

## **Minimally Invasive Implant Dentistry...Using Narrow, Shorter and Mini Implants**

**Jose-Luis Ruiz DDS, FAGD**

- Statistics show that 69% of adults ages 35 to 44 have lost at least one permanent tooth to an accident, gum disease, a failed root canal or tooth decay. Furthermore, by age 74, 26% of adults have lost all of their permanent teeth.
- Fixed bridges and removable dentures usually need to be replaced every seven to 15 years.

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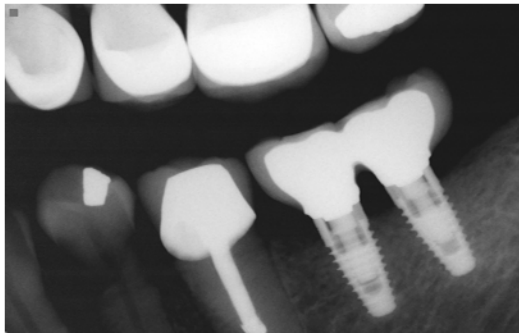
- **Keeping the Patient's Best Interest in Mind...**  
**Who is the "best" professional to perform implant procedures for our patients?**

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Just like in Oral Surgery, Perio & Endo.

### **Good Treatment?**



- 1 year post-op 2009

### **The Trend?**

"Dear, JL, enjoyed your article... I really enjoyed the part about not grafting. In my area of the country, North Carolina, virtually all the perio. and OS graft every case. I see fewer and fewer people accepting implants because this drives up the cost. Thanks for your help. " Dr. Don DiGiulian

### **Bone Augmentation Success?**

- Failure in augmented ridges:
  - 7.5% before loading .... 11.3% during 5 years of function.

**Froum SJ, Dental Implant Complications. 2010 Wiley-Blackwell. Chapter 6; Pag 112**

## Objective of This Course

- Encourage Implementation of Simple Implant Surgery in to a GP practice
- Review research from a clinical dentist perspective, including the latest in knowledge on short, narrow and mini implants
- Proper diagnosis
- Encourage additional training...

### **Benefits to patients if GP's perform simple implant surgery:**

- a) Easier access to care.
- b) Lower cost.
- c) Less teeth will be cut for fixed bridges.
- d) GPs are experienced with simple surgery.
- Keeping the Patient's Best Interest in Mind...

Using The Current Model We Use for Oral Surgery, Perio & Endo ...

- GP's are held to the same standards as specialists.

### **Benefit to a GP Practice**

- Roger Blackwell, PhD, professor of marketing and dean of the business college at the Ohio State University, led his graduate students in researching the future of the business of dentistry. They found that in order for dentists to grow their practices in the millennium, they must be involved in cosmetic dentistry and the placement and restoration of dental implants.

Why should general dentists place implants?

By Jack Hahn, DDS, FAGD Featured in *AGD Impact*, April 2007

### **Specialist Perspective?**

Froum: When first introduced to the profession, endosseous dental implants were performed primarily by oral surgeons and periodontists... as the number of dentists placing implants increases, more dentists who did not routinely perform oral or periodontal surgery...regrettably, in some cases this has resulted in an increased rate of implant-related complications.

**Froum SJ, Dental Implant Complications. 2010 Wiley-Blackwell. Chapter 6; Pag 112**

***The 7 Responsibilities of an Implant Dentist:***

1. To have proper training.
2. To choose the appropriate implant system/s.
3. To perform proper diagnosis, Treatment Planning, Radiographic and Presurgical requirements (Know when to refer)
4. To choose appropriate type & indication for grafting procedure.
5. To establish proper surgical protocol, including managing complications & provisionalization.
6. To choose proper Prosthodontics techniques for fixed and removable cases.
7. To institute long term management of implant patients and complications.

**First Responsibility: To Have Proper Training**

- Current literature indicates that surgery may be divided into two case types: straightforward and complex.
- Educational requirements vary depending on case type.
- Proper Training Is a Journey

**This course suggests a practical and evidence-based implementation protocol for general dentists interested in Implant Dentistry. It is adjunctive and a compilation of relevant literature to help develop a philosophy and a protocol for a dental practice... it should not be considered full training and it should encourage further education.**

**Dr. Jose-Luis Ruiz**

Second Responsibility

Choose the Appropriate Implant System/s.

AO: When considering placing dental implants, the practitioner has a legal and ethical responsibility to choose a medical device which has a sufficient outcome assessment based on published data.

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**It is my opinion that the unnecessary and excessive cost of implants, components and laboratory work, increases the cost of a procedure which must be more accessible to the larger population.**

Jose-Luis Ruiz

## **Choosing Implant, Width & Length**

“A Philosophy Of Treatment”

- Is the Main Stream Philosophy Always Right?!

ACP: “With rapid advancements in soft tissue and bone augmentation, the placement of implants outside the normal anatomic location to support prosthodontics replacement is becoming less acceptable unless there has been informed consent by the patient for alternative implant location and angulation.”

### **Angled Abutment**

- The authors searched the dental literature... finite element analysis and strain-gauge studies indicated that increased abutment angulations result in the placement of a greater amount of stress ... However, survival studies did not demonstrate a significant decrease of prostheses' longevity associated with angled abutments. Furthermore, there was no additional bone loss adjacent to implants that supported angled abutments compared with straight abutments.  
**Cavallaro J Jr, Greenstein G. Angled implant abutments: a practical application of available knowledge.** J Am Dent Assoc. 2011 Feb;142(2):150-8

### **Crown to Implant Ratio**

Gomez-P: Within the limited scope of this study, crown-implant ratios were not associated with recorded peri-implant bone loss.

Birdi: No statistically significant relationship was observed between increasing crown-implant ratios...

**Gómez-Polo M, BartensF, et al. The Correlation Between Crown-Implant Ratios and Marginal Bone Resorption: A Preliminary Clinical Study.** Int J Prosthodont. 2010; 23(1)33-37

**Birdi H, Schulte J, Kovacs A, Weed M, Chuang SK. Crown-to-implant ratios of short-length implants.** J Oral Implantol. 2010;36(6):425-33

### **Narrow Implants**

- Geckili: 159 NDIs belonging to four brands...overall success rate of 98.74%.
- Arisan: NDIs can be used with confidence where a regular diameter implant is not suitable. No implant fractured.

**Impact of implant length and diameter on survival rates**

- 53 human studies fulfilled the inclusion criteria...More recent publications with an adapted surgical preparation, new implant designs and adequate indications have demonstrated that implant survival rate and diameter have no relationship. **Renouard F, Nisand D. Impact of implant length and diameter on survival rates. Clin Oral Implants Res. 2006 Oct;17 Suppl 2:35-51**

#### **Surgical advantages of narrow implants.**

- Leave more bone on facial and lingual of the implant.
- Allow more surgical placements in narrow bone
- Allow more placements without bone augmentation surgery
- Decrease chances of surgical perforations of buccal and lingual plates
- Less expensive and less painful.
- With higher success than bone augmentation option.

#### **Ideal Implant Length?**

- Misch: Three dimensional analysis demonstrate that for an implant with direct bone contact, the greater magnitude of stress is concentrated in the crestal 5mm...as a result, under some clinical conditions, stress transfer pattern to the bone maybe similar between short and long implants. Other recent reports in the literature also support the use of short implants.

These studies indicated that there is no significant difference in the reported survival of short versus long implants. Failure of 59 of 2,573 short implants at 1 year was recorded, with 71% of them failing before loading. Only 101 short implants were followed for 5 years. **Int J Oral Maxillofac Implants. 2012 Nov-Dec;27(6):1323-31. Survival of short dental implants for treatment of posterior partial edentulism: a systematic review. Atieh MA, Zadeh H, Stanford CM, Cooper LF.**

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- “a short or wide implant may be considered in sites thought unfavorable for implant success, such as those associated with bone resorption or previous injury and trauma. While in these situations implant failure rates may be increased, outcomes should be compared with those associated with advanced surgical procedure such as bone grafting, sinus lifting, and the transposition of the alveolar nerve” . . **Renouard F, Nisand D. Impact of implant length and diameter on survival rates. Clin Oral Implants Res. 2006 Oct;17 Suppl 2:35-51**

- Misch: “Most bone augmentations are not as predictable as implant integration in existing bone volumes. ...Complications are more common than implant surgery... discomfort following bone augmentation is usually more than that which occurs after implant surgery”

### **Surgical Benefits of Shorter Implants**

- Decrease chances of surgical perforations of buccal and lingual plates.
- Decrease chances of injuring vital structures.
- Allow more placements without bone augmentation surgery.
- Less expensive and less painful.
- With equal or higher success than bone augmentation
- Short Implants and Occlusion

Misch: (15% failure...with implant shorter than 10mm when occlusally loaded) “Mechanical complications of the implant components or prosthesis outnumber surgical failures...these complications are found more often in bruxism (male) when opposing implant prosthesis and with group function occlusion”

### **3. Perform Proper Diagnosis, Treatment Planning, Radiographic and Presurgical Requirements (Know When to Refer)**

Proper Diagnosis Includes...

- Medical & Dental History.
- Comprehensive Oral Exam, including occlusal considerations.
- Appropriate Radiographic Records and Pre-surgical Work-ups.
- Patient/case Selection!!!

Higher risk of failure:

- Smoking
- Diabetes
- Periodontal Disease
- Osteoporosis
- Radiotherapy
- Immuno compromised

- Smokers
- Medical Considerations: Diabetes
- **Bisphosphonates**

Madrid: From the analysis of the one prospective and the three retrospective series (217 patients), the placement of an implant may be considered a safe procedure in patients taking oral BPs for <5 years.

- **Autoimmune** Crohns disease 8x higher failure, Patients taking large doses of cortisone, have higher risk of failure
- Extreme Caution with Medically-Compromised Patients... Refer To Specialist
- Always medical clearance in writing for medically compromised patients.

Proper Diagnosis

- Medical & Dental History.
- Comprehensive Oral Exam, including occlusal considerations.
- Appropriate Radiographic Records and Pre-surgical Work-ups.
- Patient/case Selection!!!

**When is Occlusion Important?**

- **7 Signs and Symptoms of Occlusal Disease-**
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Is Cone Beam CT Standard of Care?

- *AO: CBCT now fulfills the requirements to be considered a standard of care in the diagnosis and planning of implant treatment... **The incorporation of CBCT machines into some dental practices, and their subsequent use and reporting on the acquired field of view, is of concern to radiologists and authorities responsible for radiation protection.***
- **AO: Every CBCT examination requires justification that it will add new information to aid diagnosis...**
- Surgical stent fabricated from CBCT are not perfect, and stents have a 1-2 mm inaccuracy...be careful
- CBCT on cases with multiple implants or Single Tooth Close To Vita Structures

Patient Selection: ***We have the option to choose only simple cases!!!***

Complications occur with:

- Highly-esthetic cases.
- Very thin or short ridges.
- Medically compromised patients.
- Poor bone quality.
- Immediate placement.
- Extensive implant rehabilitations.
- Proximity to vital structures.
- Difficult demanding patients.
- 3. Informed Consent

**Informed Consent is A Must!!!**

- Implant Survival ≠ Implant Success

Forms of implant complications:

- Only 61 % were free of complications after 5 year.
- With in 5 years 24.9% cemented restorations lost retention.
- Studies show that 2 out of 3 implants in the esthetic zone have between 1-2 mm of facial recession.
- Studies on per-implant disease also show that at least 25% to 50%of patient experience per-implantitis or per-implant mucositis.
- Implants Survive...but Esthetic Failure

Thank you

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