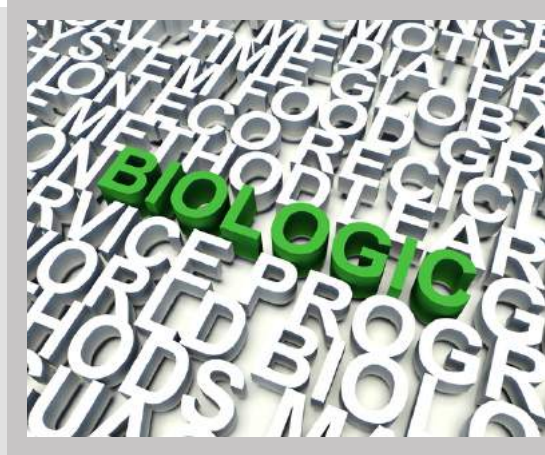


## ***Are Biologic Medications Becoming the New Catch 22 in Implant Dentistry?***

*by Randolph R. Resnik, DMD, MDS*

In the early 2000's, the field of dentistry was shocked when published reports of severe complications and morbidity surfaced with patients on a newer therapeutic antiresorptive medication (Bisphosphonates). Marx [1] and Ruggieri [2] were the first to report patients taking bisphosphonates for cancer treatment (IV) or osteoporosis (Oral) were susceptible to bone necrosis lesions termed Medication-Related Osteonecrosis of the Jaws (MRONJ). Since this time, there has been significant debate and controversy with no general consensus on how bisphosphonate patients should be treated (e.g., no treatment, no drug modification, drug holiday, C-Telopeptide (CTx) Test, discontinuation effects on disease process) for dental procedures in implant dentistry.



Currently, the field of implant dentistry is entering a new challenge, which could be far more significant and controversial than bisphosphonates. A new class of therapeutic drugs ("Biologics") have been introduced in the medical world for the treatment of a wide spectrum of diseases, including autoimmune, inflammatory, dermatologic, infectious, and neoplasms. These novel medications utilize living organisms and recombinant DNA in their manufacturing process. Unlike conventional medications that target the entire immune system (e.g., steroids, methotrexate,



cyclosporine), biologics therapeutics are significantly more beneficial as they only target particular portions of the inflammatory system.

Biological therapeutics are the fastest-growing sector in the pharmaceutical industry, with total revenues exceeding \$163 billion annually. The annual growth rate is staggering at 8%, far greater than conventional pharmaceuticals which approximates 4%. Since 1995, the applications for biologic therapeutic patents have increased over 25% per year. There are currently over 200 approved biologic drugs on the

market, with approximately 1,500 drugs being evaluated in clinical trials, and many more drugs in the pipeline. [3] The ability of these drugs to treat previously untreatable diseases is what is fueling this growth. With the unlimited scope and potential of these medications, more targeted, effective, and personalized biologic medications will be developed in the future to treat even the most complex diseases.

## Biologic Medications

Biologic medications have been approved for a wide array of disease processes. Biologics are most commonly classified by their suffixes as to their origin; Human ('mab'), humanised ('zumab') or chimeric ('ximab'). Table 1 describes the most common biologics and their intended targeted diseases.

**Table 1: Most Common Biologic Medications**

BRAND NAME	GENERIC NAME	DISEASES
Humaira	adalimumab	Rheumatoid Arthritis, Crohn's Disease, Ulcerative Colitis
Rituxan	ritiximab	Lymphoma, Leukemia, Rheumatoid Arthritis
Enbrel	etanercept	Rheumatoid Arthritis, Plaque Psoriasis, Psoriatic Arthritis
Herceptin	trastuzumab	Breast Cancer, Metastatic Gastric Adenocarcinoma
Avastin	bevacizumab	Cervical, Hepatocellular, Colorectal Cancer
Remicide	infliximab	Rheumatoid Arthritis, Crohn's Disease, Ankylosing Spondylitis
Avonex	interferon beta-1a	Multiple Sclerosis
Cosentyx	secukinumab	Psoriatic Arthritis, Ankylosing Spondylitis
Taltz	ixekizimab	Psoriatic Arthritis
Xeljanz	tocacitinib	Rheumatoid Arthritis

## Possible Side Effect Complications in Dentistry

Unfortunately, biologic drugs are not free of side effects especially when related to normal bone physiology. There exist many case reports in the medical literature concerning post-operative infections involving biologic medications, especially in orthopedic surgery. Giles et. al. showed a significant increase in post - operative infections after orthopedic surgery procedures. [4] Ruysen-Witrand also reported on an increased infection rate in rheumatoid arthritis patients undergoing orthopedic joint surgery. [5]

In the dental literature, most documentation is with case reports as little research or data on how these medications may affect patients undergoing invasive dental procedures (e.g. extractions, dental implants, bone grafts). Ciantar et. al reported a case of mandibular osteomyelitis on a patient being treated with Infliximab for juvenile arthritis. [6] Sri et. al. reported one of the first cases involving an extraction and development of a mandibular osteomyelitis in a patient being treated for psoriasis with biologic medications. [7] (Figure 1) Tsuchiya et. al. related a case of suppurative osteomyelitis derived from periapical periodontitis in a patient being treated for Crohn's disease. [8] Ziobrowska-Bech presented a 10-year study showing a relationship between biologic drugs and

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## DALLAS 2023-2024 SCHEDULE

**SEPT 8-9, 2023**

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

**SOLD OUT**

**OCT 19, 2023**

CBCT BOOTCAMP

**OCT 20-21, 2023**  
Maxillary Implant Placement  
and the Treatment of the  
Edentulous Ridge

**FEW SEATS LEFT**

**DEC 1-2, 2023**

Bone Augmentation and  
Implant Placement into  
Compromised Sites

**JAN 26-27, 2024**

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children with chronic non-infectious osteomyelitis (CNO) with either mono- or multifocal bone lesions. [9] Cillo and Barbosa reported on the first documented implant related complication with a biologic medication. An adalimumab-related dental implant surgical-site infection presented in a patient two weeks after extractions and immediate placement of 5 mandibular implants. (Figure 2) After extraoral incision and drainage of the involved fascial spaces, implant explantation and debridement of necrotic mandibular bone was completed. The patient healed uneventfully after treatment. Therefore, it appears a definite association exists between biologic medications and post-operative infections after invasive dental surgery, however without controlled, prospective cohort studies, a true prevalence and relationship cannot be established.



Figure 2: (a) Patient presented with draining mandibular exudate to Allegheny General Hospital (Pittsburgh, PA) emergency department two weeks after extraction and placement of five mandibular implants. (b, c) Extraoral image and CT Scan depicting significant fluid collection inferior and posterior to the mandibular symphysis with extension of submental abscess into the bilateral submandibular spaces, (d) Extraoral drainage with implant removal was completed (Courtesy of Joseph E. Cillo, Jr., DMD, MPH, PhD, FACS)

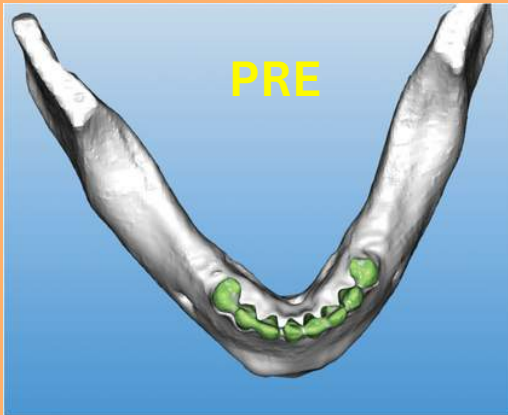
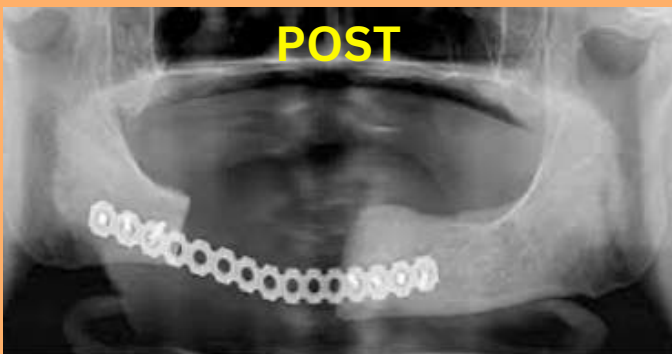


Figure 1: (a) Pre-op image prior to extraction of mandibular teeth, (b) Post-extraction osteomyelitis resulting from patient being treated with Etanercept. (b) Post-extraction osteomyelitis resulting from patient being treated with Etanercept



## Possible Pharmacological Relationship

So, how does this newest classification of medications result in post-operative dental complications? Specifically, biologic medications are tumor necrosis factor (TNF) inhibiting drugs which utilize the immune systems natural processes to detect and destroy abnormal cells.[10]. TNF plays a central role in the body's ability to fight infection. When this factor is inhibited (Biologic Medications), an increased susceptibility to infection may result. Multiple studies have shown a direct association with **(cont'd. pg 5)**

## Are Biologic Medications Becoming the New Catch 22 in Implant Dentistry? *cont'd*

TNF-inhibitors and interference with normal bone physiology. These drugs have been reported to decrease bone turnover [11][12] [13], have direct effects on the viability of osteocytes [14], and inhibition of osteoclastogenesis [15]. Therefore, these detrimental effects on the bone healing process closely parallel the genesis of MRONJ with antiresorptive (bisphosphonate) medications.

### Pre-Operative Preventative Measures

With the number of dental implant procedures increasing significantly every year, clinicians must be aware of the possible sequelae of patients taking biologic medications and undergoing invasive dental procedures. Due to the increased risk of post-operative infection, clinicians must work closely with the patients physician in the development of a treatment plan that is case specific for the reduction of post-treatment complications. Medical consultation and clearance is highly recommended prior to any proposed implant treatment, especially if any modification of the medication is recommended. [16]

If a patient presents with a past history of biologic medication use, however, is not currently being treated with the medications, medical consultation is still recommended to ascertain the level of immune suppression and current status of the patients disease process. A detailed verbal and written informed consent is suggested.

For patients currently taking biologic medications, medical consultation/clearance is highly recommended. There exist many factors the physician will take into consideration in determination of the best course of treatment.

In general, this should include the specific medication in question, medication dosage, treatment duration, co-morbidities, possibility of disease rebound, and type of surgical procedure to be performed. In most cases, modification of the medication is indicated in the peri-operative period which includes a discontinuation via a drug holiday of 4-5 times the drugs ½ life of the medication. [17] [18]

For example, for the most common biologics, etanercept (2 weeks), adalimumab (6-8 weeks), and infliximab (4-6 weeks) would be discontinued prior to surgery. The patients physician should instruct the patient of the specific instructions of the drug holiday. In no situation should a dental provider modify a patients biologic medication that is prescribed by the patients physician. In addition, a detailed verbal and written informed consent should be presented. Biologic therapy is most commonly restarted postoperatively provided that wound healing is satisfactory with no evidence of infection.



*(cont'd. pg 11)*





**Randolph R. Resnik**  
DMD, MDS  
Director



# AVOIDING IMPLANT COMPLICATIONS

## *New Format:*

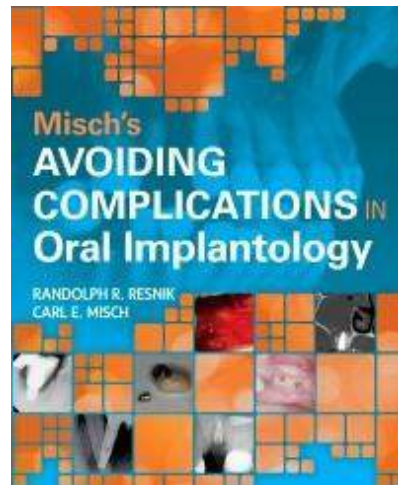
1. Online Platform Lectures
2. In-Person Lecture

## *Topics*

- Implant Placement Complications
- Occlusion Complications
- Peri-Implant Complications
- Legal Considerations
- Incision Line Opening
- Medical/Medication Complications
- Radiographic Treatment Planning
- Fixed and Removable Prosthetic Complications
- Guided Surgery Complications
- Nerve Injury Protocols
- Treatment of Ailing/Failing Implant
- Implant Placement Complications
- Bone Grafting Complications
- Screw Loosening
- All-On-X Complications
- Intra-Operative Complications
- Speech Complications and so much more...

## *Faculty*

- Randolph R Resnik DMD, MDS
- Jon Suzuki, DDS, PhD, MBA



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# MASTERING THE BUSINESS OF DENTISTRY

ROGER P. LEVIN DDS



Hello Readers,

I am very excited to provide the latest installment of "Mastering the Business of Dentistry" in the Resnik Institute newsletter. I have great respect for the educational importance of the Institute, and I sincerely hope that I will be able to contribute ideas on the business of dentistry and increasing practice production that will benefit all students and alumni. My own career as CEO of Levin Group began with this one question that I am still asking 38 years later: How do you increase production in a dental practice while reducing stress? Based on this critical question, I look forward to providing more practical recommendations that can be implemented quickly to benefit all your practices. All the best, Roger

## 7 WAYS TO INCREASE IMPLANT CASE ACCEPTANCE

Just imagine if every patient in your practice who could benefit from dental implants was interested in learning about them, had unlimited finances to afford them, and accepted treatment. While that may be a great fantasy, there is a greater reality and by understanding certain factors or "reality checks," and learning the seven ways to increase implant case acceptance, you'll experience practice success.

### REALITY CHECKS

- **Patients must be educated.** There are simple steps that you can take to educate patients. First, you should have an every-30-day email communication with your patients updating them on the practice services, technologies, the team, and, of course, dental implants. Second, you can have a script to help the front desk staff talk about dental implants with patients. Third, the hygienist should identify which patients would benefit from dental implants and have their own script that reviews those benefits directly with those patients.

- **Patients do not have unlimited money, but it doesn't necessarily matter.** Most patients do not have unlimited finances. In fact, one national economic study found that 60% of Americans do not have \$500 in cash for an emergency. The good news is that most people do not care as much about the total fee as they do about how it is paid for. Many patients think their dental insurance will cover dental implants; however, they often discover that coverage is not available. Then they pivot to payment plans and other options. Financing dental implants is a critical aspect and you must also keep in mind that there are options beyond dental implants that include bridges, dentures, or doing nothing. These options are not as good, but they are less expensive. You must make dental implants affordable through patient financing.
- **You may have to change your approach.** Many patients either lose teeth and view dental implants as expensive or extravagant or they are already missing teeth and are willing to continue the way they have been. There are millions of partially and fully edentulous patients that can benefit from dental implants. One of the biggest factors in transforming their opinion may be transforming your approach!

## SEVEN STEPS TO INCREASE CASE ACCEPTANCE

### ① Build powerful relationships.

Relationships are the foundation of selling any service. The best way to build great relationships is to become interested in people. Every new patient should experience what we call The Golden 10 questions, which involve learning 10 personal things about them. Psychologists tell us that when you get to numbers eight, nine or ten

(cont'd. pg 8)

that you will move from a professional relationship to a personal relationship. This goes to the heart of the Levin Group mantra: "Make your patients your friends!"

**2 Treat every patient with respect.**

We recently talked to a client who ended up providing a \$30,000 dental implant case. The patient had come as a second opinion, because their doctor, who they had been with for many years, left them confused. After meeting with our client, the patient understood implants completely, felt comfortable, and wanted to have implants placed in that practice. Taking time with patients is a sign of respect. Giving an enthusiastic greeting, running on time, thanking them for coming, and giving clear explanations and then asking for questions will go a long way toward increasing implant case acceptance. Don't simply assume that because the patient has been with you for years you can rush through the treatment explanations.

**3 Provide third-party proof.**

One of the best ways to create trust is third-party proof or social proof. It is essentially an endorsement and the best people to give you that endorsement is your clinical team. Don't be shy about asking your front desk and assistants to talk to patients about the excellent care they receive, the high quality of the dentist, and the dentist's extensive continuing education and years of experience. Keep in mind that four out of five patients ask a question about their case presentation when they get to the front desk. Don't underestimate the importance of your front desk team endorsing the doctor and dental implants.

**4 Be likable.**

Being likeable is one of the key factors in building relationships, relating to patients, and providing 5-star customer service. For anyone who has not read Dale Carnegie's *How to Win Friends and Influence People*, I cannot recommend it highly enough. For those of you who have read it, I encourage you to read it once a year. You want to make sure patients can feel your energy and enthusiasm and that alone

can raise your likability factor. Being open, comfortable, relaxed and not rushing, and showing enthusiasm for dental implants all before presenting the detailed case will help patients to like you. Developing a personality that is instantly likable and relatable to patients may be one of the most important behaviors to increase implant case acceptance, and overall practice success.

**5 Be seen as an authority.**

Authorities create confidence and confidence is a major factor in patient decision making. Patients need to develop confidence based on certain logistical information and that logistical information can make you an authority. This information includes how many implants you have placed, how many cases you have completed, what your results have been, what you expect their results to be, and the amount of education that you have. Being in authority is one of the most powerful factors in having people make rapid decisions and you shouldn't be afraid to let patients know that you are considered an expert in dental implants, especially if you have certifications, credentials, or Continuing Education credits.

**6 Tell a story.**

Stories can help you to make points and influence other people. We know that if you can tell a story to help a patient understand that you have seen cases like this before with excellent results, you have a much better chance of case acceptance. In general, we recommend having three stories for every service that you offer, but this is especially important for dental implants. Hearing stories helps patients visualize the benefits of dental implants, the expected results, and how you will improve the quality of their life. It is also important to tell stories about patients who did not follow through with dental implants and how their cases became more expensive, more complex, or even more painful later on. Stories are one of the most beneficial ways to help patients understand why dental implant treatment is an excellent idea and can help them overcome barriers like resistance to fees, time, or discomfort.

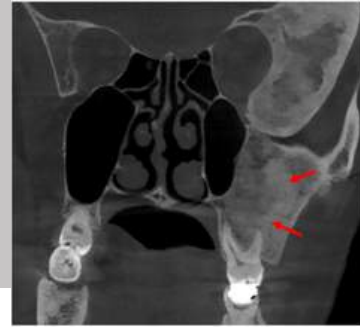
*(cont'd. pg 16)*





# RADIOLOGY QUESTION OF THE MONTH

1. What is this maxillary sclerotic lesion depicted by the red arrows?
2. What is the differential diagnosis?



# LITERATURE ARTICLE OF THE MONTH



A recent (2022) systemic review and meta-analysis evaluating implant failure in diabetic vs. non-diabetic patients concluded diabetic patients have a \_\_\_\_\_ higher risk than non-diabetic patients?

- a. 22.5%
- b. 45.7%
- c. 56.2%
- d. 77.7%

Al Ansari, Yasmin, Halime Shahwan, and Bruno Ramos Chrcanovic. "Diabetes mellitus and dental implants: a systematic review and meta-analysis." *Materials* 15.9 (2022): 3227.

# PHARMACOLOGY UPDATE OF THE MONTH

**FYI** As stated in the September 2022 newsletter, an alternative to a penicillin derivative antibiotic in a penicillin allergy patient (non-Type 1 hypersensitivity) is the use of a cephalosporin with a different R1 chain. For many years, Cefuroxime (Ceftin), which is a 2nd generation cephalosporin has been recommended.

Another alternative, with even less cross-reactivity possibility is Cefdinir (Omnicef). This 3rd generation cephalosporin is an extended-spectrum antibiotic with excellent sinus uptake and resistant to bacterial beta-lactamase production. Ceftinir (300 mg) is prescribed as 300mg bid or 600mg once/day. According to GOOD RX, Ceftinir is less expensive than Cefuroxime and Augmentin.

## **BREAKING NEWS**

# 2

## **New COURSES JUST ADDED for 2024**

*Orlando, FL  
October 24, 2024*

### **DIGITAL WORKFLOW FULL-ARCH PROTOCOLS**

*Topics*

- Workflows utilizing the latest in digital technology including scanning,
- 3D Printing,
- Photogrammetry
- Prosthetic Design.....



### **ALL - ON- X FOR LAB TECHNICIANS**

*Course specifically designed for Lab Technicians*

*Topics*

- Full-Arch Procedures (Maxillo-Mandibular Relationships)
- Prosthesis Design
- Conversion Techniques
- Workflow Protocols for Lab Technicians



**Table 2: Most Common Biologic Medications**

**PAST BIOLOGIC THERAPY: (RELATIVE CONTRAINDICATION)**

- Medical Consultation/Clearance
- Detailed Informed Consent

**CONCURRENT BIOLOGIC THERAPY + IMPLANT TREATMENT: (RELATIVE/ABSOLUTE)**

- Medical Consultation/Clearance
- Detailed Informed Consent
- Determination of Co-Morbidities
- Possible Drug Holiday (4-5 time of the drug's 1/2 life) [i] to be modified by the patients physician.
- Pre- and Post-Op Antibiotic Coverage
- More Frequent Post-op Evaluation Appointments

## ***Conclusion***

In conclusion, biologic drugs are an exciting new class of medications that have revolutionized the treatment of a wide spectrum of diseases in medicine. In the future, more and more of our patients will be utilizing these medications for a full array of disease processes as this promising classification of drugs will continue to grow and become more complex. Therefore, dentists must be aware of the possible complications that may arise from these medications, especially in combination with dental implant procedures. Unfortunately, there exists minimal research that can quantify the extent of the relationship between post-operative infections and the use of biologic medications. Caution must be used when treatment planning extractions, dental implants, and bone grafting procedures with concomitant use of biologic drugs. Post-op infection is the most common adverse effect, therefore clinicians must be prudent in evaluating the patient pre and postoperatively along with consultation with the patients physician. In the future, a clearer picture will be determined of the association and risk between TNF-alpha inhibitor therapy and post-surgical infections as more research is completed on this topic.

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Mark's  
Corner

by Mark Romano  
CEO of NOW MEDIA

## Get Found on the TOP of Google Maps

You must appear on the *Search Engine Results Page* to attract new dental implant patients. The top of the page is dedicated to Google Maps results, which are crucial for people searching for your services in your local area.

**First**, start with your practice information on Google to help you improve your Google Maps visibility. Is everything updated and current? This includes contact information, locations, hours of operation, areas of services, photos, insurance accepted, and a list of services you offer. You can update this information in your Google Business Profile which is linked to your Gmail account.

**Second**, you can use keywords to improve search rankings. That might look like a "tooth extraction" or "dental implant dentist/provider." Using these keywords helps the Google algorithm properly categorize your business profile and drive more website traffic.

**Third**, please update your profile regularly. There are no "set it and forget" solutions to doing this. Keeping your profile updated is simple.

Most updates after your initial audit and clean-up will be straightforward. At least monthly, add photos of your practice or staff, update hours for holidays, post updates and new patient specials, highlight new tech and always ask for and respond to reviews.

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## SIMPLIFIED CORRECTION OF OVERCONTOURED PMMA INTERIM PROSTHESIS

### PROBLEM:

Even with guided surgery, in some cases the resultant implant position will result in an overcontoured interim prosthesis. When this occurs, patients often will complain about speech problems and irritation from the overcontoured part of the prosthesis. (Figure 1)



Figure 1: (a) Pre-op image prior to extraction of mandibular teeth, (b) lingually overcontoured PMMA prosthesis (green circle).

### SOLUTION:

#### STEP #1

Instead of fabricating a new PMMA prosthesis, a modified conversion may be completed. On the original master cast, more ideal angled abutments may be selected (buccal version). A placement jig maybe fabricated to allow ideal intraoral abutment placement. (Figure 2)



Figure 2: (a) More ideal abutment selection and positioning, (b) placement jig.

#### STEP #2

After the new abutments are inserted, a chairside conversion (new abutment pick-up) is completed (Figure 3)



Figure 3: Chairside pick-up with more ideal angled abutments

*(cont'd. pg 16)*



*First Ever!!*

# AVOIDING PROSTHETIC COMPLICATIONS

*Conventional and Implant Prosthetics*

**November 15-16,  
2024  
Caesar's Palace  
Las Vegas, NV**



*Faculty*

**Randolph R. Resnik DMD, MDS**

**Jon Suzuki, DDS, PhD, MBA**

**Gordon Christensen, DMD, MDS, PhD**

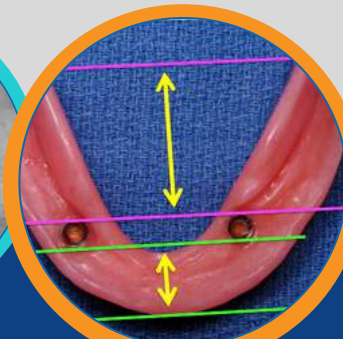
*Topics:*

## *Conventional Prosthetics*

- Restorative Materials
- Crown Preps
- Impressions (analog vs. digital)
- Scanning Protocols
- Cement Selection
- In-Office Milling
- Fixed Prosthesis Repairs

## *Implant Prosthetics*

- Implant Prosthesis Fracture
- Screw Loosening
- Prosthetic Design
- Full-Arch Materials
- Intra-Operative Complications
- Overdenture Attachment  
Troubleshooting
- Peri-Implant Disease Repair





*Just Released...* **ORLANDO**  
**2024**  
**SCHEDULE**

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Treatment Planning, Socket  
Grafting, and Implant  
Placement

**MAY 30, 2024**

CBCT BOOTCAMP

**MAY 31- JUNE 1, 2024**

Multiple Implant Placement  
and the Treatment of the  
Edentulous Ridge

**JULY 26-27, 2024**

Bone Augmentation and  
Implant Placement into  
Compromised Sites

**SEPT 13-14, 2024**

Treatment of the Posterior  
Maxilla: Osteotome and  
Lateral Wall Technique

**OCT 25-26, 2024**

Immediate Placement and  
Loading, Treatment of Peri-  
Implant Disease

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Orlando, FL



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

**SIMPLIFIED CORRECTION OF OVERCONTOURED PMMA INTERIM PROSTHESIS (cont'd)**

**CONCLUSION:**

A simplified chairside technique has been discussed to correct an overcontoured PMMA interim prosthesis due to non-ideal implant positioning. Instead of fabricating a new PMMA prosthesis, more ideal angled abutments were placed and the prosthesis was converted to a more ideal contour. Always verify complete seating of the abutments via intra-oral radiographs. If in doubt of the passivity, complete a new scan in case a new PMMA is required at a later date. (Figure 4)



Figure 4: (a) Existing lingual positioned implants or abutments (green arrows), (b) Chairside conversion with more ideal angled abutments.

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**MASTERING THE BUSINESS OF DENTISTRY (cont'd)**

**7 Update your current systems.**

The truth is that most general practice treatment is single tooth, and the data shows that this has not changed in the last 10 years. We recommend you review the case presentation system in your practice carefully, as it must be periodically updated. This is especially true as you expand into a service such as dental implants, because the systems that work for patients regarding single-tooth dentistry do not work the same way for larger cases. Learning to include the patient in the case presentation, not doing more than 50% of the talking, asking questions to engage the patient, and showing empathy and positive energy about your expectations for the case are all crucial factors of an effective case presentation system. When you get this right, case acceptance for dental implants will increase almost automatically.

**CONCLUSION**

Using the above recommendations will help you relate to patients better, build powerful relationships, and increase implant case acceptance. If you want to increase the number of implant cases annually, which is an excellent goal to pursue, you will need to continue to upgrade your case presentation system, which is both a science and an art. The science is following the steps, and the art is understanding and relating to people. If you have a strong desire to continue to improve in these areas, your implant practice will continue to expand.

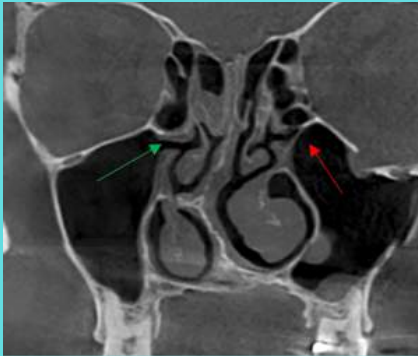
*ROGER P. LEVIN, DDS*  
 Roger P. Levin, DDS is the CEO and Founder of Levin Group, a leading practice management consulting firm that has worked with over 30,000 practices to increase production. A recognized expert on dental practice management and marketing, he has written 67 books and over 4,000 articles and regularly presents seminars in the U.S. and around the world.  
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# ITXPROS – TIP of the Month

## The Importance of Patency of the Maxillary Ostium

The ostium (a main component of the osteo-meatal complex) is the main drainage area of the maxillary sinus, located posteriorly and medially near the roof of the maxillary sinus. Patency of the ostium is crucial to ensure proper mucociliary action of the maxillary sinus, especially after implant or bone grafting into the maxillary sinus proper. It is imperative the patency of the maxillary sinus ostium be verified prior to these procedures.

The patency of the ostium is also important for the following reasons:



Coronal cut showing a patent ostium on the right side (green arrow) and a non-patent ostium on the left side (red arrow).

- Ventilation of the sinus: The sinus ostium also allows for ventilation of the sinus. This helps to keep the sinus healthy and to prevent infection. If the sinus ostium is obstructed, the sinus can become stagnant and more susceptible to infection.
- Pressure equalization: The sinus ostium also helps to equalize the pressure between the sinus and the outside environment. This is important for preventing barotrauma, which is a condition that can occur when the pressure in the sinus is different from the pressure in the outside environment.

## ANSWERS

### RADIOLOGY QUESTION OF THE MONTH

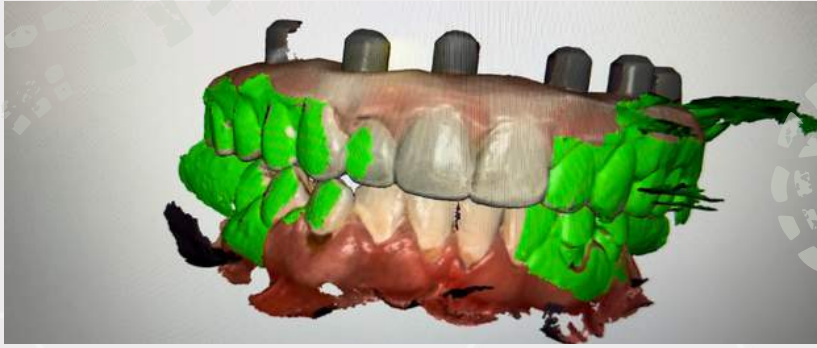
1. Craniofacial fibrous dysplasia involving the upper left maxilla, with the characteristic ground glass appearance,
2. Differential diagnosis:
  - Paget's disease (FD is most commonly unilateral while Paget's is usually bilateral, multiple skeletal bones will be affected)
  - Ossifying fibroma (OF is characterized as ball-like expansion, and is usually surrounded by a radiolucent rim)
  - Osteosarcoma (Osteosarcoma will be associated with other malignant symptoms and a periosteal reaction)

### LITERATURE ARTICLE OF THE MONTH





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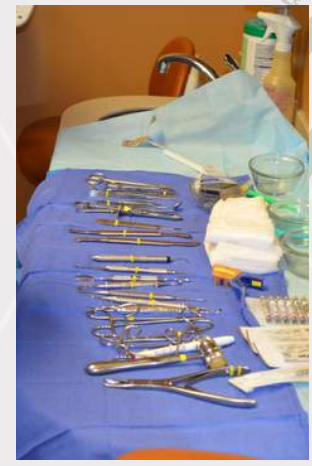


**Last  
Course  
August 11,  
2023**

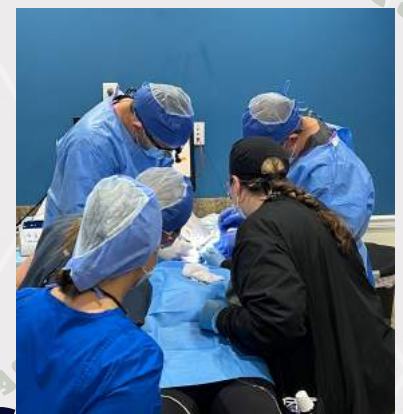
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# See what past graduates are saying...



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 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**

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 Resnik 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**

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