

Ceramic Veneers with Minimal Tooth Preparation-A Case Report

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Abstract: A 21 year old male patient with the complaints of discoloured teeth. The treatment was planned based on the patient's expectations. A through smile analysis, pretreatment photographs, prosthodontic, orthodontic evaluations were made. Porcelain veneers with minimal tooth preparation was done. An ideal integration of biological and functional stand points are necessary for optimizing the treatment outcome with porcelain laminate veneers.

Keywords: Esthetics, analysis, discolouration, veneers

I. Introduction

The art of achieving pleasing esthetics starts with taking into consideration, various factors like proper case selection and tooth preparation¹. A simple and conservative approach involving minimal tooth reduction is a primary requisite of a restorative technique. Porcelain laminate veneers fulfill the criteria of requiring minimal tooth reduction. Apart from being esthetic, they are incomparable in terms of longevity. This case report discusses various factors to be taken into consideration while planning esthetic treatment with veneers.

II. Case Report

A 21 year old male patient reported with the complaints of generalized yellowish brown discolouration of his teeth, limited tooth visibility and attrition(Fig:1,2). initial examination he was diagnosed to be affected with generalized enamel hypoplasia due to fluorosis.



Fig:1 Discoloured teeth



Fig:2 Limited teeth visibility

The patient's expectations were to regain his tooth colour, and wanted long term stability in treatment. Initial appointment was scheduled to take pre treatment photographs and study models. A complete smile analysis was done which comprised of the following. Facial analysis determined the facial profile, midline, commissural line. It was noted that the commissural line was slightly shifted to the left.



Fig: 3 Facial analysis

Dentolabial analysis (Fig:3) revealed the incisal curve and smile line was quite low. The existing teeth were short for his face. The gingival zenith was asymmetrical. Phonetic analysis determined the inter-occlusal distance during speech and in rest position. The inter-labial space occupied by the maxillary teeth was less than 60%. Inter-occlusal rest space was 4mm. Tooth analysis(Fig:4) revealed that the patient had a class 1 molar relationship. The inter-incisal line was deviated 1mm right to midline. His teeth were square shaped with generalized attrition that was more for his age, the abnormal surface texture of the tooth was evident with pronounced horizontal grooves. It was well evident that the height to width ratio was disproportionate.



Fig :4 Tooth analysis

Treatment plan was to do occlusal intervention for the lost vertical dimension before esthetic rehabilitation. Occlusal intervention for the lost vertical dimension was done by constructing an anterior bite plane and the patient was observed till he accommodated the increase without signs of muscle fatigue.

Face bow transfer and Wax up

This was done by doing a face bow transfer(Fig:5) and mounting the casts in a semi-adjustable articulator.(Fig : 6)



Fig: 5 Face Bow Transfer



Fig: 6 Articulation

Wax up was done in the mounted casts. Certain considerations like accentuating the incisal dominance increase in the vertical dimension. Providing a flat defined incisal plane for the lower anteriors and maintaining an ideal height width ratio of the teeth. It was checked that the occlusion was free from interferences.



Fig: 7 Wax-up



Fig: 9 Tooth reduction

Tooth reduction

Silicone putty impression of the upper and lower models served as a guide for minimal tooth reduction. (Fig: 8). Tooth reduction was individually controlled with the silicone matrix. A mere roughening of the enamel alone was sufficient in certain areas, the finish line was modified chamfer done using a torpedo diamond. Incisal edge clearance was controlled with the palatal index. Shade selection was done with vita shade guide's final impression was taken with additional silicone.

Aesthetic pre-evaluation temporaries (Fig: 10)

Clear plastic stent were formulated using wax-ups. The tooth were spot etched individually and composite was placed in the stent and bulk cured. The patient was evaluated for phonetics, esthetics and occlusion. The patient was given a week period to assess his temporaries. With the patient approval of temporaries photographs were taken and send to the lab to serve as a guide for tooth reduction.



Fig : 10 Aesthetic pre-evaluation temporaries

Luting of veneers

The veneers were fabricated with pressable ceramics and luted with dual cure composite (Fig :11). The patient was pleased with the final treatment outcome.



Fig : 11 Post-treatment photographs

III. Discussion

A complete smile analysis helps us to determine the considerations to be taken while planning an aesthetic treatment. In this particular case a low smile line, and inadequate height to width ratio of the teeth, flattened incisal curve necessitated an increase in the vertical dimension of teeth while planning for veneers. However, generalized attrition and a reduced inter-occlusal rest space necessitated an increase in bite before the esthetic intervention began.

Procedures like bleaching may improve the degree of discolouration but have no role in terms of long term stability or increase in vertical dimension that necessitated this particular case. Face bow transfer and articulation helped in achieving harmony in function and esthetics in planning for the final restoration. The silicone impression besides being a guide for tooth reduction will also help not to remove unnecessary tooth structure in areas not required. In this case the tooth would have been over prepared if not the wax ups and silicone index were not made.

Pre-evaluation temporaries give the clinician an idea of the final esthetic and functional outcome of the restoration and a sense of confidence in the patient's perspective. A one week waiting period with the temporaries will allow both the patient and clinician an opportunity to assess phonetics, function and decide any changes to be made. A composite mockup will also give a general idea on the tooth length in the proposed final restoration. It is also easy to remove as it is only spot etched and not bonded to the tooth.

IV. Conclusion

A proper approach to achieve best smile starts with complete smile analysis. Only when the final and current positions are compared the clinician can determine a proper design and select appropriate esthetic restoration. Patients with small or lingually placed teeth are ideal candidates for minimal tooth preparation. Prosthetic and esthetic consideration provides guidance for optimizing the treatment plan based on the individual clinical situation. An ideal integration of various factors will go a long way in achieving the best smile design that cannot be achieved otherwise by ones intuition or experience.

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