

DIRECT POST AND CORE PATTERNS WITH URETHANE DIMETHACRYLATE RESIN- A CLINICAL TECHNIQUE

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Abstract:

Pattern for custom made post and core can be fabricated either by direct or indirect technique. This clinical technique demonstrates a unique direct method for fabrication of a custom post and core pattern using light polymerized urethane dimethacrylate which is commonly used for making provisionals.

This method is a novel modification which simplifies the direct technique. The advantages of using a light polymerized material are unlimited working time and rapid finishing of the pattern.

Key words: Direct technique; Post and core; Urethane dimethacrylate

Introduction

Post and core restorations can be fabricated employing direct or indirect techniques.¹⁻³ Direct techniques have traditionally employed inlay wax or pattern resins on a suitable substrate to get the impression of the prepared canal and also to shape the core structure. Direct techniques remove the hassle of impressing the canal with elastomers which are technique sensitive and

prone to distortions. Self-polymerizing resins have been utilized to make direct patterns quite successfully but they can be time consuming.⁴ In this technique, the authors describe the innovative use of light polymerized urethane dimethacrylate (LUDM) to fabricate direct post and core pattern which is fast and accurate.

Procedure

1. Post space preparation was done as per conventional method (Fig. 1).
2. Select a micro brush applicator tip
3. Use a Bard Parker blade and reduce the size of the applicator tip such that it fits in the prepared canal.
4. Mildly roughen the surface of the applicator tip using Bard Parker blade for better frictional retention.
5. The post space is lubricated with petrolatum jelly to ensure that the LUDM (REVOTEK LC, GC Corporation, Tokyo, Japan) does not stick to the canal wall.
6. Adapt the to the applicator surface with fingers and shape it to the required diameter (Fig. 2).

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6. The applicator tip with the applied resin is molded by repeated insertion and removal into the prepared post space. It is then light cured for 20 seconds (Fig.3).
7. The core structure is molded and shaped intraorally and then light cured (Fig 4).
8. The tip of the applicator is made short till the level of the core.
9. The customized cast post and core is obtained by traditional lost wax process or the prepared pattern can be scanned for digital work flow.

Discussion

Patterns for custom made post and core can be

fabricated either by direct or indirect technique.¹⁻³ In direct technique an impression of the post space is made using inlay wax or pattern resin, which is then subjected to investing and casting. Traditionally patterns for dental castings have been formed from inlay casting wax. These material combines familiarity and ease of manipulation with good replication of details and cost effectiveness.⁵ According to Morey et al.⁶ waxes have a high coefficient of thermal expansion and a tendency to warp or distort on standing. It also has a tendency to flake or chip off and distort while manipulating.

Shadmanet al⁷ in 1975, presented a direct technique for fabrication of posts and cores. They completed the dowel part by pouring the molten

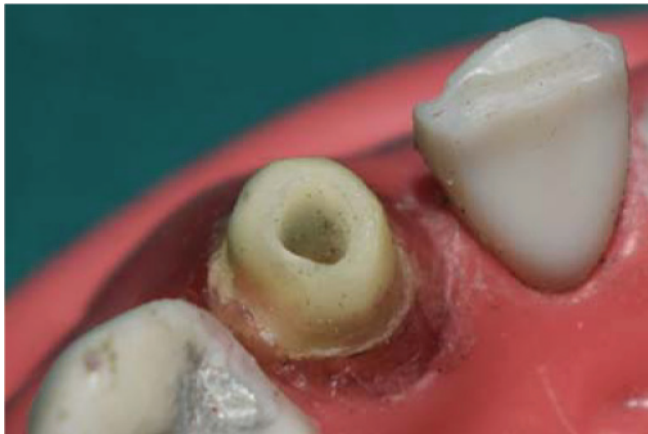


Fig.1: Post space preparation

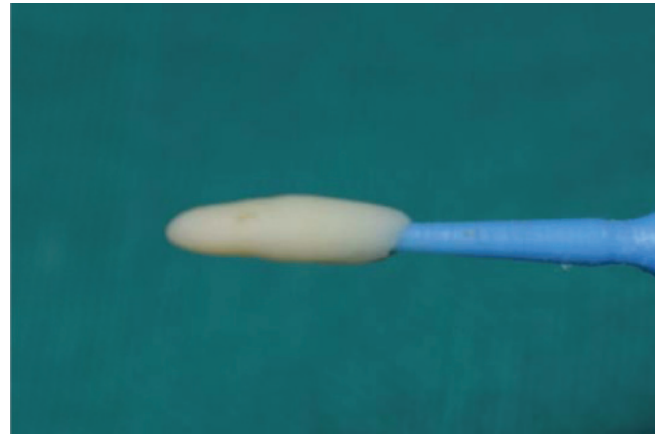


Fig.2: LUDM adapted to the applicator surface

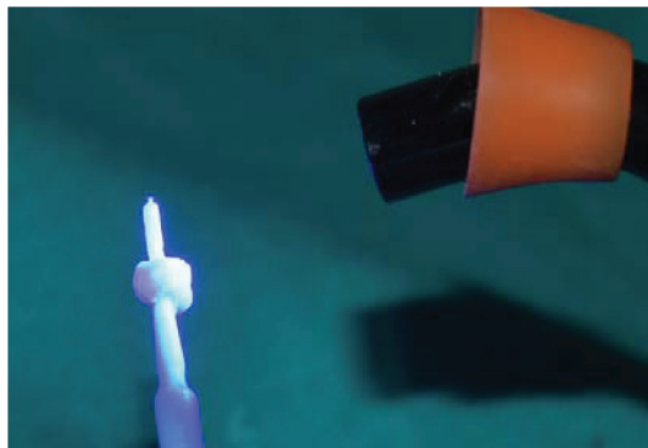


Fig.3: Light curing of the LUDM.



Fig.4: Finished pattern

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blue inlay wax over a barbed broach wrapped in cotton fibers, and then inserting it into the canal. After forming the core, the handle of the broach was removed with a wire cutter followed by spruing, investing, and casting. Here no special armamentarium was needed. However the major drawback of this method is that the residual barbed broach had to be pulled out after the burnout procedure.

According to Hofstede⁸ post and cores fabricated with acrylic resins tend to get locked within the undercuts. An alternative method is to use pattern resins. Unfortunately its drawbacks are dimensional changes caused by polymerization shrinkage or storage protocol leading to inaccuracies affecting retention and resistance of final castings.⁹⁻¹⁰

This article uses LUDM which simplifies the existing technique of direct pattern fabrication. The advantages of using this material are ease of manipulation without constraints of a timed setting, no mixing required, and no release of exothermic heat. It comes in a light- proof storage case keeping the material fresh, the absence of adverse soft tissue reactions due to methyl methacrylate free monomer, easy retrieval of the material and less chair side time.

The technique described here is an excellent modification of direct method resulting in well adapted post and core with great retention and significantly reduced chair side time.

Conclusion

Direct techniques have traditionally employed inlay wax for obtaining the impression of a prepared

canal. One of the greatest disadvantages of using inlay wax is its tendency to flake, distort or chip off while manipulating. To overcome the drawbacks of conventional impression procedure, a modified method using LUDM has been used here. Patterns fabricated using this technique provided excellent fit, easy retrieval of pattern from canal and less chair side time.

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