

## Problem Solvers 37 Block Grafts

Synonyms: Block graft, chin-block grafts, ramus grafts, auto graft, autogenous graft.

The statistics are staggering that while the population growth is declining, the number of older Americans is increasing as baby boomers continue to age. The need for bone in order to have dental implants is exacerbated by the number of people that wear dentures beyond their normal use; which results in ill-fitting false teeth that can accelerate bone loss.

The use of dental implants can restore people to normal function after years of functioning with false teeth. People that wear partials have expressed dissatisfaction as the partials are not comfortable, food gets under the flanges of the partials and they get sores under dentures and partials. People that have natural teeth can generate 250-300 lbs/square inch of chewing forces which is the force required to bite a raw carrot. When people have been wearing their dentures for 5 years that number drops to 25-lbs/square inch or the force of chewing an overcooked carrot.

If people place implants earlier in their edentulism—when their teeth get removed—the ability to place implants is greatly improved. When people wait an excessively long time the bone resorbs and must be regenerated to have dental implants. This process, known as “growing the bone,” is performed by using grafts of bone to add to the width and height of the deficient jaws.

What are the types of block grafts?

- Chin-block or symphysis grafts
- Ramus blocks from the back of the lower jaw by the wisdom tooth area.
- Calveria-the bone in the skull can be used for blocks
- Tibia-The lower leg can be a source of bone.
- Hip graft-the hip has a piece of bone removed in the operating room.
- Cadaveric sterilized block grafts-This is donated bone from a bone bank.

Types of Bone grafts:

- Autogenous Grafts: This is bone that is harvested from inside the patient's mouth or body. It can be harvested from the upper and lower jaw, iliac crest, calvarium (skull), tibia and ribs. Autogenous grafts are considered the "gold standard" for grafting however, they involve an additional surgery to expose the surgical site.
- Allografts: Bone products that are made from humans (donated bone) and provided in the form of demineralized freeze- dried bone or mineralized bone, irradiated bone, freeze dried bone matrix.

- Xenografts: Are Derived from non-human species include bovine, porcine and are readily available. Chemicals or additives are used for stimulating or accelerating tissue regeneration and are often combined with these products.
- Alloplasts: Artificial synthetic bone material that can be made of glass or ceramics.

I need bone added before I can have an implant. How long does it have to heal before the implants can be placed?

The surgeon will tell you how long they have to wait based upon what they saw at the surgery but generally they can re-enter the graft at 4 months but they may opt to wait for 6-8 months to give the graft longer to integrate with your bone.

Are block grafts the only way to grow bone?

No sometimes a surgeon will use screws and bone chips to rebuild the bone. This is called a tent graft. In this procedure the dentist will usually want to add some bone from another part of your mouth but they will harvest smaller pieces instead of a full block.

Another way to grow bone is to use a titanium mesh and place a bone morphogenic protein under the mesh. This is a growth factor that can help grow bone but it is very expensive and not used routinely for this reason. It is a very interesting topic for study as BMP's are currently used in other branches of medicine to help grow bone. The safety and efficacy of bone morphogenic proteins is being studied and may lead to breakthroughs that will help limit the need for block grafts in the future.

Do block grafts always work?

Unfortunately nothing in medicine comes with a guarantee. Block grafts can fail to integrate. There is potential for the graft to come loose and allow a fibrous tissue to grow between the graft and the host bone resulting in failure of the graft and a need to redo it in the future.

How much bone can you add with a block graft?

According to an article in Implant Dentistry based upon a study of 56 consecutive patients, the average height that can be achieved is 5.6mm and the average width achieved is 3.8mm. The success rates were 87.5% successful. Smoking and diabetes

are the two conditions that are associated with a higher rate of complications and graft failure. The most difficult aspect of grafting to achieve is the height of the graft.

My doctor told me I need a skin graft before I can have a block graft, why?

If the bone doesn't have a blood supply, the bone won't have nutrients to support the re-growth of new bone where the block has been placed. The gum tissues have to bring the blood supply to the bone. Addition of skin (soft tissue graft) can help to bring blood supply, as well as giving suitable surface area of the skin to fully cover the graft without tension. If the graft gets exposed or the skin covering the graft sluffs due to not having enough skin, the graft may become exposed and may be lost. If the skin covering the graft is too tight, it may dehisce or separate which could expose the bone and lead to contamination and failure as well. So having a skin or soft tissue graft prior to a block is a very good insurance policy to help the graft become more predictable!

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