

# A Technique to Salvage a Single Implant-Supported Fixed Dental Prosthesis Having a Nonretrievable Implant Screw Fragment

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An implant screw fracture is one of the common problems associated with the implant components. In some situations, it may not be possible to retrieve the fractured implant screws. As a result, clinicians either remove the implant or the implant may need to be covered over with soft tissue. The salvage of an implant with a nonretrievable screw fragment may be highly beneficial to the patients. This report describes a technique to salvage an implant-supported single restoration that has a nonretrievable implant screw fragment.

**Key Words:** *implant, fractured screw*

## INTRODUCTION

**D**espite high survival rates of implants, biological and mechanical complications occur. A large number of mechanical complications have been reported in the literature.<sup>1</sup> Implant screw fracture is one of the mechanical problems associated with implant components.<sup>1,2</sup> The fractured end of an implant screw can sometimes become stuck within the internal threads of the implants, and various techniques have been presented for retrieving the screw fragment.<sup>3-5</sup> Once the implant screw fragment is retrieved, existing restorations can be used with a new implant screw.

In some situations, however, it may not be possible to retrieve the implant screw fragments, and implants are rendered useless.<sup>4,6</sup> As a result, clinicians might choose to either remove the implant<sup>7</sup> and replace it with a new one, which can be an expensive option, or abandon the implant and cover it with soft tissue, which may lead to compromised function, phonation, or esthetics.<sup>7</sup>

Therefore, salvage of an implant with a nonretrievable screw fragment may be beneficial to patients.

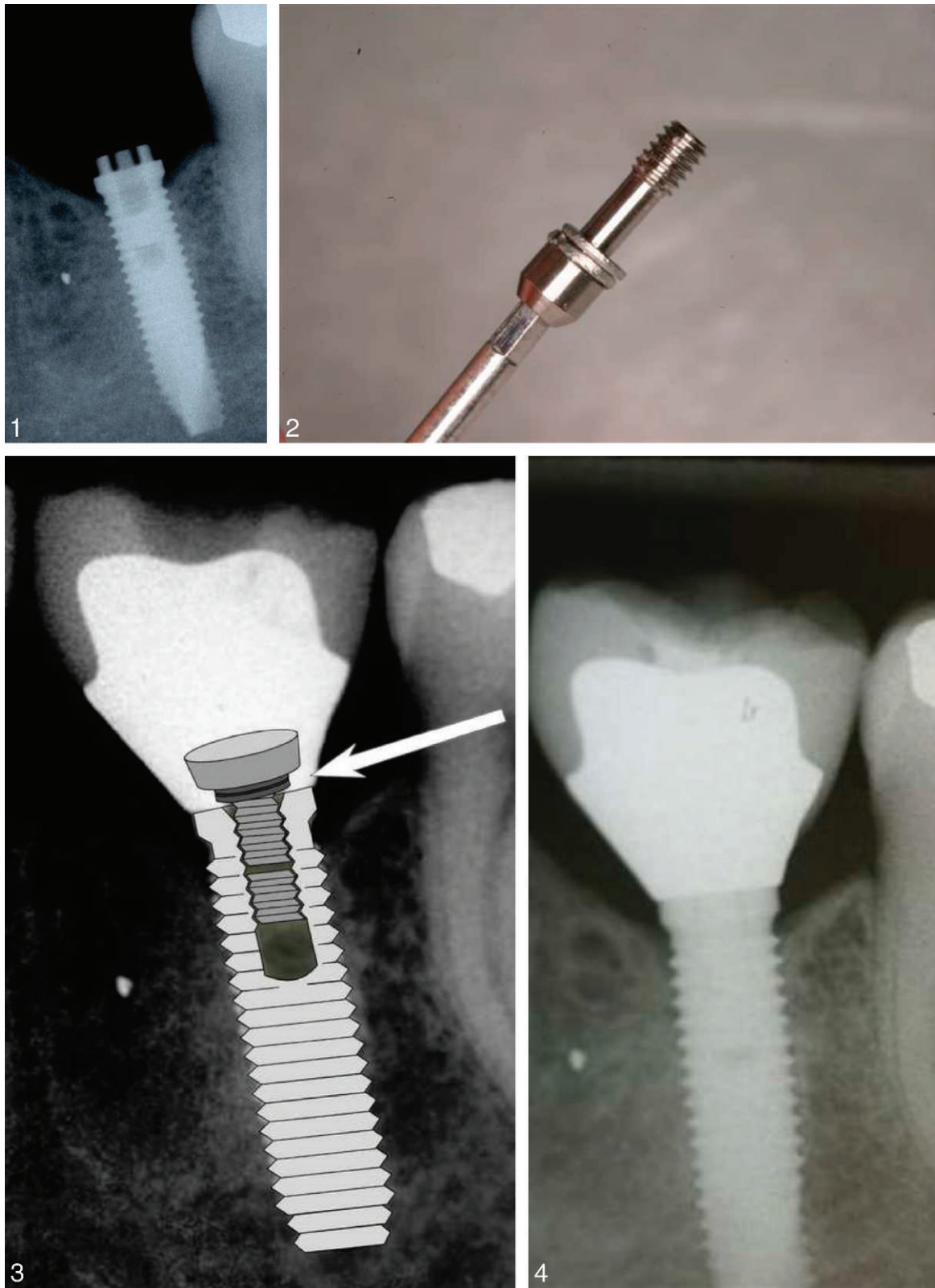
This report describes a technique to salvage an implant-supported single restoration that has a nonretrievable implant screw fragment. This technique, which involves the use of washers with a new implant screw, can be used if at least 2 internal threads of the implant are still usable. It enables clinicians to reuse the existing restoration, is time efficient, is cost-effective, and can be used with different implant systems. The approach might be helpful as a short-term solution in otherwise hopeless implant screw fracture complications. The time gained by reusing the existing crown and keeping the implant functioning can be beneficial for the patient. One of the disadvantages of this technique, however, is that it effectively shortens the depth of penetration of the fixation screw into the implant body.

Preloading the screw is the most important factor in loosening. The more torque used to tighten the screw, the less likely it will come loose. Thread stresses are inversely proportional to the length of the threaded joint.<sup>8</sup> Considering these factors, the long-term effectiveness of the use of washers is unknown.

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**FIGURES 1–4.** **FIGURE 1.** Nonretrievable implant screw fragment. **FIGURE 2.** Washers on the new implant screw. **FIGURE 3.** The restoration is tightened onto the implant with the new screw and 2 washers in place. **FIGURE 4.** Existing restoration completely seated and tightened onto the implant.

In addition, cutting off the end of the fixation screw may not be a practical alternative as this would not allow the screw head to bottom out on the screw-mating surface of the crown. In this technique, adding the washers allows the under-head surface of the screw to meet resistance.

### PROCEDURE

Following are the steps in the retrieval technique:

1. Remove the coronal fragment of the implant screw (Figure 1).
2. Select a new implant screw and a flat stainless washer (620C stainless washers; #0 Flat Washer SS, .099, .063, .016; The Olander Company Inc, Sunnyvale, Calif). Measure the screw head and the thread diameter with a Boley gauge. Make sure that the washer's external diameter is not larger than the screw head's diameter and that the internal diameter of the washer is large enough for the screw threads to go through it (Figure 2).
3. Initially, try to hand-tighten the restoration using 1 washer around the new screw, and check if the screw meets resistance and stops turning. If the restoration is not tightly engaged on the implant, use additional washers until a tight engagement is achieved between the restoration and the implant (Figure 3).
4. Once the restoration is secured on the implant, torque the screw with a torque wrench, following

- the manufacturer's instructions, to finalize the seating of the restoration on the implant (Figure 4).
5. Place a piece of cotton on top of the screw head and seal the access hole with a temporary restorative material (Fermit, Ivoclar Vivadent, Schaan, Liechtenstein) or with a composite resin restorative material.

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