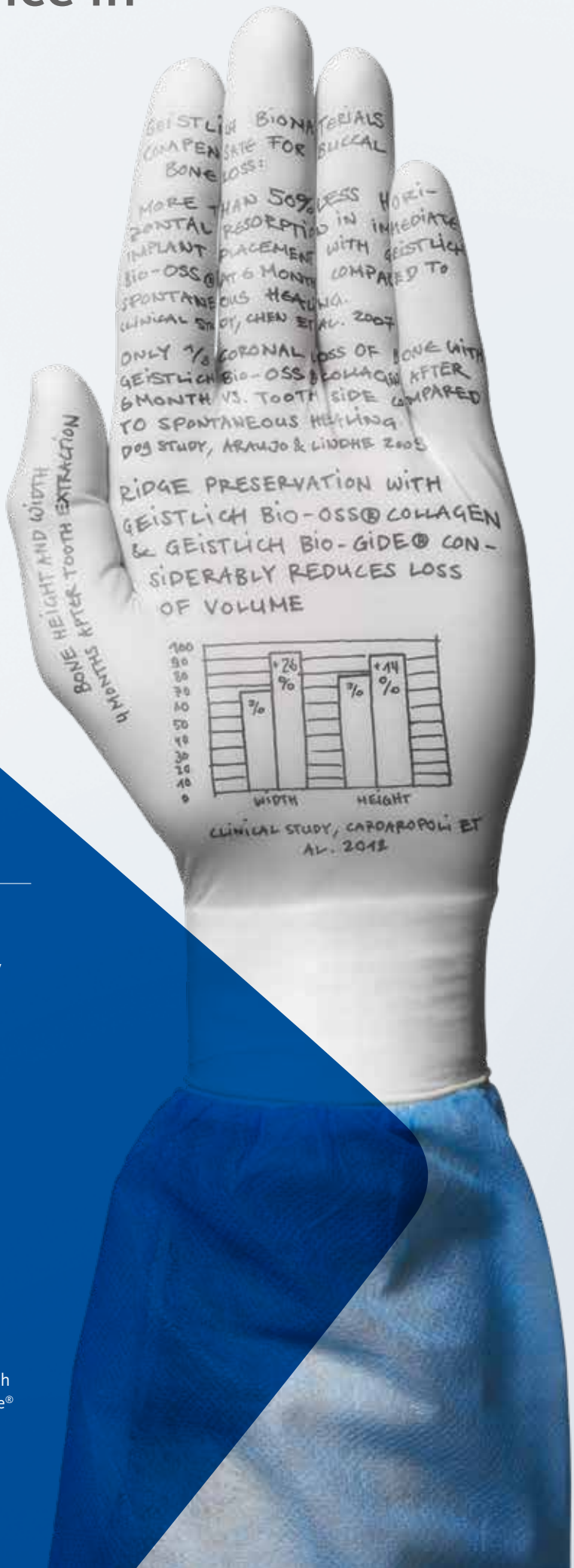
LEADING REGENERATION

Geistlich
Biomaterials

Solutions after tooth extraction

All our science in your hands



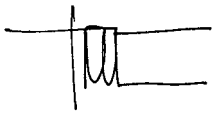
CONTENT

Geistlich expertise for easy and predictable regenerative dentistry

With Geistlich Bio-Oss® and Geistlich Bio-Gide®, Geistlich Biomaterials has revolutionized regenerative dentistry for over 30 years. Bone augmentation following tooth extraction has become an integral part of daily routine in dental practice.

The dentist and implantologist is vital in ensuring that patients are offered the benefits of Ridge Preservation. Dentists and patients alike can benefit from the early use of regenerative measures. The approach is easy, minimally invasive and painless for the patient. Late implantation or bridge restoration is possible at any chosen time.

In this brochure, we provide you the scientific background of the method, take you step by step through its application in practice and answer frequently asked questions.



Paul Note
CEO GEISTLICH PHARMA

"Dentists and patients benefit alike from the early use of regenerative measures"

The alveolar ridge loses volume in conventional therapy

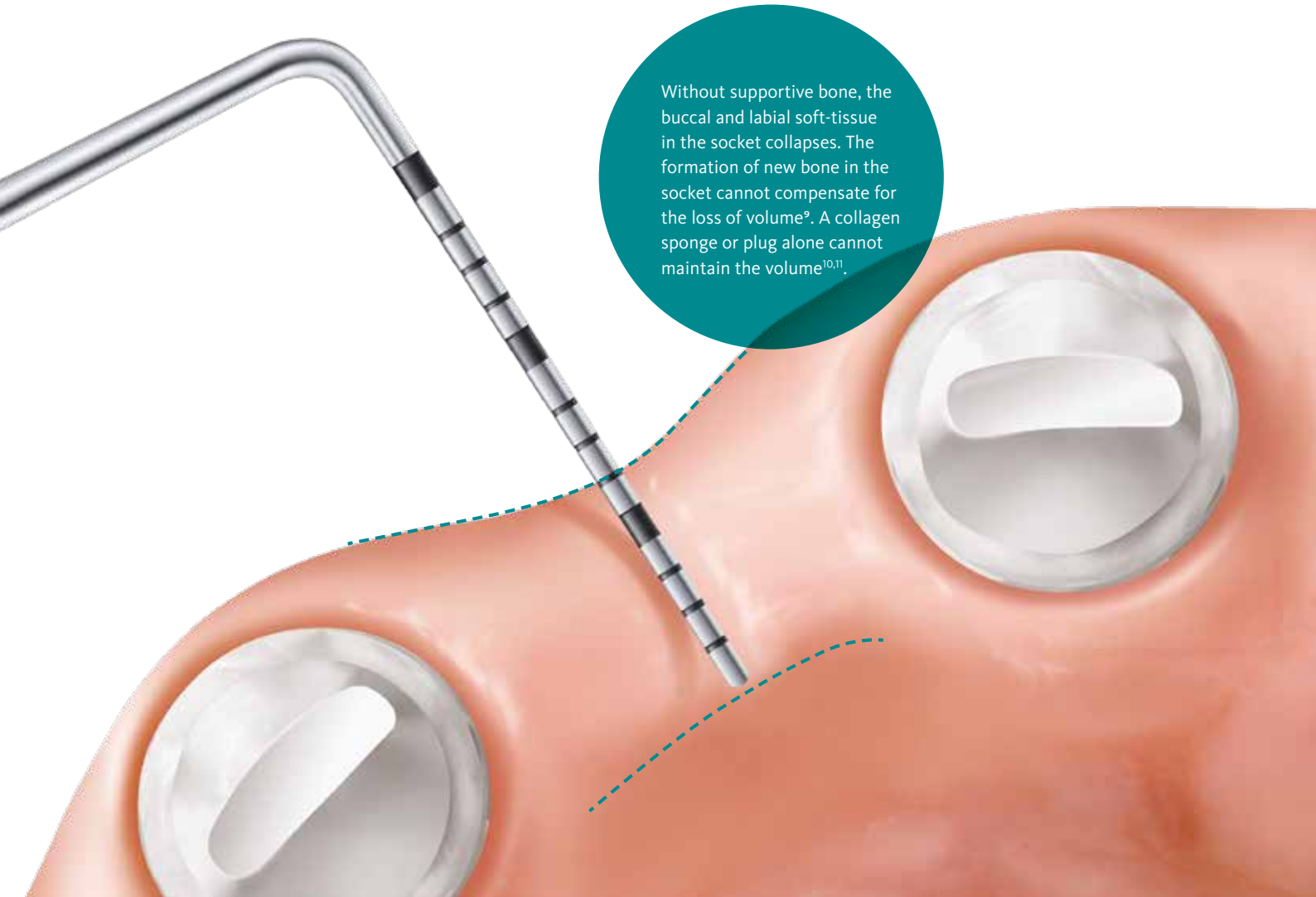
Without ridge preservation

"The thinner the buccal bone wall, the greater the impact following tooth extraction[7]."

Without Ridge Preservation: Around 50% of the volume is lost over 6 months (horizontal 29–63%, vertical 11–22%)[8].

Alveolar ridge loss following tooth extraction...

6 months after the removal of a tooth an average of 50% of the surrounding bone and soft-tissue is lost[1–3]. The volume loss is often particularly severe if the bone wall is very thin, as it is in the anterior region (wall thickness < 1 mm)[4,5]. The bone wall, which almost exclusively consists of bundle bone, is completely resorbed[6].



Geistlich biomaterials offer a predictable solution to preserve volume

...a physiological process that can be minimized.

The period immediately following tooth extraction is when volume loss can best be prevented. The socket can be filled with Geistlich Bio-Oss® Collagen and sealed with Geistlich Bio-Gide® or, in the case of intact sockets, with Geistlich Mucograft® Seal.

With ridge preservation

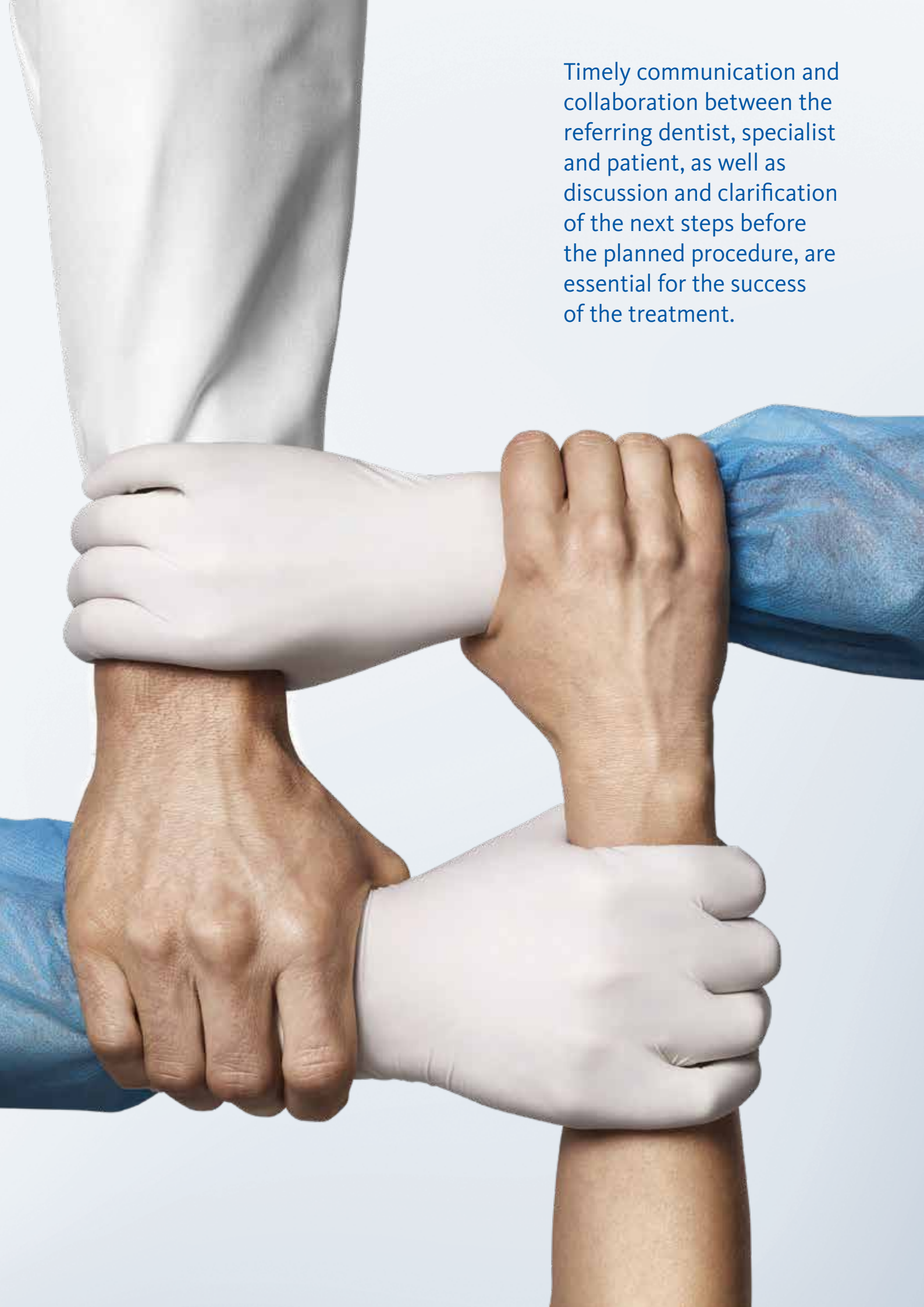
"Ridge Preservation with Geistlich Bio-Oss® Collagen and Geistlich Bio-Gide® maintain 93 % of the bone volume[12,13]."

With Ridge Preservation: An even ridge contour and easier insertion of implants in the alveolar ridge[14] or a sufficient basis for a pontic rest with a bridge restoration[15].

If Ridge Preservation (e.g. with Geistlich Bio-Oss® and Geistlich Bio-Gide®) is performed after tooth extraction, in more than 90% of cases no further bone augmentation is necessary[1].

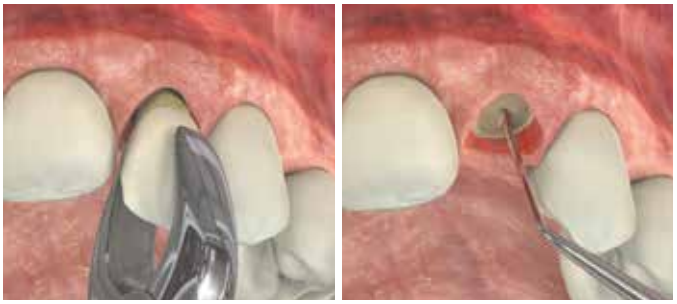
Scan and find out more on the topic.

Timely communication and collaboration between the referring dentist, specialist and patient, as well as discussion and clarification of the next steps before the planned procedure, are essential for the success of the treatment.



Rely on our products for peace of mind

1. TOOTH EXTRACTION AND CURETTAGE

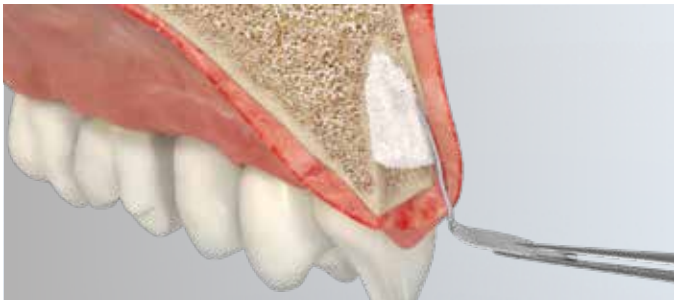


- The tooth should be removed atraumatically in order to preserve the existing bone structures.
- Precise cleaning of the sockets is essential.
- Deepithelialisation of the wound margins allows granulation of the soft-tissue margin.

On tooth extraction, the formation of a flap can lead to additional resorption[14].

Immediate performance of curettage prevents later complications.

2. INTRODUCING GEISTLICH BIO-GIDE®



- In case of a defective buccal bone wall, Geistlich Bio-Gide® can be dry cut and placed IN the socket with the rough side towards the defect.
- The Geistlich Bio-Gide® membrane can alternatively be inserted between the periosteum and the soft-tissue.

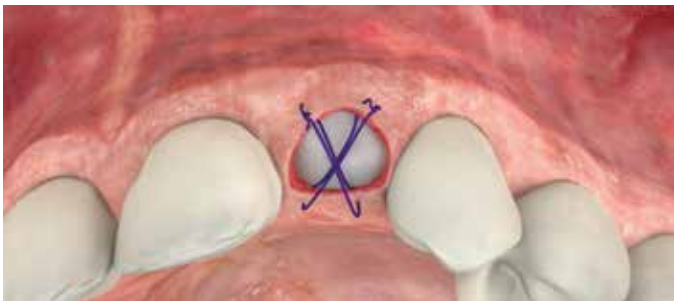
In 85% of cases the buccal bone wall is not intact[16].

3. INSERTING GEISTLICH BIO-OSS® COLLAGEN

- Geistlich Bio-Oss® Collagen can be applied both dry, as well as moistened with saline solution or patients blood.
- It can be cut to size and carefully inserted into the socket with forceps.

Geistlich Bio-Oss® Collagen should not be too highly compressed.

4. RELIABLE CLOSURE



- Geistlich Bio-Gide® is folded over the filled socket.
- The surrounding soft-tissue is sutured over the membrane with single sutures.
- The membrane itself does not need to be sutured and can be left for open-healing.[35,36]

In case of intact* sockets, Geistlich Mucograft® Seal can be used for socket sealing. Geistlich recommends practising the procedure in a course beforehand.

* The definition of an intact extraction sockets varies among experts and includes buccal bone defects of 0 to 50%.

Ridge Preservation in bridge restoration

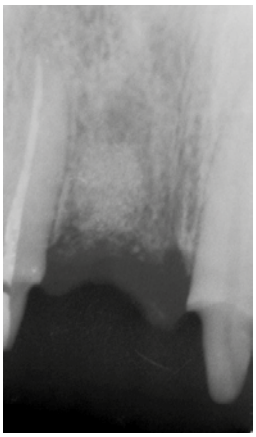
Dr. Manuel Neves | Porto, Portugal

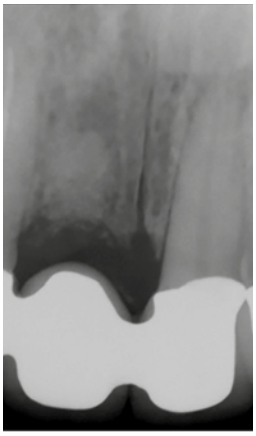
Good reasons for Ridge Preservation in bridge restoration

- Over 90% of the original alveolar ridge volumen remains[12,13]
- An aesthetically pleasing soft-tissue contour in the anterior region is associated with a high degree of patient satisfaction[15]
- No gap under the pontic means: improved conditions for good oral hygiene
- Natural phonetics are preserved

"As a result of Ridge Preservation, the volume under the pontic can be well maintained. Should the bridge be subsequently replaced by an implant restoration, there is already sufficient bone volume and additional augmentation can usually be avoided"

Dr. Manuel Neves
Porto, Portugal





1 Clinical and radiological starting situation: Tooth 11 is to be extracted.

2 Minimal-invasive extraction and precise curettage. Exploration with the periodontal probe shows that the buccal bone wall is partially defective.

3 Geistlich Bio-Gide® collagen membrane is inserted dry into the socket The membrane is placed buccal on the inner socket wall and slightly protrudes the crestal bone.

4 The socket is filled with Geistlich Bio-Oss® Collagen. It may be advantageous to cut up the Geistlich Bio-Oss® Collagen and to insert it piece-by-piece into the socket.

5 The Geistlich Bio-Gide® collagen membrane is folded over the filled socket, and heals uncovered.

6 Temporary restoration.

7 4 months postoperative, the radiological and clinical examination shows well healed tissue.

8 Preparation for taking the final impression.

9 Impression for producing the permanent bridge.

10 Aesthetically attractive result after 1 year. As a result of the Ridge Preservation measures, the volume under the pontic can be well maintained.

Ridge Preservation in late implantation

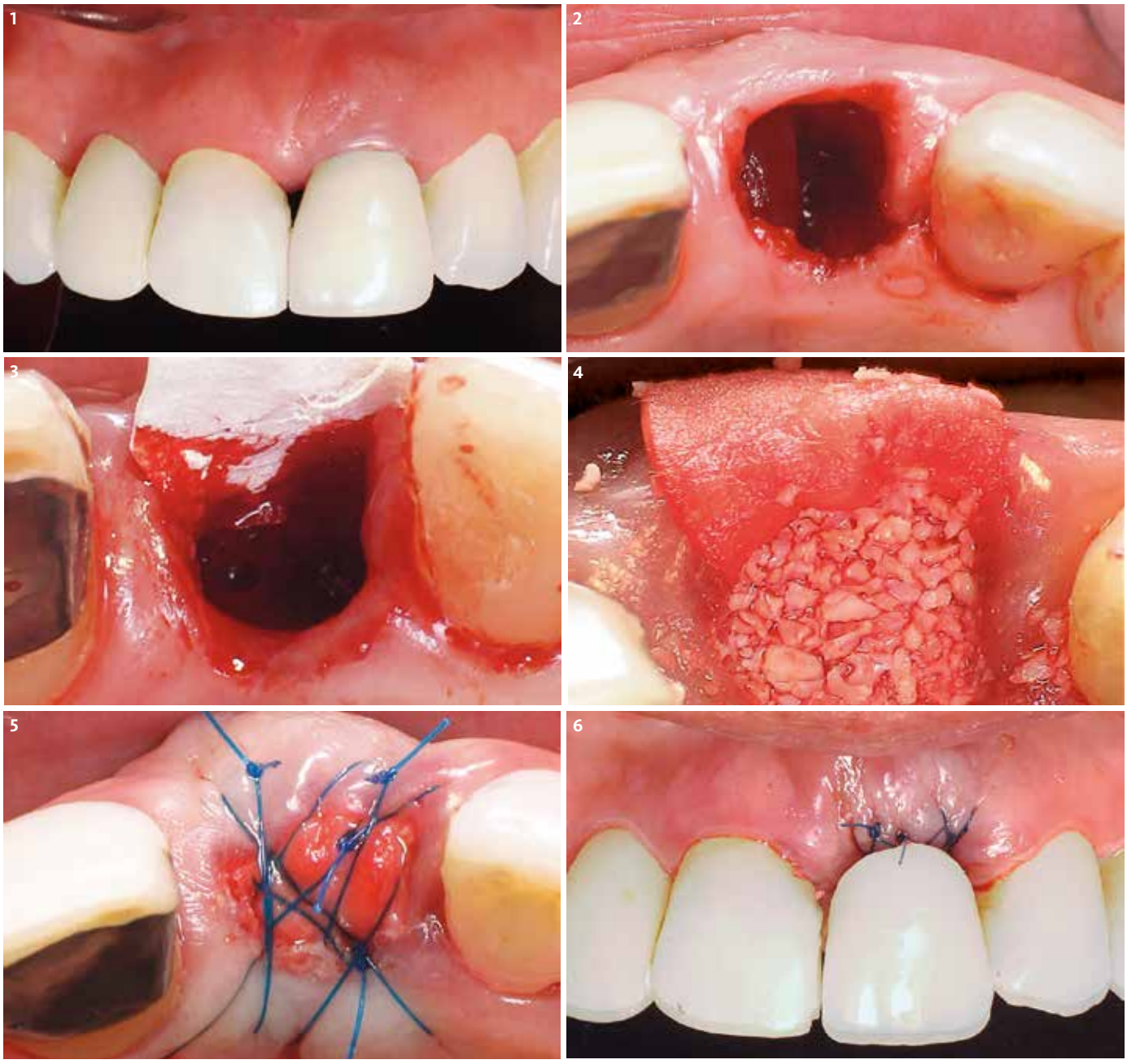
Dr. Fernán Lopez, Medellin, Columbia

The benefits of Ridge Preservation prior to implant restoration

› Ridge Preservation allows the ridge volume to be safely maintained through to the time of implantation[2]

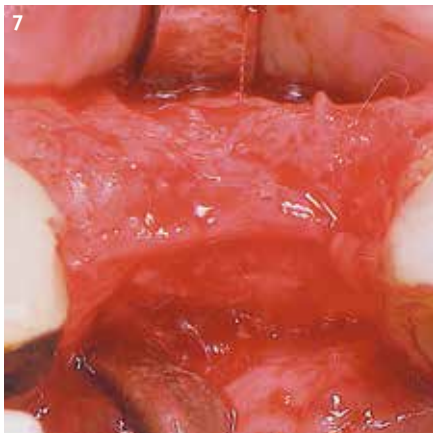
› When following late implant placement protocols, simultaneous augmentation is only required in rare cases[1]

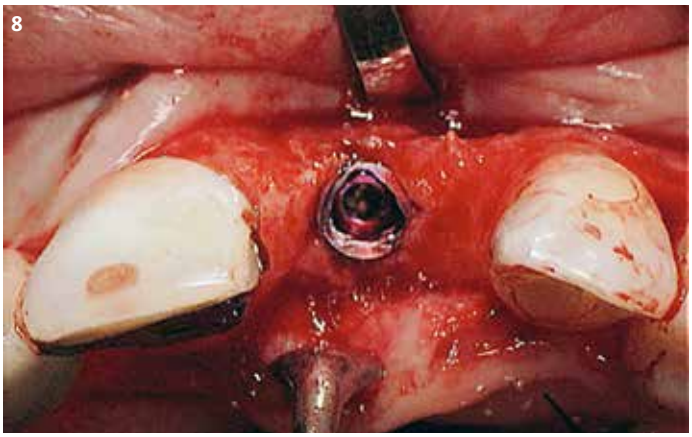
› However, should augmentation be required, the procedure is easier and less stressful for the patient[1]

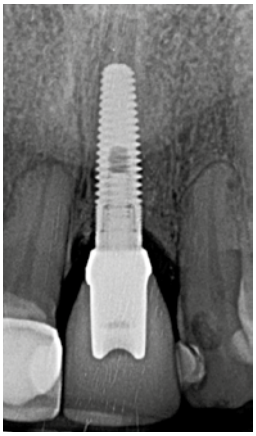


“Thanks to Ridge Preservation, the implant could be inserted into stable bone. For the patient, Ridge Preservation means less pain, lower costs and a reduced risk of complications.”

Dr. Fernán Lopez
Medellin, Columbia







1 Starting situation: Tooth 21, cannot be preserved and must be extracted atraumatically.

2 Exploration with the periodontal probe shows that the buccal bone wall is defective.

3 Geistlich Bio-Gide® collagen membrane is cut to size and is placed dry on the inside of the buccal bone wall.

4 The socket is filled with Geistlich Bio-Oss® Collagen. It may be advantageous to cut up the Geistlich Bio-Oss® Collagen and to introduce it piece-by-piece into the socket.

5 he socket is closed tension-free with the membrane by cross-suturing. The Geistlich-Bio-Gide® itself is not sutured and heals uncovered.

6 The temporary restoration should not apply any pressure on the augmented socket.

7 6 months after extraction and Ridge Preservation the soft-tissue shows excellent healing. The bone volume has been well preserved.

8 The implant is inserted after flap formation. The alveolar ridge has maintained sufficient width to ensure optimal implant placement without further augmentation.

9 4 months after inserting the implant, the abutment connection is performed and a gingiva former is placed.

10 The final restoration after 12 months presents a highly satisfactory functional and aesthetic outcome.

Questions and answers on the *procedure*

How important is curettage of the extraction sockets prior to Ridge Preservation?

Very important. To avoid any inflammation, the socket must be free of root fragments, foreign bodies and inflammatory tissue. The attending dentist should plan sufficient time for this step on a case-by-case basis.

What risks should the patients be informed about?

The patients must be informed about the general risks of a surgical procedure. But Ridge Preservation is a non-invasive procedure, which is associated with very few risks. Allergic reactions to the collagen may occur in very rare cases.

What measures should the patient take after the treatment?

- Cold compressions help to avoid swelling after the operation.
- Painkillers may be taken as necessary, on the dentist's prescription.
- In the first weeks, the operation site just has to be cleaned with an antibacterial mouth rinse. A toothbrush with soft bristles should be used in the vicinity of the wound.
- Hot drinks/food, alcohol and cigarettes should be avoided for 2–3 days due to the risk of secondary bleeding.
- Smoking and inadequate oral hygiene can impair the success of treatment.
- Follow-up examinations have to be observed, even with event-free healing.

Is extraction with flap elevation recommended?

Some dentists prefer tooth extraction with flap elevation in order to be in a position to better assess the bone conditions. However, this can increase patient morbidity and possibly cause additional resorption on the bone surface due to reduced blood supply and hypoxia in the cortical bone[17].

What can I do in case of an infected socket?

A. Conventionally, the socket should be curetted, rinsed with physiological saline solution, provided with a drain and allowed to heal uncovered.

B. In Ridge Preservation, the socket is precisely curetted and also rinsed with physiological saline solution. The bone may need to be freshened (the socket has to bleed) and the patient should receive antibiotics as required at the dentist's discretion.

Does the provisional impair the healing process following Ridge Preservation?

The provisional should not press too hard on the soft-tissue so as to avoid healing impairment.

Are there any important considerations to note regarding suturing?

Yes. The most important thing is that the suture does not place any tension on the soft-tissue. It should stabilize the Geistlich Bio-Gide® or Geistlich Mucograft® Seal coronally and should not exert any pressure on the underlying Geistlich Bio-Oss® Collagen (the result would be an unsightly, later soft-tissue contour with an invagination).

At what point after Ridge Preservation is there likely to be sufficient bone?

Generally, the regeneration process differs according to the patient and size of the socket. Many scientific publications, however, show that hard tissue regeneration of the socket may be expected in around 4–6 months[12].

Dr. med. dent. Thomas Zumstein
SPECIALIST FOR ORAL SURGERY
SWISS DENTAL ASSOCIATION (SSO)
SPECIALIST FOR ORAL IMPLANTOLOGY

Questions and answers on the *biomaterials*

What is the advantage of scientifically proven biomaterials?

Not all biomaterials are suitable for Ridge Preservation. Comparative studies have revealed major differences, even with negative impacts on volume preservation[2]. Geistlich Bio-Oss®, Geistlich Bio-Oss® Collagen and Geistlich Bio-Gide® have been confirmed in more than 100 studies[18] and 15 round-table meetings[16] by leading experts as suitable materials for Ridge Peservation. The high biofunctionality of the biomaterials is crucial for the positive effect and optimal wound healing.

Can Geistlich Bio-Oss® Collagen also be used without Geistlich Bio-Gide®?

The collagen in Geistlich Bio-Oss® Collagen does not have a barrier function and is not a substitute for a collagen membrane. In case of defective buccal bone lamellae, Geistlich Bio-Gide® should always be used, as it shields the augmentation material from the soft-tissue. In case of an intact buccal bone wall, the socket can be closed with the collagen matrix Geistlich Mucograft® Seal[2].

Is Geistlich Bio-Oss® Collagen a collagen sponge?

No. Geistlich Bio-Oss® Collagen is a mixture of 90% Geistlich Bio-Oss® spongiosa granulate and 10% highly purified porcine collagen. Geistlich Bio-Oss® is a natural bone mineral of bovine origin. Binding of Geistlich Bio-Oss® particles by the collagen into a block facilitates insertion into the defect.

Are allergic reactions to Geistlich Bio-Oss® Collagen or Geistlich Bio-Gide® possible?

Both products contain collagen and allergic reactions cannot be completely ruled out*. They are however, extremely rare.

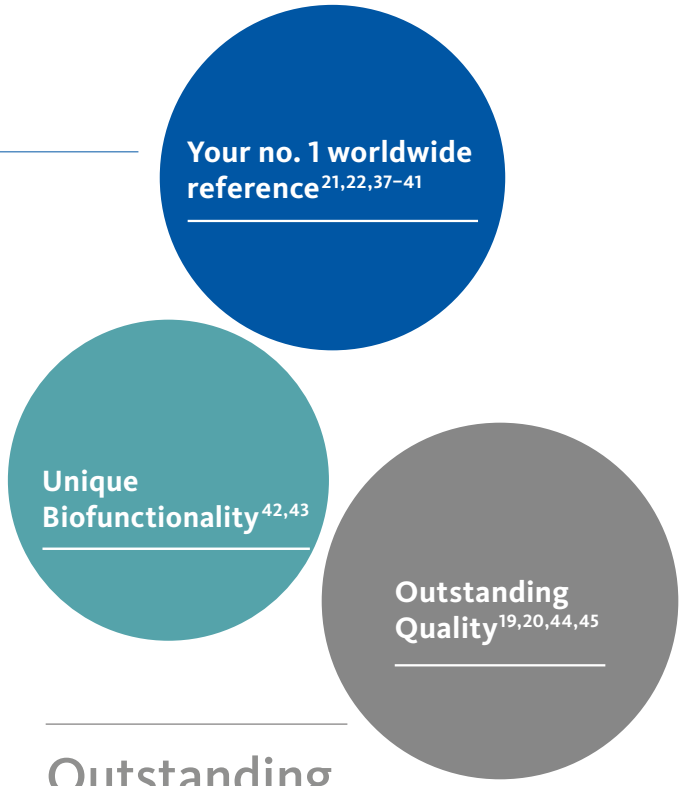
* Instructions For Use Geistlich Bio-Oss® Collagen 2019/05 and Instructions For Use Geistlich Bio-Gide® 2019/10

Can Geistlich Bio-Gide® be used for open healing in the treatment of extraction sockets?

The wound should be completely covered if possible. However, Geistlich Bio-Gide® provides high therapy safety with proven open-healing approach.[35,36]
Advantages of open-healing are extraction without flap formation and preservation of the mucogingival line[12].

* Instructions For Use Geistlich Bio-Gide® 2019/10

The success factors of Geistlich Bio-Oss® and Geistlich Bio-Gide®



Your no. 1 worldwide reference[21,22 ,37–41]

Geistlich Bio-Oss® and Geistlich Bio-Gide® are the first choice of experts[21,22,37–41]. More than 1,400 scientific studies document their success[23].

Unique biofunctionality[42,43]

Thanks to their porous structure and high hydrophilicity, Geistlich Bio-Oss®/Geistlich Bio-Oss® Collagen have ideal properties for forming new, stable bone. Geistlich Bio-Gide® with its unique bilayer structure provides optimal protection for bone regeneration.[24,25,28,29,30,32] The soft-tissue heals without scarring and largely without complications.[24] The combined use of Geistlich Bio-Oss® and Geistlich Bio-Gide® is verifiably a very good basis for optimal esthetic and functional results[19,20].

Outstanding quality[19,20,44,45]

Quality and safety are uppermost at Geistlich Pharma. For this reason we monitor all processes from A–Z at the production facility in Switzerland. From manufacture and quality management to the selection and testing of raw materials through production up to final inspection.

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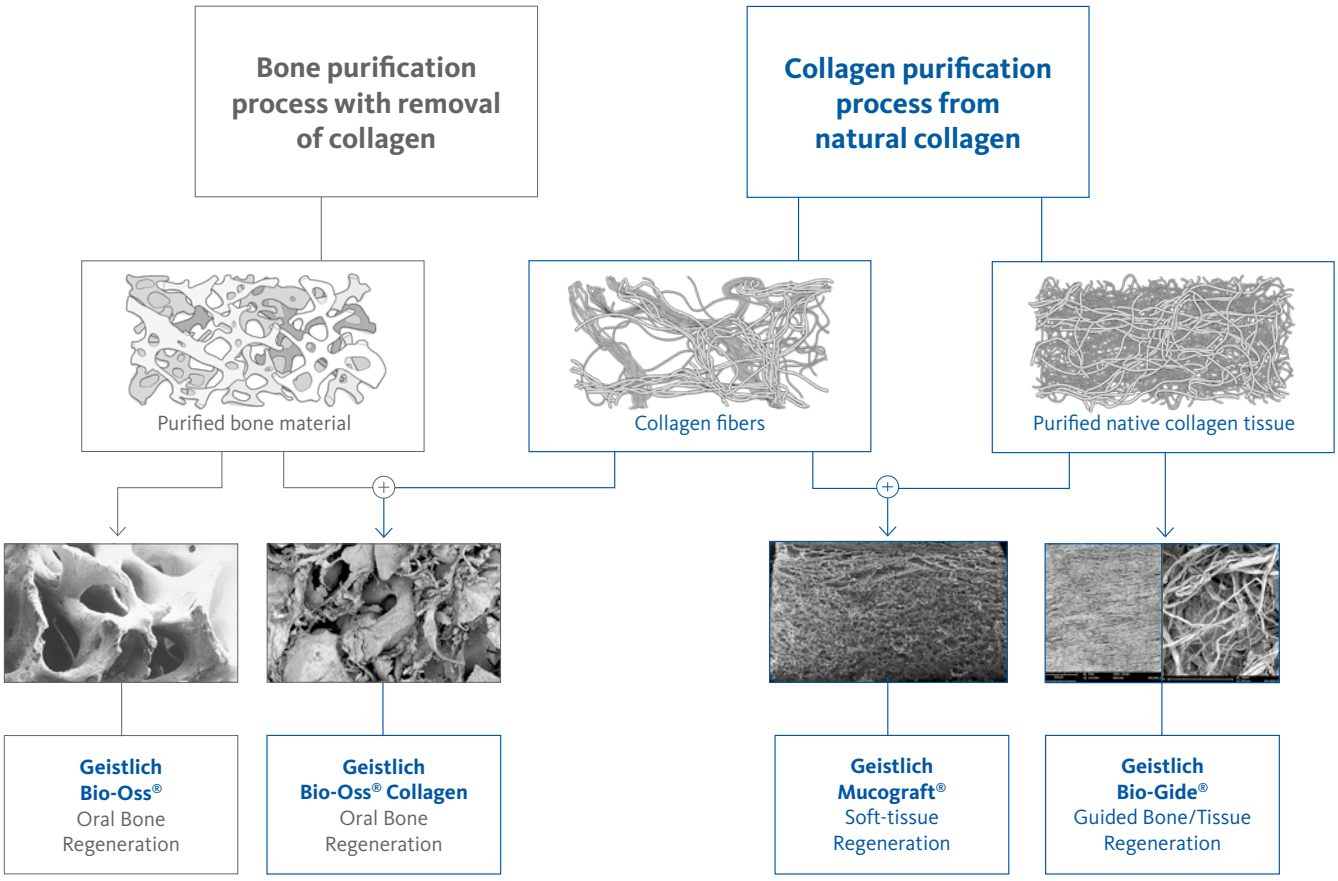
Our expertise in collagen processing: specific products for specific functions

Geistlich Biomaterials – pioneer in dental regeneration

Along with bone-processing, Geistlich has specialized in the processing of collagen for over 160 years and have refined this expertise from generation to generation. Manufacturing processes and systems have been continually optimized to make them cutting edge in their field. Geistlichs' Collagen Expertise enables us to manufacture different collagen products with different targeted functions.

Through specific collagen processing, the biomaterial properties are modulated to obtain the desired function. Today's range for Extraction Sockets Management comprises specialized products based on different Collagen Technologies such as Geistlich Bio-Gide® family, Geistlich Mucograft® Seal and Geistlich Bio-Oss® Collagen.



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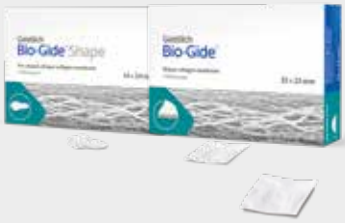
Geistlich Combi-Kit Collagen
The dream team in an attractive double pack:
Geistlich Bio-Oss® Collagen 100 mg +
Geistlich Bio-Gide® 16 × 22 mm

Geistlich Bio-Oss® Collagen
- Geistlich Bio-Oss® Collagen = 90% Geistlich Bio-Oss® + 10% collagen
- The 10% collagen simplifies handling, but does not replace a collagen membrane
- Is integrated in the natural bone[12]



Geistlich Bio-Gide® /
Geistlich Bio-Gide® Shape
- Ideal for defective extraction sockets
- Stabilizes the grafted area, protecting bone particles from dislocation[25]
- Prevents soft-tissue ingrowth (barrier function)[29,30,31,32,33]
- Uneventful wound healing[24,30]
- Resorbed without inflammation[34]
- Supports bone formation[28]

Geistlich Mucograft® Seal
- Ideal for intact sockets
- Minimal-invasive[2] and lower morbidity[26]
- Good wound healing and natural color and structure adaptation[26,27]