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MDT Ralf Dahl *completed his dental technician training from 1981 to 1985. From 1985 to 1988, he intensified his knowledge in a commercial laboratory specialising in precious metals, ceramics and attachment work. From 1988 to 1989, he worked as a dental technician in a private practice and later as a dental technician in a managerial position until 1990. In 1991, he successfully completed the master craftsman school in Düsseldorf with the master craftsman examination. He has been the owner and managing director of Mb Dentaltechnik GmbH since 1994. He is a member of the "Dental Excellence-International Laboratory Group", the EDA and the DGÄZ. Ralf Dahl is a speaker at practical work courses and live patient courses in Germany and abroad. He is a guest lecturer at the Meisterschule Freiburg and author of numerous specialist articles in Quintessenz and Dental Dialogue. The main topics of his lectures and courses are evolving around veneering techniques and all-ceramics. He specialises in polychrome veneering techniques in the field of ceramics, functional and aesthetic fabrication of all-ceramic inlays, onlays, veneers and full crowns as well as the fabrication and veneering of crowns and bridges made of oxide ceramics and lithium disilicate.*

The Path to a New Smile: A Case Report

A story about teamwork, technologies and the emotions behind

By **Dr Alina Lazar** and **MDT Ralf Dahl**, Germany

Behind every restorative therapy lies not only clinical expertise, craftsmanship and modern technology, but first and foremost a human being. This case report is about a young patient who is embarking on a journey to a new smile. For Dr Alina Lazar, a dentist with a deep understanding of aesthetic needs, and MDT Ralf Dahl, a dental technician with an eye for details and artistry, this challenge was the premiere of their collaboration. Together, they fulfilled the patient's heartfelt wish. And thus, this article is a reminder that behind every smile there is always a story of courage, hope and change.

In dentistry there are many moments when art, science and emotions collide. This article describes one such story. The patient dreamed of shining with a radiant smile on her wedding day. This desire represented a complex challenge that required both specialist knowledge and aesthetic sensitivity. The patient's goal was clear: an aesthetic improvement of her maxillary front teeth (Figs. 1 and 2). With their upcoming wedding in mind, time was short. It quickly became clear that this was not just about clinical know-how. In order to achieve an outstanding result, the involvement of a dental technician who is specialised in aesthetic reconstructions was crucial. And so, this patient case became a

Fig. 1: Initial situation. Frontal view.

Fig. 2: Initial situation. Lateral view.

first for collaboration between us as a work team. The expectations were high, and the time frame was tight; six months until the young woman's wedding.

The countdown had started ...

Every patient who consults the dental practice is unique. Therefore, the beginning of treatment is a comprehensive analysis. Often, the focus is only on the teeth. But it's not just tooth shape and colour that define a patient's smile. Only the interaction of the face, lips, gums, teeth, etc. creates the harmonious overall picture. Especially in aesthetic rehabilitations, it is important to start with an aesthetic analysis (Fig. 3). The face is like an open book and gives us a lot of information, e.g. about malocclusion and symmetrical relationships. Important aesthetic parameters include, among others: the extraoral midline, the interpupillary line and the intercommisural line.

Aesthetic analysis

In the present case, a slight extraoral shift of the midline to the left was noted. In addition, the intercommisural line showed a discrepancy from left to right. A significant difference in volume of the right lip area compared to the left was noticeable. In addition, a deviation between the extraoral and intraoral midlines was identified. The clinical findings revealed crowding in the upper jaw, which was interpreted as a relapse after orthodontic treatment. In addition, tooth enamel chipping, a composite veneer on endodontically pretreated tooth 11 and a mild gummy smile were diagnosed; Overall, initially, it seemed as a comparatively simple case for an aligner-bleaching-veneers concept.

Fig. 3: The aesthetic analysis integrates the aspects of the face.

Fig. 4: Close-up view in which the block-like displacement of the mandibular front teeth is obvious.

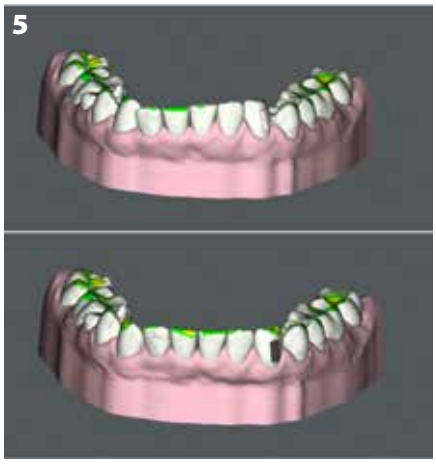
However, a detailed examination of the mandible revealed the full complexity. The mandibular front showed a block-like displacement. While the right side was intruded and protruded buccally, the left side showed extrusion and retrusion (Fig. 4). This specific constellation explained the lip position found in the aesthetic analysis. The cause of the situation was an incorrectly positioned retainer. The retainer on the right canine had broken off years ago. This had caused a negative development in an otherwise positive retainer function. The block-movement of the lower jaw had to be attributed to this occurrence.

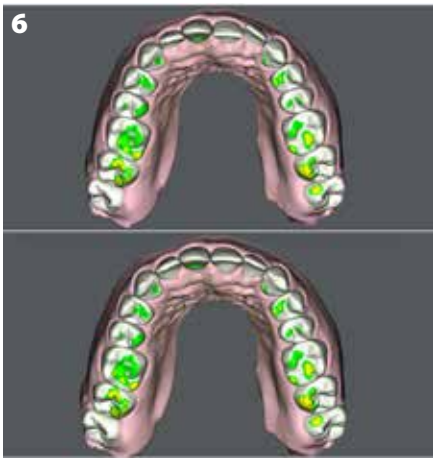
Aligner-Therapy

Before we could start planning the treatment, we needed a detailed photo status, a panoramic X-ray and a digital scan of the dentition. It was clear that an initial correction using aligners was needed to adjust the occlusal plane in the anterior region (Figs. 5 and 6). The time limit posed a real challenge here. There was only time for ten aligner splints per jaw (SureSmile Aligner, Dentsply Sirona). After having used the seventh aligner, an intermediate scanning and the model fabrication, it was time for the dental team to take action.

Dental mock-up

The dental technical analysis began with the evaluation of all the information provided by the dental practice. Efficient communication, both by telephone and digitally, is crucial here. "Communicating well" simplifies the realisation of the desired improvements and overcomes the physical distance between the work locations. The first step was to produce a wax-up. With an eye for fine details and dental symmetries, the proportions of the teeth, in particular the ratio of length to width, were idealised. The





Figs. 5-6: Planning alignment therapy to optimise the position of the teeth in the upper and lower jaw.

correction of the midline shift required a great deal of attention. An electrosurgical procedure was required to take this adjustment in the gingival line into account.

The precisely created wax-up was transferred to a mock-up. The injection moulding technique has proven itself for this purpose. The crystal-clear silicone EXACLEAR (GC) fulfils the requirements of aesthetic reconstructions thanks to its good flexibility and high stability. GC Gradia Light Body D and Light Body E from GC were used as the material for the mock-up (injection procedure). The high-strength, light-curing nanohybrid composite is based on ceramic polymer technology and offers ideal aesthetic properties. This was important because an intraoral try-in of the delicate composite veneers (mock-up) provided a visual guide to the desired result (Fig. 7). The mock-up provides valuable information for further dental work in order to realise the final work and make fine adjustments if necessary.

The wedding date was getting closer

When the pre-prosthetic work was completed, the wedding date was within reach. But despite the approaching date, time pressure must not affect the quality of the work. Every step must be taken with care, calm and consideration. Rushed or ill-considered decisions could lead to unnecessary corrections and extra work that would be difficult to manage in this tight time frame. And so, it was a balancing act between efficiency and precision, prioritising the patient's well-being and her wishes.

Preparation of the teeth

The preparation of the four anterior teeth 11, 12, 21 and 22 was carried out using a mock-up with a minimally invasive preparation set (Horico). Special attention was paid to tooth 11, which had undergone endodontic treatment and consequently had a dark colour. To achieve a harmonious colour match, tooth 11 had to be prepared somewhat more intensively than the surrounding vital teeth. In order to minimise the loss of enamel, the contact points on teeth 12 and 22 were retained, whereas those on the central anterior teeth were removed. The impression was taken using a conventional technique and sent to the dental laboratory for further processing.

Fig. 7: Mock-up test.

Fabrication of the veneers

The advantage of conventional impressions over digital scans is that they enable a precise representation of the surface structure, which can be realised in detail in the ceramic restorations. The press technique with subsequent layering was the preferred method for fabricating the ceramic veneers. The material of choice was Initial LiSi Press (GC), a highly aesthetic lithium disilicate ceramic that offers a high degree of flexibility in various translucency levels. The MT (medium translucency) shade was used for the non-discoloured teeth, while an LT (low translucency) shade was used for the slightly discoloured prepared tooth 11, albeit in a lighter shade. Thanks to the increased colour value and the greater proportion of white in the LT shade, a significantly improved coverage of the substrate could be achieved without the result appearing unnatural or too opaque. In view of the complex colouring, all pressed copings were individually layered (Initial LiSi, GC). This enabled the incorporation of mamelon structures and ensured a natural translucency as well as an impressive depth effect (Figs. 8 and 9).

Figs. 8-9: The veneers (Initial LiSi Press) with customised veneering (Initial LiSi) on the model.

Figs. 10-11: Lip appearance after insertion of the veneers.

Veneer insertion

The ceramic veneers were tried in with the translucent try-in paste from G-CEM (GC) and then permanently cemented using G-CEM ONE (GC). G-CEM ONE is a universal, self-adhesive luting composite with dual curing capability for a strong, durable bond of indirect restorations on various substrates. The material can optionally be used in combination with a primer. The veneers were cemented following the manufacturer's protocol (Figs. 10 and 11). The retention phase was organised as follows: In the upper jaw, a full Essix retainer (1 mm) was used to maintain the position and protect the veneers. In the lower jaw, a fixed retainer was placed from tooth 33 to tooth 43. In addition, an Essix retainer was used to ensure optimum preservation of the tooth position.

This was the decisive moment for the patient. Would the veneers and the previous measures live up to her high expectations? Her emotional reaction to the result was moving for all of us: the authentic, happy smile showed that her wish had been fulfilled (Fig. 12 to 14). From a professional perspective, the goal had also been achieved. The veneers blended harmoniously into the overall appearance. Thanks to the precise shade selection of the Initial LiSi Press blanks and the individual layering, even the discolouration of the endodontically pre-treated tooth 11 was completely masked. An outstanding feature from a dental perspective was the authentic representation of the incisal edge. In addition, an impressively natural surface structure was realised despite a minimal preparation of only 0.5 mm. It is fascinating to see what is possible in dentistry today to make patients happy with minimally invasive procedures.

The finale of the smile

The patient's journey, which began with the dream of shining with a perfect smile on her wedding day, was complete (Fig. 15). At the end, we saw a happy young woman. From a dental technology perspective, a smile like this is always the best way to show others your teeth. It is the result of teamwork, precision and the desire to always achieve the best for the patient. The story ends here, but the patient's radiant smile will

Figs. 12 -14: The patient's genuine and authentic smile at the end of the treatment speaks for itself.

certainly last for many years to come. Her journey to this point was not just a technical process, but an emotional experience characterised by trust and a common goal. And so this story is a living example of how art, science and emotion can merge into a harmonious whole in dentistry. A smile that not only shows the beauty of the teeth, but also the story and emotions behind them. A smile that comes from the heart.

Fig. 15: A radiant smile on the wedding day.