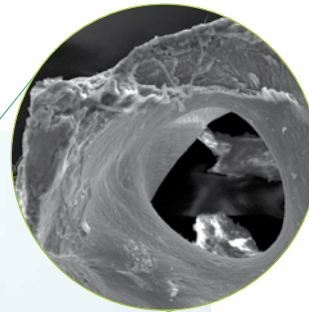


Patient information

bone & tissue
regeneration

botiss
biomaterials

Bone augmentation with maxgraft[®]



X100

established

safe

natural

Implantation –

stability is crucial for success

The most important prerequisite for long-term success of an implant is sufficient bone volume. If the jaw bone does not allow a stable implant insertion due to a reduction of the alveolar ridge, a bone augmentation has to be performed. You can compare this situation with the insertion of a dowel into a very thin wall; the wall will not provide sufficient support.

Atrophy of the jaw –

bone loss after tooth extraction

Frequently, after previous tooth loss or prolonged wearing of prosthesis a degeneration of the jaw bone (jaw ridge atrophy) can be observed.

Bone is a dynamic tissue that becomes stronger in areas subject to high mechanical stress, and is degraded where load is missing. In the healthy jaw the natural teeth transfer a stimulus to the bone, providing a signal for its maintenance. Following tooth loss this stimulus is missing and the bone is gradually reduced. In these cases an augmentation of the jaw bone prior to implantation is required.

Besides the many functional and aesthetic advantages of an implant-borne restoration, implants transfer the pressure caused by chewing to the jaw bone, therefore contributing to its preservation.

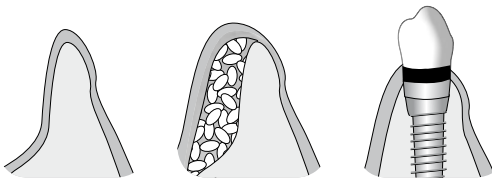
Bone augmentation – regeneration of lost bone volume

Today, more than half of all implant placements require a bone augmentation to allow an optimal insertion of the implant.

If there is sufficient width and height of the residual jaw bone an implant can be inserted immediately after augmentation of the surrounding bone (one-stage procedure). If there is not sufficient bone volume for implant insertion with primary stability, the bone has to be augmented beforehand. The implant can then be inserted after a certain healing period (two-stage procedure).

For augmentative procedures the implantologist can harvest bone chips or bone blocks from different areas of the oral cavity (autogenous bone harvested from e.g. toothless areas, mandibular angle, and chin) for placement at the augmentation site. Indeed, the patient's own bone is an optimal material due to its excellent biological properties, but there are also disadvantages limiting its use.

The availability of autogenous bone is limited, and harvesting requires generation of a second surgical site, which is associated with increased pain as well as a higher risk of infection and complications. Therefore, various bone substitute materials have been developed for the regeneration of lost bone.



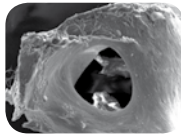
Allografts –

Human bone transplants as an alternative
for the use of autogenous bone



Bone substitute materials resemble human bone in their structure and composition.

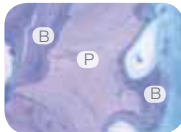
Due to its porous structure, blood vessels can easily grow into the material.



Cells use the material as a scaffold, which enables their migration and lay down of new bone matrix.



The bone substitute material (grey) is gradually integrated into the newly formed bone (blue).




Mostly they are applied as particles to the jaw bone or the defect, but there are also blocks available that can be fixed to the jaw. Bone substitute materials serve as scaffolds for blood vessels and bone forming cells.

Specialized cells migrate along the grafting material and start with the formation of new bone matrix, which hardens later on. Thereby, the material will be progressively integrated into the newly formed bone and remodeled into own bone. Bone substitute materials can originate from animal bone (mostly from domestic cattle) or human donor bone, or they are synthetically produced.




maxgraft® allografts origin and properties



Because of their origin, the structure and composition of allografts resembles the human bone most closely. As a bone regeneration material, allografts provide the necessary scaffold for nutritive blood vessels and bone forming cells, which are crucial for regeneration and the formation of new bone. Special cells wander along the allograft and start with the formation of new bone matrix, which subsequently mineralize.

Specialized cells migrate along the allograft and start with the formation of new bone matrix, which materializes later on. Thereby, the material will be progressively integrated into the newly formed bone and remodeled into own bone over time by 100%.



When undergoing hip joint replacement surgery many patients decide to donate their explanted femoral head. This tissue donation allows the manufacturing of maxgraft®.

The donor selection and the tissue procurement are strictly regulated by the European Union (Directive 2004/23/EU). A proper status of health and a comprehensive testing of transmittable diseases are precondition to be accepted as a tissue donor. As soon as the tissue is released for manufacturing it undergoes an extensive cleaning process to remove blood and cell residues and eliminate potential pathogens.

Because of its natural structure, maxgraft® allows rapid healing and a complete remodeling to new bone. The particular composition allows for a vast variety of treatment options. Beside of particulate material, different shapes of block grafts are provided, which can be applied in cases of extensive bone loss and complex reconstructions. Until today, block grafting is only possible by using autogenous bone or allografts.

Cells⁺Tissuebank Austria

C⁺TBA

The C⁺TBA in Krems is a non-profit tissue bank and focuses on the overall aim to create a European platform for the standardized procurement, processing and supply of human tissue as an allograft for orthopedic and dental surgery.

maxgraft[®] is manufactured under pharmaceutical standards in the highest clean room condition (analogue to sterile pharmaceuticals). The compliance with highest quality and safety standards guarantees a safe and reliable regeneration material with the biological potential for complete regeneration after bone loss.



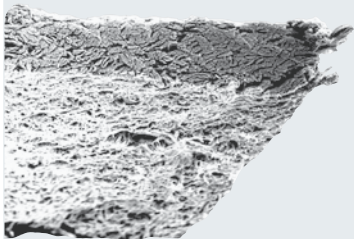
Membranes –

Protection of the augmentation site

Barrier membranes are placed over a bone substitute material to provide an optimal and undisturbed healing of a defect. The membrane both prevents migration of the bone graft particles into the oral cavity, as well as ingrowth of soft tissue from the overlying gum into the defect/augmentation site.

This is important, because bone forming cells are in competition with soft tissue cells, but proliferate much slower than the latter ones. By covering the augmentation site with a membrane, we provide bone forming cells with a competitive advantage, meaning place and time to build up the ridge/bony defect with new bone.

Membranes composed of collagen have been used as medical devices for many years. Collagens are a group of fibre-forming proteins that are widely distributed within the body and represent the main component of connective and supporting tissue. Animal collagen closely resembles human collagen and therefore, after its purification, shows a very good compatibility and healing. Collagen membranes heal without any inflammatory signs and are completely degraded by the body's natural processes.



Jason® membrane and collprotect® membrane –

natural membranes made of porcine collagen

botiss collagen membranes originate from different tissues of pigs. Porcine collagen has a particularly close analogy to human collagen ensuring a very high compatibility.

The collagen is extracted from German pigs destined for food industry. The multi-step purification process guarantees the security and compatibility of the material, while preserving the advantageous natural properties of the tissue. Throughout the production process the material is subject to strict quality checks. The membranes meet all international security standards.

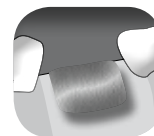
While Jason® membrane originates from the pericardium of pigs, collprotect® membrane is made of processed porcine dermis. Both membranes will be completely replaced by patients own soft tissue, but differ in their degradation times.



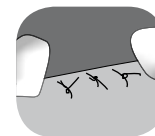
Bony defect following tooth loss



Filling of defect with bone substitute material



Covering of the defect with membrane



Wound closure by suturing

Jason® fleece and collacone® – Support of wound healing

Jason® fleece and collacone® are sponges made of porcine collagen. They can be used for wound coverage or to stop bleeding after tooth extraction, and support wound healing in a natural way.

Collagen sponges offer the advantage of a fast, complete degradation without secondary intervention for their removal.



soft tissue

education

hard tissue

Your attending dentist will advise you on the properties and advantages of the presented products.

This patient information was presented by:



Innovation.

Regeneration.

Aesthetics.

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