

# Next-Generation Synthetic Bone Grafts Are Attracting Allograft and Growth Factor Users

April 13, 2021 | Blog 7



When it comes to selecting a graft material for a bone fusion surgery, surgeons today have no shortage of options. Of the most common **types of bone graft materials**, none are becoming adopted more rapidly than next-generation advanced synthetics. Why? Just like human tissue bone grafts (allograft) and growth factor products, advanced synthetics are **biologically active**, meaning they play an active role in bone healing. However, because they are completely man-made, their properties can be finely tuned and optimized to maximize the bone healing response.

This article describes the advantages of advanced synthetic bone grafts and explains why more surgeons are switching to these newer, innovative materials.

## Advanced Synthetics: Same Benefits, Fewer Limitations

With all types of biologically active bone grafts, the end result is an improvement to the bone formation response. Demineralized bone matrix (DBM) and growth factor products can influence cells through the use of proteins, while Bioglass achieves the same result through ion release. Newer, advanced synthetic bone grafts work through their nano-structured surfaces and bone-like compositions.

In the synthetic bone graft group, the addition of biological activity to the materials has attracted surgeon attention and expanded their surgical use. In particular, many prior allograft and growth factor users are now preferring advanced synthetic bone grafts because they offer many of the same benefits without the limitations typically seen with DBMs and growth factor products. DBM is a human tissue-derived material that can have varying activity from donor to donor, is sensitive to processing, and has a limited shelf-life. In the growth factor category, products containing BMP-2 (bone morphogenetic protein-2) have been associated with significant clinical complications including swelling, bone resorption, and increased cancer risk (James 2016). This is due to the potency of growth factor proteins and their systemic effects on the body.

Advanced synthetic bone grafts can offer the same biological benefit without these limitations. Synthetic grafts are consistent and result in a uniform response every time they are used. Synthetics are stable and do not lose their biological activity over time. Additionally, the biological response to nano-structured surfaces and compositions of synthetics is localized (which is safer) and does not cause any systemic reaction in the patient. Due to the benefits and the increased availability of next-generation synthetics on the market, it is expected that increased surgical utilization of advanced synthetic bone grafts will continue.

## Get on Board with Advanced Synthetic Bone Grafts

While many different graft materials have a place in a surgeon's practice, it is no surprise that the advantages of advanced synthetics are leading more surgeons to favor these products. Advancements in synthetic materials have resulted in next-generation bone graft products that are actively involved in the bone formation process, just like allograft and growth factor products.

Next-generation synthetic bone graft materials offer many of the same biological benefits of allograft and growth factor products while mitigating the risks associated with human tissue products. As a result, surgeons have been increasingly drawn to these benefits, as evidenced by the growing market shift towards advanced synthetic bone graft products. As more advanced products enter the market, it is expected that the increased usage will continue to grow as more surgeons incorporate these advanced materials into their practice.

Next-generation biologically active properties are featured in **Biogenix TrelCor™** technology, an innovative material used in **all Biogenix bone graft products**. TrelCor's unique properties can positively influence cell attachment and differentiation and encourage healing to begin sooner than with other synthetic materials. Biogenix believes that advanced synthetics represent the future of bone graft technology and is committed to delivering products that improve clinical outcomes. To learn more Biogenix next-generation synthetic bone graft solutions, **contact our team** today.

### References:

1. James, Aaron W et al. "A Review of the Clinical Side Effects of Bone Morphogenetic Protein-2." Tissue engineering. Part B, Reviews vol. 22,4 (2016): 284-97. doi:10.1089/ten.TEB.2015.0357