

DENTAL TECHNIQUE

## Use of a dental surveyor to ensure optimal seating of implant overdenture attachments



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Implant overdentures have become a desirable treatment option for completely edentulous patients due to improved retention, stability, comfort, and quality of life.<sup>1-3</sup> Implants should be placed parallel to each other and to the path of

insertion of the prosthesis to provide optimal retention and to decrease wear.<sup>4-6</sup> Nevertheless, implants are often placed with varying degrees of divergence. In these situations, retention is often reduced as wear occurs, and this can vary with the degree of divergence and the system used.<sup>5-8</sup> To mitigate wear and reduced retention, clinicians must select attachment systems that accommodate divergence<sup>9,10</sup> and/or modify their technique.

Most attachment systems require that the abutments extend a designated minimal height above the gingiva. Occasionally, implant abutments that are divergent will be exposed unevenly or excessively above the gingival margin. If the undercut surfaces around the exposed abutment replica are not blocked out before processing, the denture may not seat fully because of interferences in the undercut regions. This would result in insufficient seating on the abutment and decreased retention (Fig. 1).

This technique article describes a method of using a dental surveyor, an abutment replica, and a parallel-sided laboratory acrylic resin bur to eliminate areas where the denture base resin is preventing the seating of an attachment housing.

### ABSTRACT

Many implant overdenture attachments accommodate divergent abutments. However, there can be instances where the denture base resin surrounding the abutment may impede seating by binding on the axial surface(s) of the abutment. This article describes the use of a dental surveyor to aid clinicians in determining where the resin denture base might be preventing the seating of overdenture attachments. The surveyor can be used for judicious adjustment to allow optimal seating of the attachments. (J Prosthet Dent 2019;121:381-3)

### TECHNIQUE

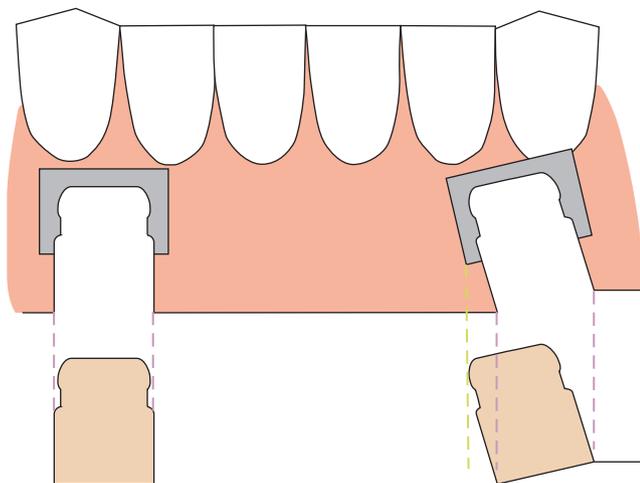
1. Before placing retentive inserts in the overdenture, adjust the implant overdenture to ensure complete seating of the prosthesis.
2. Place retentive inserts in the attachment housings. Attempt to seat the prosthesis intraorally. If the denture does not fully seat, proceed to the next step.
3. Remove, disinfect, and place the overdenture on the cast holder of a surveyor. Use a tongue blade at the posterior border to stabilize the denture in the jaws of the cast holder (Fig. 2). Do not tighten excessively or the denture could fracture. Alternatively, a base of silicone putty can be used to stabilize the denture on the cast holder. The denture must not move in the cast holder for the subsequent procedures to be successful.
4. Place an implant replica into the one attachment of the denture that most closely approximates the desired path of insertion of the prosthesis (Fig. 3).
5. Use an analyzing rod or carbon marker against the sides of the replica to select a path of insertion that

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**Figure 1.** Path of insertion of denture (red dotted lines) will not allow seating of inserts unless acrylic resin is removed at area of green dotted line.



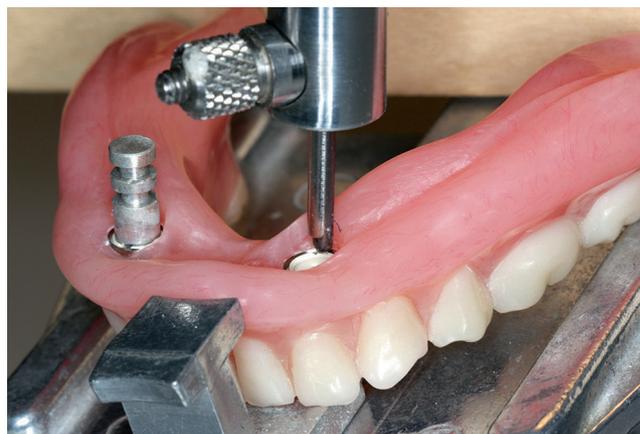
**Figure 3.** Aligning surveying tool with one implant replica in overdenture.

is parallel to the replica. Tighten the ball joint of the cast holder.

6. Use a carbon marker to mark the height of contour on the intaglio surface of the acrylic resin surrounding the abutment housing of the other implant location(s) (Fig. 4).
7. Identify areas where the height of contour indicates an undercut (Fig. 5).
8. Keeping the denture in the cast holder, use a suitable laboratory bur to trim acrylic resin parallel to the path of insertion. Contour the axial surfaces to eliminate the undercut (Fig. 6). Ensure no acrylic



**Figure 2.** Overdenture on surveyor by using tongue blade for stabilization.



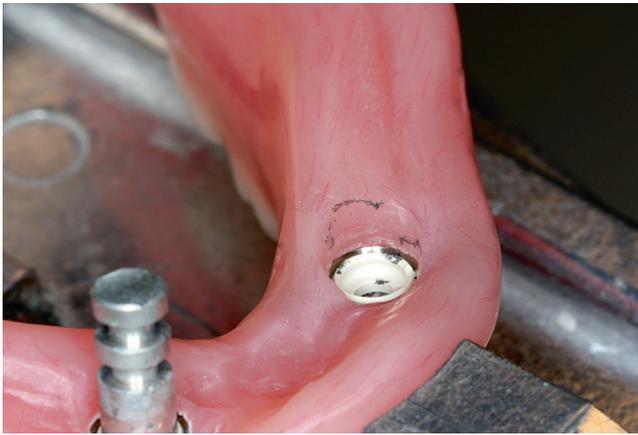
**Figure 4.** Marking height of contour on resin surrounding other abutment.

resin is left covering the lip of the housing so that the prosthesis can seat fully (Fig. 7).

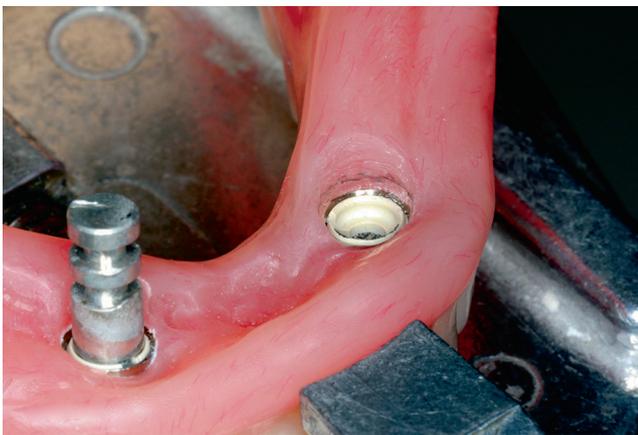
9. Finish and polish any sharp angles or rough areas. Disinfect and return to patient.

## DISCUSSION

One advantage of the described technique is that it can be used to quickly and objectively identify and adjust areas of undercut related to overdenture attachments and the path of insertion of the prosthesis. Other routine techniques for identifying areas of undercut are not optimal around overdenture attachments because of the enclosed nature and precision of fit involved. Silicone fit checking media tend to tear or



**Figure 5.** Height of contour which will not allow abutment to seat to attachment insert.

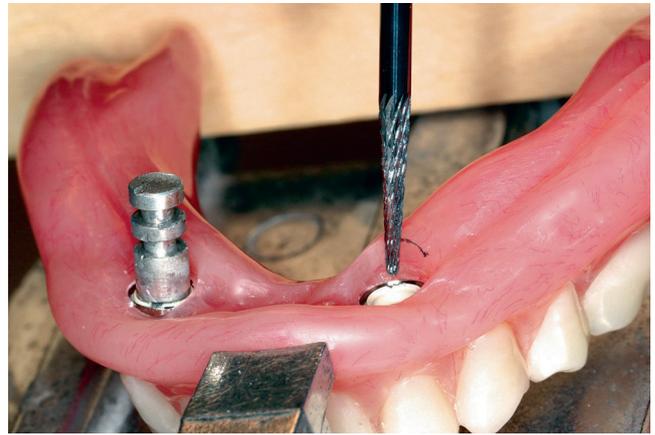


**Figure 7.** Height of contour adjusted to allow seating of abutment in attachment.

displace from the implant housing or cause the prosthesis to seat abnormally. Pastes typically smear in these situations. Pigmented aerosol media are difficult to clean from these areas.

When significant divergence is present, a path of insertion somewhere in between the axial inclinations of the multiple abutments can be selected. This ensures that adjustment does not create excessive space surrounding any single abutment. Abutment divergence that exceeds the capability of the attachment system being used will most likely not be improved by the technique presented. In situations where extreme discrepancies in alignment occur, other methods should be considered to improve seating and retention.

One disadvantage of the described technique is that it can be difficult to stabilize the prosthesis on the cast holder. However, the authors have found that by rotating the prosthesis in the cast holder or using auxiliary material such as silicone putty to stabilize the denture, the procedure can be performed expeditiously.



**Figure 6.** Relieving acrylic resin where undercut is present.

## SUMMARY

A technique has been described that uses a dental surveyor, an abutment replica, and a laboratory acrylic resin bur to eliminate areas where denture base acrylic resin prevents seating of attachment housings.

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<https://doi.org/10.1016/j.prosdent.2018.04.023>