PEP: patient-supported esthetic protocol

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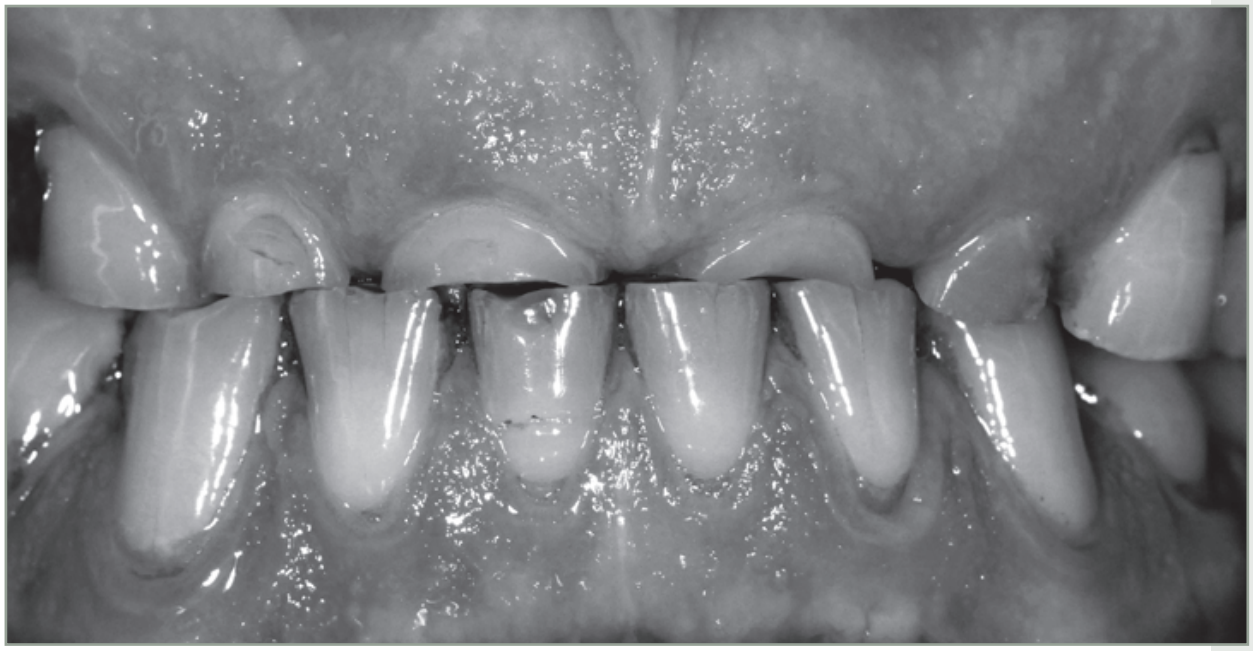

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Abstract

Nowadays, materials and process engineering, especially digital-based techniques, are becoming more and more important for esthetic dentistry. Digital communication is also increasing, which is accompanied by a change from a personal contact to a more technocratic and less emotional and empathic communication. Sometimes our personal experiences and perceptions, based on dental, empirical knowledge, collide with this development. It also happens very often, that the patients – with their perceptions, concerns and not least their esthetic preferences – feel neglected by the treatment team. Patient's wishes often cannot be described adequately.

The patient-supported esthetic protocol (PEP) described in this article is a simple tool with which the patients are involved in the esthetic concerns of their treatment. The patient feels to be more perceived, respected, and their wishes implemented, without affecting the medical therapy. At the same time, PEP is used for communication within the health care team, such as the dentist and the dental technician. Because of the clear record it is easy to recognize the changes the patient desires, and the suggestions a teammate developed with the patient, without having been present at the session. Furthermore, the protocol can be attached to the patient's medical history and, therefore, could be a tool for quality management.

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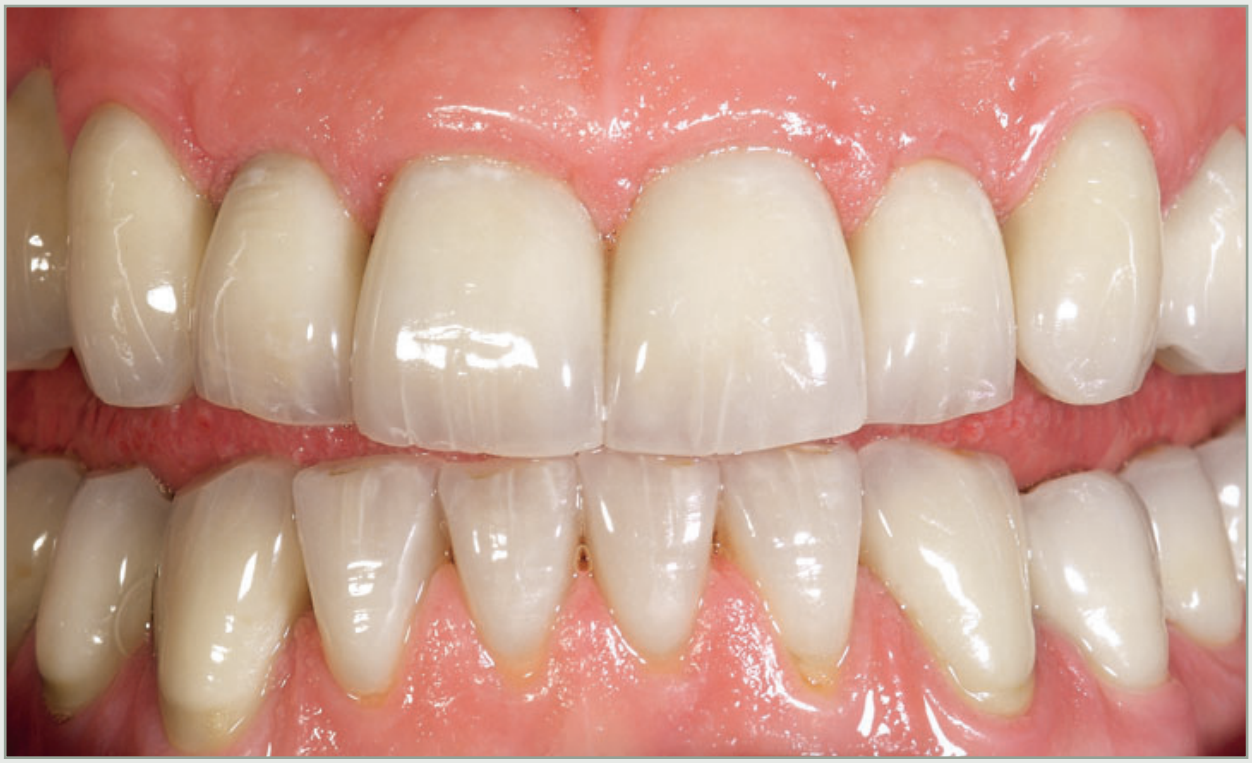


Introduction

In today's society, there is a growing awareness of the fact that attractiveness, activity and youthful attributes are affecting our personal and professional success. This increases the desire for beauty; in addition to health and general well-being, esthetics is considered of high importance. Not only do the media suggest that one's success is related close to one's appearance, but also clinical studies appear to support this theory.[1-4] Media, in turn, define or at least influence our ideal of beauty and point out ways on how to achieve these goals.

This points to a type of unification, which is reflected in fashion. At the same time, and which is no less important, we want to focus on our individuality and personality.

These ambivalent desires are causing stress under which we all more or less suffer.[5] At least there is evidence that there is an increasing conscience for oral health, considering the consultations at the dentist and dental hygienist.

In the meantime, a parallel medicine has developed that seems to be able to fulfill just that need.

In dentistry, esthetically motivated treatments are increasing.[6] At least there is evidence that there is an increasing conscience for oral health, considering the consultations at the dentist and dental hygienist.[7] This separates the patient–doctor relationship in a medically necessary and – as important – cosmetic part. The treatment team, including the dental technician, has to face this development and has to look intensively into the wishes of the "customer". It becomes obvious that our acquired knowledge about esthetics often has little to do with the expectations of the patient.

The problem with communication, understanding and misunderstanding

We have to deal with patients who are influenced by their social environment, culture, education, professional position and medical history, patients who have access to a vast amount of information through the Internet and other media. This information makes a contribution to their idea of a perfect appearance.

This personal development may only be understood to some extent by the treatment team. This is forcing us all the more to the conversation with the patient. Also, our own esthetic perception is influenced by our professional skills and can't always be understood by the patient.[8] Even members of the treatment team perceive relevant issues differently.[9,10]

The dialogue seems to deteriorate also in strictly medical matters, as medical ethicist Maio,[11] emphasizes again and again in his publications, but is also stressed by dentists, in particular Allais, in their presentations.[12] This dialogue is important for the patient's healing process, but it is also contributing to mutual understanding.

Unfortunately, it is not possible in esthetic dentistry to send the patient into a dressing room to get equipped with a new set of teeth off the rack. There is also a limit to applying formal geo-

metrical principles of esthetics,[12] and systematic proceeding does not grant dentofacial harmony nor the patient's wishes,[13] but in its consequence, this results in a unification and cannot match a persons facial physiognomy and one's uniqueness, which the patient wants to stress in a positive way and especially to be able to distinguish oneself. We all know the truly satisfying exclamation of our patients: "That is me again, I am finally able to recognize myself!" In this case, we usually met an idealized version of our patients without altering their character. If we accept the fact that the patient decides on the esthetic success or failure of our work, then our profession is truly satisfactory.

However, it is sometimes not possible to achieve these goals easily with all of our patients. Sometimes it is not possible at all.

Trying to solve this problem, the PEP has been developed; the Patient supported Esthetic Protocol.

The PEP aims to involve the patient into the whole diagnostic process until the finalization of the reconstruction; respectively to let the patient dictate the decision-making process, without neglecting our professional knowledge and skills.

In addition, the PEP supports the communication in the treatment team such as between the dentist and the dental technician. Because of the clear record it is easy to recognize the changes the patient desires, respectively the suggestions a teammate has developed with the patient, without having been present at the session and the need of a consultation. This precludes misunderstandings and contradictory statements.

The PEP is not an error analysis, or an esthetic checklist.[14] Both can be very useful for the attending dentist, but generally they follow a certain pattern and this results in standardization, which takes us back to the unification of fashion.

Checklists are helpful to analyze problems, but this is just a declaration of facts and does not develop further with the process of the treatment.[15-19]

Digital analysis or diagnostic procedures like computer imaging software engender similar schemes and it is questionable, sometimes impossible, to implement their results to the final reconstruction, because the idealization has strayed too far from the natural conditions (eg, DSD Digital Smile Design, Dental GPS – cosmetic smile design software, Smylist Professional smile design software, and many more).

The application

The structure of the PEP is the result of the reduction to the absolutely necessary. At first glance it may appear as insufficient, but it is easy to comprehend for the patient due to its straightforwardness.

It is merely a piece of paper (see Fig 1), on which all of the patients esthetic concerns and significant facts are noted, respectively sketched.

The sketches are most important, because with these drawings it is easier for the patient to visualize each step of the developing reconstruction. Every change is illustrated and the patient is able to comprehend necessary steps cognitively. It also helps to detect the repetition of certain issues or if the process is stuck on a treadmill.

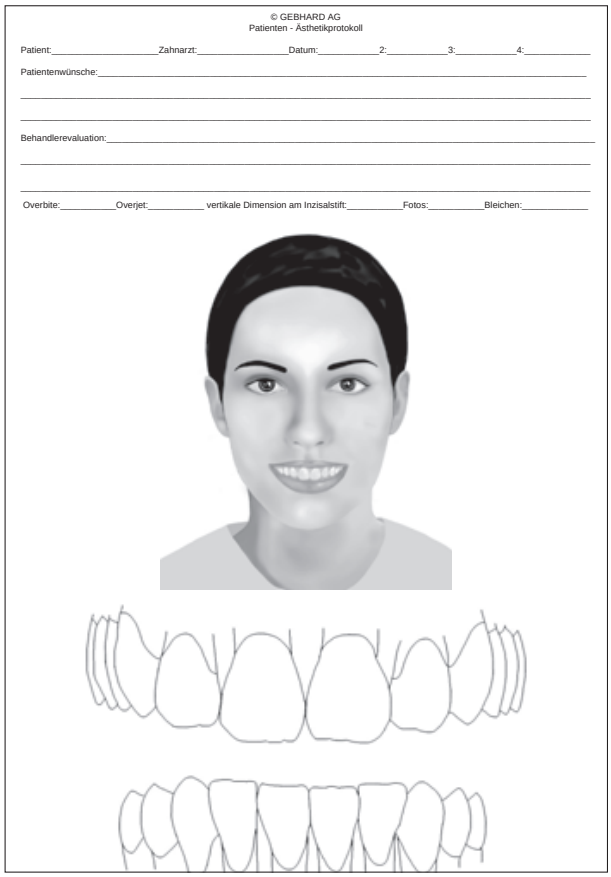


Fig 1 The PEP sheet, without questionnaire, schematic display or checklist.

The attending dentist or dental technician is forced to deal with the patient and the patient's desires before each work step, which represents a crucial moment and most important aspect of the application, that is to say, time for communication.

Note that it is important to maintain the following steps of the reconstruction in order to involve the patient fully and to acknowledge the patient's responsibility.

These described steps are not specifically designed for the PEP; rather the PEP integrates and bases these steps on an established treatment planning model. This is based on the following work steps:

- Diagnostic wax-up
- Mock-up
- Full wax-up
- Bisque try-in
- Finalization[20]

First step

Diagnostic wax-up

The PEP starts here, because this first diagnostic wax-up is a function and esthetic problem analysis, but also takes the patient's wishes into account.

First PEP analysis before initiation of the treatment

At the first session, before the treatment even starts, the member of the attending treatment team writes down the patient's esthetic wishes and issues, independent of the medical anamnesis. Everything is noted, also issues that seem to be unimportant for the treatment itself, such as no treatment at full moon or absence of the patient's spouse. The evaluation of the dentist/dental technician gets recapitulated (of course with their approval), they should also recapitulate their own evaluation with the patient. Out of nervousness it happens that the patient has not understood critical steps of the treatment, to recapitulate that discussion helps to ensure, that the patient is fully aware of the dimension of the esthetic alterations and goals.

The individual facial physiognomy is sketched and described and it is to be discussed how important it is for the pa-

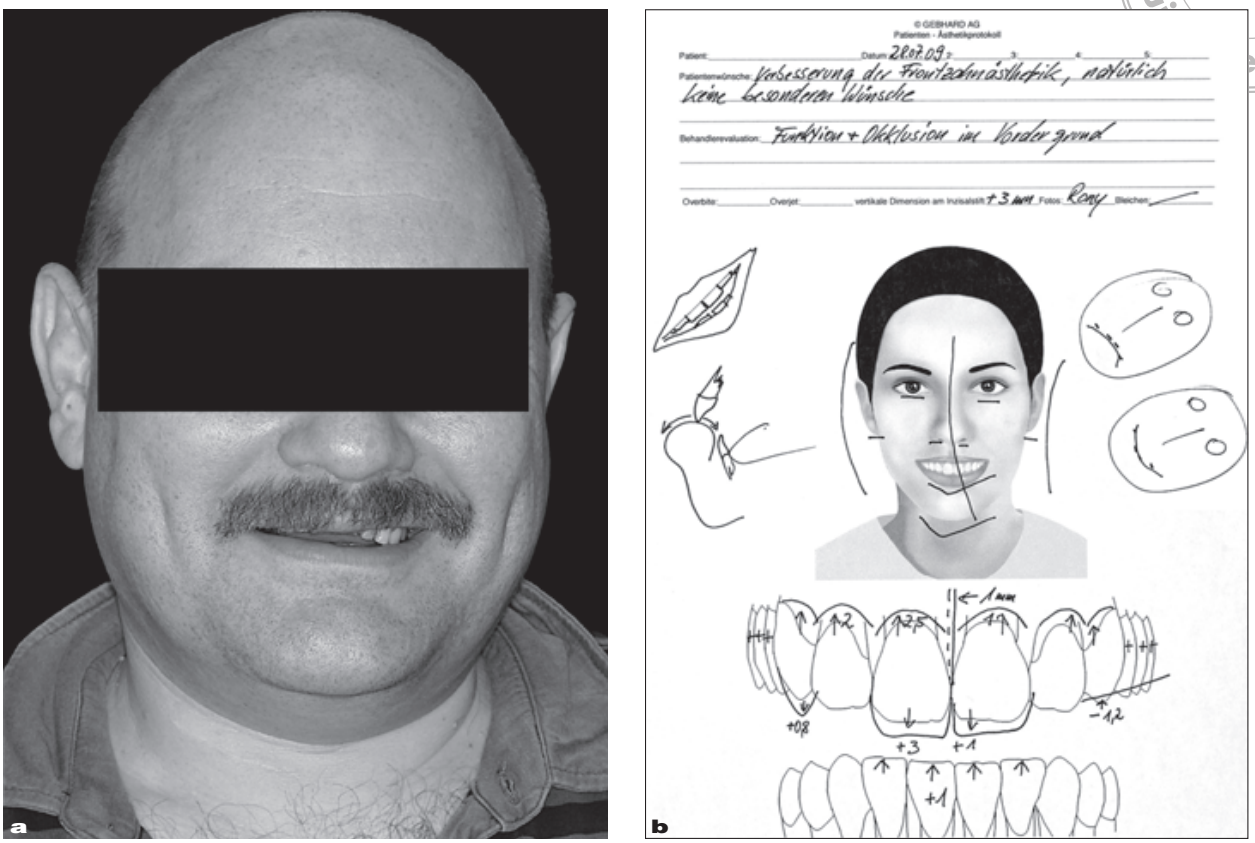


Fig 2 This is an example how the first analysis could look like with the PEP. It is filled in and sketched in the presence of the patient. This examination and the function analysis is the base for the diagnostics or the mock-up.

tient's appearance and the harmonic integration of the later reconstruction (see Fig 2).

It is to be explained why a particular tooth position blends better in the face and which factors dictate the length of the teeth. This is especially important, because patients very often feel uncomfortable with elongated front teeth (ie, buck teeth, see Fig 3).

Phonetic aspects have to be addressed and illustrated in a very simple way.

Unfortunately it's not possible to describe in this article all anatomical possibilities. It is important to discuss our ideas with the patient and define them as a first suggestion. A recommendation due to our expertise, and should be understood as just that.

Second step

Visualization of our proposition

In addition to functional issues, the developed esthetic analysis has to leave its mark on the diagnostic wax-up and should, whenever possible, be transferred into a mock-up (see Figs 4 and 5).

The visualization is the crucial tool in our treatment. This is the only way the patient can deal with it.

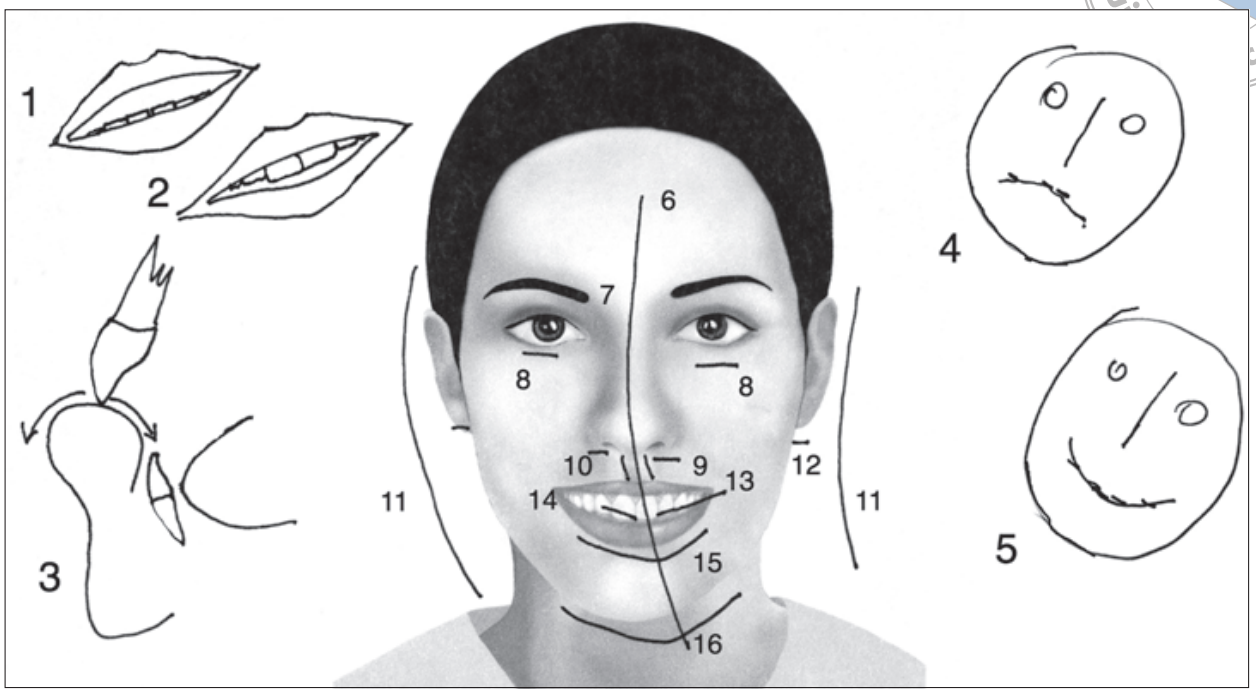


Fig 3 The most common records, which will be explained to the patient. Equipped with this basic knowledge, the patient should be able to evaluate our suggestions. These records give us the direction for the visualization through a mock-up or the diagnostic wax-up and first temporaries. The incisal edge of the front teeth should be visible when the muscles of facial expression are relaxed (1 and 2) – 1: the upper front teeth are not visible, that gives an impression of an older person, 2 appears juvenile. 3 refers to the phonetics, it represents the lower lip the arrow directed lingual represents the wet part of the lip, the arrow directed ventrally represents the dry part of the lip. The maxillary anterior teeth should touch with light pressure exactly between those two parts of the lip at the phonation of the F-sound (this could vary depending on the angle class). Figures 4 and 5 shows the course of the incisal edge in relation to the canines. If the incisal teeth are shorter than the canines, the gradient appears negative, even less attractive (4). On the other hand, the gradient appears positive and gives a friendly impression, if the canines are shorter than the front teeth (5). All other items represent given factors of the facial physiognomy, that we have to explain to the patient and we have to discuss how to integrate this information in the later reconstruction.[21,22]

The alterations wished by the patient are noted on the PEP in a different color. In this way changes are visualized (see Fig 6).

The adapted mock-up is the base for the functional diagnostic wax-up (see Fig 7). This diagnostic wax-up is implemented in first temporaries (see Fig 8). After some time these temporaries are reevaluated with the patient and the patient can declare his/her wishes again.

At the reevaluation of the temporaries, all desired alterations are noted in another different color, which is always in the presence of the patient.

After assembling a full wax-up and trying it in (see Fig 9), we can visualize this acquired knowledge. Now the patient is able to instruct the smallest changes, which are also noted on the PEP.

If there are large transformations, the full wax-up can be implemented in second temporaries.

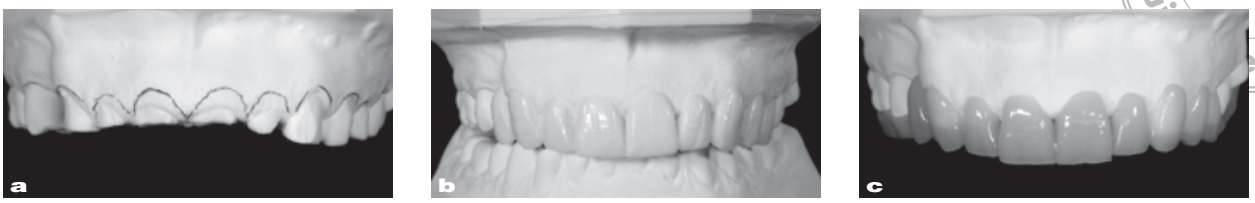


Fig 4 We implement this first suggestion by means of the first diagnostic wax-up in a mock-up.

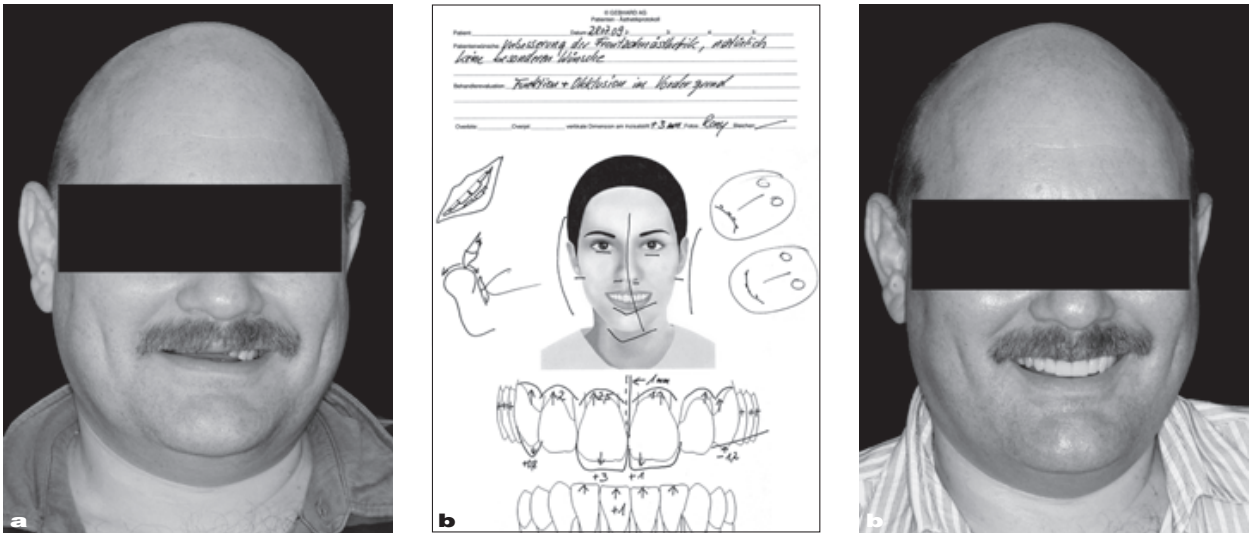


Fig 5 The mounted mock-up.

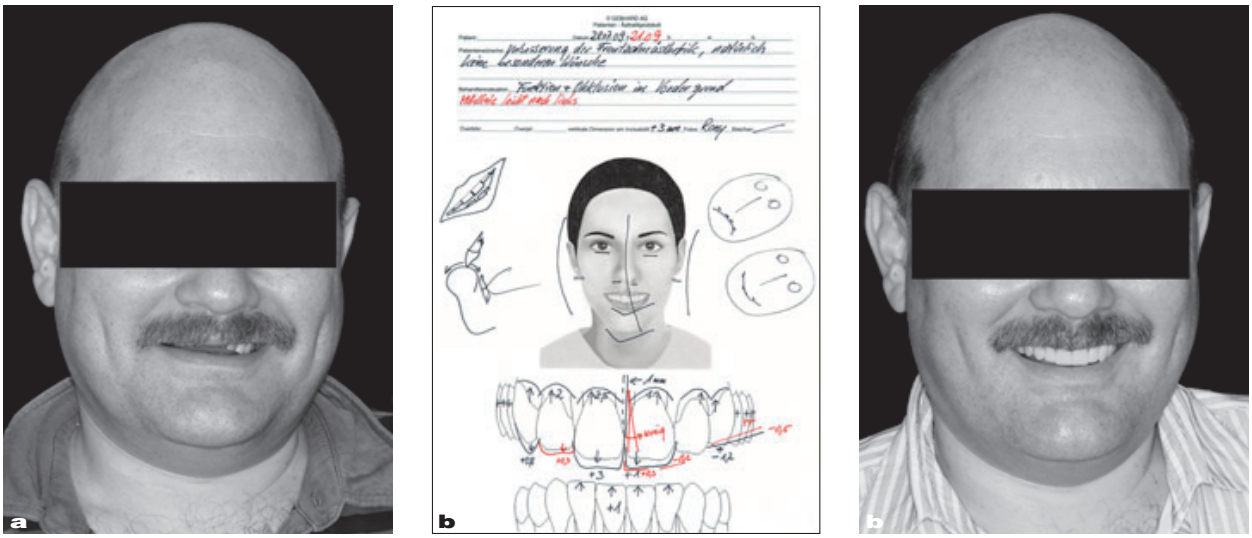


Fig 6 The mounted mock-up, with the changes that have been developed with the patient marked in red. Each step is documented in photographs to complete the protocol.

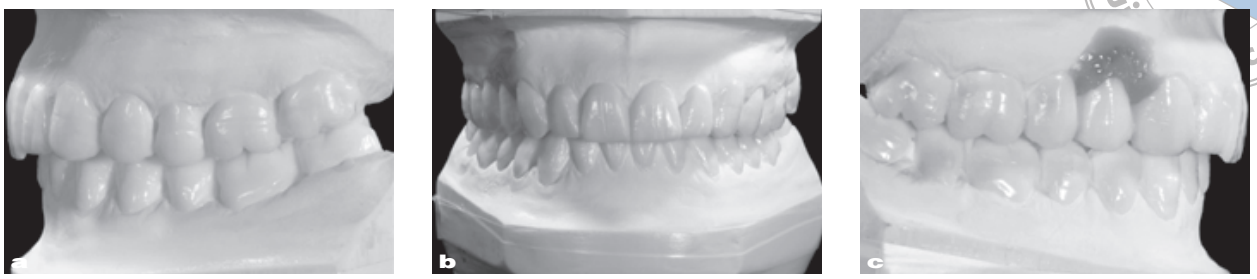


Fig 7 The definitive diagnostic wax-up. All developed points are realized in provisional shells.

Bisque try-in

All goals that have been developed in cooperation with the patient should be achieved after the bisque try-in.

With the help of the PEP it is easy to retrace how the final result has materialized (see Fig 10).

The reconstruction can be completed, if the patient agrees and has given the OK (see Fig 11).

Additional benefits

- The PEP motivates the patients to define their wishes and to participate as an essential part of the process of the development and the decision
- The PEP documents and improves communication.
- The PEP can be attached to the medical history of the patient.
- The PEP can add to the patient's commitment.
- The PEP could serve as quality management tool.
- The PEP helps to document and identify problems that are bothering the patient and are interfering with the reconstruction.
- The PEP could be of interest in a legal dispute.
- Any doctor in any esthetic discipline has to deal with the patient's requirements sympathetically, so the PEP could also be useful in other disciplines.

Conclusion

It is a very beautiful task to manufacture prostheses, especially front teeth reconstructions. But it is also challenging with every new patient and new situation. We are working with and for people in a very sensitive and intimate field.

Thanks to our routine and the established methods, it is possible to satisfy most of our patients, as well as us. However, we should assemble all our knowledge and effort to satisfy the patient, or at least to realize in time, that the patient's expectations can't be fulfilled. We should investigate the time for discussions, considerations and explanations at the beginning and during the treatment. This recompenses our effort and satisfies the patient's wishes and ensures that we won't lose this time at the end of a reconstruction, because of an unsatisfied patient.

The patient-supported esthetic protocol is an aim-oriented tool to deliberately achieve treatment goals step by step.

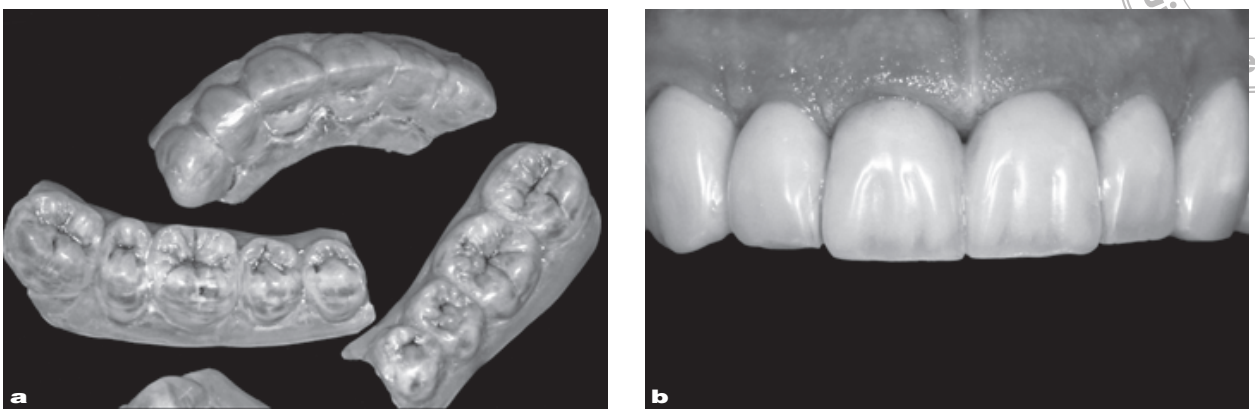


Fig 8 The tissue supported provisional shells before and after insertion.

Note

All the PEP sketches in this article were redesigned after the treatment in order to make them more clear and comprehensible for the readers.

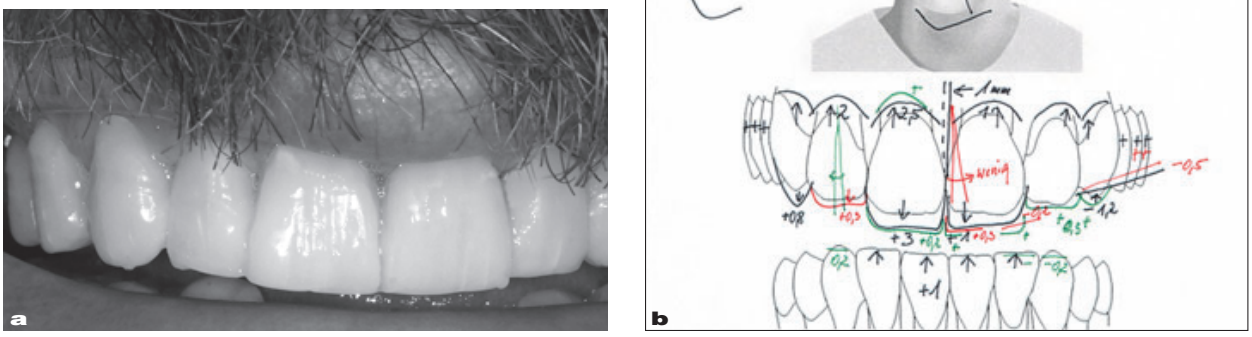
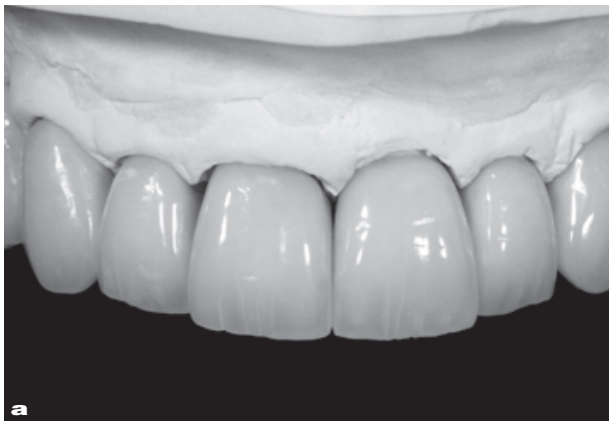


Fig 9 The full wax try-in. The desired alterations are noted again. It is ideal to implement changes directly in wax.



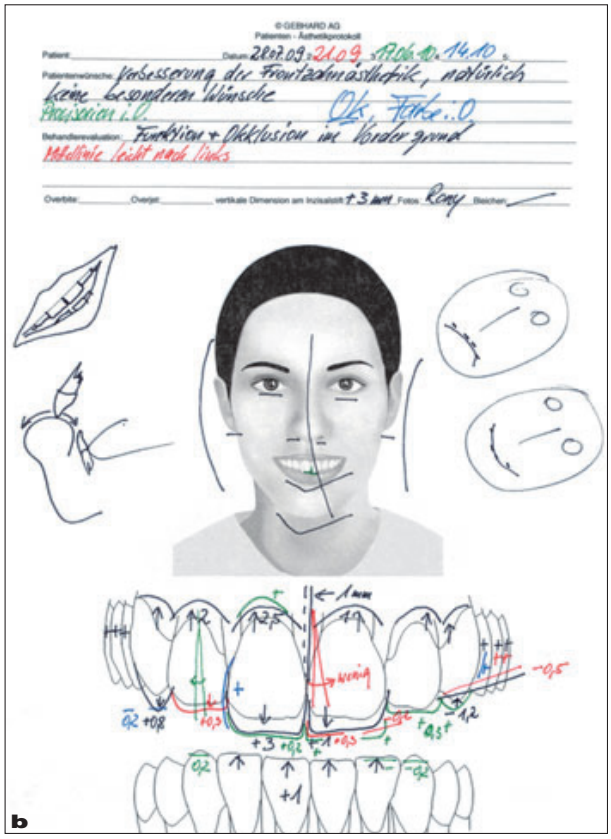


Fig 10 Last marginal corrective actions are noted during the bisque try-in and implemented in the reconstruction. The reconstruction can be accomplished after the patient has given the OK. Now the protocol is complete.

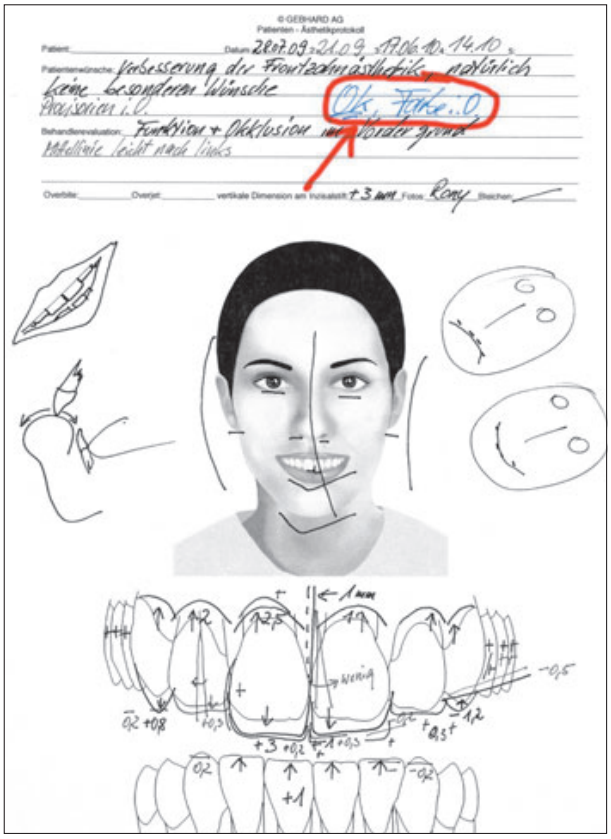


Fig 11 Only with the approval of the patient will the reconstruction be finalized.

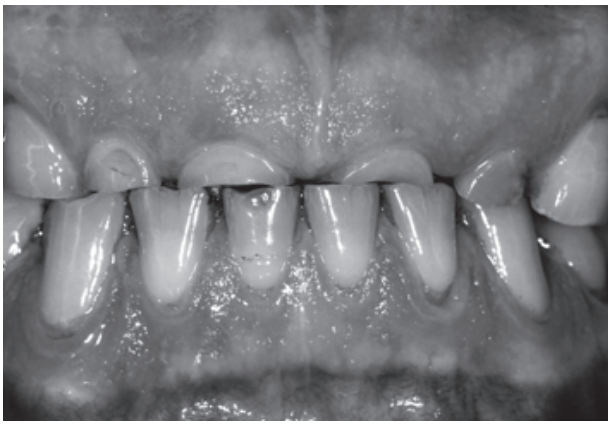


Fig 12 Initial situation.

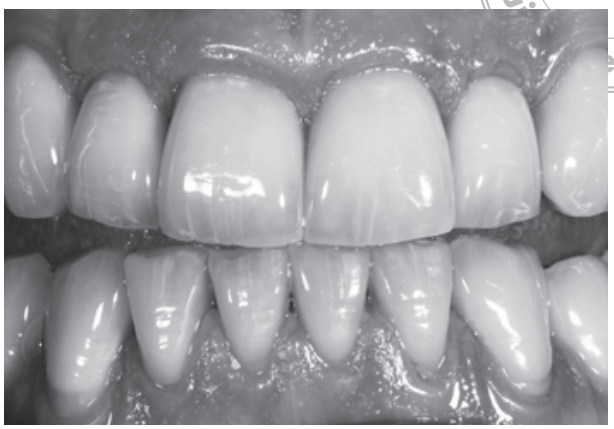


Fig 13 Final result.

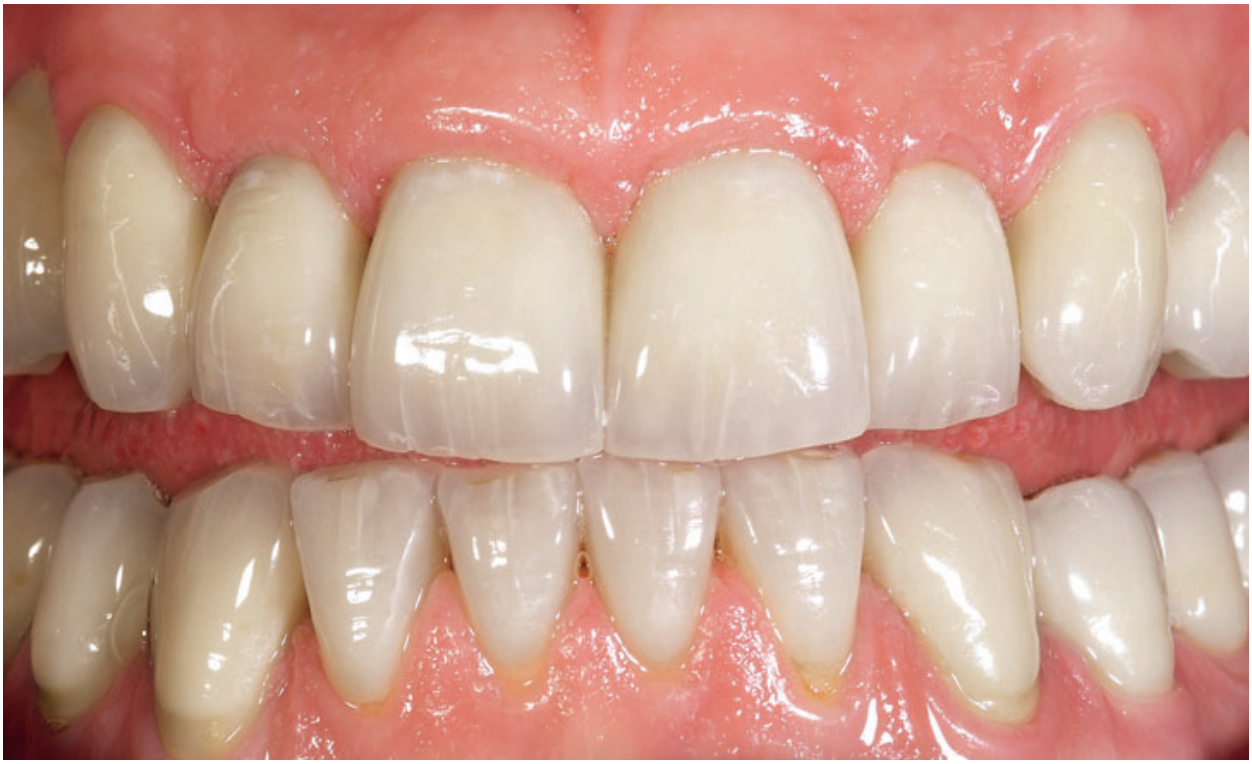


Fig 14 The completed reconstruction *in situ*.

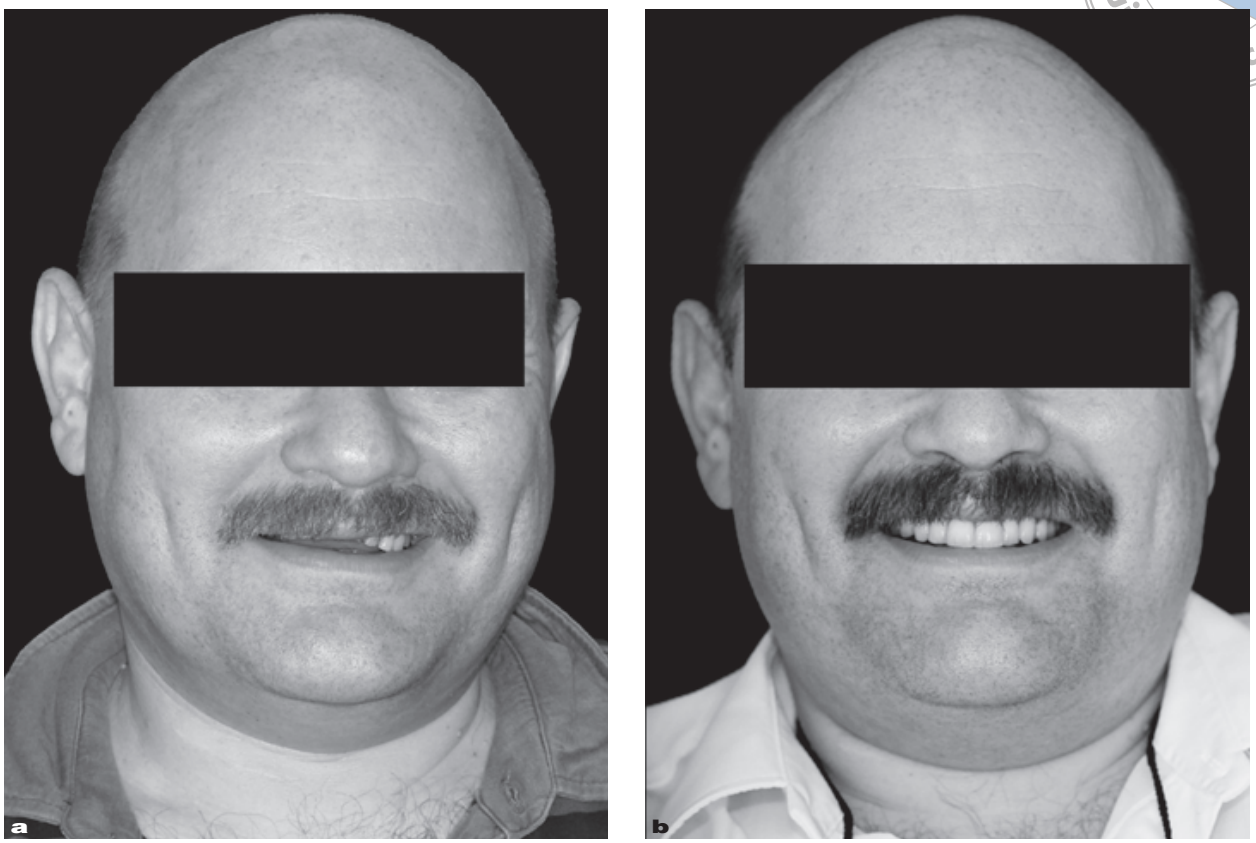


Fig 15 Before and after treatment. The patient was involved decisively in the developing process. The patient felt fulfilled and could always rely on our technical expertise.

Next steps

An iPad PEP version has been developed. This app allows filling and drawing in the protocol digitally and running over the pages of each work step. The app is assigned with an individual color code, so it is possible to communicate through this app with each team member color-code-based. The app also supports and documents the selection of the color shade and material – the shade recipe created by the dental technician or dentist – and all color corrections are recorded. The same applies for the layering scheme of direct composite restorations. Since the document can be filed as a PDF, the protocol could also be attached digitally to the patient's medical history (see http://pep-dent.com).

Acknowledgements

In close cooperation with my dentist colleges, I am able to experience motivating and inspiring moments. Those experiences are the basis for my interest in the patient.

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