Abstract

34 implants were placed in 21 patients in the in the aesthetic zone. The vertical position of each implant was placed at a distance between 2 and 3 mm of the CEJ of the future restoration. For the smile design, computer software was used which uses the facial reading as well as the psychological characteristics and wishes of the patient according to the Visagism concept. Based on that project, a wax-up was created in the dental technician lab and a surgical guide for the implant site preparation was prepared. The first provisional was designed in order to create a volume of soft tissues around the implant, and a second provisional according to the smile design was placed for a final contouring of the gingival margin.
After the final soft tissue contouring, an impression was taken and a final restoration was designed, following the recommendations of the software.
Results: All of the 32 implants were positioned in the bone according to the guide, based on the anatomical background and the project of the final restoration. All the implants were perfectly ossteointagrated, and there was no bone loss or soft tissue remodelling after the 3-year recall period. All patients were satisfied with the design of the smile that was proposed by the Visagism software.
The two provisionals concept created stabile and well designed soft tissue contour; implant position planning according to the Visagismile software and soft tissue management with two provisional restorations is a way to achieve predictable aesthetic results.

Background and Aim

Nowadays, implant treatment in the aesthetic zone is made in accordance with anatomical and aesthetic rules. The golden standard is to place the implant 2-3mm from the CEJ of the adjacent teeth. There are a number of criteria for deciding the design of the future restoration and smile and to determinate the vertical position of the implant.
Guided surgery is increasingly popular, giving the clinician very good VL, MD positioning and giving the right torque. Software options give different approaches for making the measurements for the size, shape and the correct position of each tooth, taking into account the golden rules of aesthetics and proportion.
It has also been proven that the psychology and characteristics of the personality give the smile a specific look, which is represented in the concept of Visagism.

The Aim of this study was to achieve an optimal aesthetic result, including implant treatment, by creating a suitable smile design.

Methods and Materials

Two main photographs were made of each patient: one full-face with maximal smile and visible dentition, and the other of the upper jaw with retracted lips and black contrasting tool. A short video was filmed in which the patient was asked by the clinician to go through a state of rest to maximal smile position. In a spontaneous conversation, the patients also expressed their expectations, concerns and opinion about the final aesthetic result of the dental treatment. The incisor edge position was determinated according to the aesthetic rules and the preferences of the patient.
The position of the future restoration was determined by using a web-based smile design software (VisagiSMile, Bulgaria), which uses the facial reading as well as the psychological characteristics and wishes of the patient according to the Visagism concept. There were three necessary stages for building the personalised smile design: Analysis of the face; Interview; Patient choice. Based on specific facial characteristics, the software generates face-maps, each characterising a personality type. From the face reading, the software determines the incisor line, the tooth axis, and the dominance of the central incisors. The optimal shape of the teeth is determined by an interview (questionnaire in the software, an adapted version of Dr. Susan Dellinger's test, and Eysenk's personality questionnaire). Using the data from the interview, we can define the preferences and type of temperament of the patient, and the software automatically chooses the optimal combination of tooth shapes conformed to individual characteristics of the patient: strong (rectangle), dynamic (triangle), sensitive (circle), peaceful (square). Based on that project, a wax-up was created in the dental technician lab and a prosthetic guide for the implant site preparation was prepared. The implants placed (TSV; Zimmer Biomet, Warsaw, IN, USA) were 3.7,4.1 and 4.7 mm in diameter and 10, 11.5, and 13 mm in length and were placed according to the recommended protocol at a minimum insertion torque of 20 N·cm. The vertical position of the implants was 2-3 mm from the future CEJ, and the implant platform was not placed according to the anatomical bone structure.

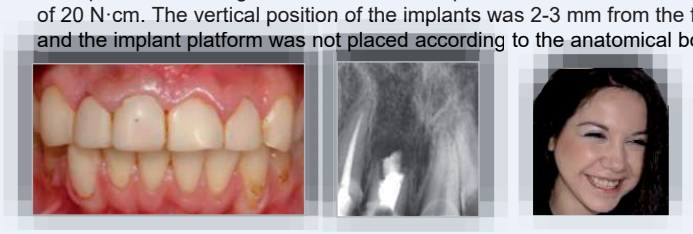

Fig.1 Existing clinical situation

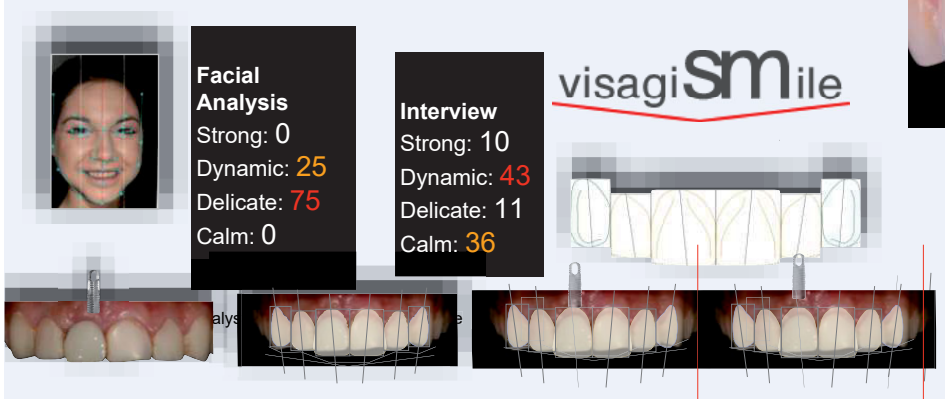

Fig.3 Planning the vertical position of the implant, according to the future CEG and not to the existing CEG

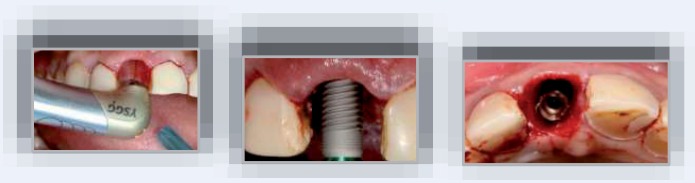

Fig4. Sterilising the socket and implantation

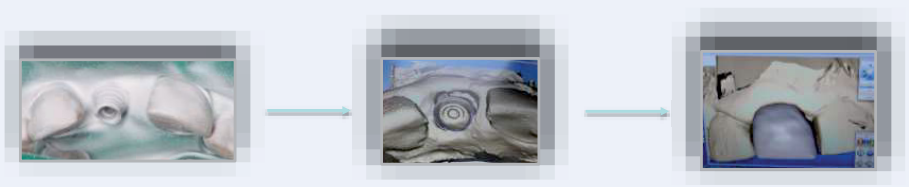

Fig.5 Preparing the first provisional right after the implantation with Cerec on the day of surgery

Results

No complications were observed during the healing process. At the end of the second month in all patients, sufficient volume of attached gingiva was formed which could be further shaped and contoured by the second provisional or the definitive restoration. Following the results after one year, according to the criteria for success of implants introduced by Szmukler et al., a success rate of 100% was registered. No bone loss was observed after the second month, while at one year the mean bone loss was estimated at -0.17mm.All the implants were perfectly ossteointagrated, and there was no bone loss or soft tissue remodelling after the 3-year recall period. All patients were satisfied with the design of the smile that was proposed by the Visagism software. The first provisional was designed in order to create a volume of soft tissues around the implant, and a second provisional according to the smile design was placed for a final contouring of the gingival margin based on the software proposal. The patient was able to "test drive" the new smile design. After the final soft tissue contouring, an impression was taken and a final restoration was designed, following the recommendations of the software and the comments of the patient.

Conclusions

For every patient, it is extremely important that the teeth proportions be correctly diagnosed before an irreversible restorative dental procedure is done. By creating a smile design, we are building a concept of perception by which we are trying to satisfy the patients' wish for an aesthetic vision. The attempt to create an individual dental composition in accordance with the requirements and expectations of the patient is in conflict with the hypothesis that standardised aesthetic concepts for beauty inculcated in the literature have to be observed and that every patient wants teeth in accordance with these regulations.

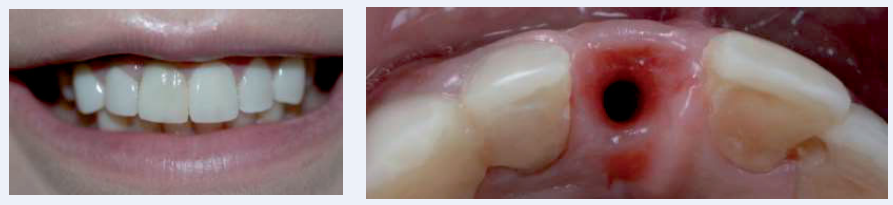

Fig.6 Emergence profile after the second provisional

Fig.7 Placing the final Emax restorations

Fig.8 The final restorations immediately after placement

Fig.9 Three years after placement of the final restorations

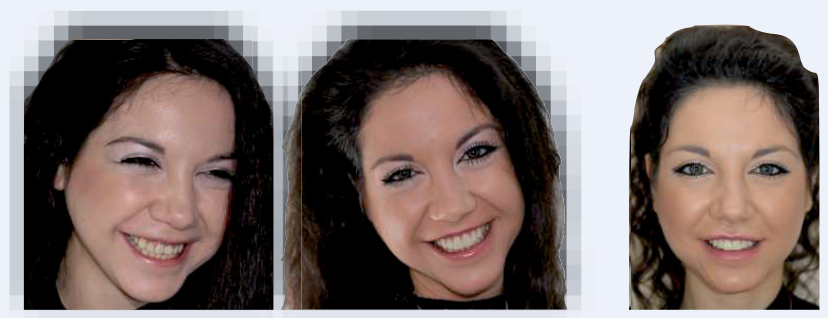

Fig.10 The patient before, after and 3 years later

References

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2. Dellinger, S. Communicating Beyond Our Differences: Introducing the Psycho-Geometrics® System. Prentice-Hall/Jade Ink, 198
3. Coachman, Ch., Calamita, M. Digital Smile Design: A Tool for Treatment Planning and Communication in Esthetic Dentistry. // Quintessence of Dental Technology, 2012, No 35, 103-111.