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Bone Grafting

Ridge Preservation Particulate Grafting Materials

Marshall Wade, DDS | Danny Holtzclaw, DDS, MS | Eric Pulver, DDS | David Lee Hill Jr., DDS

INSIDE DENTISTRY (ID): What is your "go to" barrier product when covering ridge preservation particulate grafting materials if primary closure is not possible?

Dr. Marshall Wade: The two things that I tend to use are a cytoplast titanium-reinforced membrane or a resorbable bilayer collagen membrane, such as Bio-Gide® (Geistlich, http://shop.geistlich-na.com). While the company represents them as being able to be exposed, primary closure is always the most desirable. I have had really good success with the cytoplast membrane especially. The downside about that membrane, however, is that it can only be left in for a month, but when you remove it, a pseudo-membrane has been formed underneath it, which continues to act as a barrier over the graft material, so it's been really successful.

Dr. Danny Holtzclaw: Undoubtedly my choice would be human-amnion-chorion barriers (BioXclude™, Snoasis Medical, www.snoasismedical.com). While these have only been used in dentistry for about the last 10 years, similar placental-based products have been used in medical procedures since the early 1900s. Studies have shown these barriers to contain dozens of different growth factors and proteins that provide this barrier with natural immunoprivileged properties, anti-inflammatory and antibacterial properties, pain-reduction properties, and enhanced wound-healing properties. These barriers can be left fully exposed to the oral environment. Some other barriers, such as polytetrafluoroethylene (PTFE), also have the ability to be left intentionally exposed, but they are non-resorbable. Unlike some barriers that must be retrieved at a future appointment, amnion-chorion barriers are fully resorbable. Studies have also shown that when used for ridge preservation, exposed areas that were covered with amnion-chorion barriers healed with keratinized gingival tissue, which is a definite benefit in terms of future implant health.

Dr. Eric Pulver: If I'm removing a free-end posterior tooth or teeth in an area that also requires edge and socket augmentation, I design and release my flap to achieve primary tension-free closure to avoid exposed membranes. If a very small area of the socket remains exposed, I will use gel foam and tissue glue. This acts as an artificial scab/protective barrier for the particulate graft material during the initial healing stage.

For an edentulous area, there are a number of different types of membranes. There's usually collagen type I (from a tendon) cross-linked, and non-cross-linked membranes. Each one is treated with a slightly different chemical process which alters the time it takes for the membrane to break down. I like to leave my particulate bone graft in place for 4 to 5 months before placing an implant, and there are lots of different graft materials that you can use. I prefer allografts. I sometimes will use a xenograft in combination but most of the time, 90% of the time, I would say that I use just alloplastic material.

Dr. David Lee Hill: The "ideal" dental membrane for socket grafting or a bigger osseous

reconstruction allows for preservation of that soft-tissue architecture, so that stealing, borrowing, or manipulating tissue unnecessarily does not happen. Can you get the ideal result by preserving soft-tissue architecture, keratinized tissue width, and the inherent anatomy? Does it require non-surgical removal? The membrane must be able to withstand exposure if there's not going to be primary closure.

The membrane I would recommend is something that is impervious to bacteria and comes in different sizes that are readily available, so that it allows for anything from a single-tooth extraction to a larger ridge augmentation. I prefer the Cytoplast Barrier Membrane (Osteogenics Biomedical, www.osteogenics.com). This membrane is manufactured by high-density PTFE and is specially engineered to withstand exposure. It offers predictability and increases the band of attached tissue so it's good for esthetics as well. It avoids releasing incisions and displacement of other keratinized tissue, which is what would be obtained when trying to obtain primary closure.

ID: How do you ensure these materials integrate properly when it comes to preparation and compatibility with the patient?

Dr. Holtzclaw: In my practice, implants and their related procedures account for 95% of production. Proper site development for the future placement of implants is paramount, not only in terms of a successfully osseointegrated implant, but also in terms of optimal esthetics and functionality.

Dr. Hill: You want the membrane to be recipient to the site. You want it to be conducive to tissue growth and to preserve soft-tissue architecture, and you want it to be "tissue-friendly" to properly integrate. A non-resorbable, high-density, titanium-reinforced PTFE membrane can be trimmed, shaped, and adapted or modified in a way that allows and protects additional space for bone growth, making it ideal for the patient.

ID: Do you find that some products do not do what they claim, or would you try new methods or products for this procedure?

Dr. Pulver: There are a lot of products out there that I haven't used. I'm still waiting for the perfect material that would allow us to leave a larger gap and allow for predictable bone healing. The whole idea with membrane placement is that it inhibits the fast-growing epithelial in-growth into the slow-growing particulate bone graft. If you can create an environment that encourages bone to grow, stimulate bone growth, and avoid the influx of epithelial tissue, it's creating an environment conducive to a better volume and better quality of bone for the implant.

Dr. Wade: Even with products that claim they don't need primary closure, they do desire that you get primary closure whenever possible but in some of those situations, we have really stretched the product's capabilities and it's come through very well. Among a multitude of clinicians, there's always going to be controversial opinions but this has been successful for us for quite some time. When primary closure is essential, most surgeons have the capabilities to move a flap to gain primary closure where and when it's absolutely necessary, but without going through further surgery, these barriers have worked really well for us.