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Digital Smile Design – A Case Report

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Abstract

Face is the quickest recognized physical section of people. An aesthetic smile has ever been an attractive and desirable element. One of the most significant factors to effect one's smile is the teeth. If an individual is not pleased with the way their teeth looks, they wouldn't want their teeth to be seen. Accordingly, they either avoid smiling or they feel the urge to cover their mouths when they smile. The process and restoration to be performed by the dentist is prominently significant regarding the patient's look and smile and overall psychology and self-confidence .This case report explains about the current and the recent trending approach of smile make over using digital smile design software.

Keywords: Smile Design, Digital Smile, Smile Aesthetics

Introduction

Confidence is an important aspect of one's personality and a confident smile makes the picture complete. With the increased awareness and changing times people seeking dental treatment for aesthetic purpose has significantly increased. Even people with good dental hygiene and structurally sound teeth can be dissatisfied with certain elements of their smiles. Missing teeth, Discoloration, malformed teeth, and minor orthodontic issues can affect a person's appearance and self-confidence.[1,2] People who are self-conscious about the appearance of their teeth and gums often find themselves hesitant to smile in public, keeping their mouths closed in photos and even covering their mouths when they laugh. Fortunately, modern dentistry offers a potentially ideal solution for these people in the form of fully customized smile makeover treatment plans.

Just as there are no two smiles alike, there are no two smile makeovers alike. Each smile makeover plan contains a precise combination of treatments designed to address the unique needs and goals of the individual patient. An experienced, skilled dentist will be able to identify the most conservative, least invasive procedures

that, in combination, will yield the most stunning results possible. In some cases, that may mean performing just a couple of treatments to produce subtle refinements to a smile. In others, a more comprehensive approach may be necessary. It all depends on the patient needs and the clinical situation with the objective of achieving an estheic biofunctional smile.

With this objective , every professional looks for improvement in planning and better predictability support for the clinical treatment. The use of digital tools such as DSD offers dentists a new perspective when combined with the traditional mock-up technique, showing a bigger success rate in relation to the final results. The use of digital tools offers dentists and technicians a new perspective for diagnosis and treatment plan, facilitating and improving the communication among dentist, technician, and patient.[3,4]The combination of DSD and mock-up techniques [5] allows for improved esthetic manipulation, therefore, a better predictable model to support the treatment plan. This case report enlightens about one such case report where a digital smile design software is used for a smile makeover procedure.

Case Report

A patient of age 30 years with a chief complaint of unpleasant smile reported to a dental hospital . On diagnosis patient had metal ceramic crowns in the upper front tooth region with metal collar exposure in the upper front tooth restorations and also the tooth proportion of the restored metal ceramic restoration was not ideal leading to an unsatisfied smile. Hence a new all ceramic prosthesis (emax empress) fabrication using digital smile design software was opted for a better outcome. The patient was explained about the DSD procedure and the treatment plan was framed accordingly.

Treatment Plan

- Patients chief complaint is being corrected by a latest digital technique i.e DIGITAL SMILE DESIGN .
- Digital smile design is a comprehensive imaging and modelling protocol that improves dentist and patient communication in developing the treatment plan for a cosmetic dentistry procedure .The various steps involved in DSD treatment are**:**

1. Making of Photographs
2. Orientation of facial esthetics to the smile line using digital Facebow
3. Smile design with respect to contour, length and proportion of tooth.
4. Wax mock up of reframed smile
5. Patient approval of the test drive
6. Tooth preparation and new smile makeover.

Step-1: Intra – oral photographs are taken and then uploaded to an software where there digital procedures are done (fig.1)

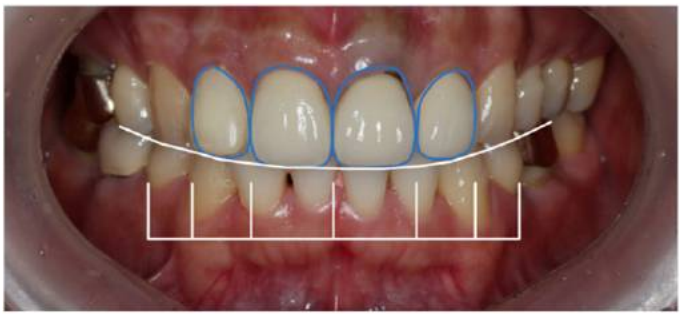
Fig.1: Preoperative intra oral photograph

Step-2: digital face bow is placed to check about the position of the maxilla and mandible and used to check about the vertical dimension of the occlusion which to be altered(fig.1.1)

Fig.1.1: Digital face bow analysis

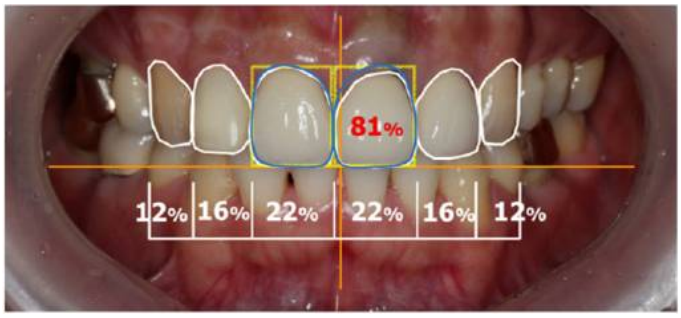
Step 3: smile analysis should be done, smile analysis is done to know about size , shape , smile line of the tooth (fig.1.2)

Fig. 1.2: smile analysis



Step 4: smile simulation –contour , color shade are noted (fig1.3)

Fig.1.3: smile simulation

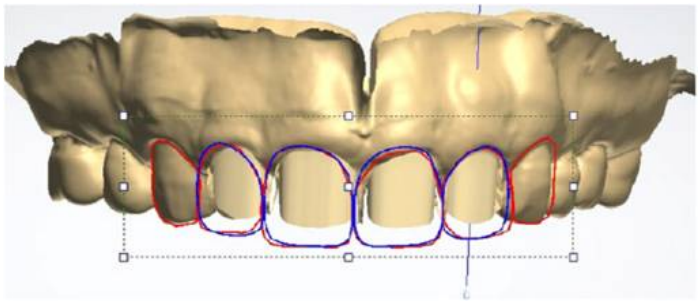


Step 5: The prepared contour and shades are transferred to the intraoral image (fig1.4)

Fig.1.4: transferred to intra oral image

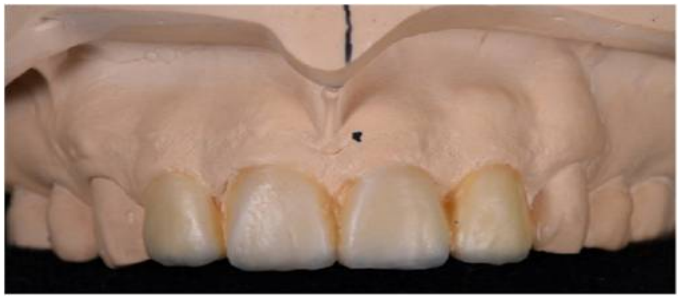
Step 5: the prepared data are transferred to digital intra oral model (fig 1.5)

Fig 1.5: digital model



Step 6: 3D cast model is prepared with the prepared data (fig1.6)

Fig-1.6: 3D cast model

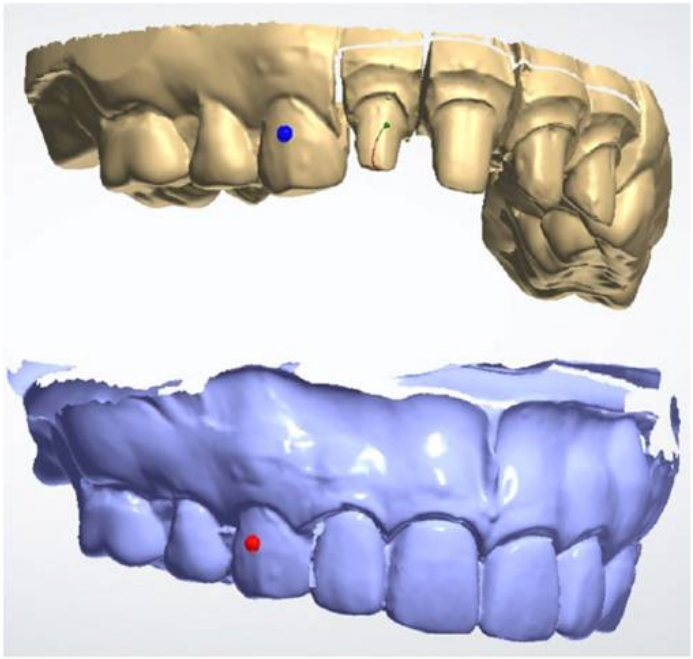


Step 7: Tooth preparation is measured and tooth is prepared (fig1.7)

Fig.1.7: measurement of tooth preparation

Step 8: prepared tooth model is applied on the digital cast and the final preparation done (fig.1.8)

Fi.1.8: final preparation



Step 9: aesthetics attained by the applying the digitally designed smile (fig1.9)

Fig.1.9: post operative intra oral image

PRE –OP & POST OP

Discussion

The digital smile design (DSD) is a digital planning tool for esthetic dentistry, in which the evaluation of the esthetic relationship among the teeth, gingiva, smile, and face is obtained through lines and digital drawings that are inserted on the facial and intraoral photographs of the patient.[6]The use of digital tools offers dentists and technicians a new perspective for diagnosis and treatment plan, facilitating and improving the communication among dentist, technician, and patient. While DSD presents many advantages over more traditional treatment planning methods, the mock-up technique is still regarded as an objective and efficient tool in treatment planning communication and used to confirm the treatment plan before the final preparations and evaluate final restorations within the limitations of biological and functional considerations. The mock-up can also be a clinical confirmation of the digital tool. Based on the above considerations, the objective of this report was to demonstrate a clinical case where the anterior teeth were rehabilitated using DSD and the direct mock-up technique for esthetic and functionnal treatment planning.

Digital imaging allows patients to visualize the expected final result, besides facilitating the presentation of the current condition of his oral health [6,7,8,9] and hence DSD is also a powerful marketing tool. However, correct digital planning requires a precise photography protocol. The photography obtained following this protocol supplies important information for the esthetic planning.[10,11] Inadequate photography may distort the reference image and may result in an incorrect diagnosis and planning. Despite studies that show a satisfactory clinical result, this tool should be used cautiously due to these limitations in this protocol. Even though DSD is a simple technique with minimum software and equipment requirements, training is necessary which increases time and cost.

Conclusion

Digital smile design software is not only an aesthetic guide protocol but the steps in it, make the treatment phases more predictable for both patient and clinician, as the final design can be seen on the computer and be used by the patient during the provisional restoration steps.

Precise and proper use of this tool will definitely aid in creating an ideal smile.

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