

Lumineers- New Era of Restorative Dentistry

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Abstract-

Laminate veneers are one of the most conservative techniques when compared to all other kinds of conservative restorations. Making veneers with porcelain supplement will minimize the amount of tooth reduction and bacterial accumulation, also improve esthetics, and allow to provide life-like tooth structure in the name of shade and shape of the tooth. Till now, various designs were explained by various authors, majorly concentrating on maximum tooth preservation and minimal intervention techniques. Here, in this article, we are aiming on Lumineers as a treatment option. Lumineers are porcelain veneers that offer the painless way to a whiter and aesthetically aligned smile. Lumineers are made of the new porcelain technology Cerinate which gives them strength but allows them to be contact lens-thin. They are placed over existing teeth without having to remove painful tooth structure. Lumineers can also be placed over existing crown or bridgework.

Keywords- Lumineers, porcelain veneers, aesthetic, durathin, minimal intervention.

Date of Submission: 25-03-2020

Date of Acceptance: 14-04-2020

I. Introduction

Lumineers have brought a great revolutionary change in aesthetic dentistry. With the advancement in material and patients awareness, lumineers has brought a light in the field of dentistry². Lumineers are thin porcelain material, custom made for the patient, and applied with a permanent bonding agent to the tooth⁴. The main difference between conventional dental veneers and lumineers is the very thin thickness of lumineers, like ultra-thin and material of construction which is called Cerinate porcelain which is very strong one and much thinner than the traditional veneers⁶. Their thickness is comparable to contact lenses. The patients' knowledge about cosmetic dental procedures has changed dramatically in the past few years⁵. Today, patients are calling and asking for them by name: Lumineers, Da Vinci veneers, Durathin, Emprethin and empress veneers².



Advantages:

1. Painless.
2. Lack of need for anesthesia.
3. Fast technique.
4. Conservation of the tooth structure.
5. No harm to the pulp and therefore elimination of post operative sensitivity.
6. Ease of impression, because tissue management is not needed.

7. No need for provisionals.
8. Permanently whitened teeth.
9. Bonding to enamel.
10. Longer-lasting restorations due to enamel bonding.
11. Minimal flexing stress due to bonding to enamel.
12. Higher level of acceptance by the patients, specifically patients with dental phobia or refuse to remove sound tooth structure.
13. Excellent esthetic.
14. Easy to clean and maintain when placed supragingivally.
15. Can be placed over unattractive crowns and bridges without replacing them.



Disadvantages:

1. Bulky appearance:

For no-preparation veneers, the esthetic results are variable; some of these restorations appeared too bulky and over contoured, while others have relatively acceptable esthetics¹¹. To maintain the original tooth shape, it often requires the clinician to remove a slight-to-moderate amount of enamel when making the tooth preparations¹³. Some clinicians feel that there is a more optimum esthetic potential when teeth are prepared with a light chamfer especially at the gingival margin to prevent overcontouring in that region, which is a debatable view¹⁴.

2. Periodontal problems due to overcontouring of the veneer.
3. Teeth width being restored cannot be altered significantly.
4. Difficult to mask severe staining and discoloration with thin veneers

Indications :

1. Upgrading and enhancing a patients appearance.
2. Minor color changes.
3. Masking mild to moderate tooth discoloration and staining. Examples: enamel hypoplasia, enamel hypocalcifications, discolorations due to endodontic staining, teeth with localized enamel malformations, flourosis with enamel mottling, tetracycline staining.
4. Masking exiting class III, IV, and V restorations
5. Closing diastemas.
6. Restoring chipped or cracked teeth.
7. Reshaping peg-shaped and undersized teeth. Many patients may be satisfied with limited improvement in their smile to preserve as much of the original tooth structure as possible.
8. Correcting minor misalignments and rotations of anterior teeth.
9. Recontouring of teeth.
10. Revitalizing existing porcelain and porcelain-metal restorations.
11. Worn dentition.
12. Adolescent dentition.
13. Pre-adolescent teeth like Chipping and cracking can be restored.

Contraindications:

1. Severe discoloration or darkly stained teeth.
2. Protruding teeth or crowding that will require some reduction to achieve better esthetics and function.
3. Insufficient enamel remaining to provide adequate retention.
4. If teeth are significantly broken down or compromised. In this case, crowns are a better and stronger alternative than ceramic veneers.
5. Large class IV defects.
7. Bruxer or clencher patients. Those patients have increased chance of veneer fracture even if incisal edge is not covered by porcelain.



Steps of Placement Techniques:

Usually three visits are required for no-preparation or minimal preparation veneers:

1. Diagnosis and treatment planning.
2. Preparation (if needed) and impression.
3. Cementation.

Each step will be discussed in details:

1. First Visit:

Diagnosis and treatment planning:

Before advising any patient regarding treatment options in any esthetic case, the dentist should complete a complete facial and dental analysis, which should include: 1. Evaluation of the patient's requests and expectations. 2. Periodontal examination. 3. Photographs. 4. Radiographs. 5. Mounted models and waxing-up. It gives the clinician and the patient a general idea about the final appearance of the case¹⁵.

There are main factors to consider when planning an esthetic treatment and the amount of tooth preparation required for a porcelain lumineer. They are:

- a. The expectations of the patient should be prioritized.
- b. Midline position: Incorrect midline appearance can be altered via restorations, but the gingival tissue will not adjust to significant changes.
- c. Lip position and fullness: In a patient with thin lips, changes in the arrangement of the teeth may alter lip support and position, possibly leading to the patient's having problems with facial esthetics, speech and/or lip closure. Even when a minimally thick (0.3mm) porcelain veneer is used, this can result in certain areas of the restoration's being quite bulky. However, thick lips are less affected by the thickness of the restorations¹⁰.
- d. Incisal edge position: Sometimes, altering the incisal edge position is often necessary to produce a more youthful and attractive appearance. The incisal edge of the maxillary central incisors is the most important determinant in smile creation. Once the incisal edge is determined, it serves to establish the proper proportions of the teeth and the levels of the gingiva⁹.
- e. Desired teeth shapes and contours: with proper designing considering contact and contour of the teeth the clinician must pay detailed attention to preparation. The clinician should make sure that the patient is aware of the esthetic restrictions that can arise from asymmetrical or misaligned teeth, and the patient must also understand that the width of the teeth being restored cannot be significantly altered. Therefore, veneer thickness, which relates to tooth reduction, is largely determined by tooth position for esthetics¹¹.
- f. Occlusion: The principles of occlusion, such as anterior guidance or pathways of motion should be followed.
- g. Desired color: The mismatch color of porcelain lumineer leads to dissatisfaction of patient and can lead to failure of the treatment⁹.

After completing the smile analysis and the practitioner has determined the ideal, final position and shape of the teeth to be restored, then the clinician can determine the necessary amount of reduction or the most appropriate type of veneering porcelain according to the patient's specific esthetic condition and desires and cannot be generalized as a single treatment to use in every situation¹⁷. Many clinicians have advocated minor adjustment of selected locations of enamel, or no preparation at all¹³.

2. Second Visit: a. Preparation (if needed): The concept of no-preparation veneer is not always practical and to improve the outcome, some degree of tooth preparation is often necessary.

I. The No-Prep Technique:

- No removal of any tooth structure and veneers are placed over existing tooth structure.
- Therefore, no anesthesia or temporaries are needed.
- The veneer thickness can be 0.2-0.7 mm.

II. The Minimal-Preparation Technique:

- Only slight modification of enamel (0.3-0.5 mm) is reduced, and dentin is not touched.
- Therefore, there is no sensitivity.
- No anesthesia is needed.

It is usually used on misaligned teeth.

A putty matrix or index may be used as a guide for the new position of teeth, and evaluate the space available to build out the teeth in the new position. If tooth preparation is needed the index could be used to locate the areas that needs modification¹⁶.

Impression: Excellent impressions are extremely important to make an excellent lumineers. No cord placement is necessary because there was no tooth preparation. And if minor preparation is done, it is usually supragingival¹⁴.



3. Third Visit: Bonding of the lumineers: Following the manufactures instructions for bonding is very important and may vary from one product to another. The following technique is the general steps that would be followed for cementation of the lumineers¹⁷.

a. Use of magnification:

Highly recommends the use of 4-power magnification or higher for Lumineers placement.

b. Preparation of the lumineers:

I. Treatment of the lumineers with porcelain conditioner for 30 sec, then rinsing and drying.

II. Apply primer for 30 seconds and thin it.

c. Try-In of the lumineers: This step is important for patient satisfaction and acceptance. The lumineers are first tried in with water or try-on paste to determine the optimum shade match with the adjacent teeth. Some brands of veneer resin cements have excellent try-in gels that match the color of the cements well, while other brands of try-in gels do not match the color of final set cement. If the shade match is perfect, then a clear resin can be used for final cementation. If the shade needs to be modified, chemical cured resin can be evaluated until fit and color are approved. After the shade is well accepted by the patient, the resin is removed and the lumineers are cleaned using acetone or water. However, the internal surface of the lumineers do not need to be retreated.

d. Preparation of the tooth surface:

I. Cleaning of the tooth surface with polishing paste.

II. Etching of each tooth for 20 seconds.

III. Applying adhesive.

e. Bonding of Lumineers:

I. Selection of the proper shade of resin cement:

Ultra-Bond by Den-Mat is used for cementation of Lumineers. Den-Mat has some resin cement products that help in color modification if the shade is off. It is important to know that the thicker the lumineer is, the more opaque it appears.

II. Placement of the lumineers:

There is no finish line in the no-preparation lumineers, so assurance that the veneer is in the proper position is very important. When six anterior lumineers are placed, generally the centrals are cemented first, then the cuspids, and finally the lateral incisors.

III. Remove excess cement around the veneers.

IV. Cure for few seconds.

V. Continue removing the excess.

VI. Continue curing.

f. Finishing:

I. All excess cement should be properly removed to maintain proper gingival health.

II. Interproximal surfaces are checked for smoothness using dental floss.

Cost of No-Preparation or Minimal-Preparation lumineers:

Different references and websites had different price lists of minimal or no-preparation lumineers. The cost can be determined only after a complete evaluation of the dentist¹⁸. No-preparation lumineers have around the same cost range of traditional porcelain veneers. Examples are:

A single Lumineer may cost between \$700-\$1,200 per tooth or even up to \$2,000 depending on how many teeth are treated²⁰. While conventional porcelain veneers generally cost between \$900 and \$2500 per tooth. Lumineers by Cerinate has a five year warranty against defects in workmanship and materials¹⁹.

As with most cosmetic dentistry treatments, typically dental insurance does not cover the cosmetic lumineers procedure. Because dental insurance is intended to cover necessary dental health treatments, not those that are elective.

II. Clinical Significance

- Lumineers need no tooth structure removal, thus bonded directly on the tooth surface¹¹.
- Lumineers bond directly to the surface tooth, making it a conservative cosmetic approach¹⁵.
- They are very durable, 10 years or longer with good oral hygiene according to clinical studies.
- The lumineers are a minimally invasive technique making them placed over the existing teeth without the removal of any tooth structure or minimal preparation.

III. Conclusion

If you think you are too old for the braces, but not old enough for dentures, veneers may be the middle ground that you are looking for². Lumineers are thin tooth-like coverings that are placed over the surface of your stained, chipped, or crooked teeth. They are custom made in a shade that would best match your surrounding teeth. Both lumineers and veneers will best deal with patient's needs⁵. However, in the battle of lumineers

versus porcelain veneers, some key differences may encourage you one over the other⁷. This article put forth the importance of minimal intervention and maximum tooth conservation to maintain patient's optimal esthetics⁹.

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