

“The cleaning effect is better and it is much more pleasant for the patients”

GBT in orthodontic preventive treatment: Interview with orthodontists Dr. Ines Metke and Dr. Claudia Mengel, and dental prophylaxis assistant Isabel Berghöfer

Combining orthodontic treatment and preventive treatment is a key element in the clinical concept of Dr. Ines Metke and Dr. Claudia Mengel. This is because prevention is important to maintain overall dental health over the course of orthodontic treatment, despite tooth cleaning being more difficult. The orthodontists introduced Guided Biofilm Therapy (GBT) in their practice in early 2022 as a new system for systematic preventive treatment.

We ask the two owners of the practice and their dental prophylaxis assistant Isabel Berghöfer about their experiences with the concept of GBT in orthodontic preventive treatment.

Dr. Metke, what can happen if patients who wear a multi-strand bracket appliance as part of orthodontic treatment do not receive adequate preventive treatment?

Dr. Ines Metke: Homecare is made more difficult by a fixed appliance, and biofilm can accumulate that is difficult for the patient to remove by themselves. Consequently, the external surfaces of the teeth can develop white spots or even caries around the brackets. If gingivitis accompanied by swelling of the gingiva, bleeding, and pain develops, this makes caring for the patient even harder and the treatment less pleasant.

We hope to avoid this with intensive education for our patients about homecare and regular professional mechanical plaque removal. Tooth movements are more dangerous in inflamed tissue and can cause permanent damage to the tooth. Gingivitis during multi-bracket treatment is reversible in adolescents as a rule but in adults there is an increased risk of bone loss if the gingivitis advances to periodontitis.

Preventive treatments and check-ups during orthodontic treatments are usually considered the responsibility of the family dentist. However, in your practice systematic preventive treatment forms part of the orthodontic treatment. What recommendations can you give for the collaboration between a general dental practice and an orthodontic practice?

Metke: It is really important for us that we care for our patients in close collaboration with their family dentists. We keep in close contact and make joint decisions about which preventive measures will be carried out and when and where.



Mengel & Metke Joint Practice

Dr. Ines Metke and Dr. Claudia Mengel have run their orthodontic practice in Marburg (Lahn) together since January 2000. From the start, prevention was part of the practice's orthodontic concept. Two years ago, the practice shifted to Guided Biofilm Therapy (GBT). The practice has been GBT certified since 2022 and employs a total of ten staff, including a full-time dentist. The prevention team includes four specialists.

Individual preventive treatment must be separated from orthodontic preventive treatment. Individual preventive treatment is generally still performed by family dentists because we could not logistically integrate this into our clinical workflows.

On the other hand, we perform orthodontic preventive treatment or professional mechanical plaque removal during treatment with fixed appliances. There are many colleagues who are very happy that we perform the orthodontic preventive treatments, particularly if their general dentistry practice is already at capacity.

Do family dentists have any concerns?

Metke: We only perform the preventive treatment for a very, very limited time and only for patients with fixed appliances. We also consider performing preventive treatment as a sign of the quality of our treatment: In this way, we can guarantee that teeth that are difficult to clean do not sustain any damage during the orthodontic treatment. Young patients are also introduced to high quality preventive treatment and learn to appreciate its importance.

Dr. Claudia Mengel: This is a win-win situation: We help patients get started with good systematic preventive treatment so that we then return them to their family dentists highly motivated.

Are patients or their parents willing to pay for the costs of GBT during orthodontic treatment?

Mengel: Our practice concept is structured so that we can easily motivate parents to this. After assessing the orthodontic findings, we carry out a very detailed consultation that can take up to three-quarters of an hour. The entire orthodontic context is discussed during this consultation, and we describe in detail the possible risks and side effects as well as the advantages of systematic preventive treatment during treatment with fixed appliances. Using digital tools and photos we can vividly demonstrate to the parents what happens when prevention and oral hygiene are not performed adequately at home.



A glimpse into the practice: The two orthodontists have run their joint practice Mengel & Metke since 2000 in Marburg on the river Lahn.

Photos: Mengel & Metke

08 RECALL

HEALTHY PATIENT = HAPPY PATIENT

- ▶ Schedule recall frequency according to risk assessment
- ▶ Ask your patient if he or she liked the treatment

07 CHECK

MAKE YOUR PATIENT SMILE

- ▶ Do a final check for remaining biofilm
- ▶ Ensure calculus is fully removed
- ▶ Accurately diagnose caries
- ▶ Protect with fluoride and apply AIRFOAM for a fresh and smooth feeling
- ▶ No polishing anymore

06 PIEZON® PS

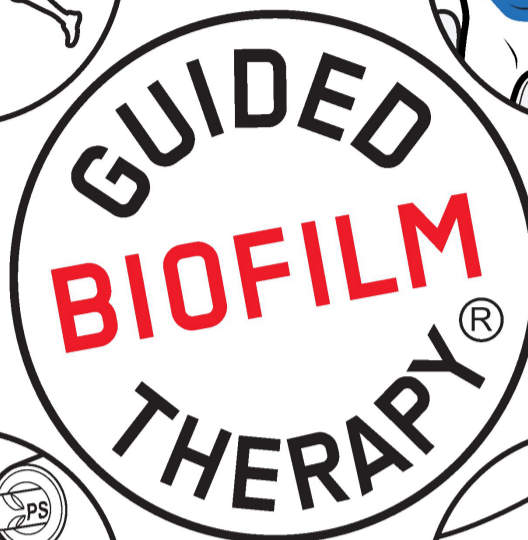
REMOVE REMAINING CALCULUS

- ▶ Use the minimally invasive EMS PIEZON® PS Instrument supra- and subgingivally up to 10 mm
- ▶ Clean > 10 mm pockets with mini curette
- ▶ Use EMS PIEZON® PI MAX Instrument around implants up to 3 mm subgingivally and on restorations

05 PERIOFLOW®

REMOVE BIOFILM IN >4 TO 9 MM POCKETS

- ▶ Use AIRFLOW® PLUS Powder on natural teeth in deep pockets and root furcations and on implants
- ▶ Use new and slimmer PERIOFLOW® Nozzle



01 ASSESSMENT AND INFECTION CONTROL

ASSESS EVERY CLINICAL CASE AND IMPLEMENT HYGIENE MEASURES

- ▶ Start by rinsing with BacterX® Pro mouthwash
- ▶ Assess teeth, gingiva and periodontal tissues
- ▶ Assess implants and peri-implant tissues

02 DISCLOSE

MAKE BIOFILM VISIBLE

- ▶ Highlight to patients the disclosed biofilm and their problematic areas with EMS Biofilm Discloser
- ▶ The color will guide biofilm removal
- ▶ Once biofilm is removed, calculus is easier to detect

03 MOTIVATE

RAISE AWARENESS AND TEACH

- ▶ Emphasize the importance of prevention
- ▶ Instruct your patients in oral hygiene
- ▶ EMS recommends interdental brushes or dental floss as well as electric or manual toothbrushes and AIRFLOW® erythritol toothpaste for daily home care

04 AIRFLOW® MAX

REMOVE BIOFILM, STAINS AND EARLY CALCULUS

- ▶ Use AIRFLOW® MAX for natural teeth, restorations and implants
- ▶ Remove biofilm supra- and subgingivally up to 4 mm using AIRFLOW® PLUS 14µm Powder
- ▶ Also remove biofilm from gingiva, tongue and palate

The eight steps of GBT: Guided Biofilm Therapy is an evidence-based, systematic, risk-oriented, and modular protocol for oral health prevention and therapy. The protocol can also be applied impressively in orthodontic preventive treatment.

Graphic: EMS

If you take the time and explain things to the children and their parents very simply and vividly, prevention becomes a given.

Metke: After the consultation, the preventive treatment package is agreed as part of the treatment. For most, that is not a problem.

What recall interval do you recommend for your orthodontic patients with fixed appliances?

Metke: Prevention is usually carried out in our practice once a quarter while orthodontic checkups are every four to six weeks. We incorporate the preventive treatment into one of the checkups. This means that the patients don't have to come back for an extra visit. We can combine the preventive treatment with changing the arch wire—that doesn't have to be the case, though.

Why did you decide to switch from a conventional method to GBT two years ago?

Mengel: We were impressed by the GBT protocol (see the graphic above). Disclosure before tooth cleaning, the focus on checking oral hygiene, and patient education were particular highlights for us. Of course, treatment with the AIRFLOW® Prophylaxis Master was also an important point because this means preventive treatment can be readily implemented in orthodontics.

Let's talk about the implementation. How do you go about GBT with your young patients, Ms. Berghöfer?

ZMP Isabel Berghöfer: Our patients are given detailed training in oral hygiene when the multibracket appliance is inserted. They are also given a set of cleaning brushes and shown how to use them on a model and in their own mouth. At the first checkup we concentrate only on oral hygiene and perform an initial professional mechanical plaque removal based on the GBT concept. I discuss with my patient whether they could implement the tips for homecare and how they went with handling the cleaning brushes. Then I disclose the biofilm and the patient and I examine where plaque is still present. I always clean one jaw together with my patient and give them tips. I say to the children, "You'll be a teeth cleaning professional when you're finished here!" Regarding the approximal plaque index, we aim to achieve values below 25 percent, which is really good oral hygiene—and we explain this to our patients as well.

Which devices do you use for tooth cleaning and which powder do you use?

Berghöfer: We work only with the AIRFLOW® Prophylaxis Master from EMS and use predominantly Plus Powder. We use Classic Comfort Powder only for severe discoloration.

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With the help of the booster function, which shifts the device to level 8 automatically, we can also clean just about everything with **Plus Powder**. That makes our work much easier, and **Plus Powder** is clearly more pleasant for the patient.

Removing biofilm from enamel around brackets is difficult. Can you also clean under arch wires and ligatures with the Airflow device?

White spot lesions: a known problem in orthodontic therapy

White spot lesions (WSL) very frequently develop during orthodontic treatment with fixed orthodontic appliances. The literature states a prevalence, depending on the definition, of between 11 and 97 percent [1, 2]. Although WSLs often regress after removal of orthodontic appliances, in more than half of affected teeth they can remain an undesirable esthetic manifestation even after 15 years [3].

WSLs develop because of demineralization resulting from additional retention niches for biofilm and the increased difficulty of removing biofilm in homecare. Periodontal diseases can also lead to accumulation of biofilm at the gingival margin. A combination of homecare and professional biofilm management therefore appears necessary to preserve the dental health of orthodontic patients [4, 5].

According to a recent survey by the German Oral Hygiene Foundation (DMS 6), about 40.5 percent of children in Germany need orthodontic treatment [6], although not all of these children need to be treated with fixed appliances. But the significance of the problem is already apparent in light of the high numbers needing treatment and the high prevalence of WSL.



Guided Biofilm Therapy in the orthodontic practice: Situation after disclosure ...



... and after treatment with the AIRFLOW® Prophyllaxis Master and Plus Powder from EMS.

Previously, preventive treatment was always performed when the arch wire was changed and probably also needed more time. Using the **AIRFLOW®** Handpiece and **Plus Powder** enables the area between the bracket and the sulcus to be cleaned thoroughly, even if the gingiva is swollen. It is difficult to reach this area using brushes and it is very unpleasant if you need to work very close to the gingiva with the brushes. I would also say that we were not always able to remove hundred percent of the biofilm in the brackets using brushes. That was more often the case with ceramic brackets. We could remove the plaque completely with the **Airflow**. The cleaning effect is better and it is much more pleasant for the patients.

Have you or your prevention team completed GBT practice training in your practice? Was the training helpful?

Berghöfer: Because the **Max** Handpiece is very ergonomic and very light and has a very narrow tip at the front, I can really reach into all areas. I can apply the handpiece so that I can easily reach around the bracket and the interdental spaces under the arch wire as well the sensitive sulcus area between the bracket and the gingiva. With the previous method using brushes, it was impossible to clean these areas adequately.

The hard calculus is removed after the biofilm because this can then be seen more clearly. What experience do you have with the EMS PIEZON® NO PAIN piezoceramic ultrasonic system in orthodontic prevention?

“We consider performing preventive treatment as a sign of the quality of our treatment.”

Berghöfer: This ultrasonic device oscillates in a linear path and the **No-Pain** module adjusts its output automatically as soon as it detects resistance on the surface, such as that caused by calculus. Before we used the **PIEZON**, the more awkward and larger ultrasonic tips sometimes debonded brackets.

But since we introduced GBT, we have not had this problem at all.

Dr. Metke, what do you think are the most important differences between GBT and your previous prevention method?

Metke: One is really clear: If you work with brushes, you have to dismantle the arch to be able to adequately reach the tooth surfaces.

Mengel: The whole team in our practice completed training. During training we were able to test the device and familiarize ourselves with the concept. That was very, very helpful. For one thing, we learned how to handle the devices. They are delicate so they have to be handled and maintained correctly. We also learned how to use the powder on a patient, how to clean the handpiece and how to clean the sulcus. It makes absolute sense to have the training. I would recommend it to every practice.



Disclosing is followed by the GBT treatment. ZMP Isabel Berghöfer relies on the combination of AIRFLOW® Prophyllaxis Master and Plus Powder from EMS.

Photos: Mengel & Metke



At the first checkup she discusses with the patient whether they could implement the tips for homecare and how they went with handling the cleaning brushes.

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