

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 esthetic zone, impression procedure can cause strangulation of interdental papilla, causing loss of papillae. 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.

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Fig. 1 Self cure acrylic carrier is checked in the mouth



Fig. 3 Matrix is removed from the carrier and sulcular extension is marked on it



Fig. 2 Matrix is made in carrier with polyvinyl siloxane occlusal registration material before soft tissue retraction



Fig. 4 Matrix is divided into small matrix and marked according to the respective tooth number

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.



Fig. 5 Retraction cord is placed around alternate tooth



Fig. 8 Every other tooth impression of remaining tooth



Fig. 6 Every other tooth impression



Fig. 9 Final pick up impression in a stock tray



Fig. 7 Retraction cord is placed around remaining tooth

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



Fig. 10 After crown cementation showing good interdentinal papilla and emergence profile

esthetics. Simultaneous retraction of closely attached teeth may also cause incomplete retraction or injury to papilla.

The complexity of making the impression does not increase substantially with the increase in number of teeth, whereas in other conventional impression techniques [1–7] it is more difficult because of the simultaneous isolation of more teeth and retraction of lips cheeks and tongue.

The problem area includes incomplete seating of small matrixes, delamination due to non-bonding combination of materials and displacement of small matrix during seating of stock tray. The problem can easily be overcome with a little experience, selection of compatible impression materials and bonding agent and allowing impression material to polymerize before seating stock tray.

Summary

The article discusses a new impression technique that incorporates features of four basic categories of impression.

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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References

1. Dubin C (1971) Copper band and tray technique for anterior jacket and crown impressions. *J Can Dent Assoc* 37:387
2. Goldfogel MH, Bomberg TJ, Bomberg SE (1989) Tube impressions: an alternative technique for taking difficult crown and bridge impressions with minimal gingival trauma. *Quintessence Int* 20:555–560
3. LaForgia A (1967) Cordless tissue retraction for impressions for fixed prosthesis. *J Prosthet Dent* 17:379–386
4. Dimashkieh MR, Morgano SM (1995) A procedure for making fixed prosthodontic impressions with the use of preformed crown shells. *J Prosthet Dent* 73:95–96
5. Cannistraci AJ (1965) A new approach to impression taking for crown and bridge. *Dent Clin North Am* 9:33–42
6. LaForgia A (1970) Multiple abutment impressions using vacuum adapted temporary splints. *J Prosthet Dent* 23:44–50
7. Lococo MP (1986) The hydrodynamic impression technique. *J Can Dent Assoc* 52:1001–1003
8. Livaditis GJ (1998) Comparison of the new matrix system with traditional fixed prosthodontic impression procedures. *J Prosthet Dent* 79:200–207
9. Livaditis GJ (1998) The matrix impression system for fixed prosthodontics. *J Prosthet Dent* 79:208–216
10. Donovan TE, Chee WW (2004) Current concepts in gingival displacement. *Dent Clin North Am* 48:433–444
11. Anneroth G, Nordenram A (1969) Reaction of the gingival to the application of threads in the gingival pockets for taking impression with elastic material. *Odontol Revy* 20:301–310