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Patient Satisfaction with Prevention

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Guided Biofilm Therapy (GBT) is a modular system for a contemporary prevention session. The eight individual GBT modules can be individually adapted to the treatment and patient situation, whether for initial therapy or maintenance therapy. A team of authors using GBT in the dental practice has added new steps to its prevention concept and conducted a patient survey to determine satisfaction with this system.

Guided Biofilm Therapy (GBT) is a standardized, systematic, risk-based and needs-oriented prevention concept and is founded on the latest scientific findings and technical advances for successful biofilm management.

GBT was developed jointly by EMS, the Swiss Dental Academy (SDA), universities (especially the University of Brescia, Italy, Prof. M. Mensi) and various practitioners **(Fig. 1)**. Besides effective cleaning performance and a high degree of substance preservation, the therapeutic goals are maximum comfort for the patient and practitioner alike.

The course of therapy has been well studied in terms of technique and materials, and its effectiveness has been proven based on evidence. This also applies to patients' satisfaction with individual steps such as AIRFLOW® and PIEZON® PS [7-14].

Patient satisfaction data is however not yet available for the entire GBT protocol. But since patient satisfaction is an important element of a well-functioning recall system and part of our internal quality management, our goal was to close this gap by interviewing 50 patients.

The Guided Biofilm Therapy Protocol

GBT is a systematic, standardized process protocol based on the „Axelsson/Lindhe recall session" [1-3]. Based on eight modules, GBT can be used for both new and current patients undergoing maintenance therapy [5,6]. The explanations described as follows refer to maintenance therapy. The modules can be applied individually according to the age-specific, risk-oriented diagnosis.

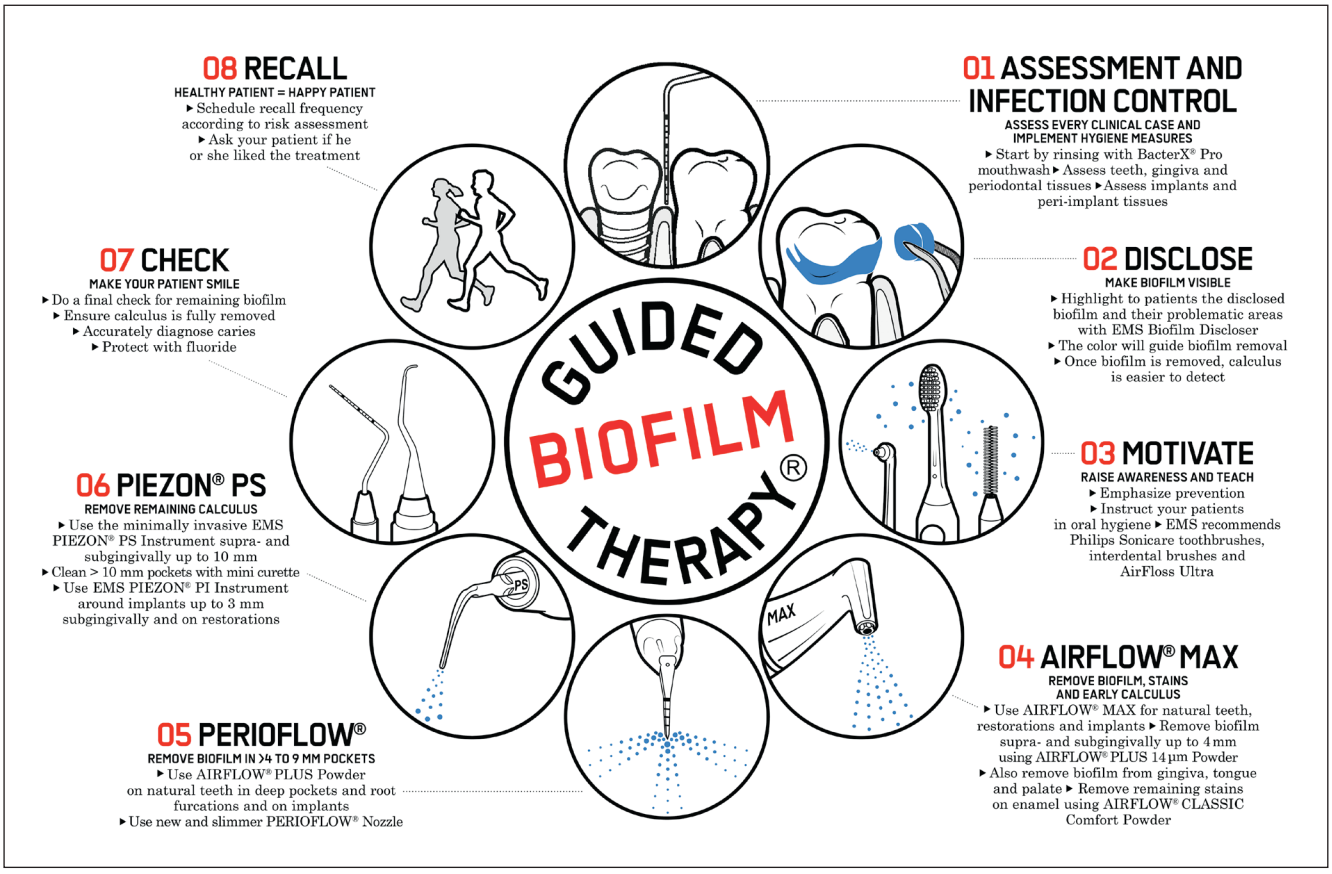


Fig. 1: The eight GBT modules.

In the following, only the new GBT steps (changes from the Axelsson/Lindhe „recall session") are explained:

- Treatment begins with **welcoming the patient** and infection control for our staff. Prior to each treatment we have our patients rinse with a 0.1% CHX solution. This facilitates a reduction of germs in the aerosol by approx. 60% [15]. This value can be increased to approx. 95% germ reduction through good extraction technology with a high-vacuum extraction system [16].

- **Disclosure of the supragingival biofilm** to determine an accurate plaque index, to motivate patients to improve their oral hygiene at home and to remove biofilm professionally and systematically. To protect the hard tooth substance, only those areas are treated that have been rendered visible by staining (disclosure) [17-19].

- **Biofilm management:** As biofilm is now clearly recognized as the main cause of the most common diseases of the periodontium, we start with subgingival and supragingival biofilm removal. We work exclusively with the AIRFLOW® Prophylaxis Master and erythritol powder (AIRFLOW® PLUS Powder). Only in rare cases of extremely severe discoloration do we use sodium hydrogen carbonate powder (AIRFLOW® CLASSIC Comfort Powder). However, it is important to always start with the AIRFLOW® PLUS Powder to ensure that sodium bicarbonate powder is only used on healthy enamel [20-26]. The AIRFLOW® handpiece is used for supragingival scaling and in pockets up to 4 mm. In deeper residual pockets > 4 mm, a special handpiece (PERIOFLOW®) with a depth-marked nozzle and AIRFLOW® PLUS Powder, erythritol, is used. [13].

- **Management of mineralized coatings:** This is followed by targeted supragingival and subgingival calculus removal [14].

The focus here is very much on preserving substance, i.e. we only remove supragingival calculus where there really is calculus to be seen. Subgingivally we are guided by our periodontal findings and the results of our probing (Hu-Friedy 11/12 Explorer). We work with piezoceramic ultrasound because the parallel direction of movement is particularly gentle on the tooth substance (PIEZON® PS instrument) [7, 26-30].

Materials and methods:

The survey was conducted in the first three months of 2019. The survey involved 50 patients who had been recalled regularly for several years before switching to GBT (2005 to 2011 and 2012 to 2015, respectively). The youngest patient was 28 years old, the oldest 79. The old treatment standard corresponded to the protocol in **Figure 2**: years 2005 to 2011 and 2012 to 2015, respectively. The patients were informed about the planned survey. They had to provide their written declaration of consent and had the chance to participate in the prize draw to win an electric toothbrush. The questionnaires and prize draw numbers were anonymized. Questions 1 to 5 were scored with a visual analog scale (VAS) from 0 to 10. Questions 6 to 8 were answered by checking the boxes **(Fig. 3)**. The patients were requested to fill out the questionnaire in the waiting room immediately after their GBT treatment. The evaluation was numerical and the results were presented descriptively.

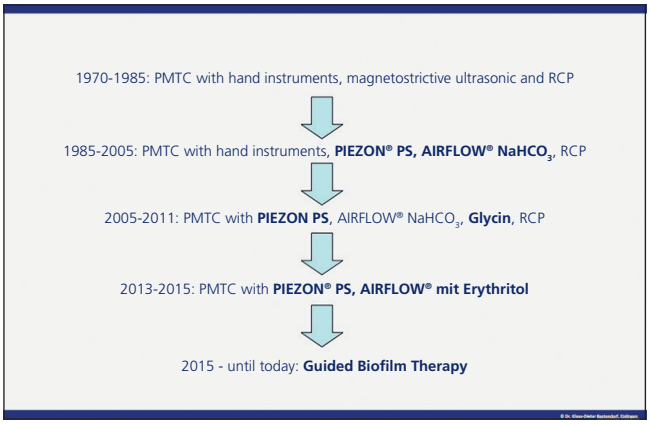
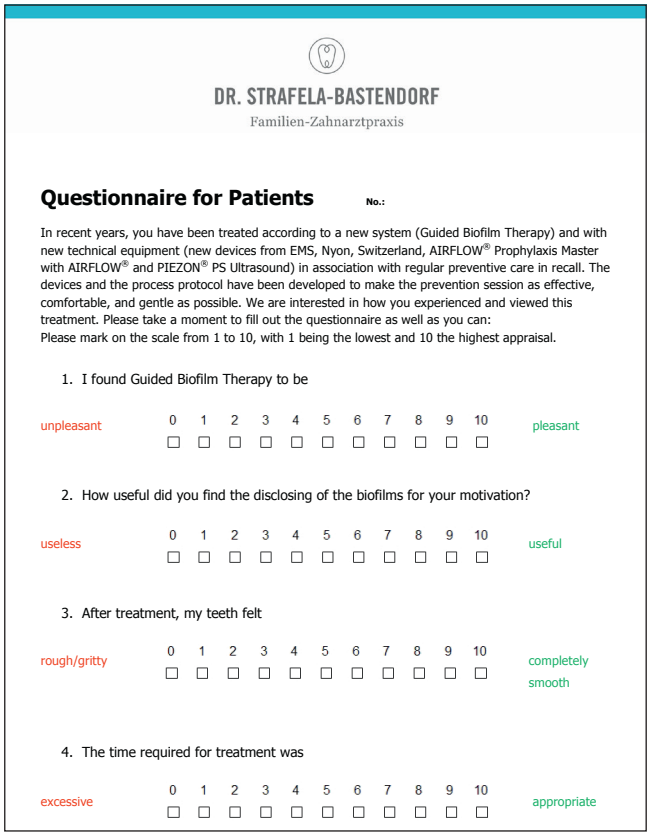


Fig. 2: The development of GBT over time.



DR. STRAFELA-BASTENDORF
Familien-Zahnarztpraxis

Questionnaire for Patients No.:

In recent years, you have been treated according to a new system (Guided Biofilm Therapy) and with new technical equipment (new devices from EMS, Nyon, Switzerland, AIRFLOW® Prophylaxis Master with AIRFLOW® and PIEZON® PS Ultrasound) in association with regular preventive care in recall. The devices and the process protocol have been developed to make the prevention session as effective, comfortable, and gentle as possible. We are interested in how you experienced and viewed this treatment. Please take a moment to fill out the questionnaire as well as you can:
Please mark on the scale from 1 to 10, with 1 being the lowest and 10 the highest appraisal.

1. I found Guided Biofilm Therapy to be

unpleasant 0 1 2 3 4 5 6 7 8 9 10 pleasant

2. How useful did you find the disclosing of the biofilms for your motivation?

useless 0 1 2 3 4 5 6 7 8 9 10 useful

3. After treatment, my teeth felt

rough/gritty 0 1 2 3 4 5 6 7 8 9 10 completely smooth

4. The time required for treatment was

excessive 0 1 2 3 4 5 6 7 8 9 10 appropriate

Fig. 3: A total of 8 questions were answered by 50 patients by checking boxes.

The results obtained

- *Subjective feeling*
  95% of the respondents stated that they found the treatment pleasant (score > 5); for 5% of respondents the rating was right in the middle between pleasant and unpleasant **(Fig. 4)**.

- *Staining (disclosure) of the biofilm*
  100% of respondents (score > 5) evaluated staining (disclosure) as a useful motivation for oral hygiene at home **(Fig. 5)**.

- *Treatment result*
  94% (score higher than 5) stated that their teeth felt smooth after treatment.

- *Time required*
  98% of the respondents (score higher than 5) considered the amount of time required as appropriate; one patient could not decide (score = 5) **(Fig. 6)**.

- *Recommendation rate*
  98% (score > 5) would recommend this treatment concept to others, in fact 80% of them „unconditionally" (score 10). On this question too, one patient could not decide (score = 5).

- *Comparison with the former method*
  Acceptance of current Guided Biofilm Therapy was consistently positive. 100% of respondents find the new approach better. The comments included the following:
  „faster and more effective, feels more gentle, sensational tooth cleaning, good feeling, much more pleasant, less painful".

- *Intensity of pain*
  60% had no pain; 38% said they felt less pain and only 2% (one patient) felt the same pain as with earlier treatments.

- *When did the pain start?*
  The results for the use of the AIRFLOW® device were particularly positive, which no patient experienced as painful. Seven patients reported pain during pocket measurement and 14 during the application of ultrasound. Unfortunately, no further differentiation (VAS) of pain was performed.

The results can be assessed as very good. This is particularly apparent from the question of recommendation and patient satisfaction: 98% would recommend the treatment to others and 100% find the new concept better than the course of treatment according to the old process protocol. In addition, there were no negative comments on the use of the AIRFLOW® device.

Discussion

Efficient and gentle removal of biofilms and mineralized deposits are essential components of prevention, initial and maintenance therapy. For a long time, the focus was solely on cleaning performance. The protection of substances is becoming increasingly important in modern recall.

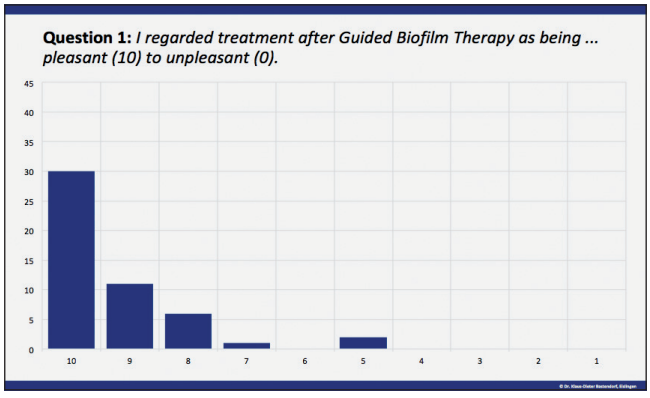


Fig. 4: The answers to the questions were presented graphically: here the evaluation of the subjective feeling.

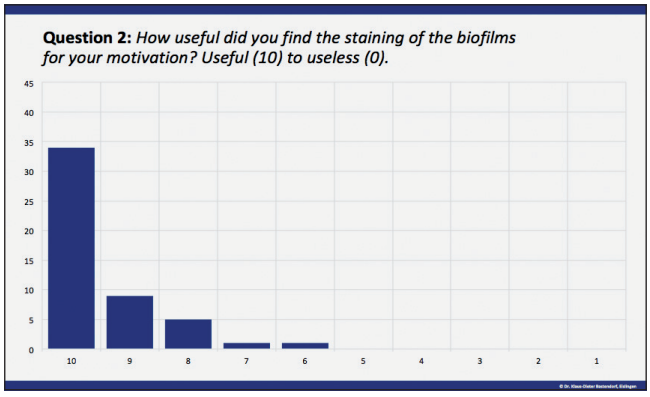


Fig. 5: Staining (disclosure) of teeth was unanimously perceived as a useful motivation.

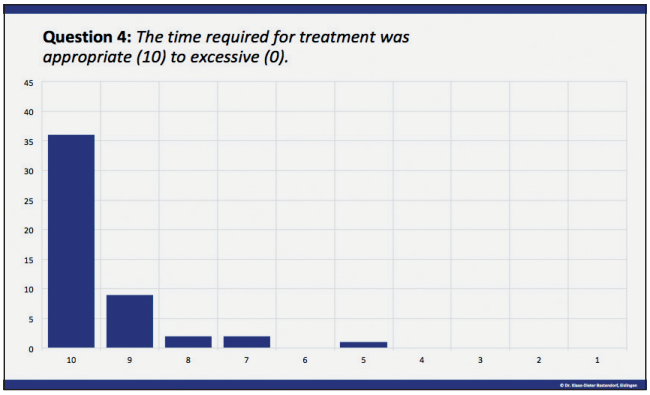


Fig. 6: Almost all patients felt that the time required for treatment was justified.

Back in 1997, Flemmig [30-32] called to avoid a loss of more than 0.5 mm cement/dentine in maintenance therapy over a period of 10 years. Patient comfort has also gained in significance, as usually only satisfied patients keep their recall appointments. Study data on the use of various aids and the resulting patient comfort have been available for some time now. Wennström [7] compared the use of hand instruments with PIEZON® PS ultrasound in initial therapy (scaling root planing). The advantages clearly lay with the PIEZON® system: For the same clinical results, the treatment time was three times shorter, the anesthetic consumption 2.5 times lower, and patient comfort much better. Aslund et al. arrived at similar results [8]: When comparing curettes with PIEZON® PS in non-surgical periodontal therapy regarding pain and cervical hypersensitivity, the clinical parameters improved equally positively in both groups. However, after 1, 4 and 8 weeks the use of PIEZON® PS caused significantly less pain and hypersensitivity. Wennström et al. [9] conducted a comparative study in maintenance therapy (PIEZON® PS vs. AIRFLOW®/glycine). There were no differences in clinical and microbial values, but patient comfort was much higher in the AIRFLOW® group. Bühler et al. [10] published a systematic review on discomfort in non-surgical periodontal therapy. The result showed less discomfort when using AIRFLOW® than with ultrasonic devices and hand instruments. Sultan et al. [11] came to the following conclusion in their critical literature review: AIRFLOW® with low-abrasive powders (glycine, erythritol) is a reliable, highly efficient and practical treatment approach for subgingival debridement. It appears to be superior to the conventional treatment approach in terms of patient comfort, safety and time required. Ethan et al. [12] came to the following conclusions in their systematic review: The advantages of AIRFLOW® with low-abrasive powders (glycine, erythritol) lie in the efficient removal of biofilm without damage to periodontal soft and/or hard tissue. Further advantages are patient comfort and the time required. Moene et al. [13] compared ultrasound with PERIOFLOW® PLUS powder in maintenance therapy for patients with pocket depths > 4 mm. Patients clearly preferred PERIOFLOW® PLUS powder, as there was less pain during treatment. Switching the biofilm removal prior to removing the mineralized deposits in the course of GBT also considerably enhances patient comfort [14]. These results are also consistent with the results of our survey.

In our practice, we have been working with the gentle aids such as AIRFLOW® and PIEZON® PS in the recall session for some time now. Since we have offered GBT to our patients as a further step forward in the recall protocol, we wanted to gain an impression of the acceptance of this method with this patient survey. The survey was conducted with a patient collective that had been regularly involved in our recall for many years.

The investigation provided predominantly descriptive information and the results were very positive throughout. We mainly attribute this to the gentle, painless, anxiety-reducing and targeted treatment. Which individual steps of GBT (staining (disclosure), biofilm removal first with AIRFLOW®/PERIOFLOW®/ PLUS powder [erythritol], then PIEZON® PS) led to very high patient satisfaction could not be ultimately clarified with this survey. What is certain is that AIRFLOW® technology, above all, and also the reduced time required for the application of ultrasound thanks to switching, are essential factors for high patient satisfaction.

Summary

By switching the process protocol for the prevention session to Guided Biofilm Therapy, as described above, which reflects the latest scientific findings and technical progress, we have succeeded in achieving a high standard of structural and process quality. Furthermore, patient satisfaction (quality of results) plays a key role in the success of prevention, which correlates strongly with long-term patient loyalty. This, in turn, depends on the quality of the treatment performed and the pain/well-being experienced, as only satisfied patients are likely to come back.
To determine the satisfaction of our patients after switching to Guided Biofilm Therapy, we requested 50 of them to fill out a questionnaire. The feedback was consistently positive on all questions. In particular, the comparison with former treatments was clear: All 50 patients questioned prefer the new method to the old one. ■

Images: Dr. K.-D. Bastendorf and EMS

Conflict of interest:
By virtue of his specialization in prevention, Dr. K.-D. Bastendorf is a consultant for E.M.S., Electro Medical Systems S.A., 1260 Nyon – Switzerland.

Dr. Nadine Strafela-Bastendorf
Dr. Klaus-Dieter Bastendorf
Family Dental Practice
Gairenstr. 6
73054 Eislingen
praxis@strafela-bastendorf.de
info@bastendorf.de

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