Master your day-to-day communication with the lab, as simple as possible

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We as humans are social creatures and in most social settings our teeth are one of the most prominent features that we use and notice about the people around us. They make up our smiles, play a crucial part in our phonetics, and are the cornerstones in situations that involve social eating. In other words, enjoying the Sunday family dinner just isn't the same thing if you feel you can't eat, speak or smile amongst family and friends.

Nowadays, patients are often well-informed and interested in getting lost or damaged teeth replaced. Usually, they are not satisfied with restoring the pure functionality, but they rather want to rebuild what once was or even change to something better with respect to aesthetics, phonetics, function, and longevity alltogether.

To be successful in reproducing a natural-looking smile is a matter of collaboration in the highest sense of the word. Teamwork within the dental clinic, but also teamwork between the dental clinic and the dental laboratory, all interconnected trying to achieve what the patient wants and what the material science at the time permits, in each and every case.

As a prosthodontist, I get to meet the patient and see how the patient's face behaves while talking and smiling. From this information, I'm able to form a picture in my mind of where the teeth should be placed, what their dimensions roughly should be, and which tooth shape might suit the patient. The dental technician on the other hand might only get a digital scan of the preparations and maybe only an intraoral photo for shade reference, how likely is it that we will end up

with the same result in our mind? Highly unlikely, and that's the reason why the dental technician needs extraoral photos or a video. In large or complex cases, I might additionally go for a digital smile design approach from those photos. Usually not for the sake of showing the patient the photos, but rather as a communication instrument with the dental technician. Later, via a wax-up and intraoral mock-up, it is shown to the patient how dental technician and I are visualising the end goal.

Material selection

To select the most suitable material for your restoration, many case-dependant factors, such as the aesthetic requirements, presence of parafunctions, presence and material of the antagonist must be taken into account. For the highest aesthetic demands, a glass ceramic (e.g. Initial LiSi Block, GC) usually is a good option, balancing aesthetics and strength. However, in some instances, e.g. in case of bruxism or denture antagonist, other materials like monolithic zirconia or hybrid ceramics (e.g. CERASMART270, GC) might be a better option.

Shade measurement

Even though the extraoral photos are most important in aesthetic cases, the first thing I do at the start of the treatment is to take the shade measurements. After only a couple of minutes the teeth will start to dehydrate and change opacity, affecting the colour interpretation of the tooth. Think of a piece of dry and wet fabric; the water makes the wet fabric appear darker compared to the dry. The same goes for the teeth, making the dried tooth appear brighter than it is normally perceived. Note that, depending on the material that is selected, the right shade reference should be used. The most known is the Vitapan shade guide (Vita). This guide is suitable to use for materials such as CERASMART270 or Initial LiSi Block, whereas using the block itself as a reference might be deceiving because the translucency of the material cannot be judged well on a block. The thickness as well as the surface reflection (gloss level and texture) of a restorative material influence the shade perception.

The shade guide should preferably be based on (or rearranged by) increasing value (brightness) (Fig. 1). It is easier to primarily determine the brightness and thereafter proceed to determining the Hue and Chroma. To do this in a reproducible manner, the lighting is critical. Therefore, as a complement to indirect sunlight, a handheld light with a high (extended) CRI (Colour Rendering Index) rating of 95+ might be beneficial.

Don't forget to take the shade of the preparation! This will have a big impact on the shade selection of the restorative material. For a dark substrate, an LT shade should be used; for a lighter/ neutral base, an HT shade will give the best result. For a very discoloured substrate, an opaque cement should be used in combination with a LT shade to mask the discolouration.

Extraoral photographs

After the initial shade taking has been finished, it is time for extraoral photos if these hadn't been taken at the initial exam. Various protocols exist for different accreditations and certifications, which you have to

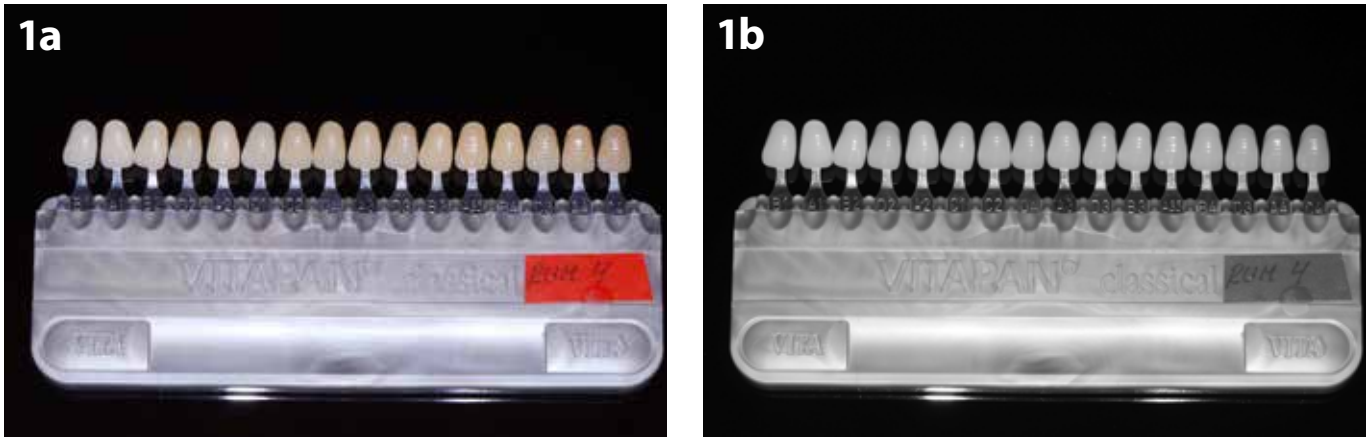

Fig. 1a: Vitapan shadeguide, arranged by increasing value: B1-A1-B2-D2-A2-C1-C2-D4-A3-D3-B3-A3.5-B4-C3-A4-C4. 1b: In a black & white image, the value can be determined easier.

Extraoral full face (Fig. 2): e.g. to determine the patient's facial features, facial symmetry, persona of the patient,…

Extraoral full face smile (Fig. 3): e.g. to determine the smile line, smile arc, the relation between the occlusal plane and the interpupillary line, upper lip curvature;

Extraoral full face max. smile (Fig. 4): e.g. to determine to gingival exposure, which teeth are exposed,… ; Say "continue smiling and say 'eeeeeee' "

Extraoral relaxed lips (Fig. 5): this shows how much of the incisors the patient is showing with the lips slightly parted and gives an idea of the length of the upper lip in a fully relaxed state and while the patient is talking.

Extraoral lateral smile view sin/dx (Figs. 6 and 7): e.g. to determine the inclination of the maxillary incisors, the jaw relationship

Extraoral 12 o'clock (Fig. 8): e.g. to visualise how much space is available buccally.

That's it.
These 7 photos are more than enough in most instances.

Figs. 2-8: Essential extraoral photographs to send to the laboratory.

follow if those are your aim. But in the scope of trying to keep everything as simple as possible I usually like to take the photos that I know the dental technician will mostly use for during the design process.

Personally, I like to complement these extraoral photos with intraoral photos for documentation and case planning. But the mentioned extraoral photos are usually sufficient for the dental technician. If none of the teeth are visible in the 'relaxed lips' photo, we need to indicate the position of the incisal edge to the dental technician. For example, by placing a periodontal probe in the photo indicating the distance from the incisal edge to the lip. Sometimes, a retracted full-face photo is helpful if the patient's teeth are not fully visible.

What is more, these photos can be imported into most dental CAD-software by the dental technician as static images, but as face scanners are becoming more and more popular, the dental technician might in many instances get the chance to import and align the patient's three-dimensional face with the intraoral scan of the patient. Meaning that the dental technician can zoom in and out and rotate the patient around while designing the constructions.

Still, in 2023 the implementation isn't that widespread, but the quality of the scanners is improving, and the prices are dropping. However, providing the dental technician with the described photo sequence will, even in the foreseeable future, still be the most important thing we as dentists can do to improve communication with the dental lab.

On an ending note, I'd warmly recommend visiting the dental laboratory, if the opportunity arises. It's beneficial to both parties to have regular contact between the clinician and the lab, whether in person, by phone, or by email. Getting to know the dental technicians, their procedures, and the processes that they are implementing might improve the collaboration. Moreover, it provides not only a great insight and better understanding of what is needed but also an appreciation for each other, which ultimately enhances your work as a clinician as well.