**METHODOLOGIES**

## Complete denture achievement in three visits

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**Introduction**

The traditional technique for achieving complete denture prosthesis require five visits: Preliminary impression, final impression, maxillomandibular relation record, trial denture; and denture insertion.\(^\text{[1,2]}\)

Some reporters suggest reducing complete denture procedures to <5.\(^\text{[3-5]}\) Swenson\(^\text{[3]}\) suggest using the four appointments. Harvey and Brada\(^\text{[4]}\) improved on Swenson’s technique by making the final impression and jaw relation record in one appointment using visible light-cure (VLC) resin. Ling\(^\text{[6]}\) reported to use VLC for tray and baseplate construction and make complete denture in three visits. Some reporters suggest using VLC as a final denture base, but Santana and Espinoza\(^\text{[7]}\) reported that deflection of the light-cured resin used for denture base could not be estimated since the material fractured as a result of its greater rigidity, and therefore, could not fulfill norm-established parameters.\(^\text{[8]}\)

The aim of this study was to describe a technique for achieving complete denture in three visits by utilizing visible light-cured (VLC) resin for tray and baseplate construction. The technique depends on this type of resin as a material for preliminary impression, and then it can be formed in a standard tray and completely set in a light box. The set resin then can be removed from the tray and formed to be the baseplate. The occlusal rims then can be adjusted on the VLC resin base plate with an increased rest space. The final impression can also be made in the first visit by the same baseplate after adjusting of occlusal rims using additional polyvinyl siloxane (PVS) impression material in variable viscosities. After that, maxillomandibular relation can be recorded using the low viscosity, fast set PVS in the centric relation. The second visit is the trial denture visit to ensure of tooth arrangement, rest space, tooth shape and color, maxillomandibular relation, and other checkpoints. The third visit is for denture insertion. Complete denture can be inserted and verified. The patient will be given instructions on the use and care of the new prostheses.

**Case Report**

A 71 years old edentulous male patient in a good general health sought treatment at Faculty of Dentistry from University of Aleppo, Syria. A clinical examination showed a good oral health and well-rounded residual ridge without any deep undercut.\(^\text{[1]}\)

The first appointment of treatment was planned to preliminary impressions, final impressions, and maxillomandibular relation record. VLC material was used as the preliminary impression material. A normal stock tray for the totally edentulous patient was used, a sheet of VLC resin (Aurora VLC\(^\text{TM}\) Tray Resin - Visible, Light Cure, Acrylic, 3 lb, and Blue) was spread onto the tray, and a preliminary impression was made. Borders were set by an intraoral light cure LED. The tray was then taken of the mouth and the impression was examined. The excess material could be cut-off and additional material could be added to areas where it is deficient.\(^\text{[2]}\)

After well-formed impression was made, the tray was put in a light box to cure the VLC material for 5 min. The cured VLC were then removed from the tray and finished to be used as baseplates. The occlusal rims then can be adjusted on the VLC resin base plate with an increased rest space. The final impression can also be made in the first visit by the same baseplate after adjusting of occlusal rims using additional polyvinyl siloxane (PVS) impression material in variable viscosities. After that, maxillomandibular relation can be recorded using the low viscosity, fast set PVS in the centric relation. The second visit is the trial denture visit to ensure of tooth arrangement, rest space, tooth shape and color, maxillomandibular relation, and other checkpoints. The third visit is for denture insertion. Complete denture can be inserted and verified. The patient will be given instructions on the use and care of the new prostheses.

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**Abstract**

The standard procedure for achieving complete denture requires 5-7 visits. Sometimes patients have no enough time for this long period. The aim of this study was to describe how to achieve a traditional complete denture with all clinical phases by just three visits by utilizing visible light-cured (VLC) resin for tray and baseplate construction. The technique depends on this type of resin as a material for preliminary impression, and then it can be formed in a standard tray and completely set in a light box. The set resin then can be removed from the tray and formed to be the baseplate. The occlusal rims then can be adjusted on the VLC resin base plate with an increased rest space. The final impression can also be made in the first visit by the same baseplate after adjusting of occlusal rims using additional polyvinyl siloxane (PVS) impression material in variable viscosities. After that, maxillomandibular relation can be recorded using the low viscosity, fast set PVS in the centric relation. The second visit is the trial denture visit to ensure of tooth arrangement, rest space, tooth shape and color, maxillomandibular relation, and other checkpoints. The third visit is for denture insertion. Complete denture can be inserted and verified. The patient will be given instructions on the use and care of the new prostheses.

**Keywords:** Complete prostheses, three-visit complete denture, visible light-cured resin

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The aim of this study was to describe a technique for achieving complete denture in three visits by utilizing VLC resin and additional polyvinyl siloxane (PVS) impression material in variable viscosities.
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during maxillomandibular relation record. The baseplates were then ready for the final impressions. The border molding was done using heavy viscosity PVS (ELITE® HD+ Tray Material, Zhermack, and Italy), and the final impression was made by low viscosity PVS (ELITE® HD+ Light Body, Zhermack, and Italy) using a closed-mouth impression technique [Figure 4]. The thickness of PVS material had reduced the vertical dimension of rest to 2-3 mm. After the final impressions were completed, maxillomandibular relation recorded using low viscosity, fast set PVS (occlufast® ROCK, Zhermack, and Italy) in the centric relation [Figure 5].

After that, at the laboratory, the maxillary and mandibular baseplates were separated and poured to make master cast. Before removing the baseplate and impression material from the cast, the baseplates were set together in the relation and mounted onto the articulator. The upper base plate was then removed and a new baseplate, and occlusion rim was made on the upper master cast with good relationship to the lower occlusion rim. The lower baseplate then was removed and a new baseplate and occlusion rim was made by the same way. Teeth were set up on the new bases for the next clinical appointment.

The second visit is the “trial denture” visit as the fourth visit for the conventional five-appointment method of denture construction [Figure 6]. The third visit is the final appointment. Complete denture was inserted and verified. The patient was given instructions on the use and care of the new prostheses [Figure 7].

Figure 4: Final impressions with variable viscosities of polyvinyl siloxane, (a) lower (b) upper

Figure 5: Baseplates are occluding together in centric relation

Figure 6: Trial denture
Discussion

A VLC denture base can be made to serve as a custom record base\(^5\) and border molding\(^6\) and the final denture base.\(^5,8\) Using visible light-polymerized materials, a technique to fabricate a customized interim removable partial denture was also described.\(^10\)

The VLC base and tray plates are a good technique to eliminate the traditional multiple visits method to construct a custom-made individual tray and preliminary cast. In this technique, impression compound and zinc oxide-eugenol paste can be used for border molding and the final impressions but PVS helps to make a better final impression and can be added to areas where it is deficient.\(^6\)

The maxillary final impression can be made first using an open-mouth impression technique, followed by the mandibular impression using a closed-mouth technique, with the mandibular record base and rim occluding with the maxillary in centric relation.\(^6\)

While the one-stage preliminary impression with the VLC base material can be made with the anatomic tray, the two-stage preliminary impression is preferred, as the initial and final preliminary impression stages lead to a more even and neat impression. The polymerization shrinkage occurs, when the VLC material polymerizes in the light box. As such, it is essential to carry out border molding on the tuberosity and the posterior border seal area of the maxilla as well as the retromolar pad and distal lingual and buccal shelf area of the mandible.

The second visit, “trial denture visit,” can be excluded when possible, but that makes it harder to fix any errors seen in the denture when delivering.

Conclusion

Using VLC tray/base material helps to make complete dentures with the three visits instead of the five visits in the traditional technique. The reduction of laboratory time and the reduced number of needed appointments mean saving of cost and time for both patients and clinicians.

References