Dental: Guided Tissue Regeneration Membrane

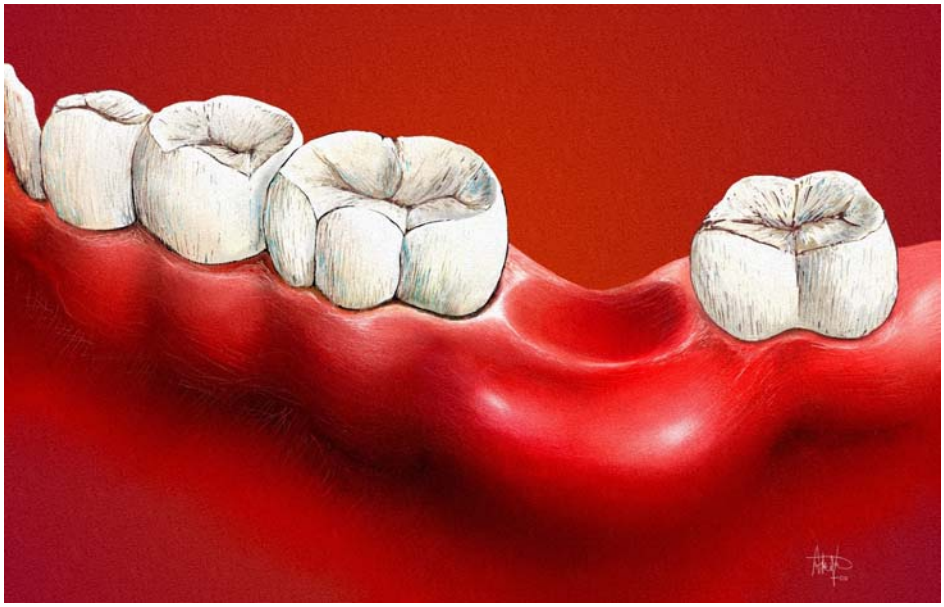
Surgical procedures can be an intimidating for many patients and this is why we hope to offer our patients a good insight into the type of injury, some possible solutions and how Inion® implants and technologies can help.

It is always extremely important for you to find out as many details as possible about your problem, the available methods of treatment for that condition, and any particular surgical method your dentist may recommend for you.

The gum versus bone race:

Soft tissue, such as gum tissue, grows very fast while bone grows more slowly. When a hole is created in the bone, for example when a tooth is removed or because of an infection, soft tissue grows into the space very quickly and prevents bone from forming there. When bone is needed to support a tooth or dental implants, uncontrolled gum tissue growth can be a problem.

A Membrane can be used to cover the hole and act as a barrier to block out the gum tissue from growing into the area. This allows the more slowly growing bone to fill the hole without any competition.



Guided Tissue Regeneration (GTR) for treatment of Periodontal disease

Periodontal Disease, or Gum disease, is an infection of the gums caused by bacteria. If left untreated, pockets of infection form between the gums and the roots of the teeth. Eventually, the tissue connecting the teeth and the gums begins to break down, causing the teeth to loosen.

Treatment usually involves thorough cleaning and, in more advanced cases, surgery may be required. This can include cutting and peeling back the gums to allow the bacteria and plaque to be scraped off the root surfaces.

Stages of Periodontal Disease

Healthy Tooth and Gums

Healthy gums are firm and pink, and do not bleed when brushing.

Beginning Gum Disease

Gums are red and swollen and bleed easily; first signs of deposits on tooth roots.

Advanced Gum Disease

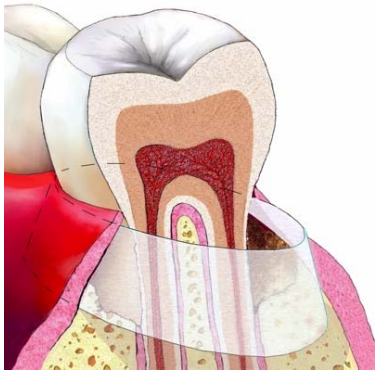
Gums are very red and painful, bleed easily. Heavy deposits on tooth roots.

Treatment usually involves thorough cleaning and, in more advanced cases, surgery may be required. This can include cutting and peeling back the gums to allow the bacteria and plaque to be scraped off the root surfaces.

Membranes can then be used to regenerate lost periodontal tissue and supporting bone. With guided tissue regeneration, the faster growing connective tissue and epithelial cells are prevented from migrating into the wound, and space is maintained between the membrane and bone, allowing time for periodontal ligament and bone to repopulate and mature in the defect area. A membrane can be used alone or with a bone graft or bone substitute.

Prior to GTR therapy, you can see that the periodontal pocket has a build up of plaque and calculus.

The Inion GTR membrane acts as a barrier between the gum and the defect(space). This enables a slower growing periodontal ligament and formation of bone cells to repair the area.



Complete healing of the area occurs when the periodontal ligament and bone cells have regenerated(grown back) and the Inion GTR membrane has completely degraded(absorbed).

Guided Bone Regeneration (GBR)

Guided Bone Regeneration (GBR) refers to procedures that attempt to regenerate bone, often prior to the placement of dental implants. This is accomplished using membranes to keep out soft tissue and allow the bone to grow in bony defects and extraction sockets.

Whenever a tooth is lost or extracted a lot of the bone that once surrounded the tooth root can disappear. This bone loss is described as 'bone resorption' . For some people, bone loss after the removal or loss of teeth leaves them without enough to secure an implant.

Guided bone regeneration can be used to create additional bone in deficient areas before placing dental implants or to repair defects around previously placed dental implants. The surgical hole can be filled with several different types of materials before covering the area with a protective membrane barrier, i.e.:

Autograft - Bone can be harvested from the patient's own body by scraping the jaw bone, removing cores or blocks of bone from different places, or even getting bone from the patient's hip.

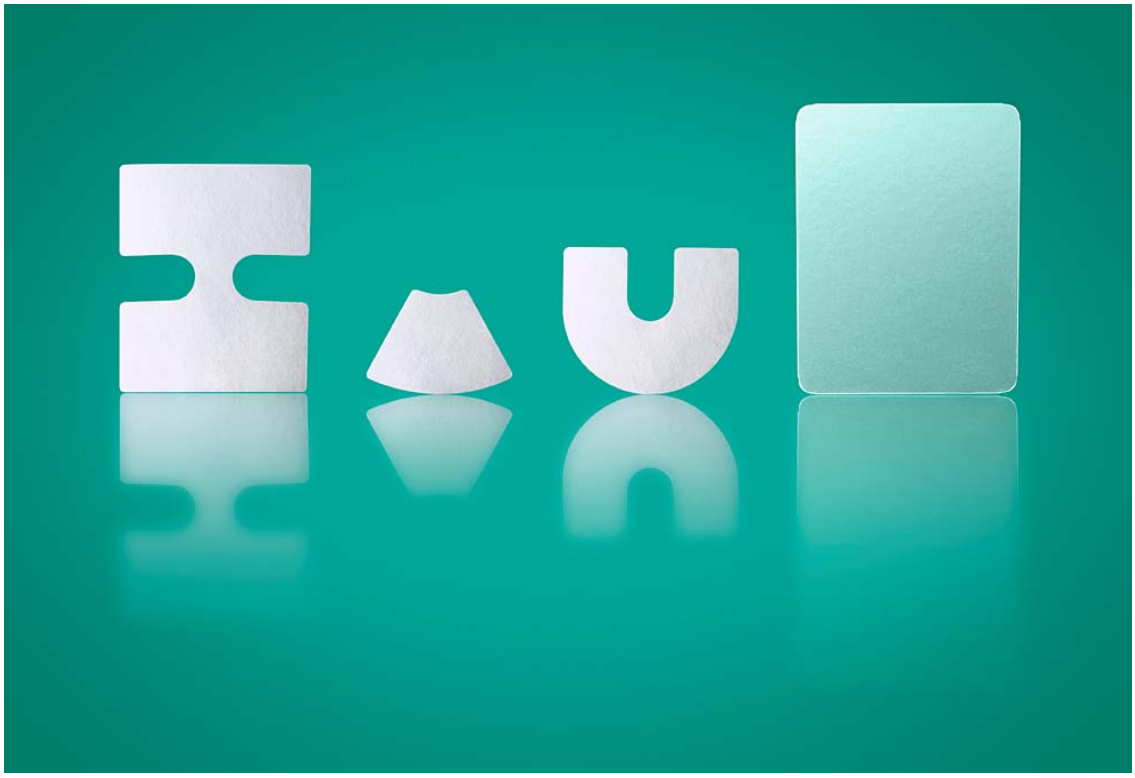
Allograft bone - bone from a deceased donor.

Other materials - such as treated bone from animals, synthetic bone, coral and biocompatible polymers can also be used.

Surgical Technique -What to expect?

The theory of GTR proposes that placing a barrier between the overlying gingival (gum)tissues and the gap will stop the faster-moving epithelium and gingival connective tissue from migrating into the wound space, allowing time for the periodontal ligament, and bone to repopulate the area.

This membrane will usually be placed during periodontal or bone graft surgery as part of the overall treatment, Your dentist, surgeon or periodontist will explain what to exepct.



Biomaterial Advantage

Inion's biodegradable materials are safe and synthetic, without any of the potential risks associated with materials from human or animal origin.

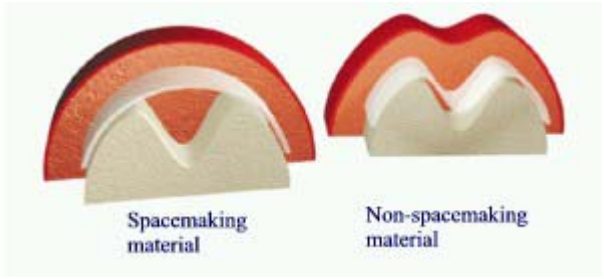
The need for membrane removal surgery is eliminated by using Inion GTR™ membranes. The polymers used in the Inion membranes and tacks biodegrade in the body and are then metabolized(processed) by the body into carbon dioxide and water.

Membrane	
TMC	Trimethylene Carbonate
LPLA	L-lactide
PGA	Polyglycolide
Tack	
TMC	Trimethylene Carbonate
DLPLA	D, L-lactide

The biocompatibility of the materials has been well documented and the same polymers have been clinically used for more than 30 years in biodegradable sutures and orthopaedic fixation devices.

What is the difference between Inion GTR™ membrane and other biodegradable membranes?

The key difference is that the membrane becomes stiff when implanted. This allows the space under the membrane to be maintained so that more bone volume can be generated.



What is the degradation time of the Inion GTR™ membrane?

The Inion GTR™ membranes are tailored to fully biodegrade within one to two years. The barrier function of the membrane to exclude gingival cells from the defect site is maintained for 8-12 weeks, thereafter the membrane starts to break down and biodegrade

What happens to the membrane? What does it degrade into?

The Inion GTR™ membrane degrades by hydrolysis and over time is metabolised through natural processes in the body into carbon dioxide and water, which are then exhaled and excreted.

Can the Inion membrane be used to prepare dental implant sites?

The Inion GTR™ Membrane System is also indicated for bone augmentation around dental implants. Due to its outstanding space maintenance properties excellent bone volume gain may be achieved.

How fast can I expect bone to regenerate underneath the membrane?

You can expect bone to grow at least as fast as with other membranes. However, ultimate results depend on a variety of factors which need to be assessed prior to surgery. Early animal study results indicate an acceleration of bone growth due to specific formulation of the membrane. Further research hereto is ongoing.