Bone Grafting Explained

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Bone Grafting: What is it and how does it work?

What does your dentist mean when he says a Bone Graft is necessary to place your dental implant?

The success of a dental implant, it's ability to support a dental restoration, is very much dependent upon how much bone is available in the site where the implant is placed. There are lots of things that affect the bone volume including things like periodontal disease, trauma and infections and it is not unusual to open up a site in the mouth for implant placement and find out that some of the critical supporting bone is missing. No problem.... We have great techniques available to us to replace missing bone. We can increase the height of bone and the width of bone. We can fill in anatomical voids in bone thereby creating new bone and we can fill in all sorts of defects that develop when teeth are lost. We can even use grafting techniques to prevent the loss of bone in circumstances where bone would normally be lost like the extraction of a tooth.

Replacing missing bone or adding to existing bone is very often essential to the success of a dental implant and the ensuing restoration. The techniques to do this are well documented and should be used when indicated by any dentist who places dental implants. Most of us will have a good idea when additional bone or bone repair will be necessary before actually starting the placement of a dental implant and the patients should be informed of this possibility. Sometimes, however, we do get fooled and run into areas where unexpected bone grafting is indicated. As long as the dentist is prepared to replace or add to the existing bone and the patient understands the bone grafting procedure, there should not be any problem with these techniques...

Types of Bone Grafting:

There are many ways in which bone grafting can be done. Sometimes it is as simple as collecting bone when preparing an implant site and then reusing the bone for grafting purposes. Whenever we can use the patients own bone for repairs or additions, we will get the best results. In extreme cases, bone can be harvested from areas outside the mouth. The most common area is the hip. Needless to say, when this type of bone graft is done, everyone has to be fully prepared and you would usually find yourself in a hospital setting with a physician actually removing the bone from your hip and your dentist placing it in the appropriate areas of your mouth.

Very often, we can use "bone in a bottle" to do bone grafting for dental implants. This bone is specially prepared from cadavers or other sources and used to get the patients own bone to grow into the repair site. It is very effective and very safe. Sometimes synthetic materials can be used to stimulate bone formation and sometimes we even use factors from your own blood to accelerate and promote bone formation in graft areas.

Very often, bone grafting is done in combination with what dentistry refers to as a "Barrier Membrane Technique". Membranes made out of special materials are placed over bone graft sites to keep out the types of soft tissue cells we do not want and promote the growth and migration of cells which will turn into normal, healthy bone. These membranes are very successful and are used quite a bit these days to promote sound bone formation. The membranes are usually removed at a later date, but sometimes they can be resorbed by the body and disappear all on their own.

In addition, it is not uncommon to use "screws" and "tacks" to secure membranes and bone grafts at an implant site. Sometimes these pieces will also have to be removed at a later date, but rest assured that all of these components and

grafting materials are safe and effective and their use has gone a long way in increasing the success rates of dental implants.

The Sinus Lift:

The human skull has several cavities or air spaces which are called "sinuses". They are part of the overall design of human beings to make the head lighter so that it can be supported on our neck. Sometimes the sinus are enlarged and intrude on areas where we want to place dental implants. We cannot place a dental implant into the sinus because we would just be placing it into an air cavity and nothing would hold it into place (although, very often, implants that are placed securely into solid bone will protrude a small way into the sinus) so when we encounter this problem, we place bone or bone growth stimulating material into the sinus.

This procedure really only affects the maxillary sinuses which are located just over the molar teeth in the upper jaw. There are no sinuses in the lower jaw. When the maxillary sinus prevents the placement of an implant, we merely open up the side of the sinus and raise the bottom portion of the sinus so it will fill in with bone. We can then go back several months later and place our dental implants in solid bone. Sometimes, there is enough bone to place the implants at the same time that you raise the floor of the sinus. This will save time.

There are some more conservative ways to grow bone in the sinus. We can do what is called an "Osteotome Lift" and just raise the floor of the sinus right over where we are placing an implant. This can be done without actually opening the sinus and healing and implant integration will then proceed as if the sinus was not in the way. Sinus lifts of all types have a high success rate and are commonly used today for promoting dental implant procedures.

Costs of Bone Grafting Technique:

There are two potential downsides to bone grafting in conjunction with dental implants. The first is that the process of bone grafting and the ensuing healing period may add significant time to the procedure. The second problem is the increased cost of these procedures. Most of you who come to this site already know that I am very much in favor of keeping the cost of dental implant work as low as possible. However, some people let the costs get way out of hand when things like grafting get involved because they tend to mystify these procedures and make them appear to be very costly.

A bottle of Freeze Dried bone cost about $95.00. Membranes cost between $35.00 and $150.00. Other instrumentation can cost several hundred dollars. I use a sliding scale for grafting charges from $250.00 to $750.00 depending upon how much bone and other materials I actually use and how difficult the particular job is. My fee for a sinus lift is $1250.00. I have seen charges in other offices ranging from $2500.00 to $25,000.00 depending upon the type of grafts. I think that some people have used "scare tactics" to inflate their fees for grafting procedures and the best defense that the patients have is to be informed about the process.

There is a new wrinkle that has come on the market. The use of a platelet sediment retrieved from the patients own blood can be very useful in promoting bone graft development. Be aware that the equipment for this can cost several thousands of dollars and that some dentists will tend to overuse the technique to pay for their investment. I have already seen platelets used in one gentleman who had more bone than he could possibly ever need... The fee for the platelet treatment was an additional $2500.00!