COA 2007
November 8-11, 2007
Zhengzhou, Henan, China
中华医学会第九届骨科学术会议暨
第二届国际COA学术大会
The Second International Congress of
Chinese Orthopaedic Association
COA 2007
Chinese Orthopaedic Association

Anterior Lumbar Interbody Fusion - NovaBone in Conjunction With Femoral Ring Allograft

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Introduction:

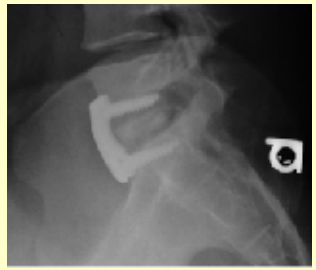
NovaBone Bioactive Synthetic Bone Graft has proven to control human osteoblasts cell cycle to favor proliferation and differentiation of only the cells that can proceed toward creation of a mineralized ECM, osteocytes, and new bone[(1)]. Clinical studies have also shown the material to be as efficacious as autograft in [(2)]. The intention of this investigation is to show the clinical experience of NovaBone as a bone graft substitute capable of inducing new bone formation.

Methods:

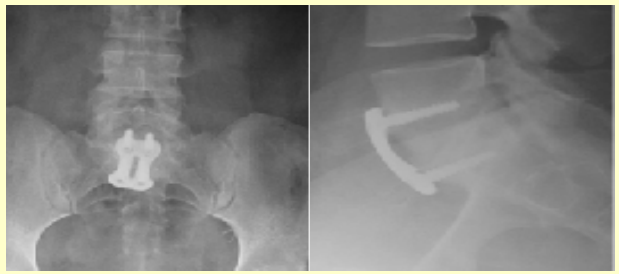
A retrospective chart and radiographic review was conducted on twenty patients who underwent a one or two level anterior lumbar interbody fusion in which a femoral ring allograft, packed with NovaBone, with an anterior tension band plate were used.

Results:

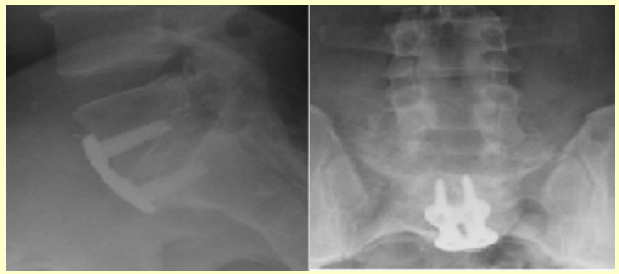
Twenty patients, aged 20 to 65 underwent an anterior lumbar interbody fusion with a one year follow up. Plain radiographs were reviewed at multiple time points with fusion being assessed in twenty (100%) of twenty patients.



4 Months Postoperative



6 Months Postoperative



8 Months Postoperative

Discussion:

Evolution in the field of osteobiologics has enabled surgeons to avoid complications or morbidities associated with bone graft harvesting. In this investigation, NovaBone Putty was shown to be an easy to use, bone graft substitute capable of inducing new bone formation. Twenty (100%) of twenty patients were found to be fused on radiographical studies. The advantage to packing NovaBone in the femoral ring allograft is to minimize the incidence of non-union, while avoiding the possible complications or morbidities associated with bone graft harvesting.

Conclusion:

The use of NovaBone has shown in this study to be be a viable alternative to achieve solid lumbar fusions, avoiding complications or morbidities related to bone graft harvesting such as pain and infection. It also proved to be a low cost alternative to commercially available bone morphogenetic protein.

Follow up long term studies with large patient cohorts will be necessary to ascertain whether NovaBone is superior to autograft or commercially available bone morphogenetic proteins.

References

1. Hench, L.L., Gaisser D.M., "The Genetic Basis for Osteogenesis Stimulation by Controlled Release of Ionic Dissolution Products."
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2. Ilharreborde, B., et al., "Bioactive Glass as a Bone Substitute for Spinal Fusion in Adolescent Ioiopathic Scoliosis –A Comparative Study with Iliac Crest Autograft." J Pediatr Orthop. Volume 28, Number 3, April/May 2008.