



Retrieval of a Fractured Abutment Screw from an Implant: A Case Report

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Abstract

With dental implants increasing in popularity as alternative treatment choices to conventional dentures and bridges, the complications associated with them are progressively emerging too. Abutment screw fracture is a technical complication associated with implant prosthetic treatment. This case report describes a simple and safe technique to retrieve a fractured implant abutment screw just by engaging surface irregularity of the screw fragment and using spinning action of bur

Key words: Screw loosening, Dental implant, Remove

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Introduction

Implant dentistry is growing in popularity as more people have become aware of the benefits of dental implants over other removable or fixed treatment options for missing teeth. Though considered to be reliable and successful, implant treatment is not free of complications. Implant-supported crowns and bridges may suffer from various mechanical, biological, or technical complications.

Fracture of the abutment screw can be rare but a disturbing complication of implant prosthetic treatment. The primary reason for screw fracture is undetected screw loosening. Screw loosening can occur due to inadequate tightening, excessive occlusal forces, overloading, fatigue, malocclusion, repeated loosening and retightening of screw, nonpassive fit of superstructure, parafunctional habits^[1,2,3,4,5].

Removal of the fractured abutment screw is a challenging process for the clinician. Various techniques have been described in literature to retrieve a fractured abutment screw. For screw fractures that occur

above the head of the implant, retrieval is relatively easy and can be accomplished using instruments such as explorers, straight probes or hemostats to hold the screw and rotate it out. For fractures occurring below the implant head, implant retrieval kits supplied by dental implant companies can be used. Alternatively, methods involving drilling of a hole or slot in the screw and engaging modified self-made screwdrivers or ultrasonic tips have also been described by various authors^[1,5,6,7,8]. This case report describes a simple technique to retrieve a fractured abutment screw

Case report

A 65 year old male patient presented to the department of Prosthodontics, Goa Dental College and Hospital with a dislodged mandibular right first molar implant crown. The patient stated that implant was placed 6 years back and was restored using cement retained metal ceramic crown. Clinical examination revealed abutment screw fracture 2mm below the implant platform (Figure 1). Radiographic examination further confirmed the presence of the fractured abutment screw threaded into the implant with no indication of any damage to implant body.

After anesthetizing the area, the implant was exposed using a tissue punch. Bleeding was controlled with a hemostatic agent to allow visibility of the fractured screw. Using a high speed handpiece, a fine tapered diamond bur (TF-11, MANI) was then placed in the fractured screw without making a slot on the head on the screw under copious water irrigation. The spinning bur when contacted the surface irregularity of the screw fragment, disengaged and spin out the fractured screw fragment out of the implant body (Figure 2 and Figure 3). This technique prevented the damage to the implant threads which could have been made while making a slot on fractured segment in an attempt to retrieve it. A radiograph was taken to confirm its complete removal. A new abutment was tightened to the implant body with a screw which was torqued to 30 Ncm. A closed tray impression was made and a metal ceramic crown was fabricated and cemented on the abutment (Figure 4).



Figure 1: Fractured abutment screw

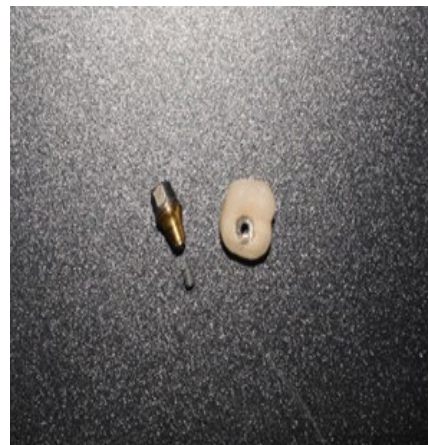


Figure2: Cemented crown showing the broken screw part



Figure 3: Abutment screw retrieved



Figure 4: Cement retained final prosthesis placed

Discussion

Screw loosening has been reported more often with single implant crowns as compared to restorations supported by multiple implants. Also, mandibular molar implant restorations are more affected by screw loosening as compared to the maxillary restorations [9]. Screw loosening can be reduced by maximising the joint clamping forces while curtailing joint separating forces such as excursive contacts, cantilevered contacts, interproximal contacts, off-axis centric contacts, and nonpassive frameworks [10].

Undetected screw loosening is one of the major reasons for screw fracture. Fracture of the implant abutment screw jeopardizes the efficient functioning of the implant. The fractured abutment screw has to be removed without damaging the internal threads of the implant body to allow efficient functioning of the implant [2].

A variety of techniques have been described in literature in order to retrieve fractured abutment screws using instruments available in the operatory to self-made screwdrivers. Dental implant manufacturers have devised screw removal kits consisting of drills and tapping instruments. There is no method that can be universally applied.

In the clinical situation described in this case report, a tapered diamond bur was used to engage the surface irregularity on the fractured screw fragment. The spinning bur, on contacting the metal surface of

the screw fragment, helps it disengage and spin out of the implant body. Proper access to the fractured screw is required before attempting screw retrieval.

Conclusion

In this case report a relatively simple and conservative technique with inexpensive dental instrumentation has been described to retrieve a fractured abutment screw. There are various factors responsible for this complication encountered in implant dentistry. Proper treatment planning and implant placement, tightening to adequate torque, knowledge of the occlusal scheme and a regular maintenance protocol can reduce the incidence of screw fracture.

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