

Preface: Bone Graft Materials

Bone grafting is the second most commonly performed procedure next to blood transfusion. Every year, 500,000 bone graft procedures are performed in the United States alone and 2.2 million procedures are performed worldwide. The approximate cost of these procedures is US\$2.5 billion. Autograft is still considered the gold standard for bone grafting. Allografts and xenografts are commonly used. Synthetic materials such as calcium sulfate, calcium phosphate-based materials, and bioglass-based materials are also widely used. During the past decade, a new generation of materials has been brought to market. These materials use growth factors such as bone morphogenetic proteins (BMP)-2 and BMP-7 and platelet-derived growth factors to stimulate or accelerate bone formation in a bone defect. This new generation of products, claimed to be more effective, is very expensive. Hence, autograft and allograft remain the most widely used bone graft materials of choice.

Although the rise in health care costs is increasingly debated in the United States and around the world, an objective evaluation is essential to demonstrate the effectiveness of old as well as new treatments. A treatment should be offered to patients because it is an effective mode of treating the particular disease or indication, not just because it is the newest available treatment. This special issue of the *Journal of Long-Term Effects of Medical Plants* evaluates the treatment options that are commonly used for bone grafting indications.

Allografts and xenografts must be extensively processed before they are used in a patient. In this issue, Katz discusses the effects that processing has on the incorporation of allograft and xenograft in bone. Growth factor-based treatments (namely, BMPs) have become the most commonly used, and most expensive, bone graft. Nair and Burks discuss the long-term effect of BMP-based treatment in humans. Petrochenko and Narayan reviews various treatment approaches intended to make bone grafts more effective.

Although calcium sulfate has been used as a bone graft for 119 years, it has recently gained increased attention because of its unique properties, such as angiogenicity, barrier properties, and so forth. This special issue contains two research articles and one review article on calcium sulfate-based bone grafts. In this issue, Sunkara et al. discuss the use of calcium sulfate for extraction socket preservation in a patient who has a history of smoking in addition to a 10-year history of bisphosphonate use. Thomas et al. discusses the newly designed calcium sulfate-based space-making device for bone regeneration. Andreana and Kutkut review the various properties of calcium sulfate that make it an effective bone graft. Another bone graft, hydroxyapatite, has also been used for coating the surfaces of an implant. Coelho et al. discuss the bone morphology and morphometry around plasma-sprayed hydroxyapatite-coated endosseous implants that were retrieved from the posterior region of the mouth between 2 months and 13 years for prosthetic reasons.

It is the intent of this special issue to evaluate the various aspects of bone graft use in order to increase their understanding and efficacy.

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