An Impression Technique for Preserving Interdental Papillae

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Abstract An esthetic revolution is occurring in dental profession. The esthetic treatment enhances appearance, improve smiles, restore function and raise self esteem. This is now well known that both teeth and gums make good smile and good facial esthetic. Sometimes while doing treatment in aesthetic zone, impression procedure can cause strangulation of interdental papilla, causing loss of papilla. This article therefore describes a new impression technique that involves the matrix impression system and “every other tooth” technique.

Keywords Papilla preservation · Impression · Interdental papilla · Fixed prosthodontics

Introduction

The success of restorative dentistry lies in marginal integrity of the cast restoration. Closely adapted margins are possible only if a good flawless impression of the preparation is being made.

Restorative dentistry continues to involve a wide range of impression procedures, which include copper tube and resin coping methods and modification [1–6], putty/wash or impression/reline method [7], syringe/tray procedure and matrix impression system [8, 9].

Out of these impression procedures, matrix impression system attempts to overcome the deficiencies of the older systems like poor registration of subgingival margins, improper gingival retraction and relapse, ineffective hemostasis and sulcular cleansing, difficulty in delivery of impression material subgingivally, lack of strength of the sulcular flange of the impression. This procedure effectively controls the four forces (relapsing, retraction, displacement and collapsing) that have an impact on the gingiva during the impression taking [9].

While making impression for anterior tooth preparations with root proximity, placing retraction cord or matrix simultaneously around all prepared teeth may result in strangulation of the gingival papillae and eventual loss of the papilla. This creates an unaesthetic black triangle in the gingival embrasures [10]. To overcome this problem “every other tooth” technique was suggested [10]. But making separate impression of alternate tooth and assembling them in the laboratory may either cause loss of fine placement details or make procedure lengthy and complicated.

This article therefore describes a modification of the matrix impression system that incorporates “every other tooth” technique in a simplified way to better deal with this condition.

Technique

1. After tooth preparation prepare matrix forming carrier on the diagnostic cast with self-cure acrylic resin (Fig. 1). There should be sufficient space of 2–4 mm between the carrier and teeth.
2. Fill the carrier with polyvinyl siloxane occlusal registration material (Regisil Rigid, Dentsply) and make the impression of the prepared teeth (Fig. 2).

3. After complete polymerization, remove the impression and separate the matrix from the carrier. There should be clear registration of the occlusal surface and axial walls of the preparations and the crest of the gingival tissue. The crevice between the prepared tooth surfaces and the gingival tissue should also be discernible. If not remake the matrix.

4. Mark the matrix with the black pencil at the sulcular extension (Fig. 3) and at the facial surface. Remove all the excess material, on the facial and lingual side of the matrix that covers the gingival tissue, with the help of scalpel and aluminium oxide abrasive stone.

5. Carefully cut the matrix from the crest of gingiva to separate impression of each tooth, preserving its sulcular extension. Mark each small matrix according to tooth number and check for fit and sulcular extension by gently seating over prepared tooth (Fig. 4). Relieve matrix accordingly if blanching of gingiva occurs.

6. Trim each small matrix from inside to create space for impression material and to create the path for the extrusion of impression material into the sulcus. The relief should be 0.25–0.75 mm. Avoid trimming from the inner incisal or occlusal aspect of the matrix, as these surfaces provide vertical stops for proper seating of matrix.

7. Make the outer aspect of each small matrix rough for better adherence of impression material.

8. Place the retraction cord (Gingival retraction cord, No 7, Produits Dentaires SA) around alternate tooth starting from the right side, i.e., mandibular right lateral incisor, mandibular left central incisor and mandibular left canine (Fig. 5).

9. Mix high-viscosity impression material (Reprosil, Heavy Body, Dentsply Caulk), load it in an impression syringe and dispense it to fill the preparation of the matrix. Air entrapment should be avoided.
Remove the retraction cord after slightly moistening it [11]. Place high-viscosity material around the teeth. Seat the small matrixes over the corresponding teeth with light vertically directed pressure (Fig. 6).

10. Repeat the same procedure (step nos. 8, 9 and 10) for the remaining prepared teeth, i.e., mandibular right central incisor, mandibular left lateral incisor and mandibular left first premolar (Figs. 7, 8).

11. Seat all the small matrixes on the designated teeth with gentle pressure, and then make the third and definitive pick-up impression with medium-viscosity material (Reprosil, Monophase, Dentsply Caulk) in a stock tray (Fig. 9).

12. After complete polymerization, remove the impression and check it for any defects.

13. When impression is acceptable, pour the master cast and send for further laboratory procedures (Fig. 10).

Discussion

The modification technique not only carries the advantages of matrix impression system like control on gingival bleeding, ease in removal of debris from sulcus and prevention of tearing of the sulcular flange, but it also saves the interdental papilla from strangulation, thus preserving
The new technique almost eliminates the difficulty in making impression of closely situated multiple teeth undergoing restorative phase. It also prevents formation of black triangles.

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