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# REVOLUTIONIZING THE SMILE

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**ABSTRACT**

A beautiful smile elevates the appearance and acceptance of an individual in our society. Smile emphasises that natural architectural pattern that should be pleasing.

With many advances, there are different ways to correct or enhance the smile, one of which is digital smile designing. Digital Smile Designing is the multi use tool that strengthens diagnosis, communication and predictability throughout treatment with careful analysis of patient's face and dental characteristics along with any critical factor that may have been overlooked during clinical, photographical or diagnostic cast based evaluation procedures. This case report depicts the use of digital smile designing software for achieving an esthetic smile.

Key words: Digital smile designing, esthetics, smile makeover

## INTRODUCTION

"As remarking that the thought is to the word that the feeling is to the facial expression." Since the mouth is one of the main focus point of the face,, it should come as no surprise that the smile plays a major role in the perception of a person and the impression made on the people around. Smile is a pleasing positioning activity of facial expression which radiates pleasant sensory stimuli thus creating a feeling of wellbeing to the wearer and the spectator**[1]**. Prosthodontist is the best person to identify the quality of a smile and if any modification is required, it is done so by them.This is accomplished by in-depth knowledge of facial esthetics, tooth morphology, and communication skills. At the conceptual level,

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however, the procedure begins with an understanding of smile design. With advancements in knowledge and techniques, dental professionals have the ability to approach smile design in a variety of ways, one of which is digital smile designing. The Digital Smile Design (DSD) is a means which aids in drawing of reference lines and shapes over extra and intraoral digital photographs in a predetermined sequence in order to widen diagnostic visualisation and help the restorative team evaluate the limitations and risk factors of a case, including asymmetries, disharmonies and violations of esthetic principles**[2]**. This case report describes the extensive approach of digital smile designing of a young female patient having dentition with compromised esthetics.

**Case Report**

A 35 year old female patient reported to the Department of Prosthodontics,D.Y.Patil University, School of Dentistry, Navi Mumbai with a chief complaint of bad appearance due to fractured and discoloured upper front teeth. On clinical examination,.11 was Ellis Class 1 fracture,21 23 was discoloured. The smile of the patient was analysed and designed with the help of a software, (SmileFy). The steps for Digital Smile designing are first to digitise your patient, upload necessary extraoral photograph of the patient in frontal view (Figure 1) and intraoral photographs (Figure 2) of the patient.

The second step is to calibrate your scans which means superimpose the intraoral scan to your patient's photographs to improve precision and accuracy of your final result. The third step is to use the 3d small frame to create and transform your mock up design into reality. Last step is to export your file and upload them to the 3d printer.

The app was opened and a new patient option was selected. The software required to fill out patient details like name, age, gender, address, date of birth,etc. Then we went to Go to Menu, New Case, AI Smile Simulation(Figure 3), and tap on "Full Smile". We then selected patient from the gallery photo and tap "Next."In the next step, we adjusted the Smile Frame based on the ideal position you envision for the patient. Tap "Next" once adjusted. The app generates a suggestive smile design. You can either tap on "Before and After"(Figure 4) if you're satisfied with the initial design or you can customise it. To adjust the smile go to "Smile Harmony" and adjust the smile by defining the midline, occlusal plane, smile curvature, and open the Smile Library to manually select the teeth shapes yourself.Under the "Frame" section( Figure 5 ), re-adjust your smile frame in the ideal position you envision the new smile to be. Use the "Height" and "Ratio H/W" to adjust teeth proportions. Use "No. Teeth" to select the number of teeth that you want to show when your patient is smiling, and adjust the "Buccal Corridor" to set to a narrower or a wider smile. Under the "Colors" section

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you can modify the coloration of the smile design. Once you select the shade you like the most for your patient, you can continue perfecting it by adjusting the warmth, brightness, and saturation.

In accordance with the law of harmony stated by Leon Williams, a relationship exists between the inverted face form and the form of maxillary central incisor in most people**[3]**. Hence, in order to select the teeth, the face form of the patient was determined using reference points. The patient had an ovoid face form.. An esthetic face on division into three part has an equal proportion with each other**[4].** Therefore, this was also calibrated in the scan.

A digital mock up is fabricated (Figure 6) and keeping this in mind, necessary intra oral procedures were done to placement of prosthesis(Figure 7). 3D printed model was printed( Figure 8) of the intraoral procedures and sent to the Lab along with the digital mock up fabto calibrated and fabrication of prosthesis.

After planning and sending to the lab, zirconia crown with emax(3M Lava) layering was placed for 11,12,21,22 and veneer(IPS Empress) was placed for 23,13 ( Figure 9).

## DISCUSSION

The principals involved in making “pretty smiles” have come to be known within the profession as the main factor of smile design. Smile design theory is basically influenced by the microaesthetics and macro esthetics**[5]**.Traditionally, these were achieved mostly by planning but in the mind of the dentist. But there are some drawbacks with it.. Firstly, the patient cannot visualise the outcome which the dentist has desired and hence is apprehensive of the outcome.. Secondly, the dentist has no visual guide or reference to achieve the goal set and the ceramist or the lab also has no track to keep up to the expectation of the dentist and patient. Whereas, for a successful treatment, a well planned mind set of the dentist, patient and ceramist and lab is of utmost importance. With the introduction of digital smile designing, a model can be fabricated so that the form, size and visibility, colour of the teeth can be assessed by the dentist and the patient. It also acts as a guide for the laboratory technician and ceramist by giving an idea of the dimension of the teeth and contour to be achieved in the final restoration. Though the software is expensive, once established can provide outstanding and satisfactory results. Digital technology has not gained much traction but has a bright future prospects. Digital dentistry is enabling dentists to provide to the patients what they want: quick, comfortable and well known dental restorations that satisfy their esthetic needs. It is also helpful in assisting the interaction between the specialist

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assisting the case.. Therefore, knowledge of smile design coupled with new and innovative technologies allows dentist to diagnose, plan, create and deliver aesthetically pleasing new smiles**[6].**Since, smile designing is a multifactorial decision-making process, therefore, digital smile designing not only aids the clinician to communicate the desired outcome with the ceramist but also helps in treating the patients with an individualized, interdisciplinary approach**[7]**

## CONCLUSION

In cosmetic and esthetic dentistry, success lies largely in understanding complaints and expectations of patients**.** Therefore, before choosing an esthetic and cosmetic treatment, it is important that the patients are able to foresee the desired outcome. With the use of latest advancements, the clinician can evaluate the patient's tooth display and incorporate smile designing into routine treatment planning.

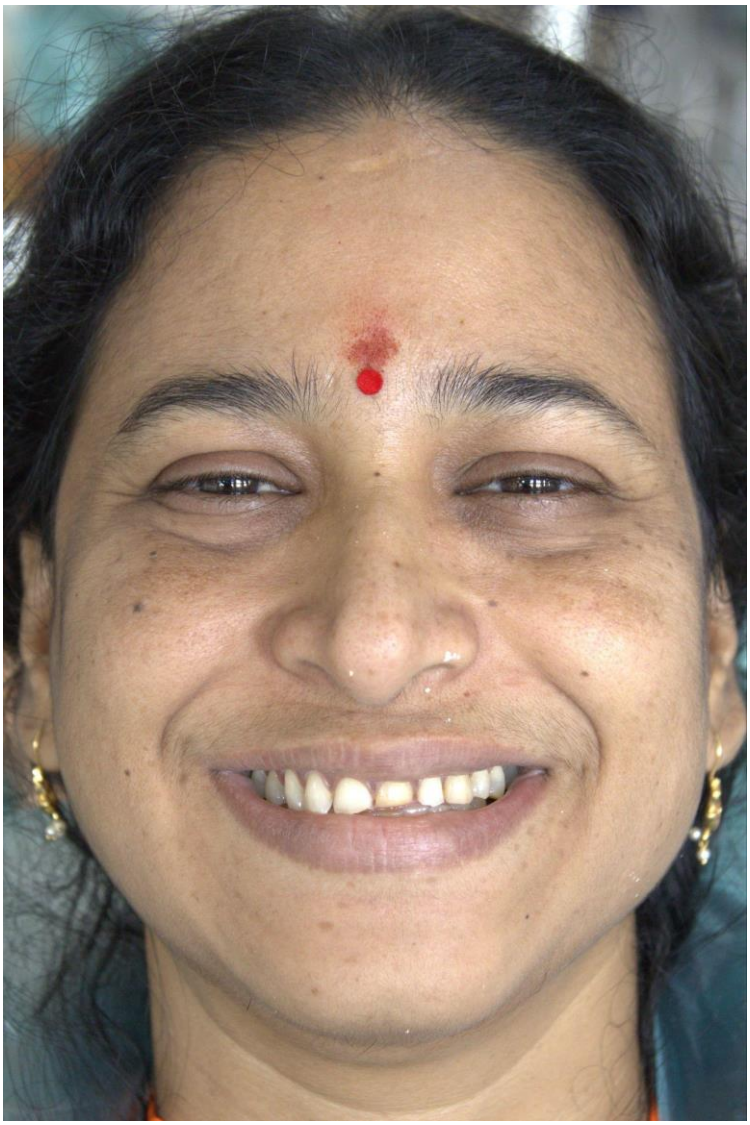

Figure 1- Extra Oral Photograph

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Figure 2- Intra Oral Photograph

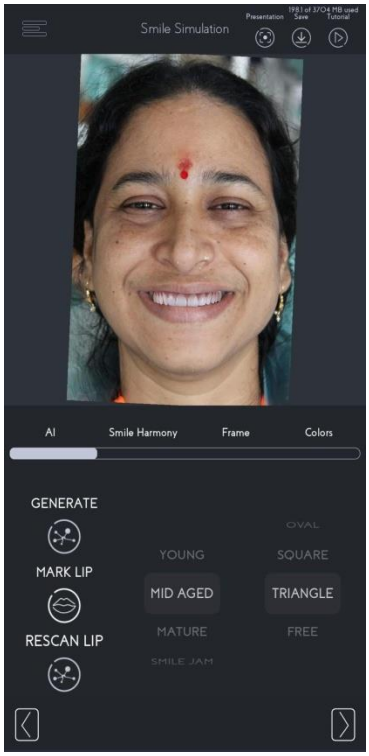


Figure 3- AI Smile Simulation

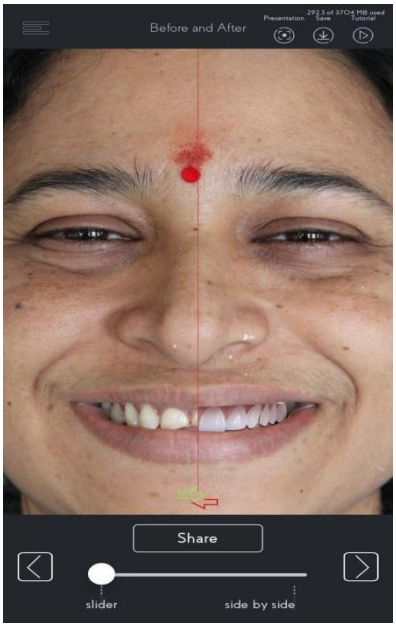


Figure 4- Before and after

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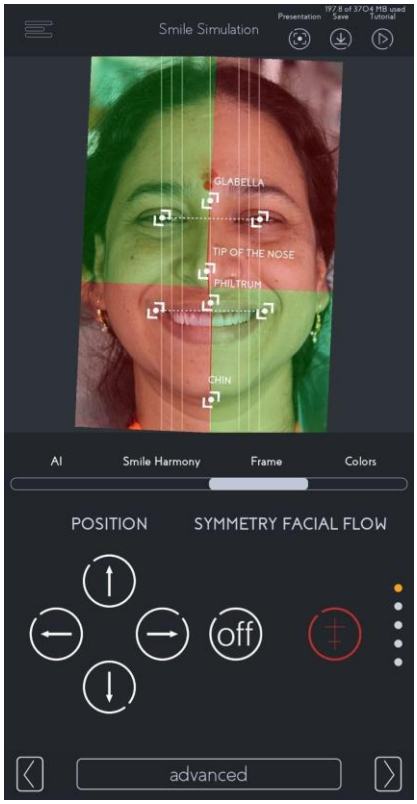


Figure 5- Frame section

Figure 6- Pre-op of the patient (left) Digital Mock up of the patient (Right)

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Figure 7- Intraoral procedures

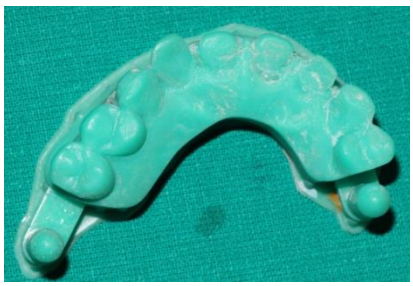

Figure 8- 3d printed model

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Figure 9- Postoperative photo of the patient

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