中华医学会第十届骨科学术会议暨第三届国际COA学术大会
The Third International Congress of Chinese Orthopaedic Association
2008年11月13–16日 中国 苏州 November 13-16, 2008 Suzhou, China

Anterior Cervical Discectomy and Fusion Utilizing a Novel Bioactive Glass Compound Increases Fusion Rate while Minimizing Complication

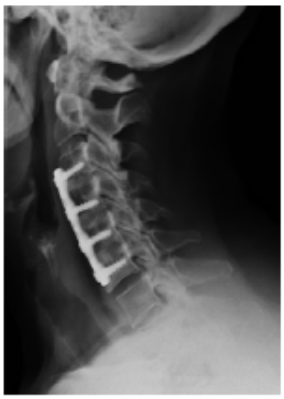
Seth M. Zeidman, MD Rochester Brain & Spine, Rochester, NY

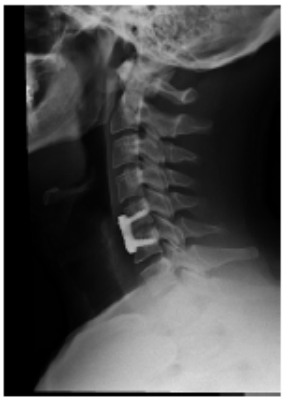
Introduction:

Iliac crest autograft remains the gold standard material for spinal fusion. However, its use is limited by additional operative time, increased blood loss, and morbidity. The incidence of pseudoarthrosis after multisegmental anterior cervical fusion is directly proportional to the number of levels of arthrodesis. Osteobiological adjuvants offer an opportunity to reduce both the probability of pseudoarthrosis and the necessity for posterior instrumentation. However, the use of BMPs as an adjunct to cervical fusion has been associated with a dramatic number of peri-operative complications. Recently, a synthetic osteoconductive bone graft material composed of bioactive glass (NovaBone, Jacksonviille, FL.) has been described, with significant efficacy. While concentrations of bioactive glasses have exhibited osteogenic potential, recent studies have demonstrated low concentrations of bioactive glasses are distinctly angiogenic. The pro-angiogenic capacity of this material is related to the soluble dissolution products of bioglass and the subsequent production of cell-secreted angiogenic factors by stimulated cells.

Methods:

We present our results using bioactive glass as an adjunct to structural arthrodesis to facilitate bone healing and do so in a controlled fashion. 64 patients underwent anterior cervical discectomy and fusion utilizing allograft bone supplemented by bioactive glass. One, two and three level fusions were performed. All patients had placement of an anterior cervical spine locking plate.





Results:

Overall incidence of fusion was 97% utilizing the combination of allograft bone with bioactive glass supplementation. Use of the bioactive glass compound resulted in more rapid solid bony fusion. None of the patients sustained any complications associated with the surgery, the bone graft and/or the bioactive glass.

Complications

Swallowing difficulty	0/64
Hoarseness/Dysphonia	0/64
Return To OR	0/64
Bleeding	0/64
Infection	0/64

The low incidence of non-union or pseudoarthrosis was much better than historical controls without the bioactive glass.

Conclusion:

Supplementation of standard allograft fusion with a bioactive glass compound facilitates more rapid and complete stable bony arthrodesis. This is achieved without any of the side effects associated with alternative biomaterials. Use of bioactive glass is safe and effective at a much lower overall cost.