A technique for salvaging an implant-supported crown with a fractured abutment screw

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Abutment screw fracture, although uncommon, occurs in clinical practice (Fig. 1, A).1,2 In most circumstances, the fractured end can be retrieved and replaced by a new abutment screw. However, sometimes the screw cannot be removed conservatively. By using rotary instruments, internal threads of the screw hole may be damaged and the implant rendered useless. To overcome these problems, this article presents a technique to safely remove the fractured screw and restore the tooth without sacrificing the implant. The procedure presented allows the essential features of the implant to be captured and transferred to the laboratory for the fabrication of a new definitive restoration. Only minimal materials and components are required.

PROCEDURE

1. Remove the fractured end of the abutment screw using a round diamond rotary cutting instrument (NTI-Kahla GmbH, Kahla, Germany) with a high-speed handpiece (TA-98L; W & H Dentalwerk Burmoos GmbH, Burmoos, Austria) under copious irrigation with saline solution.

2. Eliminate the internal threads of the implant screw hole using a straight diamond rotary cutting instrument (NTI-Kahla GmbH) with the high-speed handpiece under saline irrigation.

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Fig. 1. A, Radiograph showing fractured abutment screw within implant. B, Impression of screw opening and implant head.

Fig. 2. Definitive restoration. A, Radiograph. B, Intraoral view.

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3. Select and insert an impression post (ParaPostXP; Coltene Whaledent Dentalvertriebs GmbH, Konstanz, Germany) into the prepared screw hole. Fabricate a coping by applying autopolymerizing resin (DuraLay; Reliance Dental Mfg, Co, Worth, Ill) around the impression post and the head of the implant.

4. Apply vinyl polysiloxane impression material (President; Coltene AG, Altstatten, Switzerland) into the screw hole. Fit the coping and make a transfer impression of the coping and the remaining teeth of the arch (Fig. 1, B).

5. Section the coronal one third of an implant analogue (Branemark system; Nobel Biocare AB, Goteborg, Sweden) with a diamond disc (NTI-Kahla GmbH). Secure it onto the fitting surface of the coping through the impression post with sticky wax (Model Cement; Dentsply Ltd, Surrey, England).

6. Cast the entire impression into die stone (Velmix; Kerr USA, Romulus, Mich) and fabricate a definitive post-and-core crown.

7. Adjust and then cement the post-core crown with a resin luting agent (Panavia F; Kuraray Co, Ltd, Osaka, Japan) (Fig. 2).

REFERENCES


Comparison of dental implant systems: Quality of clinical evidence and prediction of 5-year survival


Purpose: This literature review was conducted to evaluate the quality of current evidence of clinical performance provided by American Dental Association–certified dental implant manufacturers and manufacturers with strong market penetration in the United States. The study also compared the clinical performance of different dental implant systems.

Materials and Methods: A letter was sent to 6 implant manufacturers requesting 10 references each that validated the manufacturer’s implant system in a variety of clinical applications. References were reviewed and classified relative to strength of evidence. Data extraction was then performed. Comparisons of implant survival data from 5-year studies were made, and data were pooled to establish an overall 5-year survival rate with confidence intervals (CIs).

Results: A total of 69 references were provided by the 6 implant manufacturers (Astra Tech, Centerpulse, Dentsply/Friadent, Implant Innovations, Nobel Biocare, and Straumann) but only 59 articles were available for review. Of those references, most were level-4 (case series) or level-5 (expert opinion) articles. Five-year survival data were extracted from 17 articles demonstrating overlap of CIs from the weighted average of the pooled data from each specific manufacturer; substantial equivalence of all implant systems was demonstrated based upon survival alone at 5 years. When all data were pooled, the 5-year survival rate of 96% (CI: 93% to 98%) was observed for a total of 7,398 implants.

Discussion: No obvious differences in implant survival were observed when comparing implant systems. Conclusions: The evidence supporting implant therapy is generally derived from level-4 case series rather than higher-level cohort or controlled clinical trials. Articles that directly compared different implant systems were not found. Five-year implant survival rates easily exceeded the minimums recommended by the American Dental Association certification program. (More than 50 references.)—Reprinted with permission of Quintessence Publishing.