



Patient Information

THERAPY FOR PERIODONTAL AND
PERI-IMPLANT REGENERATION

WHAT IS PERIODONTITIS?

Periodontitis is an inflammatory disease of the tissue surrounding the teeth, the so-called periodontium.

With advancing age, it is the most common cause of tooth loss, but also smoking increases the risk for periodontitis.

It can be triggered during everyday life, when food residues and bacteria are deposited on the teeth. If this so-called plaque is not removed, the oral mucosa can get inflamed, which is called gingivitis. When the disease progresses, the inflammatory processes can also affect the root of the tooth. This leads to a progressive destruction of the periodontal apparatus that anchors the teeth to the jawbone (periodontitis). When untreated, this can develop into a severe periodontitis, affecting today 19 % of the world population according to the WHO (2023). Various factors such as smoking, stress or hormonal changes increase the risk of peri-implantitis. In addition, general diseases such as diabetes, immune diseases or osteoporosis are risk factors.²

Often, these processes develop gradually over time in a chronic course, but some patients experience accelerated tissue loss, the so-called aggressive course. The disease course is determined on one hand by the kind of bacteria that trigger the

inflammation in the gum pockets, and on the other hand by the body's own defense mechanisms.

Painless & silent tooth loss

At the beginning, periodontitis is painless. Still, it is often recognizable by an increased tendency to bleed, swelling of the gums, as well as bad breath. However, as the jawbone begins to deteriorate, deep gum pockets can develop unnoticed. Within these, the teeth are anchored less strongly. This leads to tooth loosening and even tooth loss.

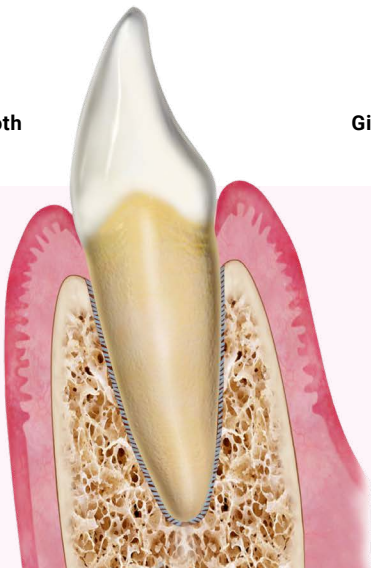
Possible impact on general health

Untreated periodontitis can have an impact on the patient's systemic health, e.g. diabetes and cardiovascular diseases. It can even favor premature births.

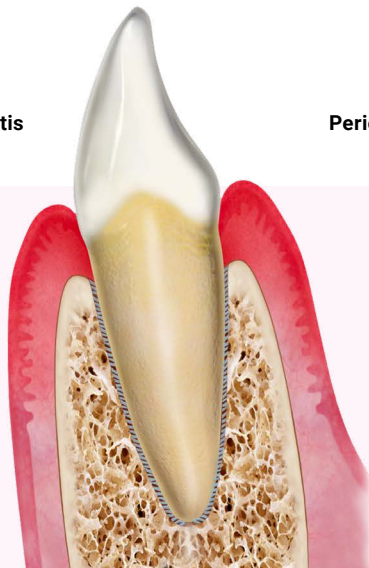
The following signs may indicate a disease of the periodontium¹

- > Bleeding gums
- > Swelling and reddening of the gums
- > Receding gums and sensitive tooth necks
- > Bad breath
- > Secretion from the gum pockets
- > Loosened teeth

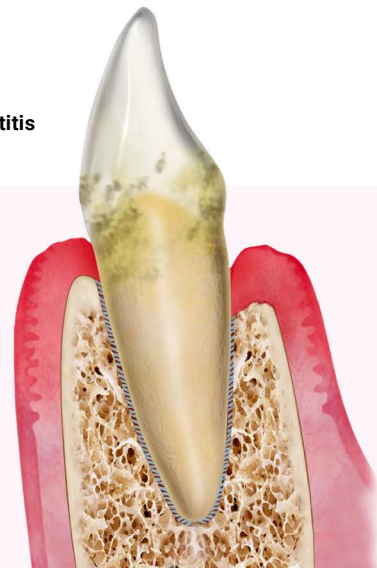
Healthy tooth



Gingivitis



Periodontitis



WHAT IS PERI-IMPLANT INFLAMMATION?

Peri-implant inflammation is the generic term for inflammation around artificial tooth roots (implants).

Implants are anchored in the bone by a specialised dentist or implantologist and grow firmly into the jaw. The gingiva and the superstructure, such as crowns, bridges, or dentures, lie above the implant.

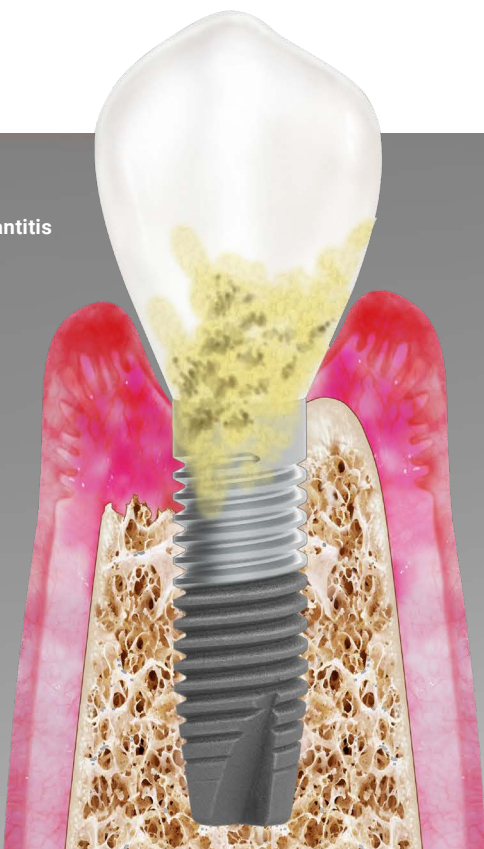
Just as with natural teeth, plaque is adhering on implant-supported dentures. If it is not removed, peri-implant mucositis develops. This is an inflammation of the mucous membrane next to the dental implant, which is usually painless in the initial stage. The gums are swollen and reddened, and bleed when touched or when brushing the teeth.

Risk of implant loss

If mucositis is not treated in time, the disease progresses in a similar way to periodontitis. The inflammatory processes affect the implant body and the surrounding tissue (so-called peri-implantitis). Both the gums and the bone substance, in which the implant body was inserted, can be inflamed. As a result, the mucous membrane and bone recede and the so-called "implant bed" is lost. If left untreated, peri-implantitis inevitably leads to the loss of the precious implant and possibly the functional prosthetics. Then, patients must wait for complete healing before the dentist or implantologist can place a new implant. Additionally, lost bone substance often has to be re-built through bone augmentation.²

Various factors such as smoking, stress or hormonal changes increase the risk of peri-implantitis. In addition, general diseases such as diabetes, immune diseases or osteoporosis are risk factors.²

Peri-implantitis

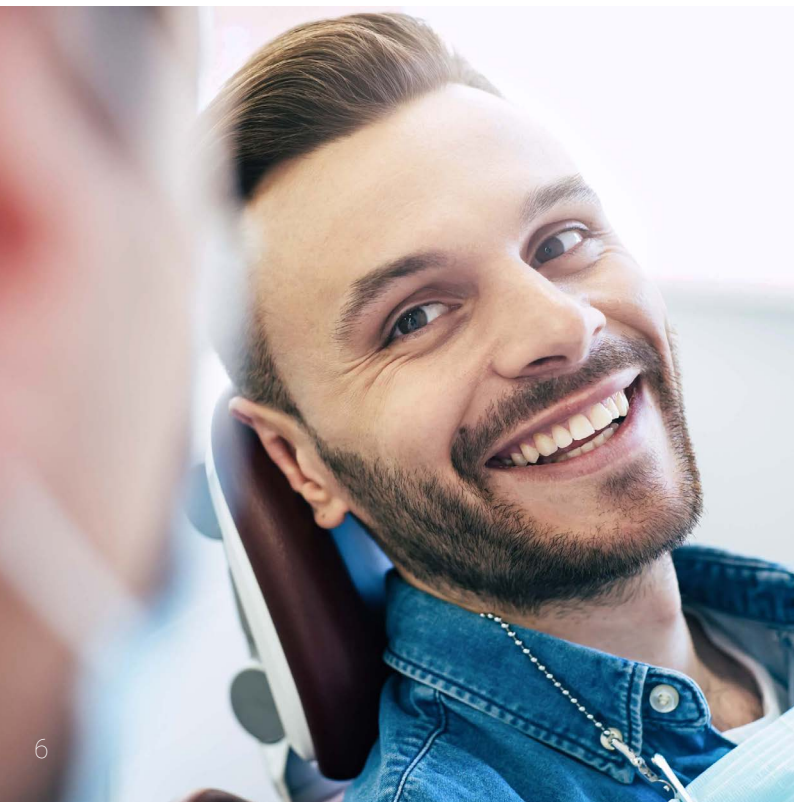


WHAT ARE THE OPTIONS FOR TREATMENT?

Periodontitis or peri-implant inflammation can be easily detected during a dental check-up. To determine the severity and aggressivity of the disease, your dentist will carry out various examinations in the mouth and the situation may also be evaluated with an X-ray image.

Periodontal treatment aims to reduce the inflammation in the tissue around the root of the tooth and thus stop the progressive breakdown of the periodontium.

With immediate treatment and removal of all bacterial plaque, the inflammation usually heals without complications. For effective mechanical removal of the biofilm from teeth and dental implants, the dentist uses special instruments as well as ultrasound and powder jet procedures.



The following steps are usually performed by your treating dentist:

1 Pre-treatment with in-depth oral hygiene instruction and professional teeth cleaning.

Often, this can already significantly reduce the degree of inflammation of the gums.

2 Closed subgingival treatment

The dentist removes plaque also from within the gingival pockets with a non-surgical intensive cleaning under local anesthesia, using various instruments and devices. If signs of inflammation (bleeding, secretion) are still present after the closed subgingival treatment **your doctor may choose one of two options:**



3a Renewed closed subgingival treatment

This is basically carried out as described above under **2**. However, additional preparations may be used that either have an antibacterial effect or are intended to support the removal of the diseased tissue.

3b Surgical procedure (open treatment)

In surgical treatment, the pocket treatment leads to the removal of the biofilm and granulated tissues in an invasive way.

WHY CLEAN&SEAL®?

The CLEAN&SEAL concept was developed on the basis of scientific findings as a support for the closed treatment of periodontal and peri-implant inflammation and to minimize or avoid any further need for surgery.^{3,4}

In case of severe periodontitis and some peri-implantitis, CLEAN&SEAL is a two-step therapy for closed subgingival treatment ②. The sequence of cleaning and sealing has shown the unique outcome to regenerate the tissues around the tooth/dental implant with a reduced need for surgery ③a ③b. The natural regenerative mechanism leads to much higher chances to preserve teeth and implant over time.

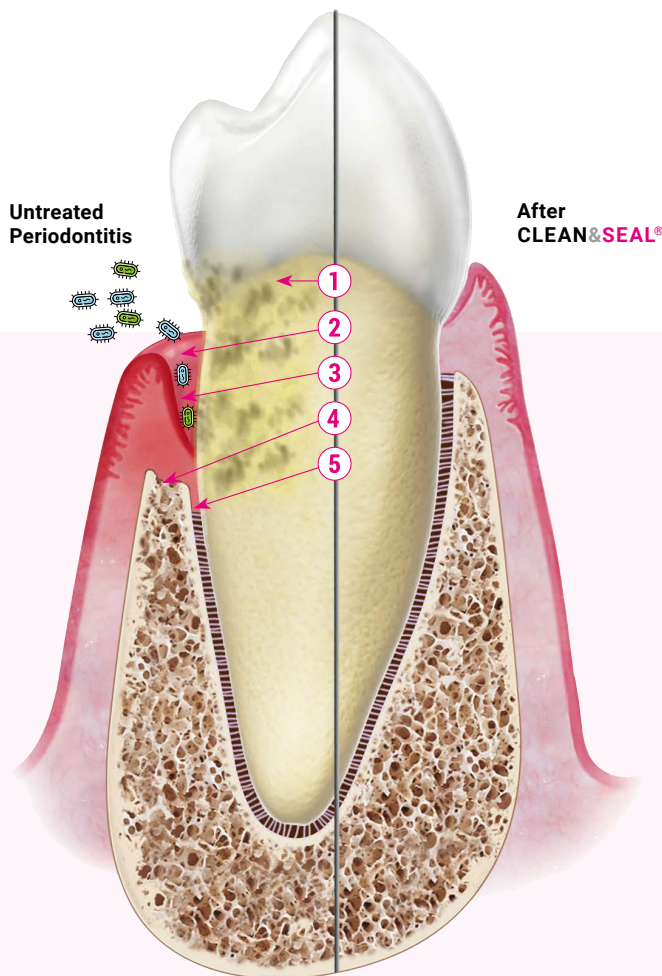
Treatment with CLEAN&SEAL can not only prevent the progression of the disease, but very often improve the health parameters, which were difficult to treat in the past. Even in “hopeless” situations, a significant improvement of the situation can lead to preserving the tooth. As such, with CLEAN&SEAL, invasive surgical intervention can be avoided. CLEAN&SEAL achieves positive results through the regenerative stimulation of the cementum, periodontal ligament and alveolar bone. This leads to a shallower to shallower periodontal pocket and better tissue attachment to the tooth root.

Benefits of CLEAN&SEAL®

- Maintains your natural teeth/implant
- Scientifically proven treatment
- Reduces pain after the treatment
- Materials of non-animal origin
- Reduced costs compared to surgical procedure

Untreated Periodontitis vs Outcome after CLEAN&SEAL®

- ① Bacterial biofilm
- ② Inflamed sulcus
- ③ Deep inflamed/infected pocket
- ④ Resorbed bone
- ⑤ Resorbed cementum and periodontal ligament



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FIRST, USE THE **CLEANER** ...

Why use the **CLEANER**?

A germ-free environment is a basic prerequisite for successful lasting treatment in wound healing. The **CLEANER** helps to remove subgingival deposits and granulated tissues and simplifies the mechanical treatment, e.g. with scalers or ultrasonic instruments.

Studies and clinical case series have shown that when the **CLEANER** is used in addition to non-surgical treatment, the pocket depth of teeth or implants can be reduced. The **CLEANER** is applied several times into the pocket around the tooth or implant before the subgingival cleaning process.



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What is the **CLEANER** made of?

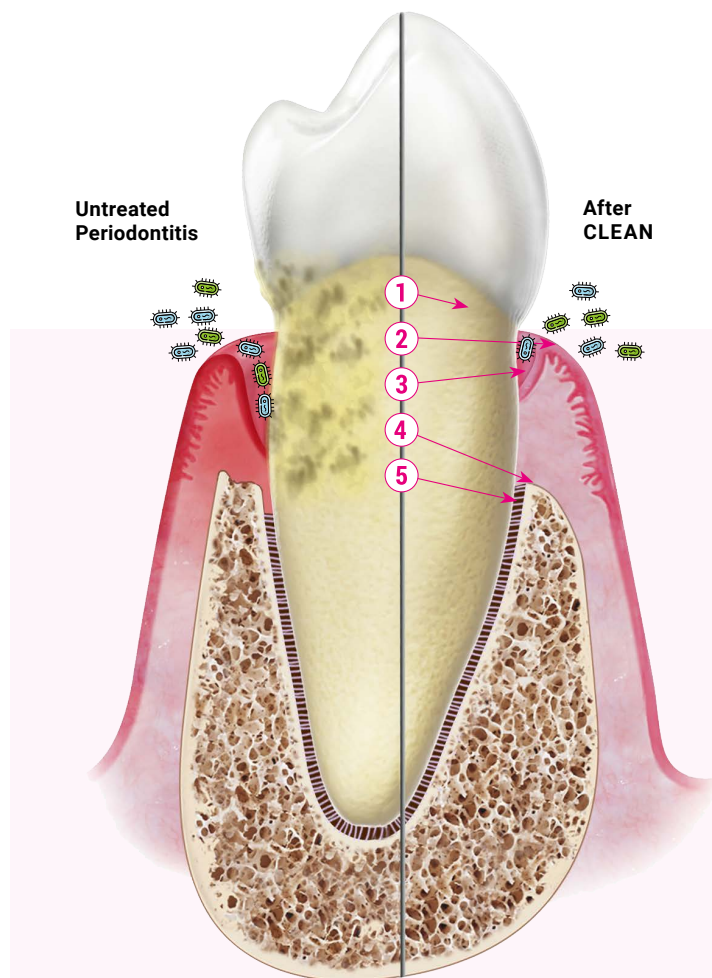
The cleaning gel consists of two components, a low-dose sodium hypochlorite (NaOCl) solution and an amino acid solution. Both components are mixed before use.

Are side effects known?

Due to its special composition, the cleaning gel acts specifically on infected tissue without affecting healthy tissue. Thus, treatment with the **CLEANER** is very well tolerated. Direct swallowing of the preparation may cause a slight burning sensation in the mouth and throat.

Untreated Periodontitis vs Outcome after **CLEAN**

- ① Clean from biofilm
- ② Healthy sulcus
- ③ Shallower healthy pocket
- ④ Bone is still resorbed
- ⑤ Cementum & periodontal ligament gain



... AND THEN, USE THE SEALER.

Why use the SEALER?

The SEALER consists of cross-linked hyaluronic acid. Its diverse properties, xHyA performs a whole range of different functions. For application in dentistry, the following three properties are particularly noteworthy:

Better and faster wound healing

Every healing process begins with the attraction and stabilisation of the blood coagulum in the wound. This blood contains essential growth factors stimulating the regeneration of different tissues. Rapidly, the inflammatory reaction brings various cells to the injured site. They break down substances and proliferate to build up new bone or other types of tissues.

xHyA binds blood and promotes the formation of the blood clot. This effect helps the body in repairing tissue damage.

Support for regeneration

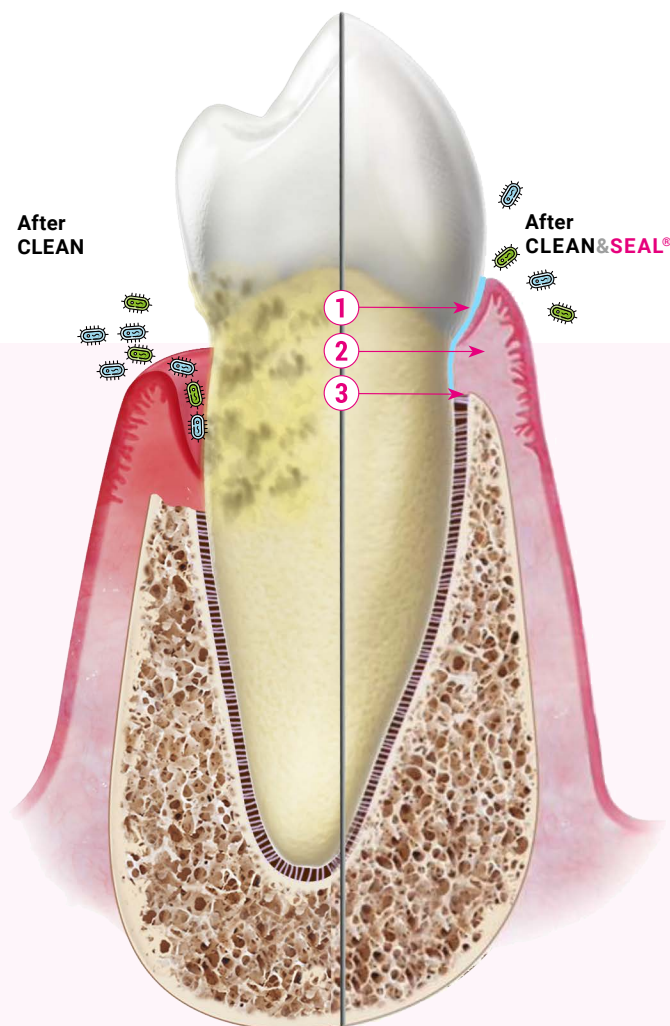
Various studies have shown that the additional administration of natural xHyA can, amongst others, lower inflammation and promote the formation of new blood vessels which is necessary for tissue regeneration. This considerably improves the healing process in terms of healing time and quantity of new tissue regeneration.

Wound space protection

A germ-free environment is a basic prerequisite for successful treatment in wound healing. Due to its pronounced bacteriostatic property and slow resorption pattern, the xHyA gel prevents the penetration and growth of common oral pathogens, lowering the risk of re-infection.

Outcome after CLEAN vs After CLEAN&SEAL®

- ① Bacteriostatic shield against oral bacteria
- ② Lower inflammation & better vascularization
- ③ Resorbable xHyA: blood clot stabilization, and regeneration of cementum, periodontal ligament, bone & gingiva



What is hyaluronic acid?

Hyaluronic acid (HyA) is a physiological substance, chains of HyA are found in all living organisms. They are one of the main components of connective tissues, synovial fluid, and many other tissues. HyA play a variety of important roles in virtually all basic regenerative processes, such as wound healing and embryogenesis. In general, HyA is important in situations where rapid tissue regeneration and repair occurs.

Which hyaluronic acids are available?

The HyA molecule occurs in different forms in the body, which perform different functions. Depending on the desired area of application, hyaluronic acid is either used in its natural or in a cross-linked form.

Natural hyaluronic acid has the highest regenerative potential, but breaks down in the body within a few hours to a few days. To extend its retention time in the body, natural HyA can be cross-linked using proven technologies. With increasing cross-linking rate, the retention time can be extended to several months. However, cross-linked HyA does not promote regeneration as much as it functions more as a compatible filler material, e.g. in cosmetic applications for wrinkle injections. Therefore, a mixture of both natural and cross-linked HyA is advantageous as it offers the benefits of both substances.

- 100 % free from animal source materials for maximum protection against infection
- Highest possible degree of purity for optimal biocompatibility
- Clearly defined molecule size as a basic requirement for consistent product quality and optimal performance

Are side effects known?

Pure hyaluronic acid is the same for all species, which is why the occurrence of side effects is generally very unlikely. In individual cases, allergic reactions or intolerance reactions to hyaluronic acid may occur.

ARE THERE ALTERNATIVES TO CLEAN&SEAL®?

Instead of using CLEAN&SEAL, your practitioner can perform the pocket treatment with mechanical cleaning only, i.e. without the additional use of auxiliaries.

It is also possible for your practitioner to use only one of the two preparations, i.e. either the CLEANER to support pocket cleaning or the SEALER to improve new tissue regeneration around the tooth/implant.

Alternatives to the CLEANER are preparations that aim to inactivate or remove the biofilm. These include local antibiotics, antiseptic products (mostly based on chlorhexidine) or lasers.

Instead of the SEALER, extracts from the patient's own blood or animal tooth proteins can be used. Additionally, there are other hyaluronic acid products of animal or biotechnological origin with different characteristics and material properties.

Your practitioner will assess the possible advantages and disadvantages, as well as the respective risks and consequences of the possible treatment options and will recommend an optimal therapy for you.

LITERATURE

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3. Zitzmann. NUKMK 2009;25(9):576-582.
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ABOUT REGEDENT

Regedent AG is a Swiss-based company⁺, specialized in researching, developing, and manufacturing therapies for dental treatments that help to better preserve teeth and dental implant by leveraging natural cellular regenerative processes.



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8500.906EN Rev. 2023-10-13