

A CUSTOM TECHNIQUE TO RETRIEVE WORN OUT IMPLANT MOUNT FROM IMPLANT DURING IMPLANT PLACEMENT: A CASE REPORT

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ABSTRACT:

Dental implants are a functional and aesthetic solution to partial and total edentulism. Although the high predictability and long-term success rate of dental implants is well documented in the literature, complications and failures do occur proportionately. The abutment screw fracture or loosening represents a rare, but quite unpleasant failure and is often a challenge for the clinician due to the difficulty in retrieving fractured screw fragments. Abutment fracture/ damage can occur immediately also. This case report describes a rare incidence of internal hex wear during implant placement and a technique to remove the worn out implant mount.

Key words: Implant, Implant mount, Implant hex, Retrieval

INTRODUCTION:

Dental implant surgery has become a routine treatment in dentistry and is generally considered to be a safe surgical procedure with a high success rate [1]. However, complications should be taken into consideration because they can follow dental implant surgery as with any other surgical procedure. Complications with implant prostheses have been categorized as surgical complications, implant loss, bone loss, peri-implant soft tissue complications, mechanical complications, and esthetic/phonetic complications [2]. Misch et al have categorized implant surgery complications as treatment plan-related, anatomy

related, procedure-related, and others [3]. One of the rare mechanical complications are abutment screw fractures and its incidence is reported to be 2 % [4]. In a recent study by Kreissl et al, the incidence over a 5-year period of abutment screw fracture was 3.9% and that of abutment screw loosening was 6.7% [5]. Implant screw fracture may occur due to a non passive fit of the supra structures, fatigue due to biomechanical overload and improper placement of implants [6,7]. Size limitations and the material used to fabricate retaining screws also increase their susceptibility to fracture [8]. Implants with a butt-joint and external hex connection to the abutment are especially

prone to screw loosening when compared with internal taper / cone joints with an anti-rotation feature [9, 10]. Stripping of the abutment screw head is another complication which can render an implant unusable. This can be the result of applying excessive force to the screw head, or the improper engagement of the driver and screw head [11]. Fracture of the implant abutment screw can be a serious problem as the fragment remaining inside the implant may prevent the implant from functioning efficiently [12]. Here we report a rare incidence of internal hex wear during implant placement and the technique used to remove the worn out implant mount internal hex screw.

CASE DETAIL:

A 48 year old male, reported to the department of prosthodontics for prosthetic rehabilitation of his missing teeth. Patient was partially edentulous in relation to mandibular left first and second molar with no distal abutment tooth. An implant supported fixed partial denture was planned for the patient [Fig 1].

Tapered dental implants (3.5 X10mm, MIS) were selected based on the bone sounding data. Once the implant site was prepared, the implant was removed from the capsule and placed into the prepared site [Fig 2]. The hex driver was used to torque the implant to a 35N force. But when implant mount was attempted to be removed from the implant, difficulty was encountered in inserting the hex driver for the cover screw into the mount [Fig 3]. This was due to the interference from the

opposing natural teeth. Unscrewing was pursued with a tilted position of the hex driver which resulted in wear of the internal hex, technically resulting in locking of the implant mount on to the implant. As the implant mount interfered with the occlusion of the patient, removal of the implant mount was necessary. It was decided to remove the implant mount without damaging the implant. Vertical sections were made on the implant mount under rubber dam isolation. Rubber dam isolation was done to prevent contamination of metal particles into the soft tissues of surgical site [Fig 4]. These sections extended till the cover screw and a notch was created on it. This was done to design a lever arm around the central axis. The lever arm is the perpendicular distance from the axis of rotation to the line of action of the force. An enamel chisel of desired diameter was bent 90 degrees and was engaged to the notch in cover screw [Fig 5]. The chisel was gradually rotated in and the worn out component was retrieved. [Fig 6, 7]

DISCUSSION:

There are various techniques in literature for management of fractured abutment screw. If an abutment screw fractures above the head of the implant, hemostats may be used to grasp the broken screw and remove it successfully. The tip of the instrument is moved carefully in a counter-clockwise direction over the surface of the screw segment until it loosens [12, 13]. In some situations, if the fractured abutment screw is buried within

the internal threads of the fixture, it may be unretrievable [14, 15]. The implants may need to be covered over with tissue due to the non-retrievable fragments that remain in the implants, and the existing prosthodontic restoration may no longer be usable [16, 17].

If the screw fracture occurs below the head of the implant or is stuck, other methods are required. Some manufactures (Nobel Biocare USA, Inc, Yorba Linda, Calif.; Implant Innovations, Inc, Palm Beach Gardens, Fla.) have systems available to facilitate the removal of broken screws from dental implants. The objective of these systems is to drill a hole into the center of the broken screw and drive into the hole a removal wedge that engages the broken screw when reverse torque is applied with the removal instrument [12].

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However, there are still some situations where a fractured screw remain lodged within the implant body and is unsuccessful in removing the fragment. When the internal threads of an implant are damaged, they may become non-restorable. Removal of the implant requires additional surgical procedures, increases cost, and delays restoration of the edentulous space.

CONCLUSIONS:

This article describes a custom technique to retrieve worn out implant mount using inexpensive instruments commonly found in dental offices. This technique is cost-effective, simple, and applicable to all implant systems and can be effectively incorporated into those clinical situations in which the broken components are not retrievable by conventional techniques.

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FIGURES:



Fig 1-a,b

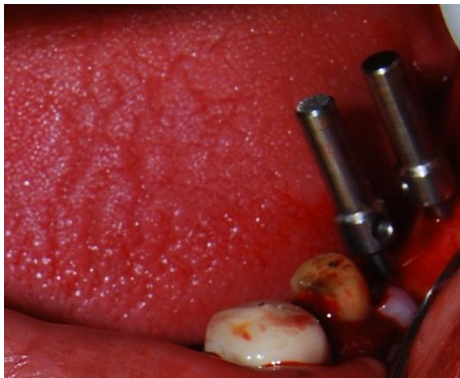


Fig 2



Fig 3-Implant mount fixed to implant

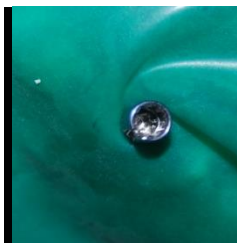


Fig 4 Rubber dam isolation





Fig 5-Enamel chisel bent at 90°

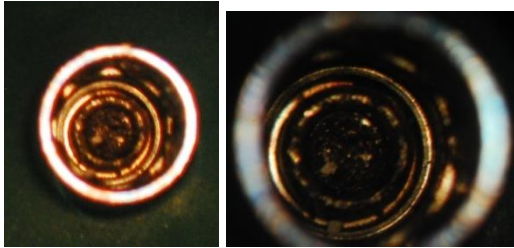


Fig 6-a,b-Appearance of worn internal hex screw under 2x and 3x magnification



Fig 7- a,b-Retrieved internal hex with prepared notches