No prep ceramic veneers have now been an established treatment in clinical practice for two decades. The very ideology of preserving enamel, and bonding to it, in order to have minimally invasive restorations and also to have the best possible bond strength to the tooth tissue. The cases where this is genuinely possible have to be carefully selected. Teeth which require addition or have gaps are the ones that benefit from these techniques. Teeth which are rather discolored and need compensatory reduction cannot benefit from these, unless adequate and effective bleaching of the teeth is carried out. The ideology entails the addition of ceramic, irrespective of brand or type, of up to 0.5 mm. There has been a lot stated and more so for reasons of marketing where the term No Prep has been glorified. It has also been suggested that these are reversible which, in the true sense, is debatable. There is however no doubt that the objective of having indirect ceramic veneers bonded to enamel should be the goal of every clinician. There are 3 cases being presented to show what is it that can be achieved by minimal invasive veneers. A set of guidelines and protocols are suggested as well. The first one presents a No Preparation Case which the author suggests is lasting well after a 3 year follow up, but it is advised that Minimal Alteration of the tooth tissues is a better alternative in order to have ease of fabrication, cementation and long term stability. The laboratory part of the 3 cases was performed by Lamberto Villani, Oral Design, Dubai.

Protocols and Guidelines
1) Teeth should be in the right position
2) Teeth should not have severe inter-proximal undercuts
3) The shade should be close to what the patient wants. If you want to lighten them or increase value, bleach beforehand
4) The shape of the teeth should be more squarish and not very triangular
5) In case of recessions, if you want to perform root coverage, this design may be very difficult to implement due to undercuts in the root area
6) Use of translucent or clear cement gives most predictable results

Advantages
1) Tooth tissue preservation
2) The best bond you can get, as it is bonded to enamel
3) No post operative sensitivity
4) Most of the times no need for temporization
5) No need for anesthetic to cement
6) Greater patient satisfaction: the WOW factor

Disadvantages
1) This is not a method used for extreme corrections of crowding
2) Cannot be used if there are deep interproximal undercuts
3) One cannot change the colour tremendously, remember we need 0.2 mm of ceramic for every shade change
4) Difficult to cement.
5) Are more expensive to produce, so add to the treatment cost

Fig. 1

CASE 1

A 45 year old female with healthy gums had received orthodontic treatment and had the desire not only to have a lighter shade of teeth but wanted to have slightly longer teeth. She wanted the worn down 2.2, and 1.1 to be more symmetrical to the contra lateral side. She also wanted the slight gaps in her teeth along with the black triangle in between 1.1 and 2.1 not to be visible. After presenting her with a mock-up and the options she opted to have ceramic veneers. The orthodontic treatment was performed to procline the upper anteriors, correct the cross-bite and create space for establishing a shallow incisal guidance even after making the teeth longer with ceramic veneers. No preparation was done. Double retraction was carried out using Ultrapak (Ultradent) with the first cord being thinner and then placing the thicker cord. Impressions were made using Impregum, single step technique. No temporization was done for this case. The veneers were fabricated using feldspathic ceramic on a Refractory Die Technique. Ceramics are treated with hydrofluoric acid at 9.7% for 90 seconds, cleaned with phosphoric acid 37% for 2 minutes and then with an ultrasonic bath for 5 minutes in alcohol. After this, a silane agent is applied to the surface. With the rubber dam in place and after checking that the isolation is correct, the teeth are treated for adhesion by sandblasting with 50 μm aluminum-oxide powder and application of phosphoric acid on enamel for 15 seconds, rinsing with tap water for 15 seconds. The veneers on 11, 12, 13, 21, 22, 23 and 41 were cemented using Translucent Cement (RelyX Veneer Cement, 3M ESPE).
Fig. 2  Preoperative View
Fig. 3 Cross-bite on the left side

Fig. 4 After orthodontics and after home bleaching
Direct Mock Up: effective for final result visualization and also for laboratory communication.
Fig. 6  Refractory Die Technique employed to fabricate feldspathic veneers.

Fig. 7  Try in of No Prep veneers: one can note that the margins are not completely flush with the teeth. These are filled with clear or translucent resin cement and have to be polished as a composite resin restoration. The immediate finishing was done with a 40 micron diamond bur and then with polishing rubbers, Astropol (Ultradent). One has to wait for 2 days of rehydration before the final polishing to be done with Jiffy brushes and Goat hair brushes (Ultradent) and Diamond polishing paste (Diamond Twist SCL from Premier).
Fig. 8  Immediate Post Cementation
Fig. 9  3 years post operative view

Fig. 10  Profile image showing smooth transition of veneers with the teeth and also a nice texture on the surface.
Fig. 11  
Before and After.

Preserving Enamel In Areas Of Line Angles

The Vertical Preparation Method
MINIMAL PREPARATION

Tooth Preparation Guidelines

Irrespective of the technique, it is imperative that the guidelines be followed for all indirect restorations as stated in an earlier article describing how tooth reduction should be done in order to preserve the tooth tissue. The preparation should be performed through a mock-up which should be based on a well planned and executed wax-up. The incisal area needs 1.5 mm ceramic, the body about 0.5-0.7 mm and a the cervical needs not more then 0.3 mm. In addition to that, a method of preserving tooth tissue in the areas of mesial and distal line angles is being suggested.

The Vertical Preparation Technique

Preserving enamel at the line angles

It is the authors opinion that, if the tooth is prepared between the line angles with a horizontal motion parallel to the labial part of the tooth and the bur is made perpendicular to the tooth in the inter proximal areas, the areas of the line angles will be preserved. Quite often, when the sweeping motion is carried out from one end of he tooth to the other there is a high probability of flattening these line angles as one gets to the mesial or distal side of the tooth.
CASE 2
A 55 year old male with healthy gums had received orthodontic treatment and had the desire not only to have a lighter shade of teeth, but wanted to have slightly longer teeth and also did not like the embrasures in between his anterior teeth. After presenting him with a mock up and the options he opted to have ceramic veneers. Minimal preparation was done. Double retraction was carried out using Ultrapak (Ultradent) with the first cord being thinner and then placing the thicker cord. Impressions were made using Impregum, single step technique. No temporization was done for this case. The veneers were fabricated using feldspathic ceramic on a Refractory Die Technique. The veneers on 11, 12, 21 and 22 were cemented using Translucent Cement (RelyX Veneer Cement, 3M ESPE). The embrasure in between 13 and 12 was effectively managed by the veneer on 12 and a composite build-up on the mesial side of 13 using the Controlled Body Technique, as suggested by Styleitaliano. A2 dentine and A3 enamel (Filtek Supreme, 3M Espe) were used for the same.
Preoperative View.

The Mock up and preparation through the Mock up
Visualization and thereafter preparation through the mock-up.

Minimal Preparation using the Vertical Preparation Method.
Fig. 18  Retraction cords in place before impressions.
Fig. 19  All enamel as seen after etching.

Fig. 20  Before and After.
CASE 3
A 42 year old female with healthy gums had received orthodontic treatment and had the desire not only to have a lighter shade of teeth but wanted to have slightly longer teeth. After presenting her with a mock up and the options she opted to have ceramic veneers. The orthodontics was done to procline the upper anteriors and create space for establishing a shallow incisal guidance even after making the teeth longer with ceramic veneers. Minimal preparation was done. Double retraction was carried out using Ultrapak (Ultradent) with the first cord being thinner and then placing the thicker cord. Impressions were made using Impregum, single step technique. No temporization was done for this case. The Veneers were fabricated using Feldspathic Ceramic on a Refractory Die Technique. Ceramics are treated with hydrofluoric acid at 9.7% for 90 seconds, cleaned with phosphoric acid 37% for 2 minutes and then with an ultrasonic bath for 5 minutes in alcohol. After this, a silane agent is applied to the surface. This treatment perfectly cleans the etched ceramic surface and achieves a mean micro-tensile bond strength of 46.3 MPa. With the rubber dam in place and after checking that the isolation is correct, the teeth are treated for adhesion by sandblasting with 50 ?m aluminum-oxide powder and application of phosphoric acid on enamel for 15 seconds, rinsing with tap water for 15 seconds. The veneers on 1.1, 1.2, 1.3, 2.1, 2.2 and 2.3 were cemented using translucent cement (RelyX Veneer Cement, 3M ESPE). A thick 2 mm orthodontic retainer at the end of the treatment was provided which also served as a night guard.
Fig. 22 Minimal Preparation done through the mock-up and also using the Vertical Preparation Technique.
Fig. 23  6 very thin feldspathic veneers fabricated using the Refractory Die Technique.

Fig. 24  Image to show layering in ceramic and very thin margins of the veneers.
Fig. 25  Alternate veneers placed at try-in to exhibit that if there is increase in volume that is required then this technique works best.
Fig. 26  Occlusal view to show the precise fit of the veneers and also labial texture.

Fig. 27  High contrast image to show the layering even in thin veneers.
Final Image of 6 veneers, 1 week after cementation.
Fig. 29

Before and After.