



Increased Bone Growth Stimulator Device (BGSD) Use in the Complex Spinal Patient and Comorbid Acuity.

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Introduction

Bone growth (osteogenesis) stimulation devices, (BGSD) provide a safe, noninvasive treatment that promotes bone growth in spinal fusions hampered by chronic disease and previous surgery. The evolution of Bone Growth Stimulation with implantable and extracutaneous methods are the standard adjunct for challenged bone matrix and presumed case failure for known comorbidities of osteoporosis, obesity, diabetes and failed smoking cessation. The devices stimulate the certain tissue and vascular growth factors by sending low-level pulses of electromagnetic energy to the injury or fusion site. The Pulsed Electromagnetic Field (PEMF) has been shown to activate the mTOR pathway which is important in stimulating the intracellular signally pathway for cell cycle reproduction. The authorship discuss the known indications of diabetes, pseudoarthrosis, osteopenia, autoimmune complexes and chronic opioid use, but assert the added awareness and correlation of high risk patients with failed back syndrome and pain management issues.



Results

Collective data retrieval from a three year retrospective, revealed an annual increase in successive BGSD usage year to date. This augmentation in use (2012 = 253, 2013 = 281, 2014 = 313) exemplifies the 10 - 15% usage increase reflective of the higher acuity patient and their perioperative care. As the patient populace of Complex Spinal Institutes becomes more morbidity-centric and acuity laden, the identifiers for failed back syndromes and segmental fixation interference becomes somewhat more predictable. Applying the moniker of 'at risk' criteria coupled with poor bone quality encountered at the surgical time, allowed for issuance ad prescription of the BGSD tool. Ease of body application and pulsed electromagnetic field delivery was facilitated by the Orthofix 'Spinal Stim' product.

Conclusions

The apperception surrounding fail back syndromes are suspect when osteopenia or chronic disease augments the pre-operative acuity and potentially the operative outcome. The acknowledgement and acceptance of Bone Growth Stimulator Devices, (BGSD) is an accepted and widely used adjunct to the practice of Complex Spinal Disorders (CSD) associated with the aforementioned comorbidities. The augmented use and recommendation of external-stimulation supplants the methods of autologous and allographic fusion methods as an additive measure to mitigate fusion intercession. Accrual rates of higher 'risk patients' within a complex spinal disorder category are better subserved with a 'belt and suspenders' type attitude toward patient outcomes and management. Patient steerage has also coalesced many involved patients to certain practitioners, (CSD), for their management expertise in in dealing with highly complicated matters. As more more patients present with healing challenges, our clinical bias of BGSD use, augments fusion potential in the demanding scenario depicted intraoperatively or collectively through past medical history.

Learning Objectives

Failed Back Syndrome  
Bone Growth Stimulator Device  
Indications for Use

References

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