

# Smile Transformation with Lithium Disilicate Veneers

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**A**nterior teeth are important contributors to a beautiful and youthful smile. Developmental defects, demineralization and caries can disturb the harmony and surface texture of these teeth, in turn affecting the smile aesthetics and confidence of a person. Here I present a case of a 32-year-old female who showed demineralization, discrepancy of shade, irregular surface texture and previously placed proximal composite resin on her anterior maxillary teeth.

On examination, we noted in addition to the above-mentioned findings she also lacked anterior guidance, though her canine guidance was satisfactory. Such cases should be planned from a functional and aesthetic viewpoint in order to ensure the long-term success of the restorations without disturbing the rest of the teeth.

After a detailed consultation, photographs and study models, a decision was made to treat the case with 6 minimally invasive lithium disilicate veneers to alter the shape, shade and surface texture.

Digital planning was done using power point and DTS Pro. The lab used the planning as a reference while designing the restorations in Exocad. We wanted to give her slightly longer central incisors keeping lateral incisors marginally shorter and delicate outlines to match her personality and make the smile more youthful and appealing.

## DENTOFACIAL AESTHETICS

The inter pupillary line was used as a reference and the inter incisal line was drawn along the maxillary incisal edges to ascertain maxillary cant (if any). In this case there

was no cant, and the patient had a good profile. The incisal display and position were also satisfactory. Our eyes are extremely sensitive to a maxillary cant and most patients notice it as a longer central incisor compared to its adjacent incisor.

The dental midline and facial midline were a match in this case, however a discrepancy of up to 2 mm is unnoticed in most cases as long as the midlines are parallel.

The dynamic smile was gummy showing a couple of mms, however she did not mind it and with a week to complete the treatment, we could not have addressed it.

## DENTAL AESTHETICS

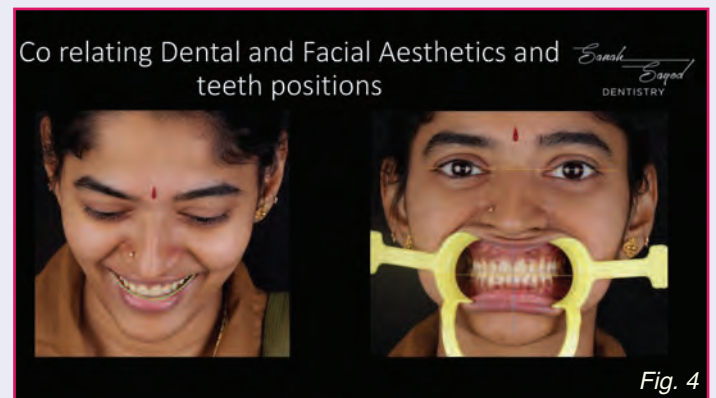
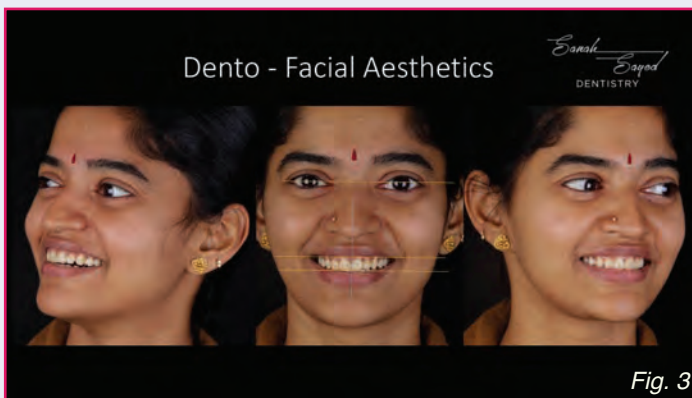
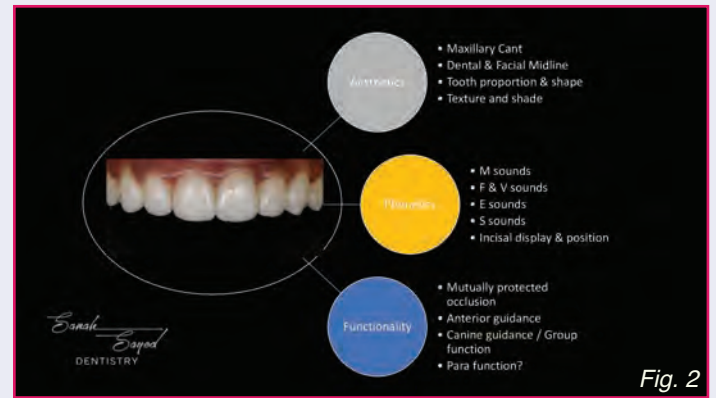
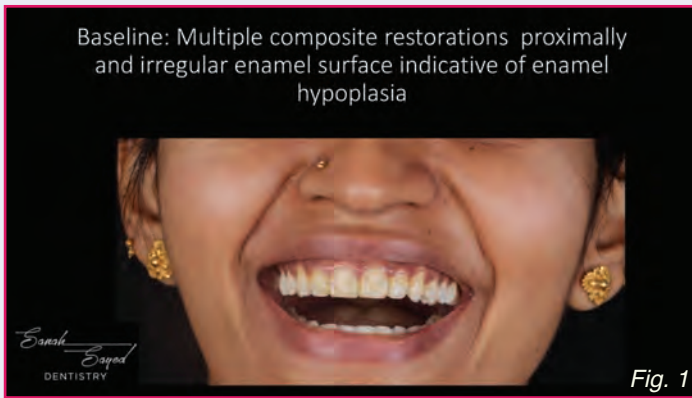
Young anterior teeth are bright with abundant surface texture which helps the scattering of light, further increasing the value of these teeth. In this case, the teeth looked dull and dark, contributing to a visual distress of highly chromatic teeth. In addition, the previously placed composite resins could not do justice to the overall tooth substrate making it look patchy.

## PHONETICS

Phonetics form an important basis when designing a smile.

M sounds determine incisal display at rest. 2-3 mm of display in women is acceptable while men show slightly less. The display reduces with age as elderly patients start showing more of their mandibular teeth due to sagging.

F and V are fricative sounds determining incisal display and position as the lower lip gently caresses the incisal edges of the maxillary anteriors.



E sounds show the smile window that help determine the extent of the dynamic smile and overlap of the maxillary and mandibular teeth.

S sounds are also called Silverman's closest speaking space. The mandibular anteriors are placed 1 mm below and behind the maxillary anterior teeth during these sounds. Too much overjet could result in a lisp and incorrect S formations.

The phonetic analysis in this case was satisfactory and we planned to increase the central incisors by 0.75 mm.

## TEETH PREPARATION

Teeth preparation was done through a bis-acryl temporary mock-up (Protemp 4): APT technique by Galip Gurel. This ensures the preparation is minimally invasive (and in enamel to ensure maximum bond strength) as we back trace our steps from the final restorations in terms of shape. A 0.5 mm depth gauge was used to mark the buccal reduction. Incisal reduction was 1.5 mm on the mock-up. The proximal contacts were broken to make a slice preparation since composites were previously placed and

it is always better to wrap the composite under the ceramic. This way the dentin is replaced by a more resilient composite material and the enamel is replaced by a stiffer & stronger ceramic.

## GINGIVAL RETRACTION AND IMPRESSIONS

A double cord technique was used for gingival retraction and the impression was made in silicone (Zhermack). The bite is recorded in a bite registration paste (Occlufast-Zhermack) and photographs are taken for stump shade communication and final shade. The restorations should blend in with the rest of the teeth. Hence, finding the closest match is important and most times consulting with a colleague helps with finding the right shade tab.

BIS ACRYL TEMPORARIES are fixed with spot etching and spot bonding in the interim period. The inter papillary area is sufficiently relieved to prevent inflammation and ensure healthy tissues at the time of veneer cementation. Teflon tape can also be used during setting of bis-acryl interdentally to prevent excess in this area.

Shade selection & Anterior guidance check:  
Maxillary central incisors should be longer.



Fig. 5



Fig. 6

Teeth preparation & retraction:  
contacts were broken because of proximal composites



Fig. 7



Fig. 8



Fig. 9

Immediate Post operative: Clean up is always easier with rubber dam



Fig. 10

## ISOLATION

Rubber dam provides a clean and dry field in addition to better visualization of teeth and margins. Brinkers #44 or dental floss can help with additional tissue retraction and subsequent easy clean up of the cement.

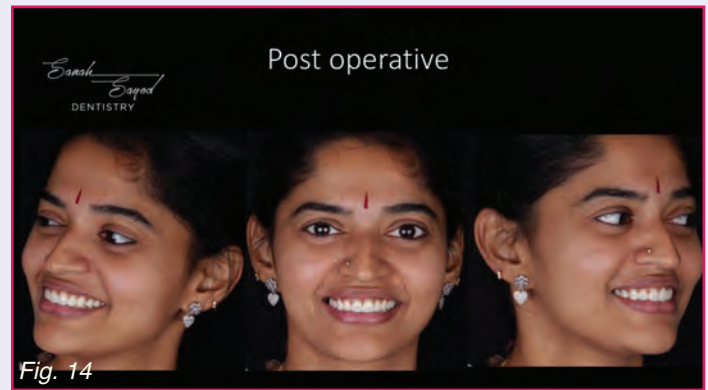
## CEMENTATION PROTOCOL

The intaglio surface is first treated with 9% buffered hydrofluoric acid (Ultradent) for 20 seconds followed by application of 37% phosphoric acid to remove the insoluble porcelain salts and debris formed.

Silane is applied and allowed to evaporate for 60

seconds. If not, it can be air dried after 60 seconds with oil free air. Next, follows the application of universal bond, and air drying but it should not be cured to prevent any seating errors.

The tooth surfaces are air abraded to remove debris. 37% phosphoric acid is applied for 15 seconds and rinsed. This should be air dried to reveal a frosted appearance. Universal bond (3M) is applied, air dried but not cured. I prefer to use a light activated resin cement for veneers rather than dual cure because of the increased working time, control and ease of clean up (Microbrush or #0 brush).



**Curing Light:** The veneers can be spot cured or tack cured to remove residual cement. Additionally, the veneer should be cured under K.Y. Jelly for 40 seconds on all surfaces to ensure complete setting. Residual cement overhangs can be removed with #12 blade. A yellow bur and Zekrya Gingiva protecting kit (Dentsply) can also be used to remove cervical overhang.

Occlusion is verified and patient is recalled after a week.

**Follow Up:** Photographs and detailed hygiene instructions are shared with the patient.

## CONCLUSION

Lithium disilicate veneers fit perfectly in the minimally invasive world of dentistry. These versatile materials offer aesthetics, translucency and bond strengths to make beautiful, functional and durable restorations in the anterior teeth.

The 10 year overall cumulative survival rate of lithium disilicate veneers is 99.6% as per available research making them a good choice for smile makeovers. However, case selection and bonding substrate (enamel is better than dentin). This should be considered when providing such treatment modalities to ensure their long-term success. ■



Fig. 17

## About the author



*Dr. Sanah Sayed is an Aesthetic and restorative dentist with over a decade of clinical experience. An alumni member of D.Y. Patil school of dentistry, Navi Mumbai, India she finished at the top of her class and went on to study and pursue Aesthetics at Manipal college of dental sciences, Karnataka.*

*Awarded "Outstanding dentist of the year " by Famdent Excellence in Dentistry, 2022 and "Aesthetic dentist of the year 2022 by Indian dental divas awards she currently maintains her private practice at Pune where she tries to marry aesthetics and functionality to deliver healthy smiles to her patients.*

*She is the mentor of Sanah Sayed Dentistry and regularly conducts workshops on smile designing and composites.*