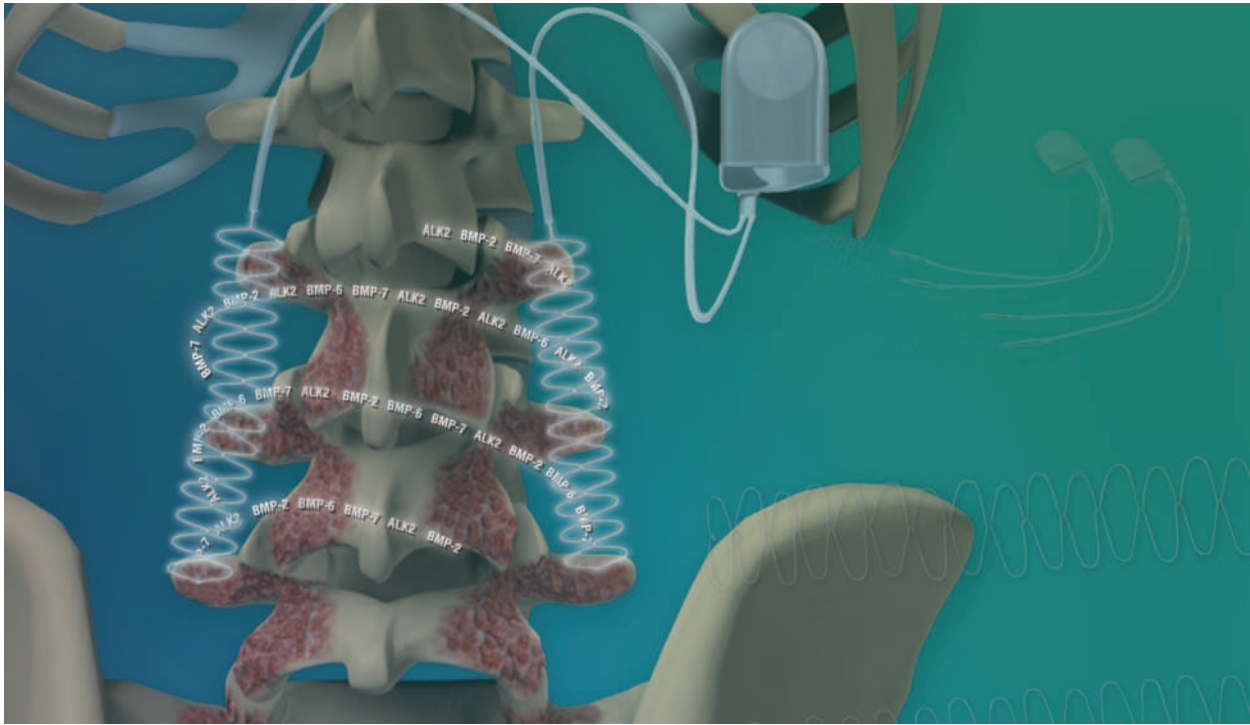


*Introducing...
The New SpF[®] PLUS-Mini
Spinal Fusion Stimulator*

Still Delivering 60 Microamps...Now 67% Smaller



SpF[®] PLUS-MINI

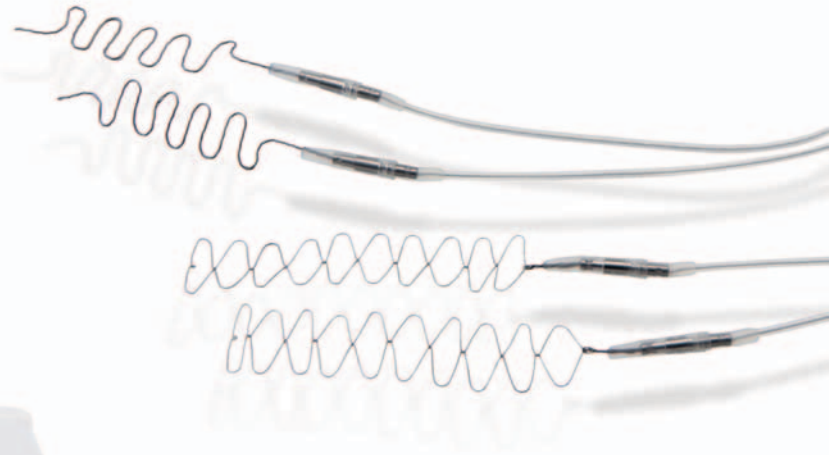
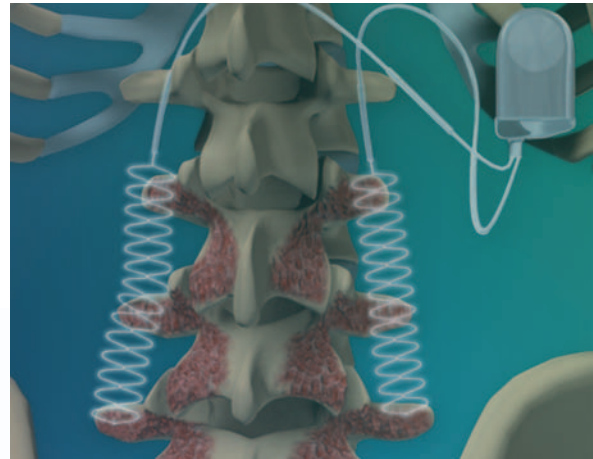


Introducing the NEW SpF[®] PLUS-Mini Spinal Fusion Stimulator

The Most Effective SpF Internal Spinal Fusion Stimulator Available, Now 1/3 The Size

Since 1987, the **SpF** stimulator has proven to be a safe, cost-effective adjunct for spinal fusions – with 100% compliance guaranteed. The record is clear; **SpF** stimulator is proven to be consistent and highly effective over time. Now, Biomet Spine adds to the **SpF** product family with its 67% smaller 60-microamp device – the **SpF PLUS-Mini** Spinal Fusion Stimulator.

- The slimmest, low profile design of any **SpF** model, for enhanced patient comfort and increased placement options
- **SpF** Direct Current (DC) Technology involves the upregulation of BMPs and other osteopromotive factors, including BMP 2, 6, 7 and the BMP receptor ALK2 throughout the treatment period¹
- Increased Current Density (CD) has been shown in animal models* to increase fusion success rates, speed to fusion, and fusion mass²
- Proven to show a 50% increase in success rates over autograft alone³
- Cost-effective in treatment of multi-level fusions



Now 67% Smaller

* Animal test results are not necessarily indicative of clinical performance

¹ Fredericks, D.C., et al., Effects of Direct Current Stimulation on Gene Expression of Osteopromotive Factors in a Postelateral Spinal Fusion Model. SPINE; January 2007, Volume 32, Number 2, pp 174-181.

² See Increased Current Density Page for References.

³ PMAP850035. Kane, William J., MD, PhD. Direct Current Electrical Bone Growth Stimulation for Spinal Fusion. Spine. Vol. 13, No. 3, pp. 363-365, March, 1988.

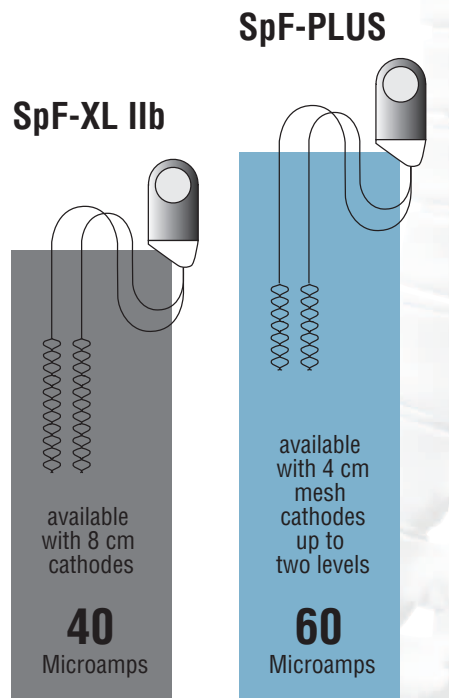
Increased Current Density

The New **SpF PLUS**-Mini Spinal Fusion Stimulator delivers 30 microamperes to each cathode out of its reduced size generator. This in turn means that the current density at each cathode will be 7.5 A/cm².

Animal studies* have shown that there is a dose responsive effect as it applies to direct current stimulation. Collectively, these studies found that as the current density increased the chance for fusion success increased as well.

What did increased current density do in an animal model?

- Increased fusion success rates
- Increased bone density and fusion mass
- Increased biomechanical strength
- Provided faster speed to fusion
- Was shown to work in conjunction with Pro Osteon® Bone Graft Substitute to increase fusion rates



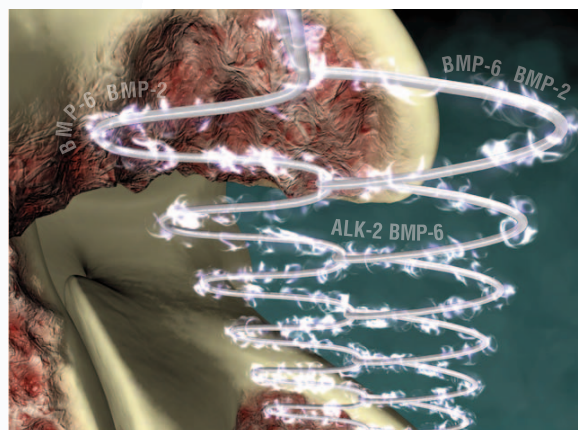
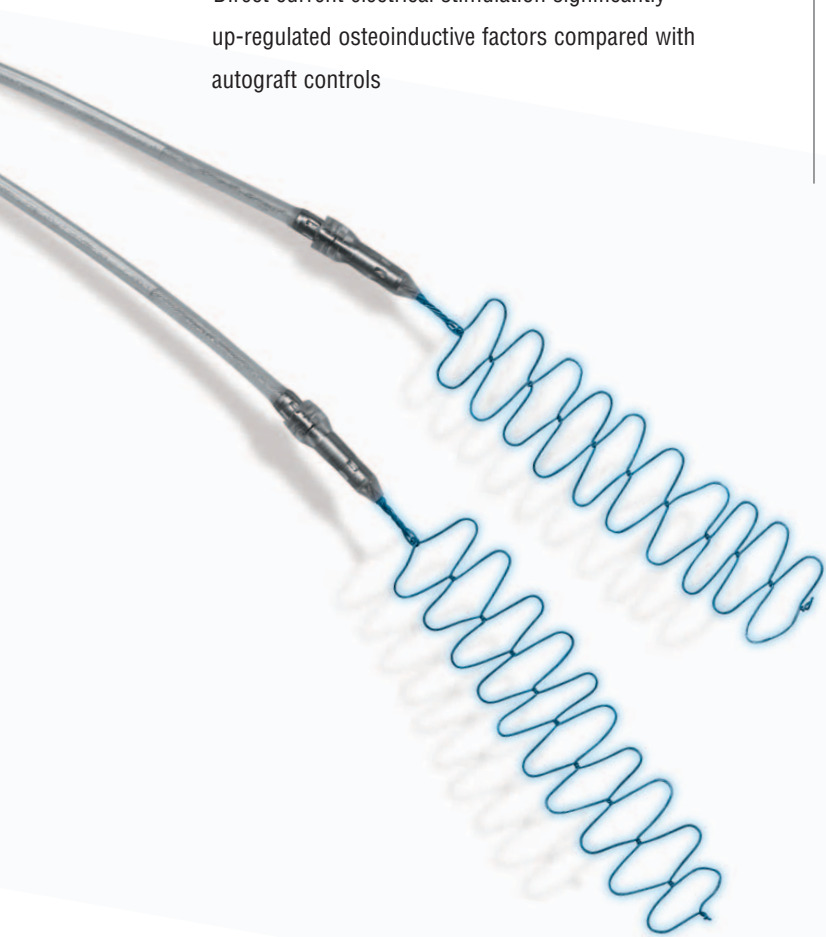
* Animal test results are not necessarily indicative of clinical performance

As demonstrated by:

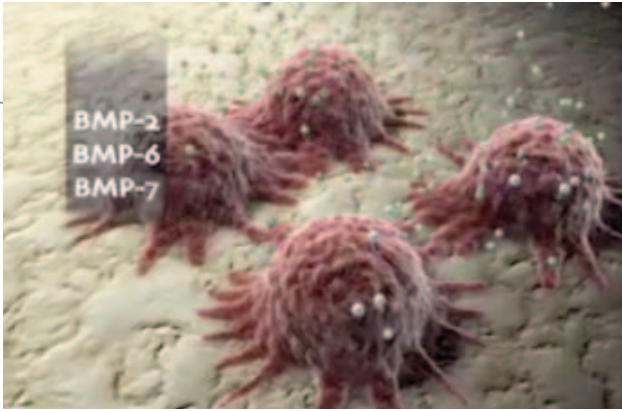
- Bozic, K.J., et al., In Vivo Evaluation of Coralline Hydroxyapatite and Direct Current Electrical Stimulation in Lumbar Spinal Fusion. *SPINE*; 1997, Volume 24, Number 20, pp 2127-2133.
- Toth, J.M., et al., Direct Current Electrical Stimulation Increases the Fusion Rate of Spinal Fusion Cages. *SPINE*; 2000, Volume 25, Number 20, pp2560-2567.
- France, J.C., et al., The Efficacy of Direct Current Stimulation for Lumbar Intertransverse Process Fusions in an Animal Model. *SPINE*; 2001, Volume 26, Number 9, pp1002-1008.
- Dejaradin, L.M., et al., The Effect of Varied Electrical Current Densities on Lumbar Spinal Fusions in Dogs. *The Spine Journal*; 2001, Volume 1, pp341-347.

Involves The Upregulation of Multiple BMP's and Growth Factors

- Direct current was shown to stimulate multiple BMPs¹, which are known to act synergistically and are much more potent together as compared to a single BMP
- Various growth factors were elevated for the duration of the experiment (28 weeks), and direct current provided a sustained elevation of growth factor production during the whole course of treatment, unlike an rhBMP
- Direct current electrical stimulation significantly up-regulated osteoinductive factors compared with autograft controls
- Visually and radiographically, greater and more rapid bone formation was observed in the direct current treated group compared to autograft controls
- Direct current enhanced fusion success rates of the single-level motion segment
- Direct current effects the later stages of bone formation and remodelling by maintaining changes in pH and PO₂ which are known to inhibit osteoclast formation and stimulate osteoblast formation

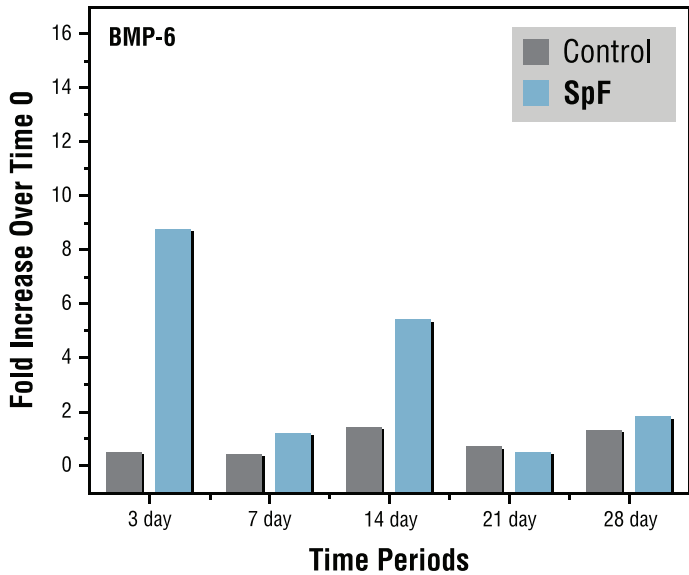


SpF Direct Current - A Proven Technology...

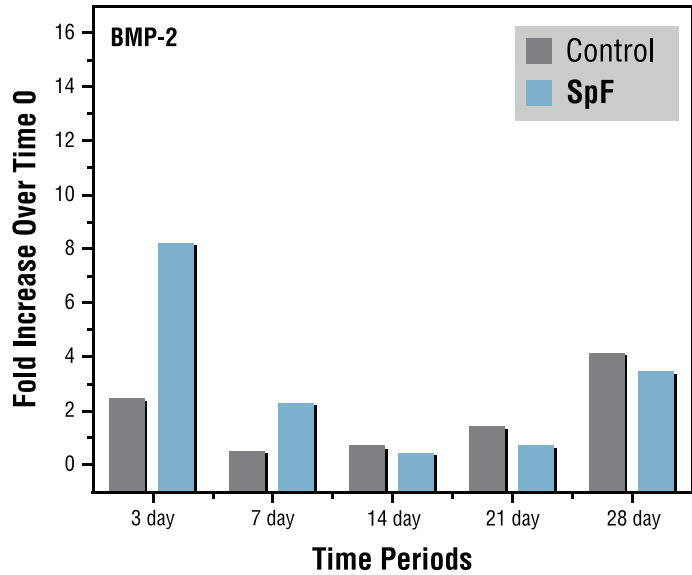


An animal study* was conducted, and demonstrated the upregulation of gene expression for noted bone-related factors as a mechanism contributing to the effectiveness of Direct Current (DC) for spinal fusions. DC stimulation up-regulated osteoinductive factors BMP-2, BMP-6, and BMP-7 in an animal model.

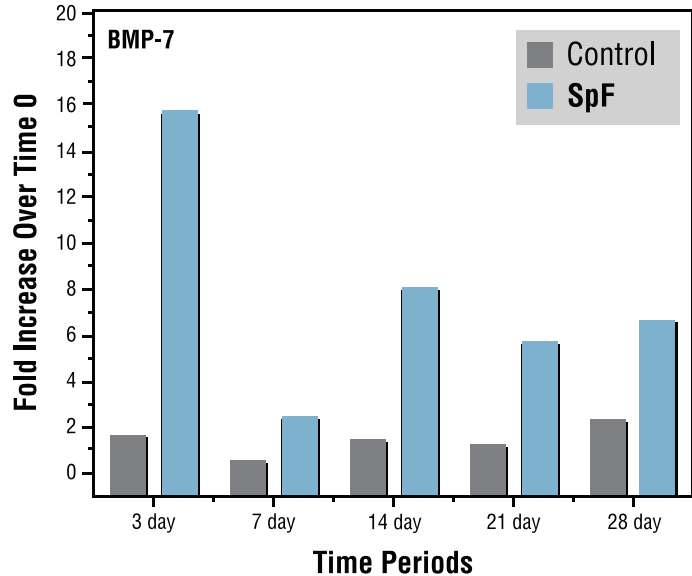
BMP-6 was significantly higher in SpF stimulator treated animals at days 3 and 14



BMP-2 was significantly higher in SpF stimulator treated animals at days 3 and 7



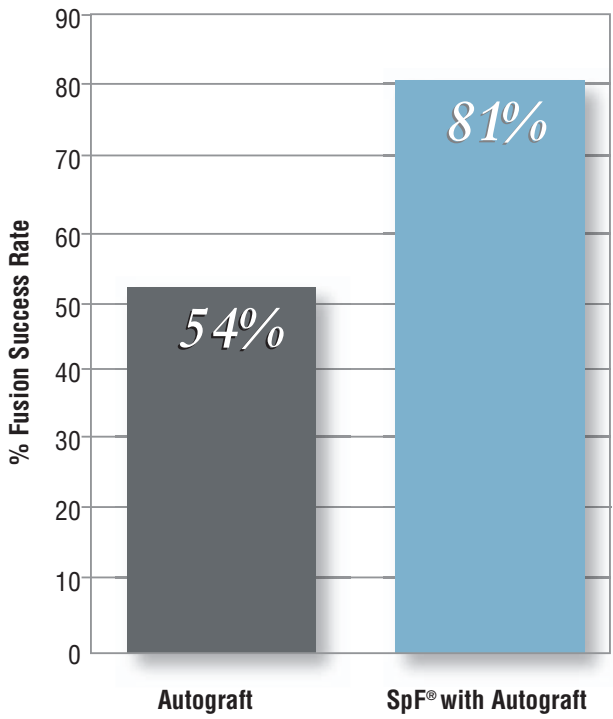
SpF stimulator treated animals has significantly greater BMP-7 expression at all time periods



* Animal test results are not necessarily indicative of clinical performance

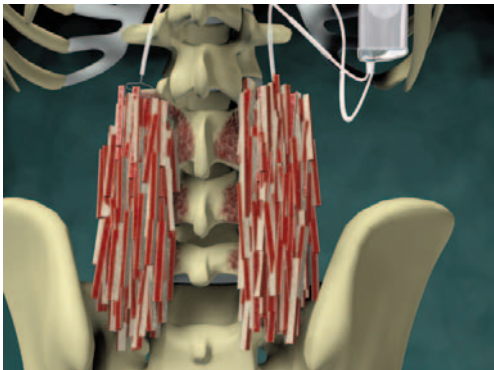
For Cost-Effective Fusions

50% Increase In Success Rate Over Autograft Alone



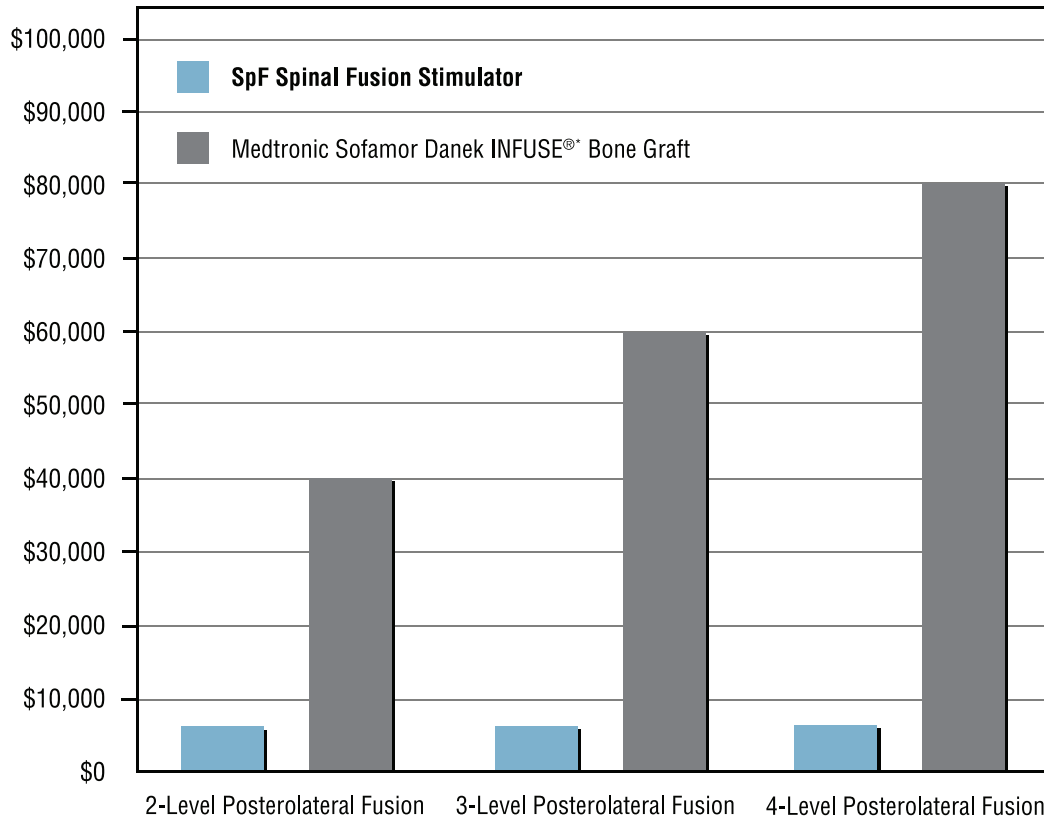
A PMA Randomized Prospective Controlled Trial,¹ proved the following to be true for SpF Direct Current Technology:

- Autograft demonstrated a 54% fusion success rate overall in the control group “in situ” (15 of 28 patients)
- The **SpF** stimulator treated group demonstrated a 81% fusion success rate overall in the stimulated group (25 of 31 patients)
- The **SpF** stimulator treated group demonstrated its effectiveness with autograft vs. autograft alone in difficult to fuse patients for the following groups:
 - (a) Previous failed fusions (40% autograft success rate vs 82% **SpF** stimulator success rate)
 - (b) Grade II or worse spondy (83% autograft success rate vs 100% **SpF** stimulator success rate)
 - (c) Multiple level fusion (50% autograft success rate vs 73% **SpF** stimulator success rate)
 - (d) “Other” including obesity, geriatric population, etc. (75% autograft success rate vs 89% **SpF** stimulator success)



¹ PMAP850035. Kane, William J., MD, PhD. Direct Current Electrical Bone Growth Stimulation for Spinal Fusion. Spine. Vol. 13, No. 3, pp. 363-365, March, 1988

Cost-Effectiveness vs. INFUSE® Bone Graft



Cost is based upon a required 40mg dose per level at \$5,000 per vial (4 vials needed) to demonstrate equivalency to autograft in posterolateral fusions¹.

SpF Spinal Fusion Stimulator

- The **SpF** Spinal Fusion Stimulator demonstrated a 50% increase in the number of patients healed over autograft alone³
- Biomet Science Sets Us Apart. **SpF** Implantable Spinal Fusion Stimulator (Direct Current Technology) involves the upregulation of BMPs and other osteopromotive factors, including BMP-2, -6 and -7, and the BMP receptor ALK2, which are normal physiological regulators of various stages of bone healing, including chondrogenesis and osteogenesis⁴

CPT Reimbursement Codes for SpF Spinal Fusion Stimulators

Implantation: 20975

Explantation (Deep): 20680

Explantation (Superficial): 20670

COMPETITIVE INDICATIONS FOR USE

INFUSE® is a registered trademark of Medtronic Sofamor Danek.

INFUSE: INFUSE is NOT indicated for posterolateral fusions or posterior lateral interbody fusion.

The INFUSE Bone Graft/LT-Cage Lumbar Tapered Fusion Device is indicated for spinal fusion procedures in skeletally mature patients with DDD at one level from L4-S1. Patients should have had at least 6 months of nonoperative treatment prior to treatment with device. Device is to be implanted via an anterior open or anterior laparoscopic approach.

¹ Initial INFUSE Clinical Trial

² Sandhu, Harvinder S. and Khan, Safdar N. Recombinant Human Bone Morphogenetic Protein-2: Use in Spinal Fusion Applications. The Journal of Bone and Joint Surgery. Vol. 85-A-Supplement 3-2003, pp. 89-95.

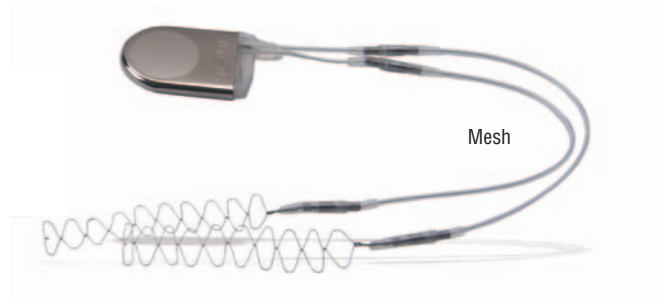
³ PMA850035. Kane, William J., MD, PhD. Direct Current Electrical Bone Growth Stimulation for Spinal Fusion. Spine. Vol. 13, No. 3, pp. 363-365, March, 1988.

⁴ Fredericks, D.C., et al., Effects of Direct Current Stimulation on Gene Expression of Osteopromotive Factors in a Posterolateral Spinal Fusion Model. SPINE; January 2007, Volume 32, Number 2, pp 174-181.

SpF[®] PLUS-Mini Spinal Fusion Stimulator

New and Improved Features:

- Increased Current Density
- Cost - Effectiveness
- Proven Success Rate Over Autograft Alone
- Involves the Upregulation of Multiple BMP's and Growth Factors
- Part of a Comprehensive Line of Biomet Spine Solutions



Biomet...Offering A Comprehensive Line Of Spinal Fusion Solutions

