

What would you do?

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1. Case Presentation

R.O.



1. Case Presentation

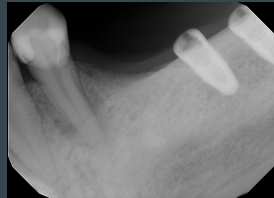
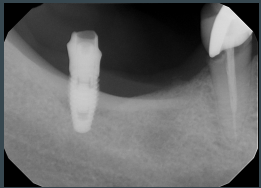
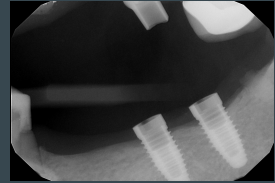
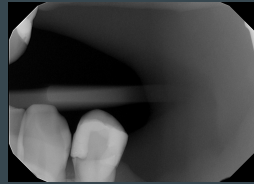
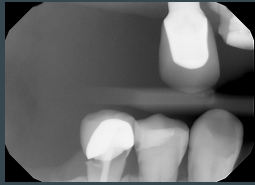
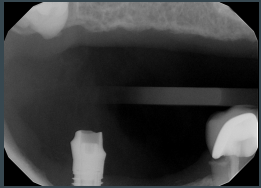
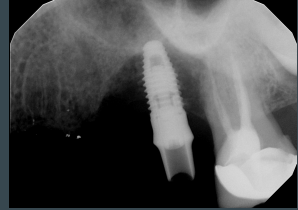
40 y.o male patient

CC: “I want to look normal with normal teeth.”

MED HX: Methodone, recovering heroine addict.

DENT HX: Got several implants 8 years ago at a dentist. Returned a few months later to get the crowns, but the dentist was gone. Got a set of stayplates at Western Dental.

1. Case Presentation - FMX



1. Case Presentation - Problem list

- Multiple edentulous sites
- Open margins on existing crowns
- Unrestorable caries
- Ill-fitting existing stayplates
- Unrestored and failing implants!!!!
- ZERO money

Considerations -

- He is only 40 years old (38 at the time I met him)
- Recovering drug addict, seeking to get his life back in order
- UCSF is his last resort and hope



2. Treatment Options (cost not including implant removal - \$1500/implant)

Options	Risk (Cons)	Benefits (Pros)	Cost	Timeline
No treatment	- Infection, Further bone loss from infections. - His esthetic concern.	- No cost	0	No
Upper Complete over Lower removable partial denture.	- Poor design of tissue-borne RPD can make the lower dentition loose and he might need another lower complete denture soon. - Cost	- Save natural teeth on the lower. - Abutment will help the RPD with retention, stability and support.	\$\$	7 to 10 appointments

2. Treatment Options (continued)

Options	Risk (Cons)	Benefits (Pros)	Cost	Timeline
Complete denture over lower implant-retained denture.	-Cost associated w/ Potential need of additional implant on the lower right. Patient needs to comply with oral hygiene.	-Better retention, stability and support of lower denture -Retained implant can help maintain buccal bone contour.	\$\$\$\$	7-10 appointments or more.
Explant all the implants and fabricate complete over complete denture	-Explant the well-integrated implants can associate w/ complications such as bone fracture. -Retention, stability and support of lower complete denture.	-Less needs to keep up with oral hygiene because no more retained implants. -Once all the retained implants are explanted. The case will be more straightforward and can be more predictable.	\$	6-9 appointments

2. Treatment Options (continued)

Options	Risk (Cons)	Benefits (Pros)	Cost	Timeline
Leaving well-integrated implant and fabricate upper complete denture and lower implant over denture.	-Cleansability on the retained implant. Less predictable because you don't know when the #18, #19 implant can fail without adequate care.	-Patient might get a dental fund in the future and can utilize the #18 and #19 implants. -Retained implant can help maintain buccal bone contour.	\$	7-10 appointments
Fabricate immediate dentures instead of regular dentures	- Denture can be loose over time as bone remodels after extractions. - require reline - Potential need of new denture	- Less appointments before patient receive the dentures.	\$	3-4 appointments

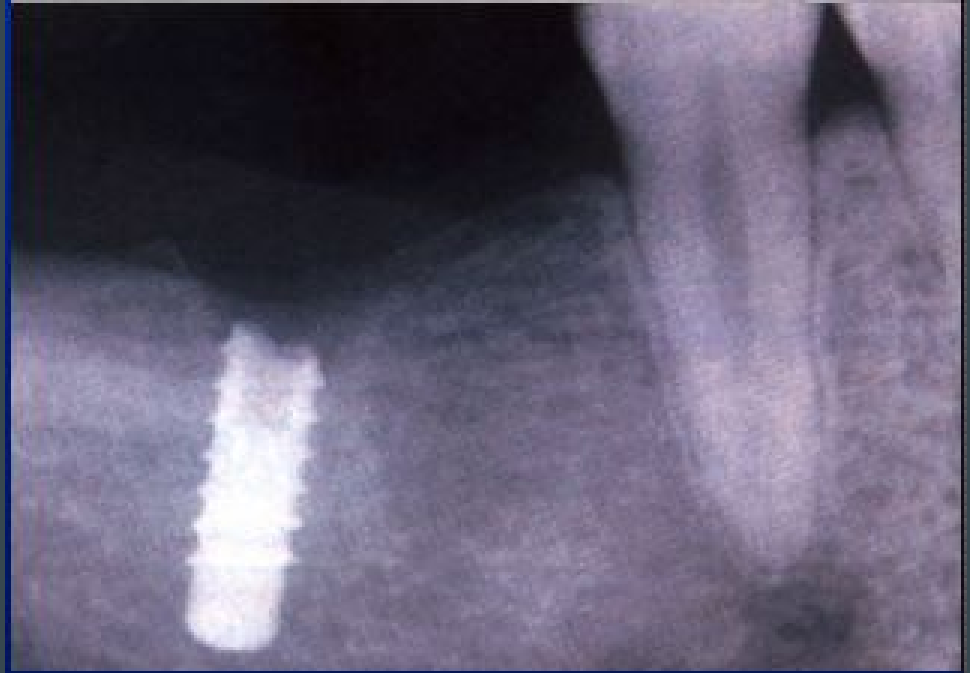
3. Implant complications

Reversible:

1. screw loosening
2. screw fracture
3. abutment fracture
4. porcelain fracture
5. resin fracture

Irreversible

1. bone loss
2. loss of osseointegration
3. implant fracture



3. What causes implant failures?

1. Failures in Technique

- a. Faulty placement of implant creating compromised prosthetic design
- b. Air embolism during drilling
- c. Generating high temperature during drilling
- d. Displaced components, screws, & screwdrivers
- e. Violations of vital structures (mandibular canal contents, mental foramen, maxillary sinus, nasal fossa)



3. What causes implant failures?

2. Improper loading:

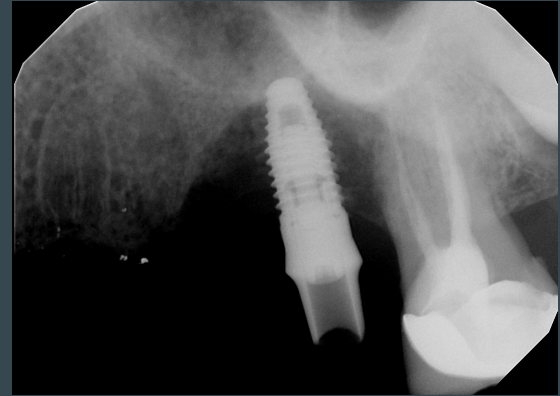
- a. Consider patient's occlusion, position of abutment in the arch, direction of load forces, nature of opposing arch.
- b. Bruxism, clenching, tongue thrust
 - i. Implant healing failures may result from micro-movement of the implant from too much stress
 - ii. Early crestal bone loss may be related to occlusal overload conditions.
 - iii. Prosthesis or abutment screws may become loose from bending or



3. What causes implant failures?

3. Infection

- a. Host factors (vascularity, immune system)
- b. Implant factors (contaminated implant)
- c. Microbial factors (quantity, type, virulence)
- d. Surgical (failure to use aseptic techniques)



4. How to ensure success

1. Patient selection

- a. Medical history - Immunocompromised, use of bisphosphonates, uncontrolled diabetes, radiation therapy, smoking
- b. Dental history - Reason for loss of tooth, caries risk, willingness to participate in care
- c. Psychological status and expectations

4. How to ensure success

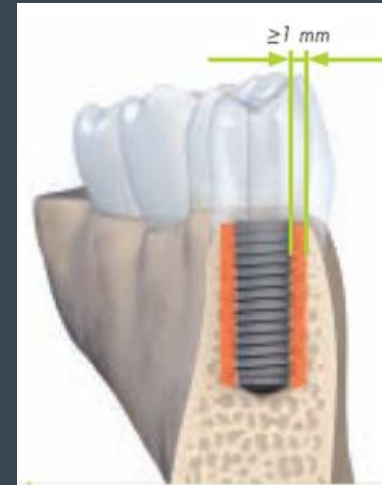
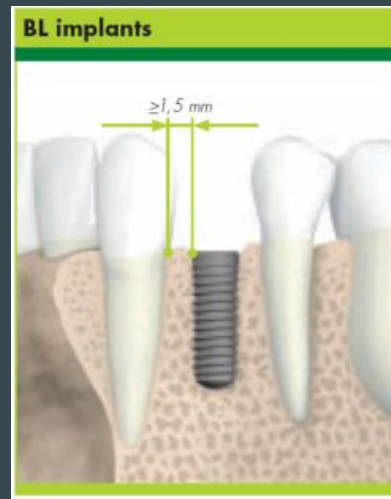
1. Proper treatment planning

a. Soft tissue

- i. Overall condition of the tissue, amount of keratinized tissues, thickness, depth of vestibule

b. Hard tissue

- i. Skeletal features and occlusion, availability of native bone and its quality, bone contours
- ii. Proper spacing



5. Clinical indices for evaluating dental implants

1. Pain

- a. Once implant has achieved primary healing, absence of pain under vertical and horizontal forces is a primary subjective criteria of success.
- b. Pain does not occur unless the implant is mobile and surrounded by inflamed tissue OR has rigid fixation but impinges on a nerve.

2. Mobility

- a. Rigid fixation - absence of mobility with forces under 500 g

3. Radiographic crestal bone loss

- a. In comparison to marginal bone level at the time of implant insertion

4. Probing depths

- a. Little diagnostic value unless accompanied by signs or symptoms

Table 1. Health Scale for Dental Implants*

Implant Quality Scale Group	Clinical Conditions
I. Success (optimum health)	a) No pain or tenderness upon function b) 0 mobility c) <2 mm radiographic bone loss from initial surgery d) No exudates history
II. Satisfactory survival	a) No pain on function b) 0 mobility c) 2–4 mm radiographic bone loss d) No exudates history
III. Compromised survival	a) May have sensitivity on function b) No mobility c) Radiographic bone loss >4 mm (less than 1/2 of implant body) d) Probing depth >7 mm e) May have exudates history
IV. Failure (clinical or absolute failure)	Any of following: a) Pain on function b) Mobility c) Radiographic bone loss >1/2 length of implant d) Uncontrolled exudate e) No longer in mouth

4. Treatment options for failing implants

Goals: determine etiology of failing implants, remove sources contributing to failure (systemic, bacterial), regenerate bone around implant

- 1) Peri-implantitis
- 2) Broken/loose implant components
- 3) Hopeless implants

Peri-mucositis/Peri-implantitis treatment

1) Non-surgical:

a) Local debridement:

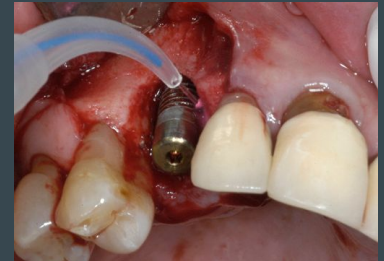
- i) hand scalers, rubber cup, ultrasonic, air polishing
- ii) Implant-specific instrumentation w/ plastic, silicone, resin/carbon tips
- iii) Ultrasonic PEEK plastic tip and air polishing w/glycine powder were shown to be superior in removal of biofilm when compared with curettes and rubber cups

b) Surface decontamination:

- i) Er:YAG laser, air polishing, gauze soaked in saline or chlorhexidine, photodynamic therapy
- ii) Elimination of bacteria from the titanium implant surface
- iii) Long-term reduction in bacteria questionable

c) Adjunctive anti-microbial therapy:

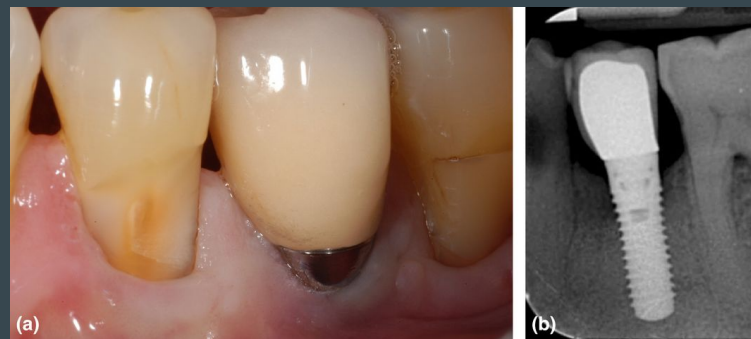
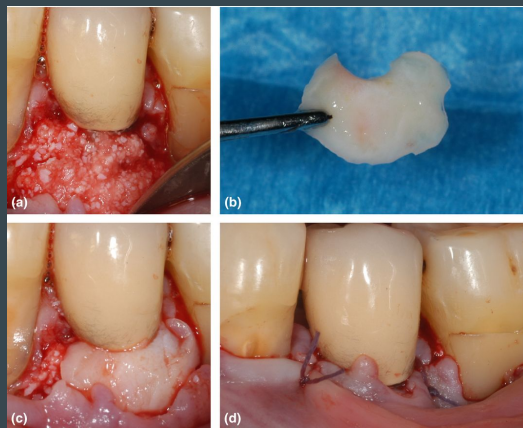
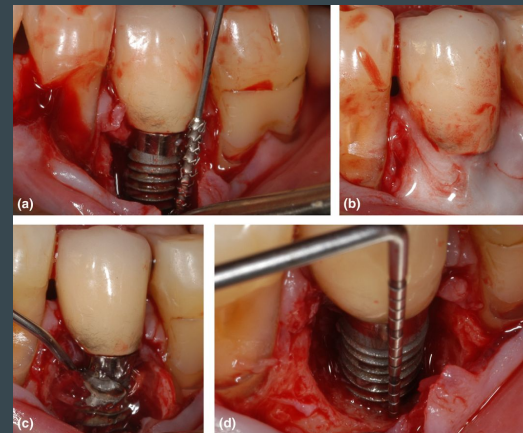
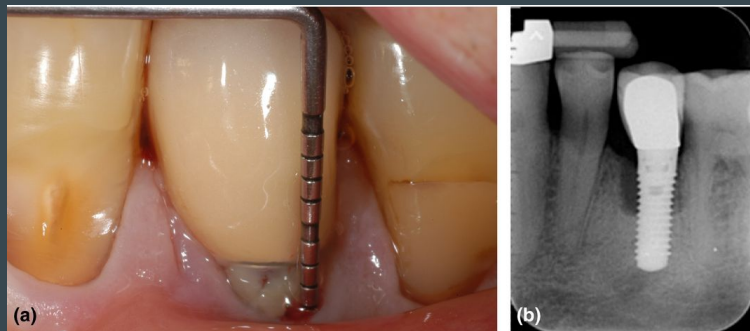
- i) Tetracycline fibers, minocycline spheres,
- ii) May be more effective when PD >5mm are present
- iii) Use of antimicrobials is controversial



Peri-implantitis treatment

2) Surgical

- a) Treatment for peri-implantitis usually requires surgical methods
- b) Bone grafts w/wo membranes, membranes alone, access flap for debridement
 - i) Bone grafts w/membranes have shown significantly greater amounts of bone regeneration and re-osseointegration
 - ii) All procedures utilize debridement of implant and peridontium after flap exposure to remove infected tissue and to disinfect the implant surface
 - iii) Case selection is important



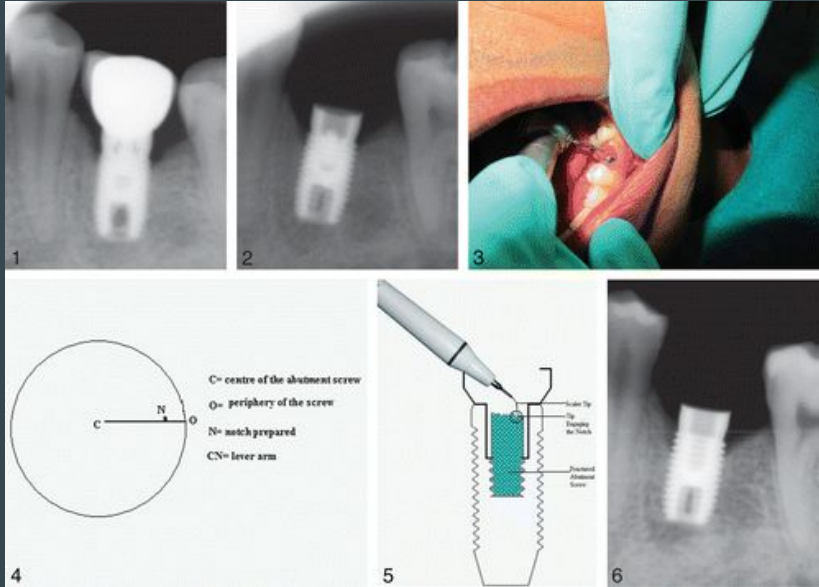
Successful treatment of peri-implantitis

- 1) Reduction in clinical signs of inflammation
- 2) Pocket depth reduction, CAL gain
- 3) Bone regeneration, bony defect resolution

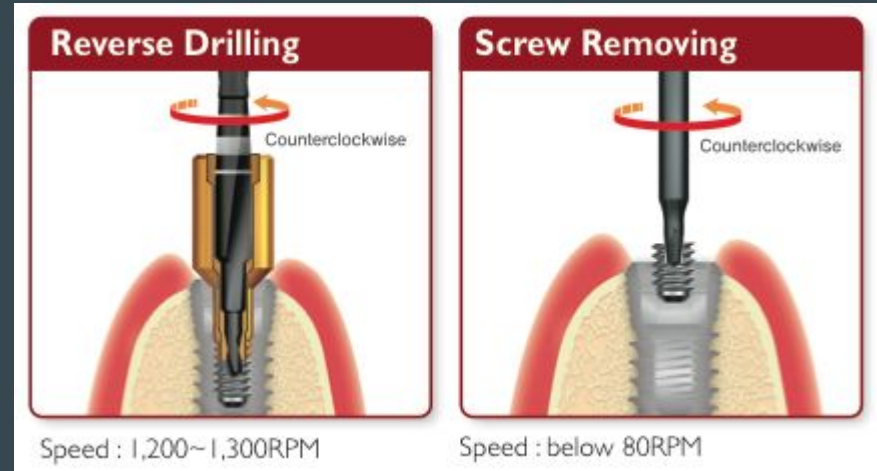
Numerous studies indicate that maintenance of the periodontium is essential to achieve long term success with treatment of peri implantitis

Broken implant components

Abutment/screw fracture:



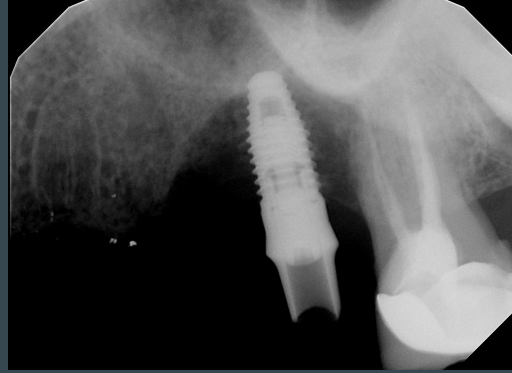
Rotate engaged instrument in anti-clockwise direction



Implant fixture and screw removal kit

Hopeless implants

- Fractured implant
- Osteointegration failure
- Advanced bone loss



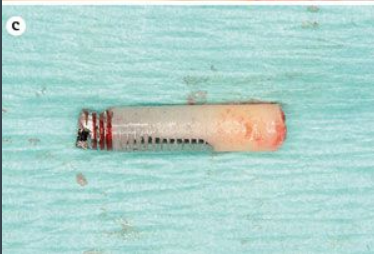
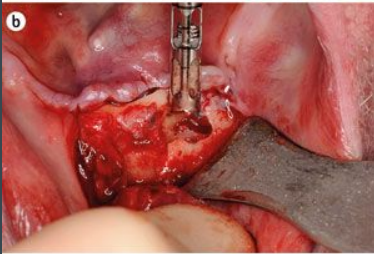
Implant removal techniques:



Retrieval of fx implant with counter torque ratchet tool kit

-Internal fixture removal screw is attached to fixture removal tool, then the torque wrench is turned in an anti-clockwise direction, up to 300N (reverse torque)

Implant removal techniques:

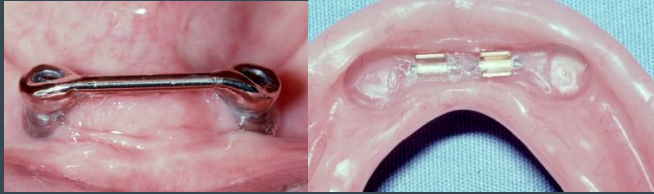


Removal of implant with trephine bur

- More invasive
- Bone is removed around the implant
- Use the smallest trephine bur that does not engage the implant
- Bone augmentation may be necessary

5. Overdenture, implant retained denture

- Factors: Number of Implants, Position of Implants in the arch, A-P Spread, Cost
- Prosthetic options: Tissue, Implant & Tissue, or Implant supported (6+, large AP sp)
- Tissue supported overdenture: 2 ant implants: stability & retention /ridge: support



- Implant and tissue supported: support by both implant and ridge (3+ implants): AP sp

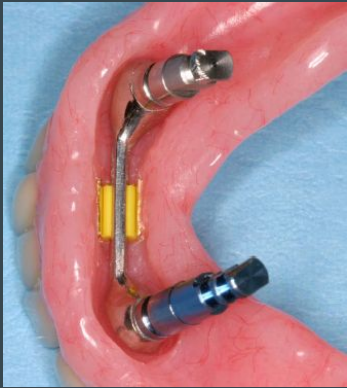


5. Overdenture, implant retained denture

➤ Bar attachment Overdenture:

**Allows bar rotation along a fulcrum, perpendicular to sagittal plane

→ Obtain posterior support from edentulous ridge



5. Overdenture, implant retained denture

Single implant: Ball attachment



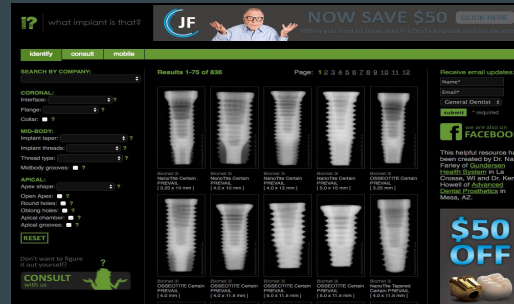
3 yr results: 90 % repairs with ball attachment group,
6.7 repairs per person in ball group vs. 0.8 in bar group (*MacEntee et.al. JPD 93:28, 2005*)
→ get consent form!!

What did we end up doing?

1. Extraction of all remaining dentition and removal of implants #7, 14, 30 at SFGH for \$50/implant.



2. Place healing abutments over implants #18 and 19.
- whatimplantisthat.com



3. Deliver immediate upper and lower dentures.



Happy Patient!

Before



After



Happy Patient!

Before



After



Discussion Questions

1. Have any of you had cases of failed implants? How did you approach the case?
2. What would you do if you encounter a patient with limited resources?

6. References

- Lecture: Implant Surgical Complications - 2015
- Lecture: Surgical Treatment Planning of Implants
- Lecture: Implant Treatment Planning and Patient Selection
- Lecture: Implant
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