

# A Metal-Acrylic Bar for Splinting Implant Impression Copings

## Case Report

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## Abstract

Precise transfer of three-dimensional position of dental implants from oral cavity to the cast needs special considerations in impression making.

It has been suggested to splint the copings by bars or acrylic resin material before making impression. Some problems regarding to polymerization shrinkage of acrylic resin have been reported. In this study, we describe a metal-acrylic bar that has advantages of both acrylic and metal bars.

**Keywords:** •Dental Implantation •Dental Impression Technique • Dental Materials• Acrylic Resins

## Introduction

Precise transfer of three-dimensional position of dental implants from oral cavity to the cast needs special considerations in impression taking.

Generally, there are two impression taking procedures in implant dentistry, called direct and indirect methods. In former, the impression copings are picked-up in the impression while in later, the copings are remained in mouth then are un-screwed and connected to the lab analogs and inserted into related spaces in the impression.<sup>(1)</sup> It has been suggested to splint the copings in pick-up technique.<sup>(1)</sup> Autopolymerized acrylic resin is commonly employed for this purpose and is usually used with dental floss.<sup>(1)</sup> Other materials such as dual-cure acrylic resin, light curing composite resin, additional silicone, and polyether bite registration materials have also been tested for splinting.<sup>(2-5)</sup> Some problems regarding polymerization shrinkage of acrylic resin have been reported.<sup>(6)</sup> Developments in splinting materials and manipulation protocols might result in minimizing the distortion.

For example, fabrication of acrylic connecting bar could eliminate the shrinkage effect 24 hours before taking the impression. Moreover, some authors have described the use of solid prefabricated resin or plastic bars which have facilitated the splinting procedure and decreased chair time.<sup>(7,8)</sup> Some authors have compared different splinting materials with each other and suggested the use of metal bars.<sup>(9)</sup> However, breakage of connection between the splint materials and the impression copings is a concern.<sup>(10)</sup> In this study, we describe a metal-acrylic bar that has advantages of both acrylic and metal bars.

## Materials and Methods

Perform the following steps:

1. Cut 4cm of a 2-mm-thick metal bar (brass alloy) (figure 1a, figure 2a).

2. Put 1-mm-thick wax (Boxing wax, Kerr, USA) around 3-cm of the bar (figure 1b, figure 2b).
3. Take a putty index (Speedex, Coltene/Whaledent, Switzerland) of it (figure 1c, figure 2c).
4. Remove the metal-wax bar from the index and eliminate the wax (or cut a new metal bar). The wax space is now remained to be filled with acrylic resin (figure 1d, 1e and figure 2d, 2e).
5. Make some serrations on the bar.
6. Mix acrylic resin (Pattern resin, GC Corp, Tokyo, Japan) and pour it into the created space by the metal-wax bar.
7. Insert the metal bar into the space and wait until the setting time (figure 1f and figure 2f).
8. Remove the metal-acrylic bar from the index and trim the flashes (figure 1g and figure 2g).

For clinical use, cut the favourite length of the metal-resin bar.

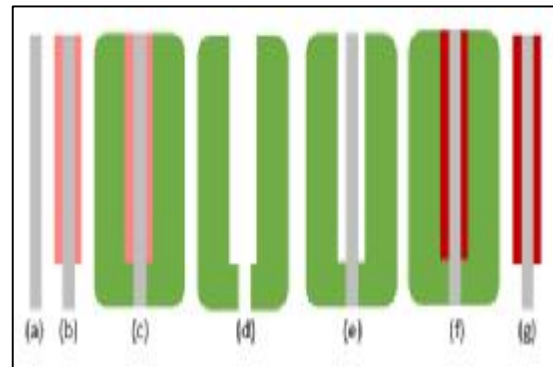


Figure 1. Schematic presentation of the metal-acrylic bar technique fabrication

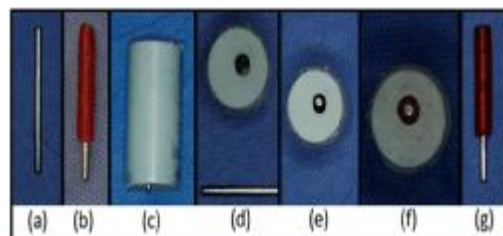


Figure 2. Fabrication of the metal-acrylic bar

## Discussion

This paper introduced a new type of bar to splint the open-tray impression copings. The advantages include high strength, especially in long bridges or overdenture cases, assured connection between impression copings and splint material and finally decreased chair time compared to the most commonly used splinting procedures. One of the disadvantages of this procedure is the heat created during cutting the bar. This will loosen connection between the metal and the acrylic resin. However, this will be

managed by controlling the heat by alternative cutting or cooling the loosed acrylic to let it shrink.

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