

## Perio-Mate Powder

- Main ingredient is glycine an amino acid commonly found in proteins and soluble in water.
- Highly water soluble to prevent subgingival retention.
- Lower Mohs hardness than dentin.

\*Glycine ranks 2 on the Mohs hardness scale, while dentine is 2 to 2.5.

MODEL : Perio-Mate Powder

ORDER CODE : Y900938



Contains : 2 bottles (160g each)

## Perio-Mate NOZZLE TIP

- Disposable
- Sterile blisterpacks

MODEL : Perio-Mate Nozzle Tip

ORDER CODE : Y1002741



Contains : 40 nozzles

# Clinicians Guide to Subgingival Air Polishing

Perio-Mate

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Specifications are subject to change without notice.

PR-D1061EN Ver.1 16.07.GLB

**NSK**  
CREATE IT.



## × INTRODUCTION

### What is Subgingival Air Polishing?

While a patient's daily dental care routine is vital for maintaining good oral health, regular professional care is equally important. “[Subgingival airpolishing](#)” has already gained an international reputation as a superior method.

“[Subgingival airpolishing](#)” is very effective in removing the deposits that cause periodontal disease. But it is not without its risks which is why it hasn't been adopted everywhere to the same extent. Read about the risk on p5 onwards in this booklet. However, it is a safer and more effective method of removing deposition than standard maintenance if performed correctly.

Full understanding of the effects, usage, and precautions required to perform “[Subgingival airpolishing](#)” safely will allow you to experience a new era of professional care and comfort for you and your patients.

**QUESTION** Why do we need to maintain teeth?

The most important factor for the maintenance of patients' natural teeth and dental implants in good condition over the long term is the patients' own oral hygiene routine. However, professional care involving regular maintenance and supportive periodontal therapy, SPT, also plays a major role. Normal maintenance will leave some issues unresolved.

The main purpose of maintenance

- ①  
Maintain a healthy periodontium
- ②  
Preventing disease
- ③  
Ensuring quality of life (QOL)

**QUESTION** What is subgingival airpolishing, which is becoming a global standard in dental care?

Issues with conventional perio maintenance

Effective cleaning below the gum line is difficult as this area cannot be seen.

The soft tissue, the root surface (dentin) in the delicate periodontal pocket are easily damaged.

Direct contact devices like scalers and brushes cannot remove deposits in difficult-to-reach areas.

But with Subgingival airpolishing,

**Effective removal of biofilm:**  
Compared to other maintenance equipment, less biofilm and plaque remains with wide powder dispersal, even in areas that cannot be seen.

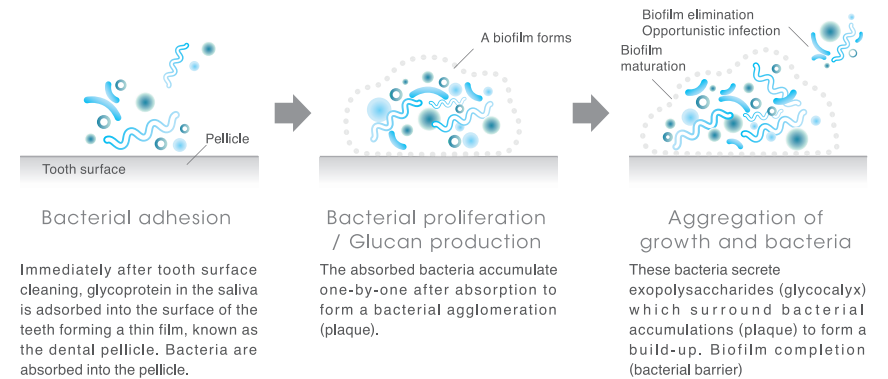
**Gentle treatment:**  
The soft powder is less likely to injure tissue and is a gentle treatment for the periodontal pocket.

**Cleaning of a wide area of the tooth surface:**  
As the non-contact method can remove deposits over a wider range, areas that cannot be reached by contact instruments can be cleaned successfully.

**This is a more professional method for removing biofilm from inside and outside the periodontal pocket that provides more comfortable treatment for both the patient and operator. This is subgingival airpolishing.**

**QUESTION** What is biofilm?

It is thin coating of micro-organisms that forms on a body surface, such as teeth (plaque). These bacteria extrude exopolysaccharide (glycocalyx), which forms a barrier. The accumulation of bacteria protected by this barrier exists alongside other types of bacteria that cannot attach directly to the tooth surface, besides other bacteria species as well. Interaction and antagonism between nutrients and adhering material creates stable conditions for bacterial colonies. As long as they are within this barrier, the bacteria are protected from attack by the host's immune system using white blood cells and antibodies. This structure is the biofilm.



**QUESTION** Why this needs to be removed?

Once the biofilm has formed on the surface of the teeth, the cleaning action of saliva is lost as it cannot reach the enamel. This creates an environment where bacteria can proliferate easily as they are protected inside the biofilm. This results in dental caries and periodontal disease. White blood cells and antibodies arrive when biofilm grows inside the periodontal pocket but bacteria protected by a barrier of biofilm are not affected by these attacks. Conversely, pathogenic factors and endotoxins produced by the white blood cells damage the gums and increase inflammation.

**QUESTION** How can this be eliminated?

Since biofilm has a high resistance to chemotherapies such as antibacterial agents, mechanical destruction and removal with a toothbrush or an ultrasonic scaler is necessary. However, as a tooth brush does not reach inside the periodontal pocket, patients cannot remove biofilm themselves. For this, a mechanical instrument is needed to reach inside the pocket and professional treatment performed by specialists is vitally important. Subgingival airpolishing has gained attention as an effective method.

ATTENTION

## What you need to know to perform subgingival airpolishing therapy with confidence.

When performed correctly, subgingival airpolishing is an effective and comfortable professional treatment. If used incorrectly however, the risk of the following diseases cannot be totally discounted. To carry out treatments with additional safety considerations, please be fully aware of the risks of powder maintenance.

### Subcutaneous Emphysema

It is the introduction of air or other gases into soft tissues when using air pressure instruments, which may result in swelling. If this does not become infected it will heal naturally. Treatment with antibiotics may however be an option in certain circumstances.

\*Loose connective tissue: the tissues of various structures connected loosely to the body. Structures widely distributed throughout the body such as peripheral glands, surrounding blood vessels and nerves located under the skin or mucous membranes.

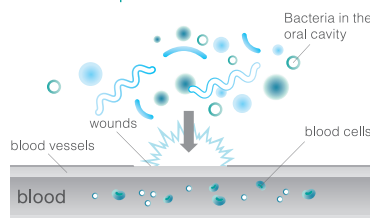
- Causes** Entry of pressurised air from air syringes or turbines. The use of hydrogen peroxide during root canal cleaning.  
Air in the nasal cavity, maxillary sinus, or oral cavity from changes in expiratory pressure.
- Symptoms** Sudden and unexpected symptoms around treatment area, diffuse swelling and dull pain, ear discomfort and so on.

### Bacteremia

Situations where bacteria have entered the previously sterile peripheral blood vessels are called bacteraemia. Bacteraemia associated with dental treatment such as tooth extraction and scaling (SRP), is a temporary condition involving bacterial invasion into the blood vessels around wounds when performing invasive treatment which are then circulated around the whole body. Bacteria are rapidly circulated throughout the system and are mostly removed by the liver so are unlikely to cause infection. However, it is important to gain an understanding of the patients' medical history as patients with systemic disease or who are immuno-compromised or those with artificial heart valves and prosthetic joints are at a slight risk of complications such as bacterial meningitis and infectious endocarditis.

- Causes** For dentistry, this can occur when brushing, scaling and performing invasive treatment such as tooth extraction.
- Symptoms** Shivering, chills, fever, and weakness.

#### The concept of bacteraemia



Bacterial infiltration of blood vessels can occur from wounds.

## Inflammation around implants and treatments

Master of Oral Science, Dental Hygienist Nobuko Kashiwai

Conventional dental treatment involved the resection of the affected area to eliminate the problem but current implant treatment now prefers surgical or prosthetic replacement of lost teeth followed by maintenance therapy. The two greatest issues with the long-term success of an implant are the peri-implant disease named "peri-implant mucositis" where inflammation is localised only in the peri-implant mucosa and "Peri-implantitis" where inflammation has spread to the supporting bone. This may cause infection by periodontal bacteria such as Porphyromonas gingivalis.<sup>1</sup> At this stage the inflammation is localised in the mucosa and is reversible if treated by removing the biofilm that acts as a "nest" for pathogens and substances causing inflammation but if the inflammation spreads to the bone, recovery is not expected. Hardt et al. conducted a study of patients grouped into those with and without a history of periodontal disease and investigated implants embedded in the maxillary molar region over a period of five years. The conclusion was that the group with a prior history were at a disadvantage in terms of the rate of implant loss and the amount of bone resorption.<sup>2</sup> In other words, if a patient has lost a tooth due to periodontal disease they are at risk from the start and treatment should focus on suppressing the formation of biofilm which is the underlying cause in order to control the activity of periodontal pathogens prior to surgery.

Actual treatment requires a communication environment that has been created over a long period of dental appointments. Patients must be proactive in their own personal dental care routine, in addition to understanding the risks associated with biofilm and conditions in their own oral cavity, and we as dental health care professionals must practice professional treatment with reliable results. It is possible to conduct ongoing maintenance therapy in a short time and with minimum discomfort to achieve this, instead of the "long", "painful", "difficult" treatments that have been performed up to now. Biofilm that is regenerated in a three to four month period<sup>3</sup> removed with rotary vibration

Maintaining "more reliable" surface cleanliness by breaking deposition apart, instead of polishing using the pressure of the instrument. Air ablation used in conjunction with debridement and fine water particle dispersal using hand instruments can be used to physically destroy biofilm, while ultrasonic scaling using the cavitation effect is an effective approach towards anaerobic bacteria.

Differing results in terms of efficient use of time and comfort can be obtained, from evidence based steps when they are followed one by one.

#### Bibliography

- \*1 Hultin M, Gustafsson A, Hallonström H, Johansson LA, Ekfeldt A, Klinge B Microbiological findings and host response in patients with peri-implantitis Clinical Oral Implant research 13, 2002
- \*2 Hardt CRE, Gröndahl K, Lekholm U, Wenneström JL Outcome of implant therapy in relation to experienced loss of periodontal bone support A retrospective 5 years study Clinical Oral Implant research 13, 2002
- \*3 OKUDA K., Biofilm: Dental Plaque, Ishiyaku Pub.Inc., 2007



Implant case

**SOLUTION**

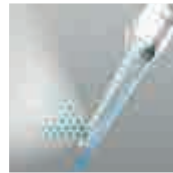
NSK advocates the 'Perio-Mate' as a safe and effective method of subgingival airpolisher



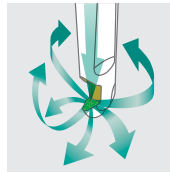
Products are developed to maximise the benefits and safety of powder maintenance therapy but at the same time to avoid any associated risks.

- Designed to achieve optimum ejection pressure for subgingival use. A gentle ejection pressure setting, reduced to about 70% of that of Prophy-Mate neo (conventional tooth surface cleaner).
- Provides a powder flow rate and ejection pressure adjustment function, allowing precise adjustment to suit the treatment site.
- A limit can be set for cases treated (number of periodontal pockets, inflammation)  
\* Please refer to the user manual for details on usage.

- The nozzle tip is designed so that the powder flows over the entire insertion surface when used in the periodontal pocket. For this reason, the powder ejected from the nozzle is not dispersed with excessive force in only one direction. The safe design ensures powder/air does not directly make contact with the bottom of the pocket as channels for delivering powder/air and water are separate.



Directions of powder injection



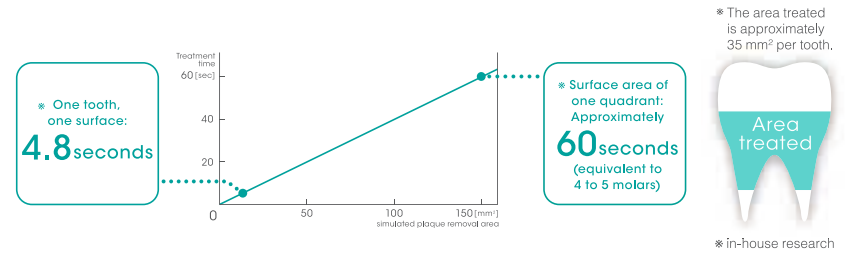
Powder flow in periodontal pocket

**⚠ Cautions**

- There is a risk of emphysema occurring with excessive air delivery pressure. Please make sure to use the correct air pressure. Please set the ejection air pressure so that there is at least a slight spray out of the periodontal pocket. Also, please make adjustments to an appropriate air supply pressure while monitoring the patient's condition.
- Please do not use the Perio-Mate on root surfaces where scaling treatment has just been performed.
- Please adjust the powder ejection quantity with the flow rate adjustment ring to suit patient and gum conditions.

**Fast and effective removal capability.**

Biofilm in the periodontal pocket can be removed in approximately 60 seconds per quadrant.



**Extensive removal of biofilm inside and outside the periodontal pocket in only 4.8 seconds per single tooth surface.**

- As the powder is ejected over a wide area, biofilm can be removed from inside the periodontal pocket in approximately 4.8 seconds per tooth surface area.
- Deposits can be removed without direct contact with almost none of the extensive biofilm and plaque adhesion remaining and the results are effective. It is possible to clean areas the tip cannot reach with the powder injection effect.
- Treats a broad spectrum from fast targeted biofilm removal to peri-implants and delicate periodontal pockets.
- By removing the Perio-Mate nozzle tip, it is possible to approach the gum line and subgingival area up to 3 mm below the pocket which are the areas requiring most frequent treatment.



## Guide for using the Perio-Mate

⚠ Please refer to the operation manual carefully before using.

### Before use

Cover patient to protect from powder i.e goggles, towel.

### How to hold

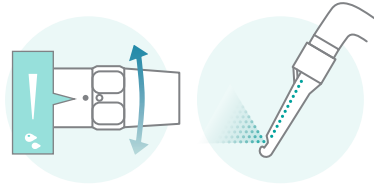
Hold the hand piece firmly so that it can be turned using the fingertips.



### Powder flow adjustment

Please adjust the ejection quantity once you have observed the treatment site and the patient's condition.

- Adjusting from MAX: deep periodontal pockets, bifurcation, removing light stains.
- Adjusting from MIN: shallow pockets, tight gums, plaque removal at the gum line.



- Irrigate during treatment.
- Use of suction is recommended during treatment.
- Do not use inside a periodontal pocket and without a tip nozzle.

## Subgingival

Please use with a nozzle tip attached to the nozzle of the Perio-Mate hand piece.

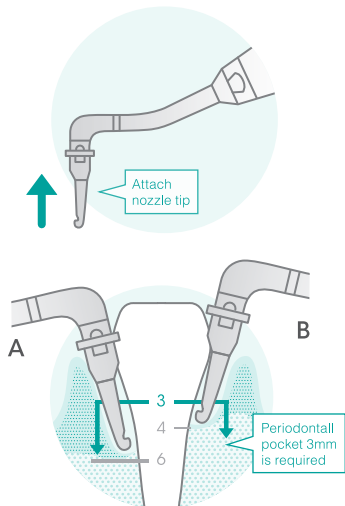
\* Ensure the nozzle tip is fully inserted into the interior. There is a risk of aspiration accidents if dropped during treatment.

### Instruction

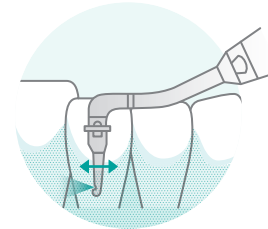
Erasing biofilms in periodontal pocket from 3 mm to 6 mm below the end of the gingival margin after basic periodontal treatment.

1. Slowly insert the nozzle tip 3 mm or more to the position most appropriate for treatment. Please adjust the insertion depth at this time to suit each individual patient's pocket values. Please do not insert the nozzle tip to the bottom of the periodontal pocket and carry out ejection. There is a risk of air embolism.

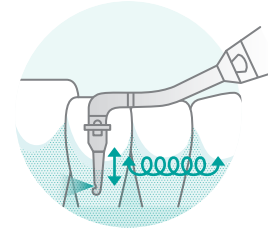
\* There have been cases where inserting the tip 3 mm into the periodontal pocket results in ineffective powder ejection.



A : if less than periodontal pocket 6mm  
B : if periodontal pocket 4mm



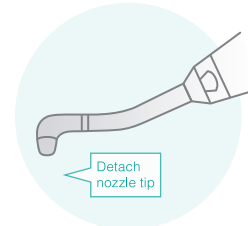
2. Effective results can be obtained from 5 to a total of 20 seconds ejection per tooth surface.



3. Move as if drawing several small circles in a longitudinal direction on the tooth surface while moving the nozzle tip laterally in the direction of the powder flow.

\* There are cases where the powder is ejected when the air pressure is released in the powder case after disengaging the pedal. Please use a suction device until the powder flow has stopped so as not to inject powder into the oral cavity.

## Supragingival

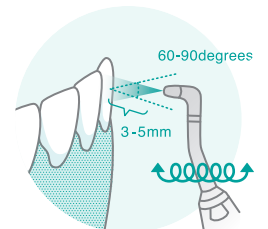
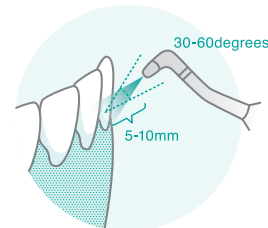


Please use with the nozzle tip removed from the nozzle of the Perio-Mate hand piece.

### Instruction

Removal of plaque biofilm from the gingival margin (up to approximately 3 mm inside the pocket). To spray, direct the nozzle toward the gingival margin at the distance and angle as shown in the diagram. Manoeuvre slowly at this time to ensure the entire tooth surface is sprayed.

\* Do not position the nozzle tip too close to the tooth surface as the removal function is reduced if the nozzle is positioned less than 2 mm from the tooth surface.



Removal of light staining following extensive deposition. To spray, direct the nozzle toward the tooth surface at the distance and angle as shown in the diagram. Move as if drawing small circles.