

## SHORT COMMUNICATION

### Cross-Threaded Internal Dental Implant Surface- A technical note!

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#### INTRODUCTION

Damage to the internal surface of osseointegrated dental implants can be a frustrating complication for both clinician and the patient. It could potentially stall the restorative sequel due to inability of engaging a prosthetic implant component. The chances of internal thread damage can result from various reasons such as manipulation during retrieval of fractured screw or a cold-welded screw or introducing rotary instruments to create slots for screw removal. Further, it can be damaged when attempting to remove any cemented abutments or posts. However, the chances of stripping or cross threading the internal implant surface from a routine change of healing cap or abutment or cover screw are unusual especially during the process of osseointegration. We report a peculiar situation where the internal surface of an osseointegrating implant was distorted or cross-threaded by improper seating of the healing abutment during routine second stage or implant un-covering stage to prepare for Implant restoration.

#### TECHNICAL CASE SCENARIO

A middle-aged male patient referred for surgical planning and placement of root form implant in the edentulous site lower right second molar. A Zimmer Tapered Screw-Vent Implant (*Zimmer Dental, Warsaw, IN*) was selected for surgical placement in the edentulous area. During a scheduled second stage or

cover screw uncovering visit, an attempt to fit a healing abutment to prepare the gingival tissue was unsuccessful. Periapical radiograph was verified during multiple attempts to seat the healing abutment with no success. The inner 1/3<sup>rd</sup> thread of the implant was not permitting the complete seating of the healing abutment screw. The cover screw that was previously seated all the way through, when re-attempted resulted in failure to be re-seated. A verification radiograph confirmed possible internal thread damage was more likely the cause of non-fitting of implant healing abutment.

A dilemma arose debating the options for providing a definitive restoration. After analyzing multiple management options, we decided to use an innovative re-tapping tool manufactured by the Implant company to handle such complications. A Zimmer OMNI/ SPL TAP 0493 (*Zimmer Dental*) specifically designed and created for re-tapping or re-threading the internal surface of Tapered Screw- Vent Implant. This special tool had to be requested from *Zimmer Dental* to salvage the osseointegrating endosteal implant. The tool was similar to a hand driver and was inserted into the internal thread surface and seated at appropriate angle in line to the thread pattern. A clockwise 1/8<sup>th</sup> of a hand turn was performed, followed by copious irrigation of saline and adequate suction to remove the debris from the internal implant surface<sup>1</sup>.

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Fig 1a. Healing abutment mesial inclined and unable to be seated completely.



Fig 1b. Healing abutment attempted but distally inclined and unable to be seated completely.

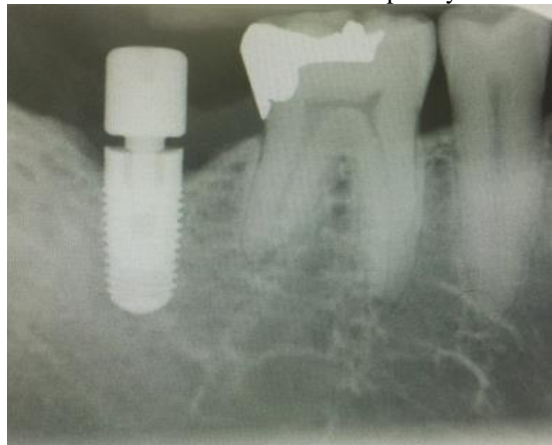


Fig 1c. Taller healing abutment attempted and unable to be seated.

Following the completion of re-threading or re-tapping procedure, we were able to successfully seat the new healing abutment until there was no space between the implant platform and collar of the healing abutment.

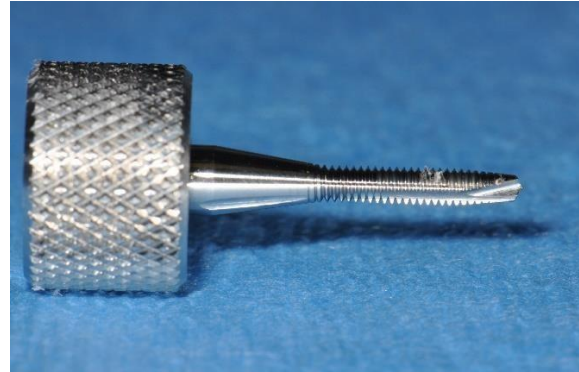


Fig 2a. Zimmer OMNI/ SPL Tap Thread hand driving tool, Zimmer Dental, USA

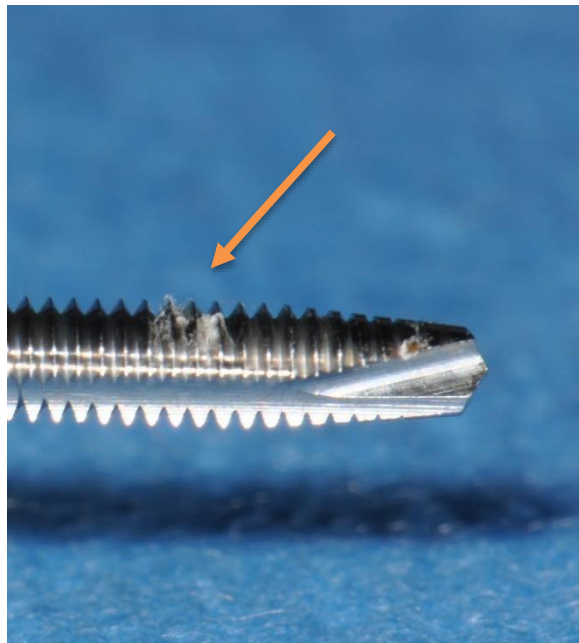


Fig 2b. Magnification (*arrow*) depicting the area on the Zimmer OMNI/ SPL tap where the successful re-threading of the distorted internal thread was accomplished.

**DISCUSSION**

Complications such as these are not encountered in a day-to-day implant practice associated with restorative dentistry. However, due to poor angulation of the implant, improper hardware selection, undue force exerted and lack of clinical experience pertaining to implant systems can lead to these complications<sup>3</sup>. Clinical scenarios of this kind occur immediately after surgical placement of implant, which gives us the option of replacing the implant. However, in our case the dilemma arose during the process of healing of the implant. During the second stage procedure, a healing abutment was to be placed for gingival contouring to receive the future implant supported prosthesis. Since the healing abutment or the cover screw was not

seating completely, it was a challenge to leave the implant open leading to tissue overgrowth that could harbor plaque and turn out to be a nidus of oral infection<sup>4</sup>.

Authors could not find sufficient literature about the internal thread damage during the process of second stage surgery or during osseointegration and the associated dilemma. However, the manufacturer of the Implant system (*Zimmer Dental*) had probably anticipated such a complication; hence a rescue tool was available on request. A tapping tool is originally used to create an internal thread during the milling and fabrication of the titanium implant<sup>2</sup>.

### CONCLUSION

The use of surgical re-tapping tool was recommended by *Zimmer Dental* to be used only on completely osseointegrated implants. However, in our clinical situation we were midway through the osseointegration process. The downside of this technique could be jeopardizing the osseointegration process by providing rotational forces to the implant while re-threading of internal surface. Adequate care to be rendered when using these tools or techniques in

rectifying the cross thread. Clinicians using *Zimmer Dental* implant or other brands should be aware of such possible complication and solution can be available from their respective implant manufacturer.

### CONFLICT OF INTEREST

There is no conflict of interest.

### REFERENCES

1. Rubel BS, Hill EE. Management of a Dental Implant with Internal thread damage. *The New York State Dental Journal*, 2015;38-40.
2. Araujo A, Fromentin G, Poulachon G. Analytical and experimental investigations on thread milling forces in titanium alloy. *International Journal of Machine Tools and Manufacture* 2013; 67:28-34.
3. Yilmaz B, Mascarenhas F. Salvaging an implant with damaged internal threads. *J Prosthet Dent*. 2015 Aug;114(2):301-4.
4. 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 Dec;38(6):747-50.

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