

Types of Veneers in Dental World

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Abstract

Introduction: Aesthetics is the most important factor in the restoration of anterior teeth. It is often difficult to achieve proper aesthetics in a largely carious lesion, pulp involvement, severely fractured and eroded teeth, in hypoplastic defects, as well as stained teeth. But with the development and advancement of veneers, it is maintaining aesthetic and restoring form and function of teeth has become easier. The type, material, and technique of veneer depend on the tooth structure available for restoration and the deformity/anomaly associated with tooth. Due to its superior esthetic, mechanical and biocompatible properties, a porcelain veneer is the most reliable, durable, and recommended restorative material for anterior teeth. Although adhesive restorative material is not as superior as porcelain veneer but is advancing with every passing year, which makes composite veneer another treatment modality in many cases.

Aim of Work: Aim of the review is to understand the different types of veneers used in dentistry.

Methodology: The review is the comprehensive research of PUBMED since the year 1991 to 2018.

Conclusion: In the past 25 years of restorative dentistry, a veneer is the most revolutionary one to develop. The fact that porcelain can bond to composite and then onto the tooth surface has changed the view of any clinician. Not only the mechanical properties but the esthetic properties are imparting an attractive appearance increase the self-confidence. From a full-coverage porcelain veneer and palatal veneer to ultrathin veneer (Thinners) and composite veneers, veneers give a wide variety of treatment options in patients suffering from different conditions. The successful result of the veneer depends on the case, understanding of the physicians for the procedure involved, laboratory techniques, veneer fabrication, and conservative tooth preparation. Therefore, it is the selection criteria to use veneer must be reviewed carefully before the beginning of the procedure for the long-term success rate.

Keywords: Porcelain Veneer; Partial/Palatal Veneer; Ultrathin Veneer; Composite Veneer

Case selection for veneers

- A static and dynamic occlusal relationship is an important factor since fracture is the most common cause of failure of the veneer. To avoid this, the incisal edge should be placed in a way that they do not contact opposite dentition in the rest position.
- A healthy periodontium is the second factor for the selection criteria of the veneer candidate. A healthy sound periodontium on which the restoration rests.
- The detailed examination of pre-existing carious lesion, restoration, the amount to tooth structure available for bonding, and degree of teeth discoloration already present dictate the type of veneer to be used.
- The attitude of patients towards the maintenance of veneer after treatment would make treatment more successful. Any habits which are prone to fracture veneer, oral habits such as nail-biting should be corrected prior to the initiation of treatment [1].

General indication and contraindication of veneers [2]

Indication	Contraindication
<ul style="list-style-type: none"> • Extreme discoloration in anterior teeth due to tetracycline staining, fluorosis, teeth darkened with age, devitalized teeth. • Small enamel defects such as enamel cracks • Diastema and multiple spacing between teeth. • Repair of a functionally sound metal-ceramic crown or all-ceramic crown with unsatisfactory color. • Malpositioned teeth or tooth shape anomalies such as peg laterals or rotated teeth. 	<ul style="list-style-type: none"> • In case of insufficient tooth structure, full coverage restoration is recommended. • Fractured teeth with one-third loss of tooth structure are a poor case of the veneer. • Actively erupting tooth • Patients are having parafunctional habits such as bruxism. • Endodontically treated teeth present a poor surface for bonding; hence are not indicated for veneers.

*Table 1: Indication and contraindication of veneers.***Magne and Belser classification for the indication of ceramic veneers [3]**

Type-1 Teeth resistant to bleaching
Type 1A- Tetracycline discoloration
Type 1B- Teeth unresponsive to bleaching
Type-2 Major morphological modification
Type 2A- Conoid teeth
Type 2B- Diastema or interdental triangles to be closed
Type 2C- Augmentation of incisal length or facial prominence
Type-3 Extensive restoration
Type 3A- Extensive coronal fracture
Type 3B- Extensive loss of enamel by erosion or wear
Type 3C- Generalized congenital malformation

*Table 2: Magne and Belser classification.***Porcelain or ceramic veneer**

Porcelain veneers are popularly used for the conservative restoration of unesthetic anterior teeth since the 1980s. Numerous studies have suggested its favorable clinical performance, maintaining appropriate aesthetics with more patient's satisfaction and less adverse effects on gingiva and periodontium. The failure rates were mostly low with some failure contributing factors such as unfavorable occlusion and articulation, significant loss to the tooth structure, inappropriate use of luting agents, and underprepared or unprepared teeth. However, despite this, porcelain is considered more durable when compared to direct composite veneers [4-6].

All system used for porcelain veneers are [1]:

- Conventional ceramics
- Castable ceramics
- Machinable ceramics
- Pressable ceramics
- Infiltrated ceramics

Shade selection

Tooth color is closely related to the color of eyes, skin, and hair since all these have a common embryonic origin and are therefore considered in shade selection. There are various shade guides available such as vita porcelain shade guide. Lower chroma and higher value

shade should be selected; this helps in a slight darkening due to increased translucency with polymerization of composite luting cement. It is recommended to clean the teeth and remove all the stains and debris and match the shade in the early hours and compare it in the 5-second interval so as to avoid eye fatigue. Canine should be used as a reference [7].

Type of preparation [8]

1. Window preparation: In this, the incisal edge of the tooth is preserved.
2. Feather preparation: The incisal edge of the tooth is prepared, but incisal length is not reduced.
3. Bevel preparation: The incisal edge of the tooth is prepared Bucco-palatally and the length of the edge is reduced to 0.5 to 1 mm.
4. Incisal overlap preparation: The incisal edge of the tooth is prepared Bucco-palatable, and length is reduced to 2 mm; in this case, the veneer is extended to the palatal aspect of the tooth.

Armamentarium and tooth preparation

Armamentarium [1]

- Three tiered depth cutting diamond bur
- A round bur
- A round end tapering bur
- Finishing diamond bur

Labial reduction: It is commonly seen that the cervical portion is over-prepared, causing dentin exposure, compared to the under-prepared mid-incisal portion. Therefore, different depth is obtained at different planes. The key to success in tooth preparation is controlled depth of preparation. The labial surface is given three horizontal depth cuts with three-tiered depth cutting a diamond, 0.3 mm at the gingival finish line (since the amount of enamel is less at this area) while 0.5 mm at the incisal end. In standard preparation, with the tip of the diamond, a supragingival chamfer finish line is placed at gingival crest because it allows easy access, increases the area of enamel, provides better visibility, and helps in maintaining better hygiene. The subgingival line is preferred in severe discoloration to provide the bulk of veneer thickness [1,9].

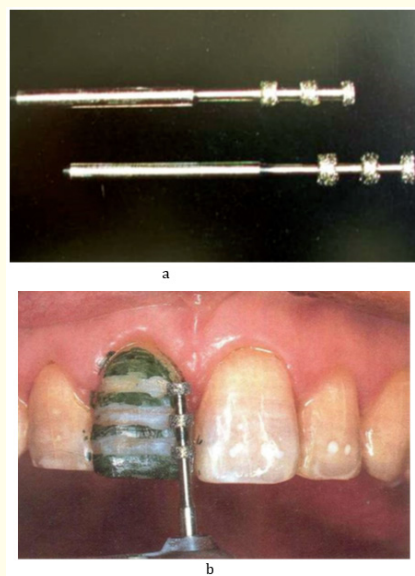


Figure 1: a) Three tiered depth cutting diamond b) labial reduction [9].

Proximal and incisal reduction: Proximal reduction is in continuation of labial reduction using round end tapered diamond. Bur is kept parallel to the long axis of teeth to avoid any undercuts. The incisal reduction is made on the basis of whether the preparation is terminating at the incisal edge (feather type) or including the incisal edge (wrap around or incisal overlap preparation). Porcelain under compression is stronger and wrap-around preparation place veneers under compression, thus give a better result. A 0.5 mm orientation grooved is made for incisal reduction using multi wheel diamond burs and the excess removed using round end tapered bur [1].

Lingual reduction: The finish line at the lingual aspect is made using a round end tapered diamond, holding it parallel to the lingual surface [1].

A provisional restoration can be given depending on the tooth preparation done, whether the proximal contacts have been broken and the timing of try-in veneer. After the laboratory procedure using different techniques, the patient is recalled for the try-in procedure to check the marginal fit, proximal fit, and any other specific changes to be done by patients or clinicians. The veneer is restored after an appropriate selection of resin cement [1].

Direct/indirect laminate composite veneers

Laminate composite veneer restoration can be a direct or indirect or combined type. The excessive preparation of teeth may damage the surrounding tissues as well as gingiva. Moreover, the laboratory procedure has been eliminated in a direct composite technique, which increases patient compliance. Therefore, in recent years, composite restoration has become a more esthetic and conservative treatment option [10]. In a direct composite technique, the material is directly applied onto the prepared tooth surface or after removal of the carious lesion. The tooth is cleaned thoroughly, etched using etchants followed by the application of bonding agent and restored using appropriate composite restoration followed by intraoral polishing. The disadvantage of the direct composite is its inferior mechanical properties, low resistance to wear, discoloration with time, and fracture [10].

On the other hand, the indirect composite veneers have advantages of having high resistance against attrition, fracture and discoloration as compared to direct composite veneers but come with a disadvantage of increases in the long chair time and cost. In indirect composite veneers, the tooth is prepared, followed by an impression using condensational silicone material, laboratory procedure includes waxing up and building of veneers extra orally. It is then tried-in and restored on the prepared tooth after etching teeth with 37% phosphoric acid (the inner surface of composite veneer is also etched using 10% of hydrofluoric acid for 15 seconds) using appropriate luting agent and polished after the adjustment and marginal fit required [10,11].

The direct-indirect technique combines both the above technique in which the first layer of high-value opaque hybrid of the resin followed by the second layer of translucent hybrid resin and final layer of translucent microfill composite resin is applied onto the tooth surface and sculpted to desired morphology. It is then teased-off at the veneer-tooth interface and is polished and heat-treated for improving physical properties. After the tooth preparation is restored onto the tooth using an appropriate luting agent [12].

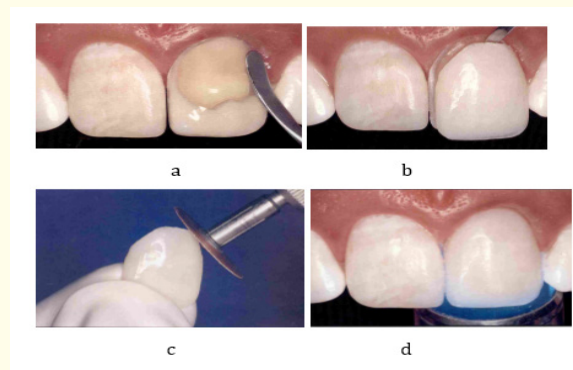


Figure 2: Showing a) layer of translucent microfill composite b) teasing off the composite veneers c) polishing and adjustment d) light curing of composite veneer post etching and bonding agent application [12].

Partial veneer or palatal veneers

Dental erosion is widely prevalent among populations and represents a great challenge in dental treatment. Either an age-related physiologic change or pathological wear, erosive wear should be treated promptly without more loss of tooth structure, and a feasible solution to it is palatal veneers since many patients do not undergo full-mouth rehabilitation. This is a conservative approach that slowly increases the vertical dimension of occlusion (VDO) [13].

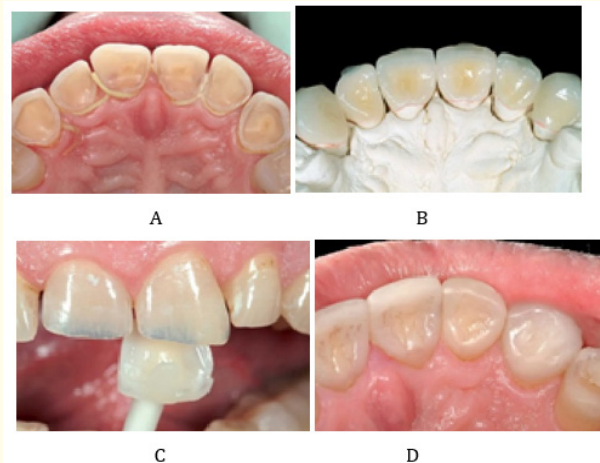


Figure 3: A-D showing a composite veneer fabricated after caries removal followed by impression taking. The prepared veneers are checked for marginal fit, shade and another adjustment in try-in and restored palatally [13].

Lumineer/thineers/ultra-thin veneer/minimal prep or no-prep veneers

With the significant improvement in ceramic and luting composite and successful bonding to the tooth structure, directed clinicians towards minimal invasive dentistry. One such recent modality in veneer is Porcelain Thineer. Porcelain Thineers can be as thin as 0.3 mm and it offers a predictable and successful treatment option in certain cases such as tetracycline staining or mild fluorosis. The aim of the Thineers is to avoid extensive tooth preparation and reinforce the remaining tooth structure present. The advantage of Thineer is preserving the natural tooth structure as much as possible and yet achieving the cosmetic needs of the patient [14].



Figure 4: Showing A) tetracycline staining in a patient B) restored with thineers [14].

Conclusion

Different types of veneers are used for different cases present to the clinician. A porcelain veneer is a choice of restoration for most of the anterior teeth needing an alteration in shape, size and color and other cosmetic point of view. With minimal tooth reduction and greater bonding with tooth structure, porcelain veneers provide long term success as well as satisfactory results. Composite veneers are another alternative with more patient compliance and are cost-effective, yet the mechanical properties are lower than porcelain veneers. With the advent of minimal dentistry, tooth structure preservation is a priority these days, which leads to the use of partial veneers or no-

prep or minimal-prep veneers in less severe cases. The ultimate selections veneers depend on the presentation of the case, tooth structure available, esthetic demand, clinician skills on the technique, and patients' compliance, and satisfaction.

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