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Management of Proclined Anterior Teeth by Digital Smile Designing – A Case Report

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ABSTRACT

A smile is a person's greatest beauty. A smile is an important facial expression – expressing friendliness, agreement and appreciation. Smile requires co-ordination of facial, gingival and dental components stimulated voluntarily or involuntarily by various emotions –Crawford. Smile design is the planning and pre-visualization of the desired end result of an esthetical dental treatment, targeting a more harmonious state instead of the current disharmony. It is interesting to note that smile has a role to play in the overall health and well- being of a person. According to Jane Lyle, author of the book "Body Language", many experts are convinced that smiling and laughing is beneficial to one's health. Psychologist Robert Zajconc has postulated that when a person smiles deliberately the brain releases neurotransmitters which can override the sadness. Paul Ekman, a researcher at the University of California supports this theory. When people's faces are happy, heart rates slowed and the bodies become calm. Mr Christian Coachman, a Brazilian dentist/ dental tech, first introduced the concept of DSD, a dental treatment planning tool used for enhancing predictability, improving communication, and strengthening vision .The purpose of this case report was to present an integrated design approach that took into account functional, esthetic , and emotional aspects of the patient's needs.

Keywords: *Esthetic, Digital smile design, intraoral software, Golden proportion*

1. INTRODUCTION

In our modern competitive society, a pleasing appearance often means the difference between success and failure in both our personal and professional lives. Scottish physiologist Charles bell (1774-1842) was quoted as remarking that the thought is to the word that the feeling is to the facial expression. He pointed out in 1806 that a smile could convey a thousand different meanings, yet it is the most easily recognized expression. And because the mouth is one of the focal points of the face , it should come as no surprise that the smile plays a major role in how we perceive ourselves, as well as in the impressions we make on the people around us. Webster defines smile as a "facial expression which indicates usually pleasure, favour or amusement, but sometimes decision or scorn characterized by an up-turning of the corners of the mouth and usually accompanied by a lightening of the face and the eyes". However a more realistic definition would be that it is the manner in which the lips and the teeth silhouettes blend to create the harmony that give the smile character. The term 'smile design' is often used as the synonym of a dental treatment with esthetical purposes. However, smile design is actually a process before the treatment starts. Today DSD is changing the future of dental practice worldwide. A unique approach to modern dentistry has revolutionized smile designing clinics around the globe.

Currently, the DSD technique is performed using digital equipment such as a computer with DSD software, a digital SLR camera, or even a smart phone. For a complete digital 3D workflow, an intra-oral scanner, 3D printer, and CAD/CAM are also needed. Photographs are essential for a complete facial and dental analysis since they serve as the basis for the formulation of changes and designs. For the integration of facially guided principles into smile design, video documentation is required for dynamic analysis of teeth, gingiva, lips, and face when smiling, laughing, and talking

CASE REPORT

A 38 years old female patient was reported to our dental clinic with chief compliant of proclined upper and lower anterior teeth. Patient gave no relevant medical, dental, family history. Extra oral examination reveals no facial asymmetry and TMJ dysfunction. On intraoral examination,

teethpresent11,12,13,14,15,16,17,18,21,22,23,24,25,26,27,28,31,32,33,34,35,36,37,38,41,42,43,44,45,46,47,48. Proclined upper anterior teeth 11,12,13,21,22,23,31,32,33,41,42,43. Midline diestema with 11, 21. Root canal treated with 26 with metal crown present. As a result of the initial examination, the patient was recommended orthodontic treatment for diastema closure and proclined anterior teeth. However, she was reluctant to undergo orthodontic treatment and wanted to see results as soon as possible. Hence a patient was managed by prosthetic plan. Patient consent was taken. The treatment started with scaling and polishing of the teeth. Extra oral and intraoral photographs were taken. After a preliminary analysis, digital impressions were made and it was decided to use digital software for a smile makeover. Following preliminary analysis digital impressions were made and it was decided to use Digital smile designing exocad software for a smile makeover. The DSD process was explained to the patient, and a treatment plan was created in accordance. After intentional RCT, zirconia with emax layering was given from canine to canine in both maxillary and mandibular arches.as there is less tooth to crown ratio in 13, 33 and 43 region a crown lengthening procedure was done. On both sides, group function occlusion was provided. The digital mock-up was superimposed on the scanned casts of the maxillary and mandibular arches to create the 3D-printed mock-up. The patient's smile and esthetics improved postoperatively. Her aesthetic results were highly satisfactory. Patient was instructed and explained for maintenance of proper oral hygiene and regular follow up for further evaluation.

Preoperative Intraoral frontal view

Intraoral Maxillary occlusal view of patient

Intraoral Mandibular Occlusal view

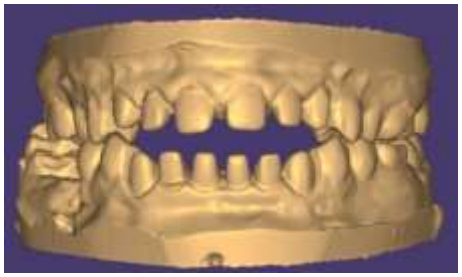
Preoperative Extra -oral frontal view

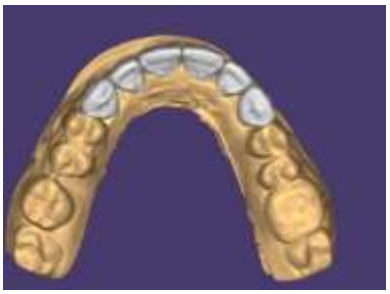
Right Lateral view

Left Lateral view

Crown preparation with 11,12,13,21,22,23,31,32,33,41,42,43

Digital scanning of prepared maxillary and mandibular anterior teeth





After digital smile designing with computer aided design

Bisque trail with addition of pink porcelain in 33,43gingival region Shade selection of teeth

Frontal view of cemented crown

Postoperative Extra oral view

2. CONCLUSION

The change in dentistry from need based dentistry to elective dentistry has made a significant impact on the profession and the public perception of dentists. Proper computerized smile designing as well as communication with the laboratory technician has made the diagnostic wax-up easier as well as it helped in further education of the patients. Use of all ceramic laminates and veneers enhanced the overall esthetic outcome. Recent advances such as the technique of Digital Smile Designing is an extremely useful tool for patient motivation and interdisciplinary as well as laboratory communication. This

article makes a novel attempt to summarize the current concepts in smile design in prosthodontics in a systematic manner. Ideal Smile is what makes the person happy. Recommendations include that DSD should be used as an auxiliary tool because beauty lies in the eyes of the beholder and ultimately mimicking the nature always works best.

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