

# Screw Access Mark for Cemented Implant Crowns: A Universal Technique to Simplify Retrievability

Todd R. Schoenbaum, DDS<sup>1\*</sup>  
 Yi-Yuan Chang, BS, MDC<sup>2</sup>  
 Richard G. Stevenson, DDS<sup>1</sup>

The use of cemented implant prostheses for partially edentulous patients continues to increase in clinical practice. One of the primary complications of the cemented implant crown is difficulty in retrieval, should the need arise. Drilling through most prosthetic materials is of little difficulty for most clinicians, but the complication lies in determining where exactly the access hole needs to be drilled. During fabrication, the location of the screw access channel is marked with a strong contrasting color stain on the surface of the prosthesis. The technique proposed here marks the location of the screw access directly on the prosthesis, thus improving the ease and predictability of future retrieval.

**Key Words:** *implant, cement-retained, prosthesis, prosthodontics*

## INTRODUCTION

The cement-retained implant prosthesis suffers from difficulty in removal should the need arise.<sup>1</sup> The primary challenge with the removal of the prosthesis is that it is not possible to locate the exact location at which the screw channel can be accessed. Screw-retained prostheses do not generally have this challenge due to a common mismatch or discoloration of the composite used to cover the screw access channel (Figure 1). Most restorative materials (ie, porcelain, gold alloy, lithium disilicate) in use today are relatively straightforward to get through, the challenge being primarily with full-contour zirconia-based restorations. It is worth noting that 20%–50% of endodontic treatment is performed through full-contour restorations,<sup>2</sup> including zirconia, a process that inevitably requires more time and burs.<sup>3</sup>

The primary reason for retrieval of the prosthesis is loose abutment screws. With the development of more stable and robust internal, conical connections, the incidence of loose screws has been significantly reduced.<sup>4–5</sup> Further reductions in loose screws can be attributed to wide adoption of torque wrenches, Titanium screws, and better protocols for abutment delivery.<sup>6</sup>

Should the need arise to remove a cemented prosthesis, various techniques have been proposed to indicate the access of the screw channel. However, most require that the patient return to the office of original treatment or that they keep a device with them for future retreatment.<sup>7–11</sup>

The technique proposed here, creates a unique and easily

identifiable mark on the prosthesis (Figure 2), such that any future clinician could easily determine the location of the screw access and drill through to retrieve the abutment screw. This is a modification of the technique originally proposed by Schwedhelm in 2006.<sup>12</sup>

## MATERIALS AND METHODS

1. Place the abutment on the implant analog.
2. Use a surveyor to locate the exit of the screw access channel (Figure 3).
3. Place the prosthesis on the abutment without disturbing the position of the model.
4. Use the surveyor to locate to where the screw access channel would exit the prosthesis.
5. Use a fine diamond bur to create a small depression at the exit location (Figure 4).
6. Place a sufficient amount of opaque white or opaque brown stain into the divot (Figure 5).
7. Finalize the stain and glaze of the prosthesis (Figures 6 and 7).

Should the need arise to remove the prosthesis at a future date, the clinician can simply cut through at the indicated location to access the abutment screw (Figures 8 and 9).

## Difference from conventional methods

This technique is advantageous in scenarios where it is determined that a cemented prosthesis is the preferred restoration. The dilemma of retrieval of a cemented prosthesis is greatly simplified and only requires that the clinician be proficient in cutting through the restorative material at the indicated location. The advantage of this technique for locating the screw access is that it is relatively permanent and remains

<sup>1</sup> Division of Constitutive and Regenerative Sciences, University of California-Los Angeles School of Dentistry, Los Angeles, Calif.

<sup>2</sup> Ceramist, Los Angeles, Calif.

\* Corresponding author, e-mail: tschoenbaum@dentistry.ucla.edu

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**FIGURES 1–9.** **FIGURE 1.** Traditional screw-retained porcelain fused to metal prostheses are relatively easy to retrieve due to the common effect of discoloration of the composite covering the screw access. **FIGURE 2.** Screw-access marking on a cemented prosthesis creates the same intuitive approach to retrieval of the cemented restoration. **FIGURE 3.** Surveyor is used to determine the angulation and position of the abutment screw access channel. **FIGURE 4.** Small divot is created in the prosthesis at the location where the screw access channel would exit as recorded by the surveyor. **FIGURE 5.** Opaque white or opaque brown porcelain stain is placed into the divot. **FIGURE 6.** Restoration is stained, glazed, and fired to completion. **FIGURE 7.** Definitive prosthesis in the mouth with the screw access marking indicating where the screw channel is located. **FIGURE 8.** First premolar crown has developed an unfavorable embrasure with the adjacent canine and needs to be replaced. The screw access marking is clearly visible on the occlusal surface. This mark indicates where to drill to find the screw channel. **FIGURE 9.** Screw access channel has been located and the screw covering has been removed allowing easy access to the abutment screw for retrieval.

with the patient for the life of the restoration. Should it be determined that the prosthesis and abutment can be reused (as in the case of a loose abutment screw), the access can be closed as would be done for any traditional screw-retained restoration. This technique is simple for the laboratory technician to perform and should result in little or no increase in cost.

The disadvantage of this technique is that it is not particularly useful in scenarios where the screw-access mark would be aesthetically unacceptable, as might be the case for angled implants in the esthetic zone.

#### ***Effect on performance***

This screw access mark will not negatively affect the performance of the prosthesis.

#### **CONCLUSION**

Though screw-retained prostheses have proven themselves as predictable and low-risk restorations, the use of the cemented implant prosthesis remains a popular option in clinical practice. Inevitably, we as a profession will be faced with a future of removing cemented implant prostheses. The technique of placing the screw-access mark directly and permanently onto the prosthesis greatly simplifies this procedure. The screw access mark is efficient, effective, and widely applicable.

#### **NOTE**

The authors report no conflict of interest with the methods and materials contained within.

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