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## Upcoming Sessions



ORLANDO

Margaritaville Resort Hotel  
Orlando Florida

### Session 5

March 5-6, 2021

Immediate Placement  
Tx of Peri-Implantitis

**SOLD OUT**  
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### Prosthetic Boot Camp

March 25-27, 2021

Fixed & Removable  
in Oral Implant

**SOLD OUT**  
Join waitlist



DALLAS

Westin Irving Convention Center  
Las Colinas - Dallas, TX

### Session 1

April 16-17, 2021

Socket Grafting, Treatment Planning,  
& Implant Placement into Abundant

### Session 2

June 11-12, 2021

Multiple Edentulous & Complete  
Arch Implant Treatment



## FEATURED ARTICLE

### The Hidden Complication of Full Arch Prosthesis

by Randolph R. Resnik, DMD, MDS

In implant dentistry today, full-arch fixed prostheses (e.g. All-On-4, 5, 6, 7, 8) have become very popular. In the literature, there is an abundance of articles discussing prosthesis complications such as fracture, hygiene, and esthetic issues. However, one significant complication that may be devastating, however is often overlooked, is speech or phonetic issues. Various clinical studies have evaluated the prevalence of speech issues with a fixed implant prostheses; Collaer et. al reported that 84% of patient with a full arch fixed implant prosthesis exhibited one or more pronunciation errors after 6 years.<sup>1</sup> Bothur et. al concluded 83% of patients receiving implant prostheses had generalized speech problems<sup>2</sup> and Van Lierde et. al reported that over 87% had at least one consonant phonetic deficit.<sup>3</sup> Although most patients eventually adapt and retrain their oral structures, there is a significant

amount of anxiety that exists with phonetic complications. To understand how to prevent speech problems, the physiology of speech must be understood.

Speech is a vital component to every aspect of life. When restoring patients to dental health, primary emphasis is usually based on mechanics and esthetics. However, phonetics and how the prosthesis impacts the speech process is often ignored. Speech sounds originate in the larynx and the sounds are modified by the position and shape of the tongue as it contacts the lips, teeth, alveolar ridges, and hard/soft palate.<sup>4</sup> From the larynx, two streams of air are generated by the velum (soft palate). The upper air stream produces the "N", "M" and "NG" sounds while the lower air stream generates all other sounds as it is mainly altered by the palate and the teeth.

cont'd pg 2

## MISCH COMPLETE COURSE SCHEDULE

### SURGICAL SESSION Orlando

#### Session 5

January 15-16, 2021

Immediate Placement & Loading, Soft Tissue Considerations

### SURGICAL SESSION Dallas

#### Session 1

April 16-17, 2021

Patient Evaluation, Treatment Planning, & Implant Placement into Abundant Bone

#### Session 2

June 11-12, 2021

Multiple Implant Placement and Treatment of the Edentulous Arch

#### CBCT BOOT CAMP

July 22, 2021

#### Session 3

July 23-24, 2021

Implant Placement & Bone Augmentation into Compromised Sites

#### Session 4

September 24-25, 2021

Treatment of the Posterior Maxilla: Osteotome & Lateral Wall Technique

#### Session 5

November 12-13, 2021

Immediate Placement & Loading, Soft Tissue Considerations

CONT'D

## The Hidden Complication of Full Arch Prostheses

The oral structures may be further defined with respect to the generation of sounds such as static components, which include the teeth, alveolar bone, and the palate. The dynamic components consist of the tongue, lips, and mucous membranes.<sup>5</sup> These structures function collectively to produce sounds.<sup>6</sup> There exist many reasons why patients exhibit speech problems after full arch implant treatment:

**a. Overbulked Prostheses:** because of the natural bone resorption process, a fixed implant prosthesis often requires the replacement of hard and soft tissue. This will most often result in the final prosthesis being larger, heavier, and bulkier in both a vertical and horizontal plane. Because patients are not accustomed to this enlarged prosthesis, often alteration of speech sounds are affected because of the impingement of the tongue space. In addition, the prosthesis may be atypical in design because of poor implant positioning. This may result from the natural progression of the alveolar ridge being positioned more lingual, because of the normal resorption process from buccal to lingual. (Figure 1)

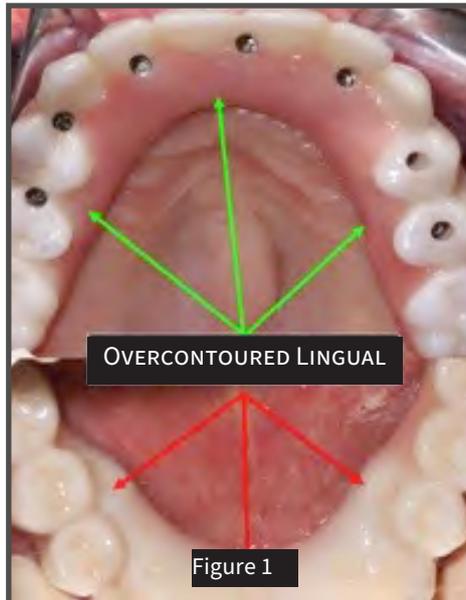


Figure 1

**b. Enlarged Tongue (Macroglossia):** the tongue is one of the most important organs of the orofacial complex with respect to speech development as it assists in the production of most consonants and vowels and developing resonance. The tongue's anatomy, physiology, and functional characteristics are paramount to the speech process. When teeth are lost,

the tongue will increase in size, which will result in compromised movement and difficulties in adaptation. An enlarged tongue has also been shown to increase in strength because of increased function and greater muscular tonicity. This may lead to more stress and strain to the prosthesis and implants. (Figure 2)



Figure 2

**c. Adapting to Prosthesis Materials:** Depending on the type of prosthesis material used (e.g. zirconia, porcelain-fused-to-metal, acrylic), patients often will have difficulty in adapting to the "feel" of the prosthesis material. This will often result in a phase in which the patient will have to adapt to the new material. It is highly variable on how long patients take to adjust to these types of materials.

**d. Lack of Proprioception:** Speech is an unconscious act which occurs even prior to the patient becoming aware of their intent to speak. The teeth and related structures play a large role in this process as proprioception allows for the fine motor movements within the oral cavity. When teeth are lost, especially when a patient is edentulous, the loss of the proprioceptive feedback system may complicate the production of speech.

**e. Air Spaces:** The design of the prosthesis, especially in relation to the intaglio surface, may lead to speech difficulties. Most common in the maxillary arch, openings or large embrasure spaces lead to air and saliva flowing between the soft tissue and the prosthesis, resulting in a "lisp". In addition, patients become guarded or tentative with the speech process, thus contributing to speech issues. (Figure 3)

cont'd pg 4





Figure 3

## SPEECH SOUNDS:

When obtaining maxillomandibular records, it is crucial for the clinician to understand the interrelationships of the tongue, teeth, prosthesis type, and lips. In general, most patients with fixed prostheses have difficulty with consonant sounds. Consonants are classified as to the anatomic structures that are involved in their productions:

### 1. “F” and “V” (Labiodental Sounds)

The “F” and “V” result from air that is forced out through a narrow space between the maxillary anterior incisal edges and the lower lip. These sounds aid in determining the anterior-posterior positioning of the maxillary incisors as well as determining the occlusal plane. When patients pronounce the “F” sounds, the incisal edges should slightly contact the vermilion border of the lower lip. The amount of contact will allow an assessment of the functional position of the maxillary and mandibular incisors in reference to the esthetic profile.

#### Clinical Significance:

If the anterior teeth are positioned too long, this will result in “f” sounds being pronounced as “v” sounds. When the maxillary teeth are too short, the “v” sounds will be pronounced as “f” sounds. Occlusal planes that are positioned too high will result in interference with the relaxation of the lips. If the occlusal plane is too low, the lip will overlap the maxillary anterior teeth, which will directly affect phonation.<sup>7</sup>

### 2. “S” sounds (Sibilant Sounds, Z, SH, ZH”)

The “S” sound (also Z, SH, ZH) occurs when the tip of the tongue is moved forward towards the roof of the mouth and air is pushed past the tongue, resulting in a hissing sound. Ideally, the mandibular anterior incisors should be slightly lingual to the maxillary incisors with a space from 1.0 – 1.5 mm when these sounds are pronounced. These speech sounds result in the mandible being in a retruded position with the teeth being in the closet contact during any type of speech. These sounds often are used to determine the functioning positioning of the anterior teeth.<sup>8</sup>

#### Clinical Significance:

The sibilant sounds are directly affected by the teeth and palatal part of the maxillary prosthesis. If the maxillary prosthesis is bulky in the premolar area (most common area), the tongue will be obstructed, and air will not be able to escape. This will result in a whistling sound. If the entire palatal part of the prosthesis is too thick or if there is too much incisal contact, lisping will result. In addition, if open embrasure spaces are present in the maxillary prosthesis, whistling may occur when these sounds are pronounced.

### 3. “TH” , “L” (Linguo Dental Sounds)

The linguo-dental sounds are formed when the tip of the tongue has light contact with the maxillary teeth (lingual). These sounds are often used to determine the labiolingual position of the anterior teeth. When pronouncing these sounds, ideally approximately 3mm of the tip of the tongue should be seen. If 3mm not seen, the teeth are too far forward or excessive vertical overlap is present. If greater than 6mm is seen, the maxillary teeth are set too lingual.<sup>9</sup>

#### Clinical Significance:

When the anterior teeth are incorrectly positioned vertically, the “TH” and “L” sounds will be distorted. In addition, if there is too little freeway space, difficulty in pronouncing these sounds will result because of restricted tongue movement.

### 4. “B, M, P” (Bilabial Sounds)

The bilabial sounds are produced when the lips contact. The “P” and “B” when pronounced results in an explosive effect. The “M” sound is more passive.

#### Clinical Significance:

These sounds may be utilized in identifying the correct vertical dimension. If the vertical dimension is too open, too little freeway space will result and the lips will not be able to contact. If the lips are not able to contact, then the bilabial sounds will be distorted.

### 5. (D, N, T) Tongue to anterior lingual teeth

The “D”, “N”, and “T” sounds are formed when the tip of the tongue contacts the anterior palate (Incisive Papilla). The tongue after contacting this area is drawn downward, producing an explosive sound. These are termed “plosive” consonants.

#### Clinical Significance:

When the prosthesis is overcontoured on the lingual, these sounds will be difficult to articulate because the tongue will be impeded. To correct this situation, the anterior palate must be reduced in thickness, however if implant placement is lingually oriented, then this may be problematic. In addition, many implants placed in this area are screw-retained, which results in an overcontoured cingulum area.

#### TREATMENT:

To prevent or minimize the existence of speech problems, the following may be completed:

**1. Good Informed Consent:** Explain to patient verbally and in writing exactly what type of prosthesis they will be receiving. This will alleviate any misunderstanding and patients will understand the importance of adaptation. Prosthesis patient models with the correct type of prosthesis material (Zirconia, Porcelain/Metal, Acrylic) is an excellent way for patients to understand the final prosthesis.

**2. Interim Prosthesis:** It is imperative that patients wear an interim prosthesis after extraction. If a delayed approach to implant placement is planned, the patient should be educated on the importance of wearing a prosthesis. The extraction of teeth in an arch may cause persistent speech problems by altering dental articulation areas that will significantly reduce the quality of speech; Not wearing an interim prosthesis leads to increased muscle atrophy and tongue enlargement.

**3. Must Retrain The Tongue:** When the natural teeth are lost, it is crucial that the tongue is allowed to adapt to the prosthesis.

The easiest way to do this is to have the patient practice the use of the musculature and phonetics. My recommendation is for patients to be instructed to speak or read out loud, usually with a book or magazine, for 30 minutes, twice a day.

### SUMMARY:

Times have changed since the early Branemark hybrid days. Patients are more educated about their options and have far greater expectations than in the past. Patients need to be fully informed of the significant difference between natural teeth and a full arch prosthesis. It is imperative the implant clinician educate the patient on the adaptation phase of full arch prostheses. Unfortunately, as patients age, their motor skills and the ability to adapt decreases. With the loss of teeth, speech articulation may be affected by numerous factors. The goal of the implant prosthesis is to restore function and esthetics, but also maintain the patient's phonetics. This is most easily accomplished by wearing an interim prosthesis which closely parallels the original maxillomandibular measurements which will allow all clinical and psychological issues corrected prior to final prosthesis.

<sup>1</sup>Collaert, Bruno, et al. "On speech problems with fixed restorations on implants in the edentulous maxilla: introduction of a novel management concept." *Clinical implant dentistry and related research* 17 (2015): e745-e750.

<sup>2</sup>Bothur, Stefan,. "Initial Speech Problems in Patients Treated with Multiple Zygomatic Implants." *International Journal of Oral & Maxillofacial Implants* 25.2 (2010).

<sup>3</sup>Van Lierde K, Comparison of speech intelligibility, articulation and oromyofunctional behaviour in subjects with single-tooth implants, fixed implant prosthetics or conventional removable prostheses. *J Oral Rehabil* 2012; 39:285-293.

<sup>4</sup>Liddelw FG. *Clinical dental prosthodontics: Phonetics*. Butterworth and Co, Ltd. Publishers 1989; 136-139.

<sup>5</sup>Adaki R, "Acoustic analysis and speech intelligibility in patients wearing conventional dentures and rugae incorporated dentures," *The Journal of Indian Prosthodontist Society*, vol. 13, no. 4, pp. 413-420, 2013.

<sup>6</sup>Martone A. L. „Clinical Applications of Concepts of Functional Anatomy and Speech. Part II –“Musculature of expression.” *J Prosthet Dent* 1962;12:4-27.

<sup>7</sup>Pound E. utilizing speech to simplify a personalized denture service; *JPD*; jan 2006; 1-9

<sup>8</sup>Pound E. Utilizing speech to simplify a personalized denture service. *Journal of Prosthetic Dentistry* 1970;24(6): 586-600.

<sup>9</sup>Chaturvedi S. Speech Considerations, *J Dental Med Sciences*. 2015; 14(17) 34-36.

## QUESTIONS OF THE MONTH

### 1 Prosthetic Question of the Month

It is imperative when fabricating a full arch fixed implant prosthesis to maintain or establish the **ideal vertical dimension**. If an Open or Closed Vertical Dimension results, various complications may occur.

Match the following complications with either:

(a) **Open Vertical Dimension**

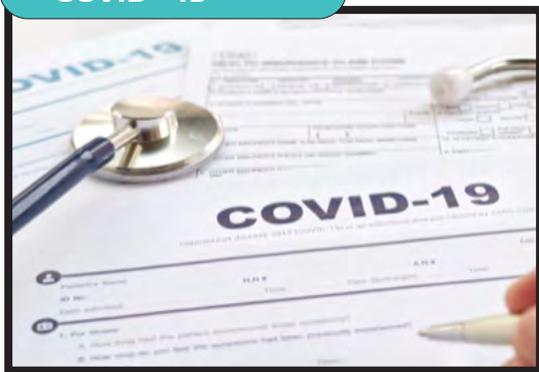
(b) **Closed Vertical Dimension**

1. Loss of Freeway Space
2. Decreased masticatory efficiency and biting force
3. Cheek Biting
4. Speech Problems
5. Facial Soft Tissue Sagging
6. "Clicking" of Teeth
7. Face has an elongated Appearance
8. Angular Cheilitis
9. Acute TMJ Pain
10. Lips are strained when closed together
11. Ear Pressure / Impaired Healing
12. Burning Sensations in Tongue / Throat

### 2 Complication Question of the Month

After a guided bone regeneration surgery in the left posterior mandible, this patient exhibited a significant lip injury. What caused this injury?





The Misch Institute is dedicated to providing a safe, healthy environment for our future meetings. Strict social-distancing protocols will be implemented along with COVID-19 prevention supplies being made available to all staff and attendees. In addition, the Misch Institute has integrated the following CDC recommended strategies and guidelines;

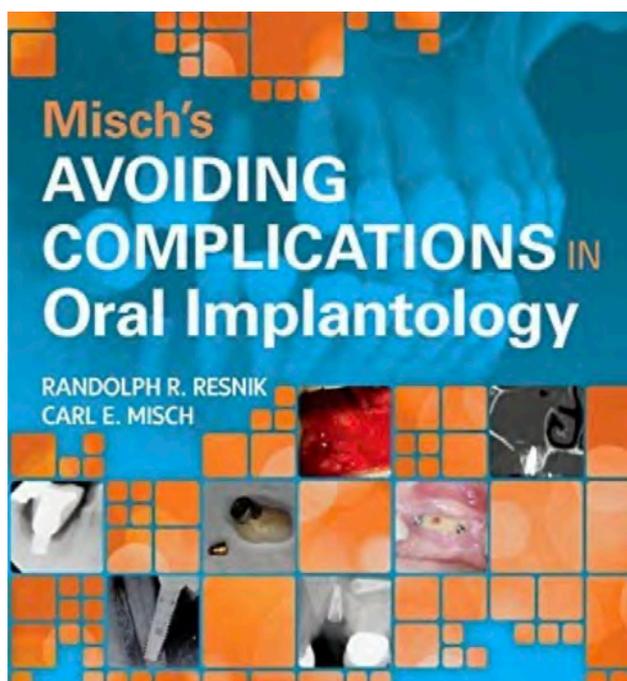
## NEW MEETING GUIDELINES DUE TO COVID - 19

- All lectures will be in an enlarged space (Main Ballroom)
- One attendee per 6-foot table
- Enlarged Exhibitor space and tables
- Hand Sanitizer , Disposable Facemasks, and Trash Baskets available
- Service stations to be sanitized once per hour along with common and high-traffic areas
- Coffee and other breakout times will be served with disposable cups.
- Bottled water in lieu of water carafes on meeting tables
- Temperature evaluation and questionnaire completion prior to meeting

The Misch Institute along with the Margaritaville Resort and Hotel will continually monitor the latest CDC guidelines and implement new policies as necessary. We appreciate everyone's understanding and flexibility with this very difficult situation. If you have any questions, please contact Heidi at 248-642-3199.

~ Randolph R. Resnik DMD, MDS  
Director of Misch Institute

## PUBLICATIONS

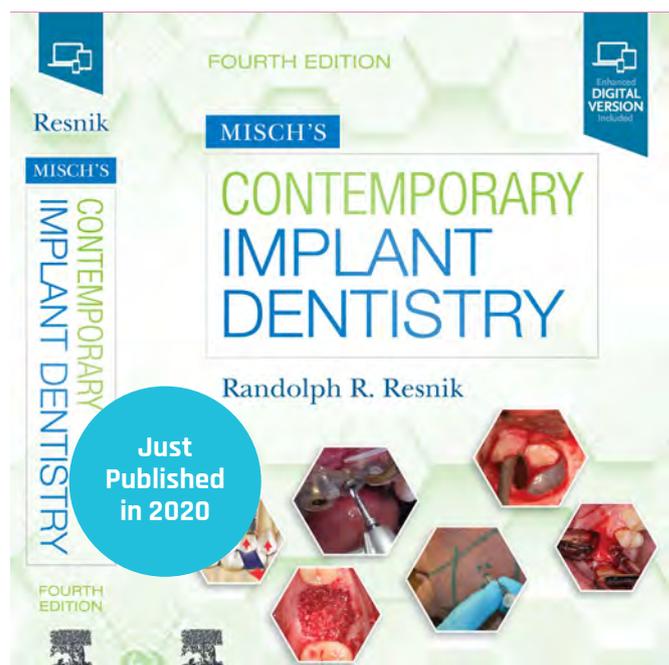


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~ Dr. Rodrigo Cuevas



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25-27  
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## FIXED PROSTHETIC LECTURE TOPICS

- Fixed Occlusal Concepts
- Fixed Treatment Planning
- FP-1, FP-2, FP-3:  
Step By Step Protocol
- Monolithic Zirconia Prostheses
- Lithium Silicate Prostheses
- Screw vs. Cement Prosthetics
- Re-Establish Vertical Dimension
- Biometrics
- Treatment of Parafunction Fixed Prosthesis Cementation Protocol
- Immediate Load Prosthesis
- Progressive Bone Loading for Fixed Prosthesis
- Complications of Fixed Prosthesis

## FIXED HANDS-ON LAB

- Direct and Indirect Impression Technique
- Fixed Prosthesis Insertion Technique
- Multi - Unit Abutment Lab
- PMMA Temporary Prosthesis
- Digital Impressions
- T-Scan Lab
- Progressive Loading
- Resonance Frequency Analysis (RFA)

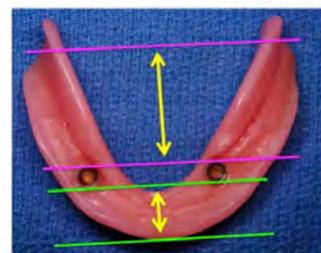


## REMOVABLE LECTURE TOPICS

- Removable Occlusal Concepts
- Removable Treatment Planning
- RP-4, RP-5 Prosthesis  
Step By Step Protocol
- Independent vs. Bar
- Overdenture Attachments
- Screw vs. Cement Prosthetics
- Progressive Bone Loading for Removable Prostheses
- Complications - Removable Prosthesis
- Screw Loosening
- Overdenture Maintenance
- Treatment of Peri- Implant Disease

## REMOVABLE HANDS-ON LAB

- Removable Impression Technique
- Locator Attachment Protocol
- Attachment Abutment Selection
- Digital Impression Technique
- Direct vs. Indirect Attachment Repair
- Full Arch Digital Impression Technique



THE  
DATE IS  
SET!

# MISCH "HANDS-ON" SURGERY COURSE

**DATE:** October 7-8, 2021

**LOCATION:** SmileFaith Advanced Training & Research Institute  
Tampa, Florida



- Patients provided for all attendees
- Florida State License provided for attendees
- Attendees perform live surgery with the assistance of the Misch faculty
- Attendees may select specific surgical procedures to complete:
  - \* Single/Multiple site Implant Placement
  - \* Immediate Implant Placement
  - \* Edentulous Implant Placement
  - \* Extraction / Socket Grafting
  - \* Guided Bone Regeneration
  - \* Sinus Grafting (Crestal & Lateral Wall)

## ANSWERS to the QUESTIONS of the MONTH

### 1 Prosthetic Question of the Month

<b>ANSWER:</b>	1.	A
	2.	B
	3.	B
	4.	A
	5.	B
	6.	A
	7.	A
	8.	B
	9.	B
	10.	A
	11.	B (Costen's Syndrome)
	12.	B. (Costen's Syndrome)



### 2 Complication Question of the Month

**ANSWER:** Handpiece Burn. Be careful of the use of 1:1 straight handpieces, as these handpieces are not reduction handpieces (such as dental implant insertion handpieces). Because they are not reduction handpieces, they usually run at approximately 40,000- 50,000 RPM's which is common for heat generation.