

MANAGEMENT OF FRACTURED ABUTMENT SCREWS

Christopher R. Resnik, DMD, MDS

Post-prosthetic complications with implant prostheses occur at a rather high rate. Adler et. al., reported in a 15-year retrospective study that approximately 32% of implant prostheses exhibit technical complications. [1] One such technical complication that is frustrating to clinicians and patients is abutment screw fracture. Abutment screw fractures usually occur secondary to screw loosening, however can occur from other factors such as improper prosthesis insertion, excessive torque, or material fatigue. [2] The incidence of screw fracture in the literature varies from 0.5-8%. [3] [4] [5]

Retrieval of retained fractured screws can be quite challenging for the clinician. Irreversible damage to the implant body may occur when aggressive screw-retrieval techniques are attempted. Most commonly, low or high-speed handpieces are used to “drill” out the fractured screw which may result in irreversible damage to the internal threads or implant body. (Figure 1) Therefore, this article will describe a systematic protocol for the atraumatic removal of fractured abutment screws.

The clinician must evaluate and answer two questions when determining what technique to use for abutment screw fracture removal. (cont'd pg. 3)



**ONLINE LEARNING PORTAL
A HUGE SUCCESS!!**

PHASE 1: UNDERWAY FOR CURRENT STUDENTS

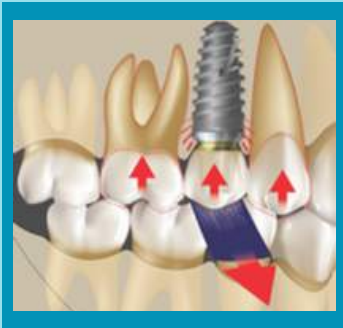
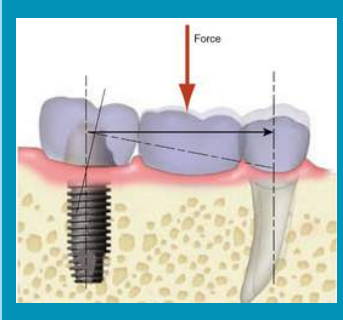
The first phase of our online learning portal is now live for current students attending in-person lectures. As it has become increasingly difficult for Dr. Resnik to cover the vast amount of information in a single weekend, the portal offers supplemental online lectures to help prepare you for upcoming courses. This additional resource allows you to ask questions and receive detailed explanations from Dr. Resnik or a faculty member before attending the course. The feedback we have solicited makes it clear that students can build a stronger foundation and retain the material more effectively with this additional support.

(cont'd pg. 4)



Figure 1: Attempts to “drill-out” fractured screws often will lead to irreversible damage to the internal aspect of the implants

HUGE



3 Day

PROSTHO BOOTCAMP

Nov 10-11, 2023

HOUSTON, TX

- Fixed and Removable Prosthetics in Oral Implantology with Hands-On lab Procedures
- Latest Prosthetic Material Selection
- FP-1, FP-2, FP-3: Procedures Step by Step
- Screw vs. Cemented Prosthetics
- Biomechanics
- Overdenture Attachments
- Progressive Bone Loading
- Direct, Indirect, Digital Impression Techniques
- +++++ Much More

AVOIDING IMPLANT COMPLICATIONS

February 16-17, 2024

LAS VEGAS, NV

at the Fabulous...



Caesar's Palace

- | | |
|--|---|
| <ul style="list-style-type: none"> • Implant Placement Complications • Bone Grafting Complications • Immediate Placement Complications • All-On-X Complications • Intra-Operative Complications • Positioning Complications • Guided Surgery Complications • Incision Line Opening • Nerve Injury Protocols | <ul style="list-style-type: none"> • Medical/Medication Complications • Radiographic Treatment Planning • Fixed Prosthetic Complications • Removable Prosthetic Complications • Screw Loosening • Occlusion Complications • Peri-Implant Complications • Treatment of Ailing/Failing Implant • Legal Considerations and so much more |
|--|---|



1. Is the screw fractured above or below neck of the implant?

In general, screws fractured above the neck of the implant are much easier to retrieve than screws broken off inside the implant body. Access to the screw is much easier and usually an explorer, spoon excavator, hemostats, or ronguers are able to engage the screw to remove in a counterclockwise direction, even in cases with screw preload. (Figure 2)

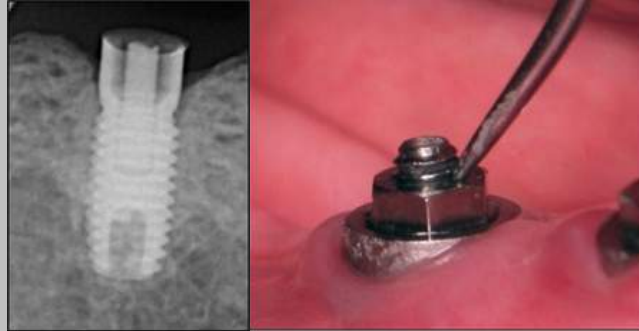


Figure 2: (a) Fractured Screw with no preload, (b) easy removal with explorer in counterclockwise direction



Figure 3: Salvin Rescue Kit

2. Does the fractured screw contain Preload or No Pre-Load?

When a screw fractures with preload (i.e., torquing or clamping force between the screw and implant threads) successful removal is much more challenging. Because the torquing or clamping force is present on the screw-implant interface, simple counterclockwise removal via methods above will most likely not be successful. Although there exists many possible methods in the literature, I have found these two atraumatic methods to work when preload exists with a high degree of success.

Ultrasonic Scaler:

An ultrasonic scaler (# 3 tip) is used by placing the scaler tip at the superior most part of the fracture screw. Using a gentle reverse torque, the vibrating or oscillations from the scaler tip may dislodge the screw via preload reduction, thereby “spinning” the screw out of the implant body. [1]

Screw-Removal Kit:

Salvin Dental manufactures a screw-retrieval kit (Rescue Kit) that is compatible with the majority of dental implant platforms. The purpose of the screw-retrieval kit is to protect the internal threading of the dental implant. After a dimple is created in the screw, a screw tap is used to back out the fractured implant screw. The following is a step-by-step protocol for removing fractured screws with preload: (Figures 3, 4, 5).

(cont'd pg 5)

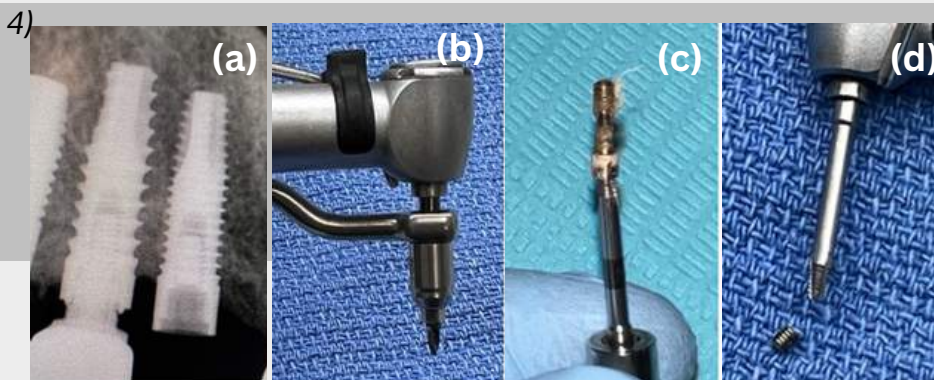


Figure 4: Case Report: (a) fractured screw with preload, (b) Implant screw drill and guide, (c) after removal with screw removal TAP, (d) fractured screw

Did You Know...

- Past Graduates are offered a discounted rate of 1000.00 off current course fee
- We offer New Grad Discounts
- If you refer a doctor to take the full continuum you will get to audit or repeat any surgical course at no additional charge
- We offer payment plans

CALL 407-256-8082 or email us at resnikimplant@gmail.com to discuss



PHASE 2: This educational portal will allow doctors to keep up-to-date on all aspects of implant dentistry (e.g., procedures, techniques, medical conditions, medications, complications, etc.). The Phase 2 portal, which will launch in late summer 2023, will include supplemental lectures and instructional videos that can be used by any clinicians not currently enrolled in our courses.

Mark's Corner



by Mark Romano
CEO of NOW MEDIA

What is Voice Search Optimization?

Voice search optimization is a set of SEO techniques that make your content more likely to appear in voice search results.

All major platforms have voice search built into them. Siri, Alexa, Cortana, Hey Google...The list goes on. People are using this feature more often than ever before.

Most practices might not even consider voice search when building their online business. If you don't, you're leaving money on the table.

Voice search queries are more conversational than text searches. They're closer to how we talk in real life. In a voice search, you may ask "Who is a good dentist near me?" In a text search, queries are phrased more along the lines of "dentist near me." As we move towards more AI-based search results - you will need to stay ahead of the curve.

For more information or see if your website is currently voice optimized, contact us today at nowmediagroup@gmail.com or by calling 858-352-8474.



**Click the Icon
to
Follow Us
on
Social Media**





Figure 5

Step 1. Identify the guide tube that is compatible with the dental implant platform. The Guide tube will be attached to the guide tube handle and inserted into the implant. This will protect the internal aspect of the implant.

Step 2. Place the implant screw drill into a latch type implant handpiece. Set motor to REVERSE at 1,000-1,250 RPM and 50-70 NCM torque.

Step 3. Drill in REVERSE using COPIOUS IRRIGATION with “up and down” motion to prepare a 1 - 2 mm deep dimple into the broken screw. External irrigation is recommended to prevent overheating.

Step 4. Insert Screw Removal TAP drill into implant handpiece. Set motor to REVERSE at 70 - 80 RPM and 50 - 70 NCM torque.

Step 5. Insert Screw Tap drill into dimple of the broken screw. With firm apical pressure, reverse the broken screw out.

Although not common, an abutment screw fracture results in an unpleasant experience for the patient and the clinician. Unfortunately, many times, removal of fractured screws may be very difficult and time-consuming, which may not be successful. Failure to remove the screw can result in significant morbidity as the implant will need to be removed, followed by bone grafting and placement of another implant. Therefore, when removing screws, it is imperative that implant clinicians have a strong understanding of abutment screw mechanics (preload vs. no preload) and various techniques of screw removal.

In summary, screws fractured above the neck of the implant with no preload are usually removed without difficulty. A screw fracture below the neck of the implant with preload, is difficult and may not be successful. The following two methods discussed will remove preload fractured screws with a high success rate and preserve the internal threads of the implant.

[1] Goodacre CJ, Kan JY, Rungcharassaeng K. Clinical complications of osseointegrated implants. *J Prosthet Dent.* 1999;81:537–52

[2] Nergiz I, Schmage P, Shahin R. Removal of a fractured implant abutment screw: A clinical report. *J Prosthet Dent.* 2004;91:513–7.

[3] Shah K, Lee DJ. An alternative approach for the management of fractured implant abutment screws on a mandibular implant-retained overdenture: A clinical report. *J Prosthet Dent.* 2016;115:402–5.

[4] Yilmaz B, McGlumphy E. A technique to retrieve fractured implant screws. *J Prosthet Dent.* 2011;105:137–8.

[5] Nayana P, Nayak SS, Chatterjee A, Sivaraman K, Srikanth G, Singh C. Retrieval of Fractured Implant Abutment Screws: A Narrative Review. *J Int Soc Prev Community Dent.* 2022;12(3):287-294.

[6] Gooty JR, Palakuru SK, Guntakalla VR, Nera M. Noninvasive method for retrieval of broken dental implant abutment screw. *Contemp Clin Dent.* 2014;5:264–7.



Wyndam at Bonnet Creek
Orlando, FL

ORLANDO 2022-2023 SCHEDULE

DEC 1-2, 2022

Patient Evaluation, CBCT
Treatment Planning, Socket
Grafting and Implant
Placement

JAN 13-14, 2023

Multiple Implant Placement
and the Treatment of the
Edentulous Ridge

MAR 2, 2023

CBCT SCOUT AND
STAMP

MAR 3-4, 2023

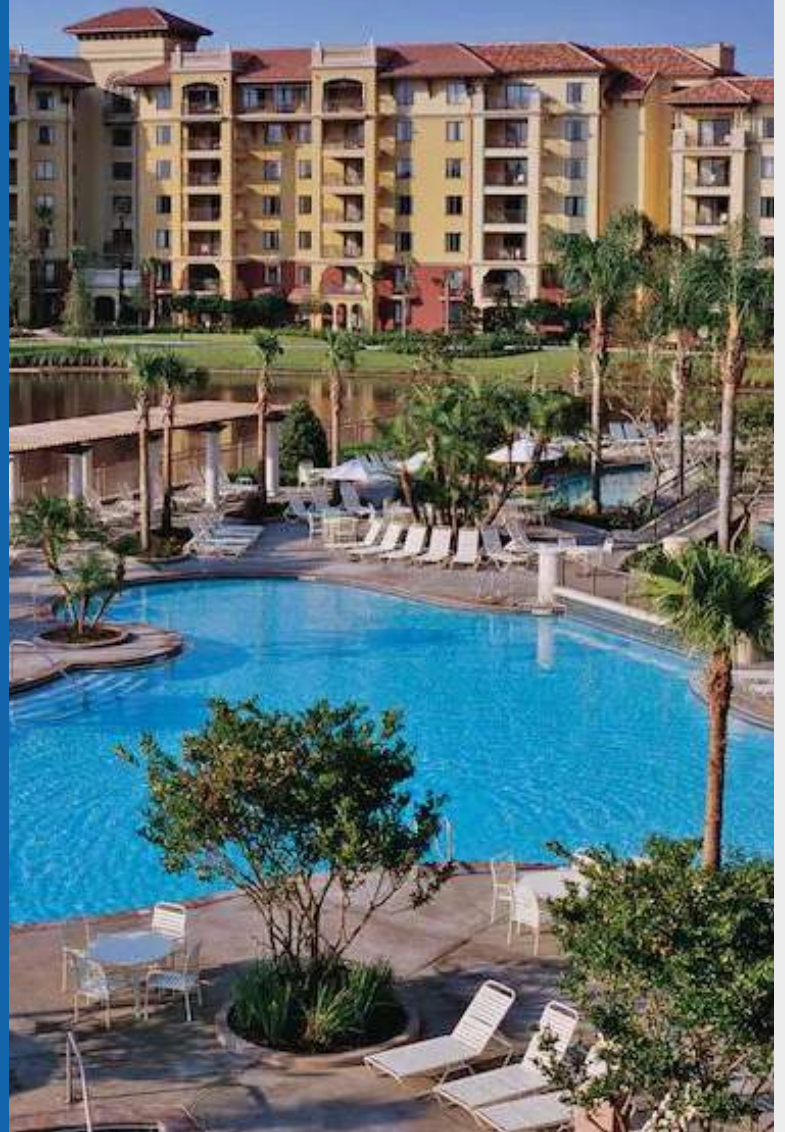
Bone Augmentation and
Implant Placement into
Compromised Sites

MAY 19-20, 2023

Treatment of the Posterior
Maxilla with Rotome and
Lateral Wall Technique

JULY 21-22, 2023

Immediate Placement and
Loading, Treatment of Peri-
Implant Disease



*"98% of our
graduates are
placing Implants."*

TIP OF THE MONTH

Prevention Of Abutment Screw Loosening

When an abutment screw loosens, the preload (screw torque) is lost. One of the most common reasons for screw loosening is termed the “settling effect”. When the final torque is applied to an abutment screw, almost immediately the torque is reduced by 2 – 10%. [1] The reason for this is that immediately after the final torque is applied, the screw threads undergo “creep”, thereby relieving the initial preload that was applied. To prevent this from occurring, the following technique is recommended.

Incremental Torque Technique

(Example = 35 N/cm)

Step 1: 10 – 15 N/cm

Step 2: 25 N/cm

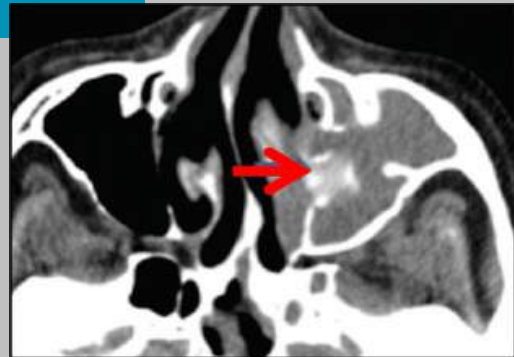
Step 3: 35 N/cm

Step 4: Re-Torque after 5-10 minutes (re-establishes the initial torque)

[1] Yao, Kuang-Ta, et al. "The effect of clockwise and counterclockwise twisting moments on abutment screw loosening." *Clinical Oral Implants Research* 23.10 (2012): 1181-1186.

CBCT QUESTION OF THE MONTH

What is the radiopaque object (red arrow) found on this axial scan?



IMPLANT STUDY OF THE MONTH

A randomized controlled clinical trial evaluated the effects of baroque (BM) and classical era music (CM) as a non-pharmacological therapy for the control of anxiety and pain levels among patients undergoing dental implant placement surgery. Does playing music during dental implant surgery reduce patients anxiety & pain?

(Answers pg 10)



info@resnikimplant.com



407-256-8082



resnikimplantinstitute.com





**NEW SURGICAL
HANDS-ON
DATE RELEASED !!**

**Friday
August 11, 2023
Cleveland, OH**

visit
www.resnikdentalimplants.com
to fill out an application



**RESNIK
INTERNATIONAL
BOOTCAMP**

LIVE IMPLANT SURGERY



THE RESNIK IMPLANT INSTITUTE

Exciting updates to the institute coming in the next few months.

NEW AND EXCITING



ONLINE PORTAL

Lectures, videos, webinars, and treatment planning



HANDS-ON SURGERY

Increase of live hands-on courses in the U.S. (Ohio)



EXPANDED CURRICULUM

More comprehensive and additional hands-on labs



NEW TEXTBOOK

Dr. Resnik's long awaited "Prosthetic Implant Dentistry"

**MORE
INFO**

407-256-8082 | www.resnikimplantinstitute.com

Hilton Garden Inn at
Silverlake Crossing
Grapevine, TX



DALLAS 2023-2024 SCHEDULE

SEPT 8-9, 2023

Patient Evaluation, CBCT
Treatment Planning, Socket
Grafting, and Implant
Placement

OCT 19, 2023

CBCT BOOTCAMP

OCT 20-21, 2023

Multiple Implant Placement
and the Treatment of the
Edentulous Ridge

DEC 1-2, 2023

Bone Augmentation and
Implant Placement into
Compromised Sites

JAN 26-27, 2024

Treatment of the Posterior
Maxilla: Osteotome and
Lateral Wall Technique

MARCH 8-9, 2024

Immediate Placement and
Loading, Treatment of Peri-
Implant Disease

*"Our graduates show a
22.5% increase
in income in their first
year after the course."*



info@resnikimplant.com



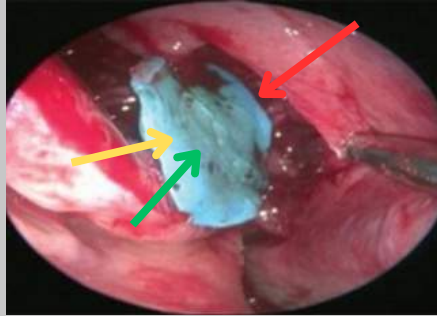
407-256-8082



resnikimplantinstitute.com

ANSWERS...

CBCT QUESTION OF THE MONTH



Impression Material in
the Maxillary Sinus

(Polyvinyl Siloxane)

IMPLANT STUDY OF THE MONTH

Yes, both baroque and classical music reduces anxiety in patients undergoing dental implant placement surgery.

Pellicer, Lorenzo Á. Esteban, et al. "Can Music Decrease Anxiety and Pain During Dental Implant Surgery? A Randomized Clinical Trial." *Journal of Oral and Maxillofacial Surgery* 81.2 (2023): 194-200.

Thanks to our sponsors...



See what past graduates are saying...

Dr. Resnik and his team are amazing! I took an extensive implant curriculum about 12 years ago and only placed the straight forward single or double implants since then. If you want to raise your implant game for your patients, your practice, and yourself - you don't have a choice: SIGN UP TODAY and you won't regret it! Cheers! -- **Dr. Chad Yenchesky**

The course gives you the confidence you need to place dental implants and allows you to meet like minded colleagues and instructors. \ Dr. Resnik is a great lecturer, keeps things interesting and presence scientific research to back up his claims. Most importantly the course will provide you with cook book instructions and protocols for everything you will encounter during your implant journey, from placement, to suture line opening to dealing with infections, consent form templates, medical clearance templates...etc. \. Strongly recommend! -- **Dr. J Chen**

This course gives you a comprehensive introduction to placing single, multi, and full arch implants mostly using guided techniques. This course is for anyone at any level. The audience is made up of beginners who have never placed an implant (like myself) to the well seasoned general dentists/ OMFS who has had years of experience placing implants. Best money I have spent to forward my career. -- **Dr. Natalie Sigwart**

I finished the 5-course curriculum just this past year. Dr. Resnik and the faculty are hands down the best in the business. The Misch/Resnik program gives you the education, tools, and the confidence to be proficient at implant dentistry. This curriculum gives you the knowledge and the skills to take your practice to the next level! -- **Dr Michael Buck**

Many thanks to Dr. Resnik and the Misch/Resnik Institute for their excellence and the quality of the surgical and prosthetic implant courses. I have gone through most of the courses a second time to my advantage, because they are always updated with new labs and lectures. THANK YOU! -- **Dr. Barb Leadbeater**

After 30 years of practicing dentistry, my only regret is that I did not get involved with implant dentistry earlier in my career, specifically with the Misch Institute. I never realized how rewarding and exciting for both me and my practice this could be. Dr. Randy Resnik and his entire staff are a major factor in this testimony! -- **Dr. Douglas Adel**

Dr. Resnik has an amazing depth of scientific based knowledge concerning his subject. He builds a very large zone of safety. If one stays within this zone the success rate will be maximized and complications will be extremely rare. -- **Dr. Terry Rigdon**

Join the Family!



info@resnikimplant.com



407-256-8082



resnikimplantinstitute.com