

Affordable aesthetic management for a patient from low income strata to improve social well-being: A case report

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ABSTRACT

Background: Aesthetic correction involves a holistic approach which considers the oral cavity as a whole by the norms of the treatment. Aesthetics enhance the facial profile and also the smile line of the patient which improves the quality of life of a patient enabling them to a better socioeconomic status. Smile correction of a patient paves the path for a systematic approach to the treatment and also imparts an improved level of confidence which leads to new opportunities both in the personal and professional field. Aesthetic correction provides challenging aspects concerning patient satisfaction and functional demands. This is the most affordable treatment for patients' who are not financially sound in developing countries like India. The other treatment modalities such as Veneers or All-ceramic crowns are aesthetically pleasing but are quite expensive for people in the lower income strata. Due to this, direct composite treatment is very economical and it also improves the patient's overall confidence and it helps them to socialise well and carry out their daily routine activities without any hindrance and difficulty. **Case Report:** This case report deals with the esthetic correction of midline diastema and spacing in the maxillary and mandibular anterior region. **Conclusion:** Aesthetic correction involves meticulous treatment planning to revive the essence of lost beauty as well as improve the functional aspect for the patient.

Keywords: Aesthetics, smile correction, smile design

Introduction

Aesthetics always plays an integral part in the smile design and overall appearance of the patient. Smile enhances the ability to express a wide variety of emotions with the help of teeth and lips by their movement and it also enables the individual to express oneself in the society. Aesthetics, function and biologic harmony of tissues have to be precisely maintained and shaped accordingly with the use of newer materials and restorative techniques. Treatment of spacing and midline diastema in anterior teeth is

usually completed using an orthodontic, restorative treatments or a combination of both. The treatment protocol is designed keeping in mind the patients needs, diagnosis of the condition, the time and cost needed for the treatment and various available choice of treatments. In the current case scenario, treatment options available include direct composites or veneers as minimalistic approach restorative treatment alternatives in place of conventional and extensive orthodontic treatment.

Midline diastemas are common in children between the age group of 6 to 8 years which gradually decreases over a period of time, commonly seen in maxillary region of the jaw between incisors. Overgrowth of interdental papilla results in spacing and drifting of teeth which results in diastema. Midline diastema is

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not significant in the mandibular anterior region. The common cause of spacing in the mandibular region is the habit of tongue thrusting. Tongue thrusting occurs due to enlarged size of the tongue which results in spacing between the upper and lower incisors. The size, shape and posture of the tongue leads to constant movement of the tongue causing outward pressure against the incisors.

Case History

A 32-year-old female patient reported to the clinic with a chief complaint of spacing in the maxillary and mandibular anterior teeth. The patient provided a history of tongue thrusting habit in childhood. The patient was mainly concerned about her lack of confidence to sport a visible smile. She added that her low self-esteem made it difficult to socialise at her workplace as well. On clinical examination, she presented with mild proclination in upper anterior teeth with classic midline diastema and spacing between the lower anterior teeth [Figure 1- Diagnostic Model of Patient with midline diastema and spacing]. Patient had pronounced spacing in between teeth 11 and 21 and minimal spacing between teeth 12, 22, 13 and 23 in the maxilla and spacing was also present between teeth 41, 31, 42, 43, 32 and 33 [Figure 2- Intra oral clinical image showing spacing in the upper and lower anterior teeth].

There were no signs of mobility in any of the teeth involved. The patient was advised an orthopantomogram (OPG) and Lateral Cephalogram to assess her periodontal status and skeletal profile. The patient's OPG revealed bone loss in the maxillary and mandibular anterior teeth [Figure 3-OPG of the patient].

The Lateral Cephalogram revealed skeletal abnormality which is a result of the tongue thrusting habit of the patient.

The patient was advised oral prophylaxis and was informed about the treatment protocol. The patient had a history of tongue thrusting habit right from childhood. Interventional treatment was not done to correct the habit at a young age. The spacing got aggravated due to the tongue-thrusting habit of the patient. Orthodontic correction for spacing and a tongue crib to correct the tongue-thrusting habit was advised to the patient. The patient was not willing for orthodontic treatment. The facial symmetry, lip line, smile line, dimensions of the teeth, position of the teeth, incisal edge and its angulation were assessed. Similarly, gingival health and gingival position with respect to the adjacent teeth were also assessed. The diagnostic findings from clinical examination and diagnostic models were correlated with the OPG. The patient's primary impression was made, then diagnostic wax-up was done and used to analyse the expected outcome and to explain to the patient. Thus, the patient's treatment plan was formulated and the treatment was done accordingly.

The patient was explained that the spacing in the maxillary and mandibular teeth will be corrected with composite build up in



Figure 1: Diagnostic model of patient with midline diastema and spacing



Figure 2: Intra oral clinical image showing spacing in the upper and lower anterior teeth

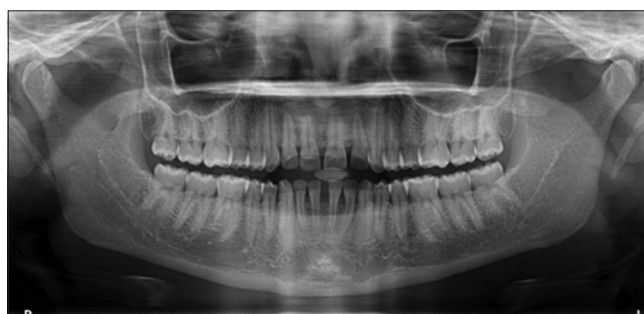


Figure 3: OPG of the patient

the anterior region from canine to canine. Then, the step by step procedure for the composite build-up was carried out followed by finishing and polishing of the final restoration. A tongue crib was advised to the patient to stop the tongue-thrusting habit and prevent further deterioration of the skeletal defect. Levin's Golden Proportion was employed for the smile design in the anterior region of the maxillary teeth. The theory of Golden proportion relates to the successive width of the anterior teeth, as viewed from the labial aspect. It states that the width of the central incisor should be in golden proportion to the width of the lateral incisor and that the lateral incisor should be in golden

proportion to the width of the canine when viewed from the labial aspect. Then, the distal and mesial surfaces of the tooth are made rough and incremental build-up of composite resin is done. The composite build is completed in the maxillary and mandibular canine in the maxillary and mandibular anterior region [Figure 4- Completed composite build up in the anterior teeth].

Any premature contacts were checked with an articulating paper. Finishing and polishing of the composite restoration was completed. The patient was recalled for a review after a week. The patient was satisfied and she did not have any discomfort with regard to speech and appearance of the restoration.

Discussion

The choice of treatment for anterior teeth proclination and spacing of teeth is Orthodontic correction. There are some situations where the patient is not willing for orthodontic treatment and other modalities of treatment have to be done to correct and enhance the aesthetics in the anterior region of the oral cavity.^[1] The other modalities of treatment include ceramic crowns or veneers or using composites for correction of spacing of anterior teeth. Although composite requires a lot of chair side time, it is relatively less expensive and the longevity of the restoration is also good. The composite used should have good mechanical and physical properties. It should be resistant to wear and fracture excellent colour stability and polishing.^[2] It should also have excellent optical properties such as fluorescence and translucency. The composite Prime Dent used for this patient comprises of two kinds of fillers—colloidal silica and heavy metal glasses. It has a high compressive strength of 270 MPZ and low water sorption and solubility.^[3] It is superior to micro filled composites and it provides better surface smoothness and excellent finish to the restoration.^[4]

Composites are added in layers and in small increments to decrease the volumetric contraction and prevent polymerisation shrinkage which results in unnecessary stresses to the restoration. The composite restoration was smoothed and polished with Shofu kit followed by polishing paste.^[5] Shofu kit is a combination of impregnated stones and silicone points which helps in easy and smooth polishing of the restoration which prevents bacterial



Figure 4: Completed composite build up in the anterior teeth

adhesion and decrease the biofilm formation. This leads to a refined aesthetic finish for the composite restoration. Polishing of the restoration is done to remove rough areas and increase the longevity of the restoration.^[6]

The longevity of the restoration depends upon the type of restorative material chosen for the procedure along with the size and location of the defect, the condition and the substrate, technique and the isolation procedure.^[7] Anterior composite restorations are subjected to fracture especially in Class IV restorations due to the increased masticatory load.^[8] The most common cause of failure in the anterior restorations is due to aesthetic reasons which include surface staining, alterations in colour, the brightness of the restoration and anatomical form of the tooth which influences the clinical success of the restoration.^[9]

Demarco *et al.* said that anterior composite restorations have a success rate of 0% to 4.1% annually and survival rates of 54.3% to 100% annually. The overall failure rate was 24.1% for 3 years in this systematic review.^[6] Flavio *et al.* said that the overall failure of the composite was 1% to 3% annually which is due to secondary caries and fractures and anterior region it is 1% to 5% and the failure is mainly due to aesthetic reasons.^[10]

New advances in direct composites include the modifications in the filler particle which is the incorporation of nanoparticle, incorporation of highly cross-linked polymers and alternatives to camphorquinone curing light such as benzoylgermanium derivatives. Thus, these newer materials incorporated into nanocomposites enhanced the mechanical and optical of composites, thereby improving the longevity and success of the restoration.

Aesthetics plays a very important key role in a person appearance and it also enhances the smile of a person to actively engage and socialise in our community among fellow human beings. Direct composites are cost effective and improve the overall aesthetic appearance of the individual who cannot afford expensive treatments such as Veneers and All-ceramic crowns. Such patients do need to socialise and communicate among their peers to carry out their day to day activities. This type of aesthetic treatment improves the overall confidence level of the patient and helps them to coordinate and improvise both physically and mentally in their professional and personal work.

Conclusion

Composites are one of the modalities of treatment for aesthetic restorations. Proper case selection followed by treatment plan which includes the type of aesthetic restoration required, the choice of the material used for the treatment and the need for treatment form an important part for the success, longevity and survival rate of the restoration.

Clinical significance

The aesthetic correction done for the patient maintained the harmony of the tooth structure and preserved the tooth. It

improved the aesthetics of the patient and also enhanced the smile of the patient at an affordable cost. It also improved the overall confidence of the patient and helped her lead an active social life.

Acknowledgement

The patient has provided written informed consent to allow this case report to be published along with the accompanying images.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Key Messages

Aesthetics and smile correction are interconnected with each other and it is an integral part in the smile design of an individual

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Conflicts of interest

There are no conflicts of interest.

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