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TIPS FROM OUR READERS

A technique to retrieve a fractured implant abutment screw by using a screwdriver fashioned from a needle

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Implant therapy is one of the most effective and reliable options for replacing missing teeth, but even with the high success and survival rates of dental implants,[1] clinicians may still have to deal with a variety of complications,[2] both biological and mechanical. Biological complications include the loss of osseointegration or peri-implantitis,[3] and mechanical complications include crown fracture, ceramic chipping, framework fracture, and loosening or fracture of abutment screws.[2,4] The reported rates of abutment screw fracture range between 2% and 3.9%. Removal of the fractured screw is always challenging.[5,6] However, if the fractured screw is not removed, the implant will remain osseointegrated but will lose its ability to hold the prosthesis, and the prosthodontic restoration cannot be used.[7] In situations where the screw fragment is not jammed, an attempt to retrieve the fractured screw by using an explorer might be successful.[4] However, when the fragment is jammed, methods reported by Luterbacher et al,[7] Nergiz et al,[4] and Yilmaz and McGlumphy,[8] using different implant repair kits, are recommended. For the most part, the method of removing fractured screws involves the use of dental rotary instruments.

Limited space between the intaglio surface of the implant fixture and the fractured screw sometimes makes it difficult to successfully remove the implant screw by rotating a dental explorer counterclockwise along the surface of the screw. It is also risky to remove a fractured screw by using a dental rotary instrument because this procedure may damage the inner threads of the implant.[9]

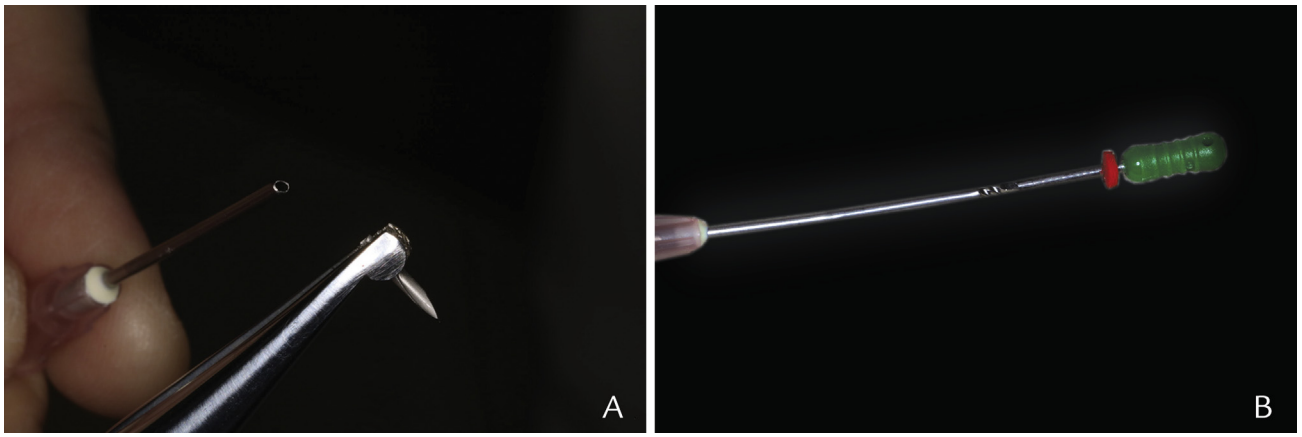

Figure 1. A, Needle tip removed by using pliers. B, Needle tip rounded by inserting K-file.

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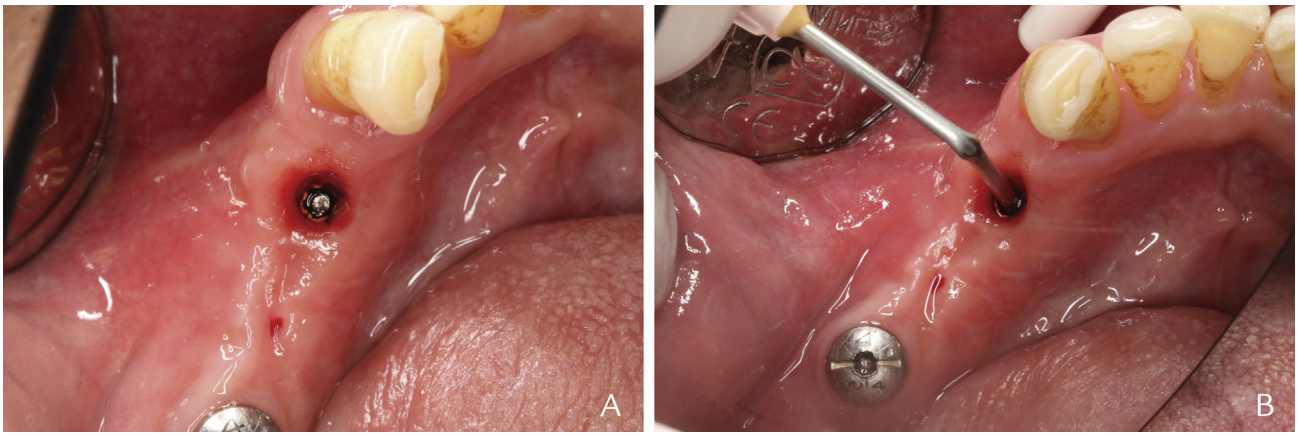

Figure 2. A, Occlusal view of fractured abutment screw in implant fixture. B, Custom screwdriver placed in implant to engage fractured screw.

This article describes a straightforward and cost-effective method for removing a screw fractured above or level with the implant platform by using a custom screwdriver fashioned from a hypodermic needle. This method is not recommended when the remaining part of the screw is deep below the implant platform. Depending on the implant system and the size of the fractured screw, the clinician can choose an appropriate hypodermic needle from a range of between 10 and 34 gauge (inner diameter: 2.69 mm to 0.05 mm) to achieve a friction fit between the screw and needle. With this technique, the clinician can avoid a surgical intervention and limit the risk of damaging the inner thread of the fixture.

PROCEDURE

1. Obtain an appropriate hypodermic needle, 10 to 34 gauge (inner diameter: 2.69 mm to 0.05 mm). The example here shows an 18-gauge (inner diameter: 0.84 mm) Nipro Hypodermic Needle (Nipro Ltd).
2. Remove the sharp tip of the needle by using Howe pliers (Task Howe Pliers; Pearson Dental Supplies, Inc) to create a flattened surface at the end of the needle (Fig. 1A).
3. Place a K-File (Kerr Corp) in the needle to round the needle tip (Fig. 1B).
4. Bend the needle to make a custom screwdriver.
5. Evaluate the space between the fractured screw and the implant fixture (Fig. 2A).
6. Advance the custom screwdriver into the implant until the fractured screw is securely engaged (Fig. 2B).
7. Place gentle pressure on the fractured screw by using the custom screwdriver and slowly and carefully turn the screwdriver counterclockwise to loosen the fractured screw.
8. Remove the fractured screw.

REFERENCES

1. Lemos CA, Ferro-Alves ML, Okamoto R, Mendonca MR, Pellizzer EP. Short dental implants versus standard dental implants placed in the posterior jaws: a systematic review and meta-analysis. J Dent 2016;47:8-17.
2. Wittneben JG, Buser D, Salvi GE, Bürgin W. Complication and failure rates with implant-supported fixed dental prostheses and single crowns: A 10-year retrospective study. Clin Implant Dent Relat Res 2014;16:356-64.
3. Balshi TJ. An analysis and management of fractured implants: a clinical report. Int J Oral Maxillofac Implants 1996;11:660-6.
4. Nergiz I, Schmage P, Shahin R. Removal of a fractured implant abutment screw: a clinical report. J Prosthet Dent 2004;91:513-7.
5. Goodacre CJ, Bernal G, Rungcharassaeng K, Kan JY. Clinical complications with implants and implant prostheses. J Prosthet Dent 2003;90:121-32.
6. Kreissl ME, Gerds T, Muche R, Heydecke G, Strub JR. Technical complications of implant-supported fixed partial dentures in partially edentulous cases after an average observation period of 5 years. Clin Oral Implants Res 2007;18:720-6.
7. Luterbacher S, Fourmousis I, Lang NP, Bragger U. Fractured prosthetic abutments in osseointegrated implants: a technical complication to cope with. Clin Oral Implants Res 2000;11:163-70.
8. Burak Y, McGlumphy E. A technique to retrieve fractured implant screws. J Prosthet Dent 2011;105:137-8.
9. Walia MS, Arora S, Luthra R, Walia PK. Removal of fractured dental implant screw using a new technique: a case report. J Oral Implantol 2012;38:747-50.

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