

RETRIEVAL OF A COLD WELDED GINGIVAL FORMER - A CASE REPORT

*Prasad Aravind, **Abdul Razak P, ***Deepthi Venugopalan, ***Nimisha Ramesh, ***Athira M

*Professor, **Professor and HOD, ***Postgraduate student, Department of Prosthodontics, MES Dental College, Perinthalmanna, Kerala. | Corresponding Author: Dr. Prasad Aravind, Email: prasu_aravi@rediffmail.com

Abstract:

AIM: To report our experience with the retrieval of cold welded gingival former.

INTRODUCTION: Cold welding of gingival former is a rare mechanical complication.¹ Cold welding of a well osseointegrated dental implant can give sleepless nights to a practitioner. Retrieval without damaging the threads of an implant is a difficult task.

CASE REPORT: This case report describes how a cold welded gingival former was retrieved without damaging the threads of an implant.

CONCLUSION: To minimize the incidence of cold welded gingival former adequate precautions should be taken. Adequate knowledge of various retrieval modes is imperative to overcome the challenge.

KEYWORDS: cold welding, preload, complications, gingival former

Cold welded gingival former is a rare mechanical complication. Etiology and retrieval techniques for the same are barely mentioned in any literature. Retrieval without damaging the internal threads of the implants is quite a difficult task.¹

In the previously reported cases, when retrieved cold welded cover screws were inspected, dried blood was always present around the threads of the coverscrews. Blood and bone debris that remained around the threads of the implant were considered as the main reason for the cold welding. The fibrin in the blood acts as glue and binds the two parts together. Dried blood bone or any other debris can wedge in between the threads and can affect the seating of the gingival former.^{1,2,3}

Various methods have been tried for retrieving the coverscrew by clinicians, The same methods can also be applied to gingival formers. Some of them are: ^{1,3,4}

- Ultrasonic tools in an anticlockwise direction were used to vibrate the screw and retrieve in the process
- Extraction forceps with fine beaks (lower anteriors) to tease out the coverscrew
- Application of crushed ice over the coverscrew to shrink the screw threads
- To reverse torque the coverscrew upto 40-50Ncm and retrieve
- To use a ratchet with unlimited torque to unscrew the cover screw if the implant has

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osseointegrated, the cover screw will unscrew

- Drill into the screw access on the cover screw until the body of the coverscrew disengages with a high speed handpiece and no: 6 round bur. The extension of the coverscrew left inside the implant can then be unscrewed with a screwdriver.
- Make a plus shaped groove on the gingival former, retrieve it with the help of screwdriver.
- Submerge the implant
- Remove the implant entirely and start all over again

Precautions to be taken to avoid coldwelding:^{1,2,3}

- Apply petroleum jelly on the contacting surface
- Thorough irrigation to avoid blood contamination or to avoid bone debris wedged in between the threads
- Apply antibiotic ointment
- Apply chlorhexidine gel inside the implant (recommended by straumann)

Case Report:

A 44 years old male patient reported to the department of Prosthodontics for prosthetic rehabilitation of an implant placed in the lower right second premolar. The implant was placed 4

months prior to his visit. Implant dimension was 3.75*11.5mm. radiographic examination showed a complete osseointegrated fixture.

During prosthetic phase hex driver was engaged into the gingival former of the implant and unscrewing of gingival former was attempted multiple times. Since it did not loosen a manual ratchet was used to retrieve the gingival former by applying reverse torque of greater than 35Ncm. Friction slot of gingival former was worn out because of repeated trial. The drilling of the gingival former had a high risk of damaging the internal threads of the implant. So drilling the body of gingival former was aborted.

Using a high speed handpiece extensions were made on the gingival formers from the center to both end with carbide bur. The flat end of a cement mixing spatula was engaged and turned the gingival former in an anticlockwise direction still no change happened. Lower anterior forceps with fine beaks were used to hold gingival former firm apical pressure was applied followed by anticlockwise movement until the gingival former was retrieved. The implant threads were well preserved. Thorough betadine irrigation was done. A new gingival former was placed.

Discussion:

Cold welding is defined as an increase in loosening torque with respect to tightening torque and it



has been suggested that this might occur and result in a lack of retrievability which is inherent in the 3 component system of the hex design.⁵ The connection between the gingival former and implant is termed as screw joint.⁶ Tightening of screw creates tension in the screw. Preload is the initial load created by the application of a torque and causes elongation of the screw. Preload leads to an over clamping force between the healing cap and the implant. Large magnitudes of the preload have been seen to cause plastic deformation or permanent change in the material at which point the screw is no longer retrievable which is sometimes referred to as cold welding. Different companies provide different torque wrench which is not completely accurate and components may corrode after autoclaving many times, which in turn may increase the torque applied to the screw joint. Therefore, advocated position for autoclaving of hand torque wrenches are open (broken) position.⁷

This situation is one of the rare mechanical complications. The assumed reason is wedging of the dried blood between the screw and implant components. Other possibilities could be a defect in the screw itself. Several techniques have been tried by clinicians. Preparation of healing cap as conventional abutment and fabrication of crown over it is a logical solution.⁷

However different techniques may be used in conjunction to successfully retrieve the gingival former. In the presented clinical situation, gingival former couldn't be retrieved by reverse torque or drilling through the screw.

Though a notch was created over the gingival former to retrieve it using a cement spatula, it was not successful. Hence extraction forceps with

fine beaks were used to turn it anticlockwise. This technique is cost effective, simple and applicable to all available dental implant system. This can be incorporated where the retrievability of the coldwelded gingival formers are difficult. However there is a possibility of applying injudicious force while removing it and care should be taken not to disturb the osseointegrated implant.

Conclusion:

Cold welding of gingival former is a rare complication. To minimize the incidence of coldwelded gingival former adequate precautions should be taken knowledge of various retrieval schemes will also come handy in such situations. There is no universally applied technique to retrieve a coldwelded gingival former. It's more of a trial and error approach to save the situation.

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