
“I’ve got a screw loose.”

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Background

66 y.o. Female presents with--

CC: "My implant tooth is loose."

Hx CC: #11 implant was placed by an oral surgeon and restored by private general dentist 3 years prior. Pt noticed loose fit 1 year ago without worsening mobility. No pain.

Med hx: HTN. Depression. Insomnia.

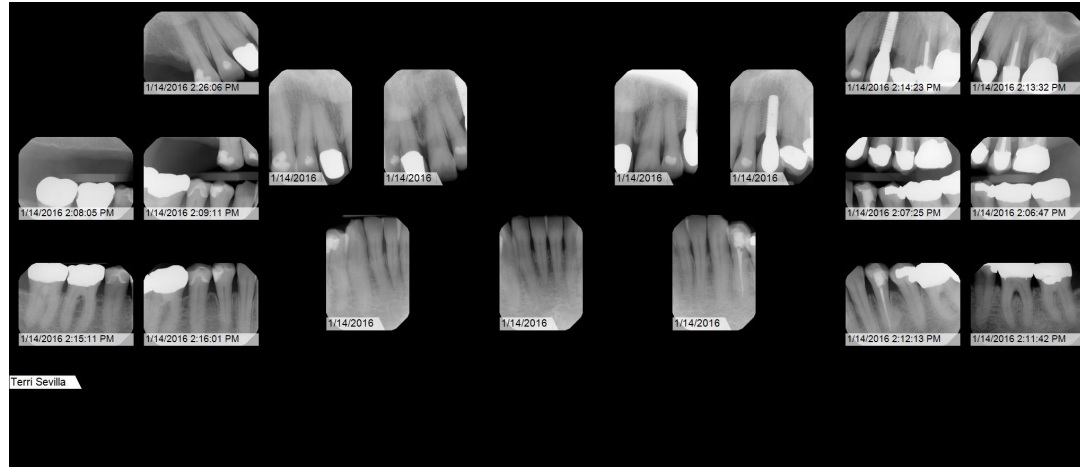
Meds: Amlodipine, losartan, effexor, trazadone, chantix

Social hx: Smoker- 10 cigs/day

Dental hx: Clenches/grinds, 7/10 dental anxiety, recent ext #13, 14 due to localized severe periodontal disease. Brushes 1x/day, flosses 3x/day.



Findings



- Missing teeth: #1, 2, 3, 4, 5, 11, 13, 14, 15, 16, 17, 32 (#13 and #14 extracted after this FMX)
- Perio: Reduced periodontium w/localized chronic severe perio #18, 19
- Multiple full coverage restorations, direct composite restorations
- Stayplate replacing #'s 1-5 given by the private gen dentist after implant, that pt does not wear regularly

Findings

- Implant: 3.3mm Strauman NCSL active 12mm TiZr
- Abutment: 4.8 x 3.5mm Strauman- Zirconia Custom
- Crown: Screw retained porcelain fused to zirconia



- EO/IO/TMJ: WNL
- Xerostomia
- No peri-implantitis



Peri-Implantitis

An inflammatory process in the soft and hard tissue surrounding an osseointegrated implant resulting in bleeding on probing, bone loss, and suppuration.

Risk Factors

- Smoker
- Poorly controlled diabetes
- Poor oral hygiene
- Hx of periodontal disease
- Residual cement
- Occlusal overload (bruxism)
- Premature loading/lack of primary stability

What to look for?

- Bleeding on probing
- Suppuration
- Increasing periodontal pocket
- Radiographic bone loss around coronal portion of implant
- Mobility



****Implant did not show signs of peri-implantitis**

Ethical Concerns

How should you approach this patient?

1. Urge the patient to return to previous dentist, who is familiar with patient's treatment plan
 - a. Patient declined to do this
2. What if the implant failure was the fault of the previous dentist?
 - a. ADA Code of Ethics: "Patients should be informed of their present oral health status **without disparaging comment about prior services**"
 - b. You can consult with the previous dentist to determine circumstances and conditions of previous treatment
 - c. If concerns are serious, you (the dentist) can suggest that the patient contact the state or local dental society's peer review

Informed Consent for Treatment

“Dentist has the obligation to obtain fully informed consent of patient or guardian PRIOR to treatment, or the use of any identifiable artifacts (such as photographs, X-rays, study models, etc) for ANY purpose other than treatment”

- What about use of radiographs and photos for case presentations? Must patient give informed consent?
- Explanation of treatment: proposed treatment, reasonable alternatives, risks of not performing those treatments, and expected costs

Source: CDA Code of Ethics

Informed Consent for Treatment

In this case:

- Proposed treatment: remove implant crown
 - Challenge of proposing a treatment plan before you have identified why the implant is failing
 - May consist of replacing implant AND crown, or just crown
- Reasonable alternatives: do nothing, refer patient to specialist or previous provider
- Risks:
 - Implant may or may not be savable
 - Risks of doing nothing: problem may persist or worsen, leading to complete failure of implant

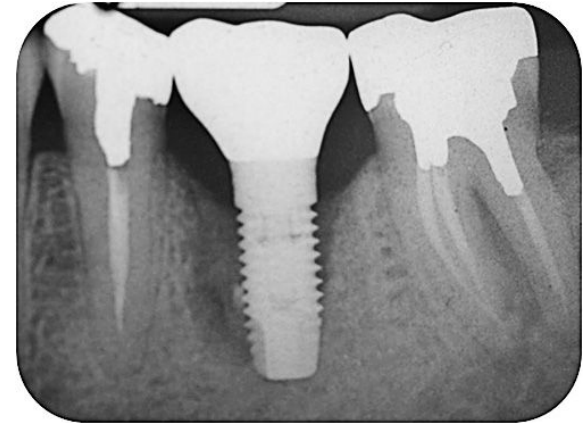


Why do implants fail?

Loss of integration:

This type of failure occurs mostly before loading the implant with the definitive restoration and minimal resources have been spent on the prostheses. The major clinical problem in these situations is delay of completion of treatment and patient management. When non cylindrical implants are used, more trauma is caused on removal; this can lead to severe hard and soft tissue loss. Reconstruction of these defects may require multiple surgeries. Placement of non cylindrical implants should be avoided for this reason

A more difficult problem to manage is when there is bone loss that occurs on an integrated implant often referred to as peri-implantitis; this often manifests after the definitive restorations have been placed. This type of bone loss is usually progressive in nature



Why do implants fail?

Positional failure

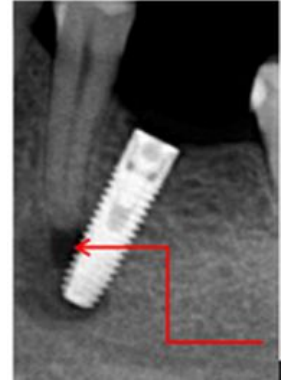
The most common type of failure is caused by poor treatment planning and/or poor surgical execution. Implant placement must be controlled and precise in order to support tooth like restorations, the restoration should guide implant placement and planning for implant placement must take into account the form and position of the restoration

Soft tissue problems

The soft tissue frames the restoration — careful management of soft tissue must be considered from the time extractions take place if the tooth to be replaced is still present. Even a well placed implant will not allow good aesthetics if the soft tissue is not present or not managed well with the use of provisional restorations

Biomechanical failures

These types of failures range from loosening of screws to breakage of implant components and implants. These types of failures can be avoided with proper treatment planning, a good understanding of screw joint mechanics and knowledge of the implant system used.



How to Prevent Implant Failure

- Proper treatment planning:
 - Patient selection: expectations and medical history
 - Complete records
 - Study models
 - Oral hygiene and periodontal health of patient
 - Adequate ridge thickness, bone height, and space for implant and crown
 - Functional load on implant
 - Surgical stent fabrication
 - Images: CBCT, Pano, FMX
 - Coordination between specialist and restorative dentist if needed

Components of Implants

Abutments

Method of retention of prosthesis

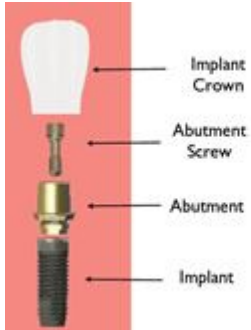
Screw retained
Cement retained

Methods by which abutment is retained
to the implant

Screw in
Friction fit
Cement

Straight
Angled

Stock
Custom



Cement vs. Screw Retained

Diagram 1

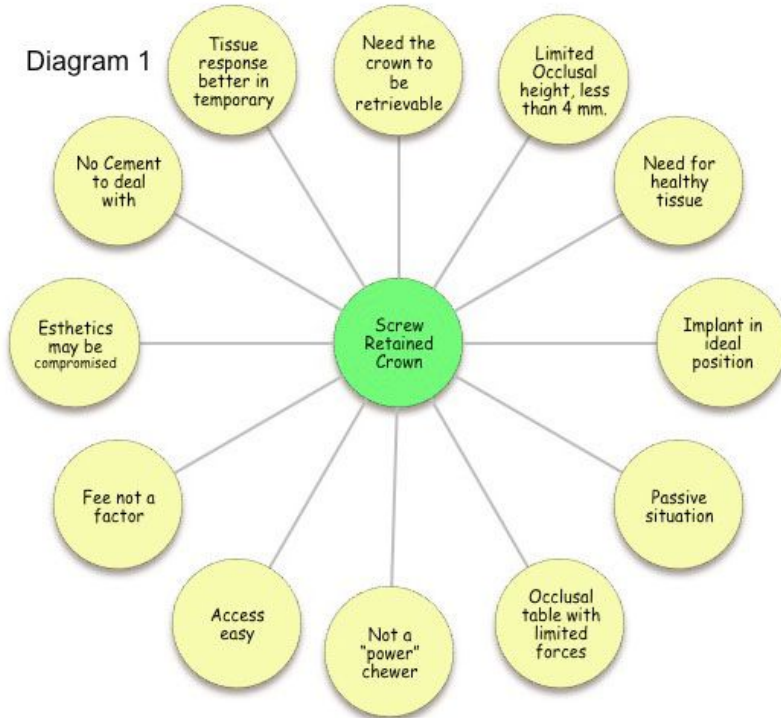
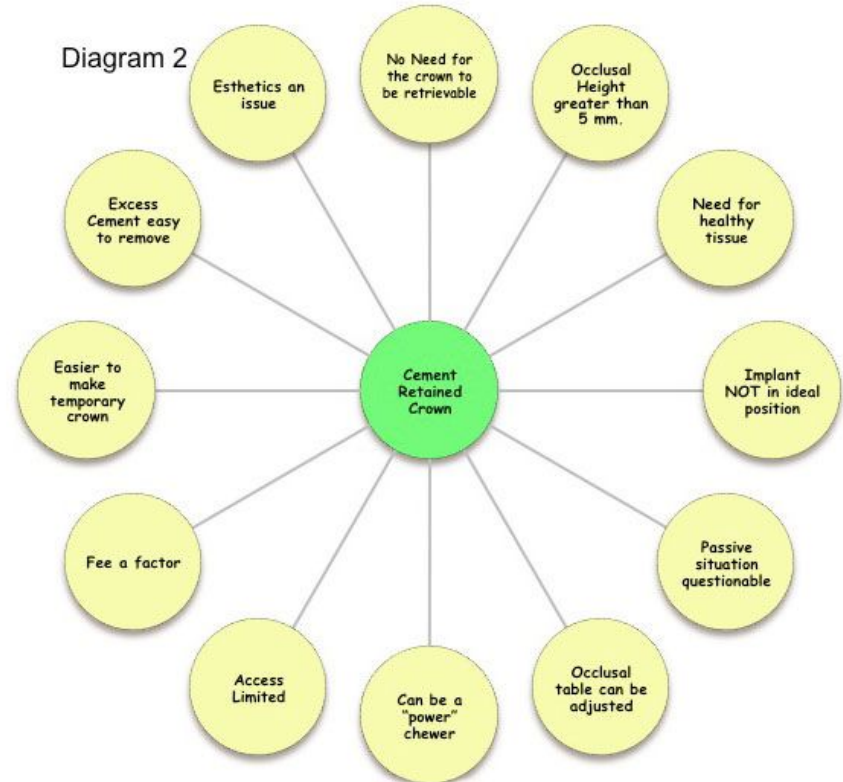
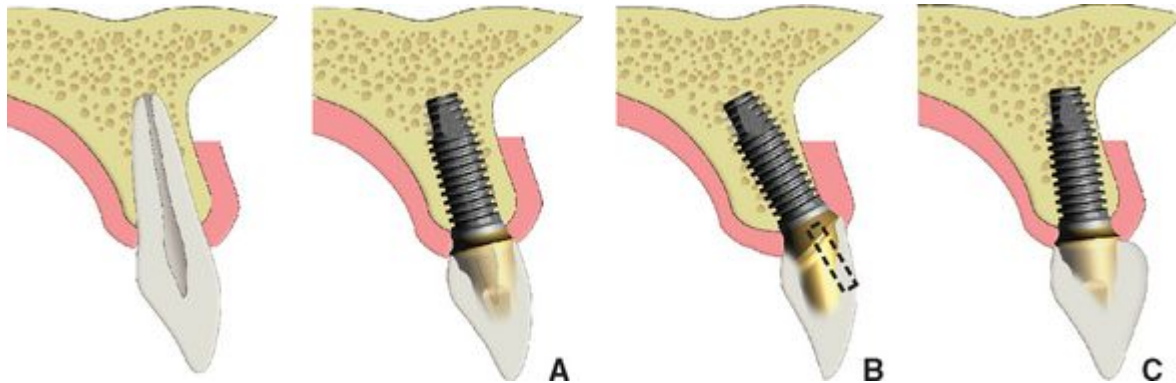


Diagram 2



Limiting Factors for Anterior Single Tooth Implant

- Age limitations
- Mesio-distal space
- Bone height
- Challenging aesthetics
- Crown height space



Restoring Anterior Implants: Considerations

Cement-retained implant crowns are more commonly used compared to screw-retained crowns except:

- If retrieval is planned
- If cement management is too difficult, therefore higher chances of peri-implantitis
- Or if interocclusal space is limited

Restoring Anterior Implants: Considerations

- Premature contact or hyperocclusion have shown to cause bone loss and lead to implant failure.
- No posterior support results in greater force on the anterior teeth and therefore restoring anterior teeth with implants in patients with no posterior support is not recommended.
- Posterior missing teeth should be restored before addressing the anterior implant restoration

What actually happened?

Patient concerns:

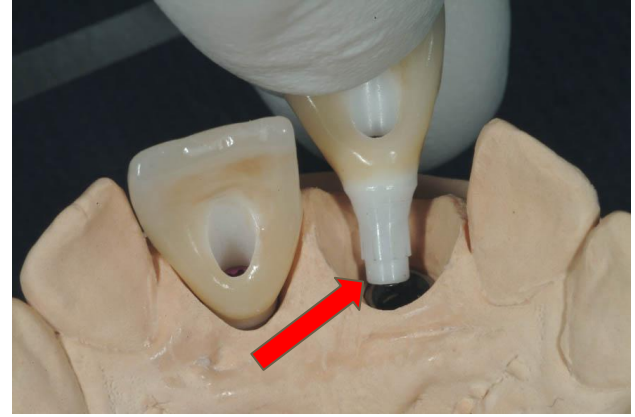
- Patient did not trust previous dentist and refused to go back to him to evaluate #11 implant.
- Pt gave us her oral surgeon's phone number so we can call and consult about the current implant. After speaking to oral surgeon, she said she needed a dentist to remove the crown to determine if the crown is defective or the implant because it's not clear whether the implant is failing or the crown.

Due to clinic policies, referred to AEGD where resident went over RBAC and the possibility of irreversibly damaging implant crown/screw if we try to remove crown blindly. While drilling for screw, crown may be damaged to the point where no crown can be replaced temporarily.

Resident made essix retainer to replace #11 just in case implant crown fractures during removal.

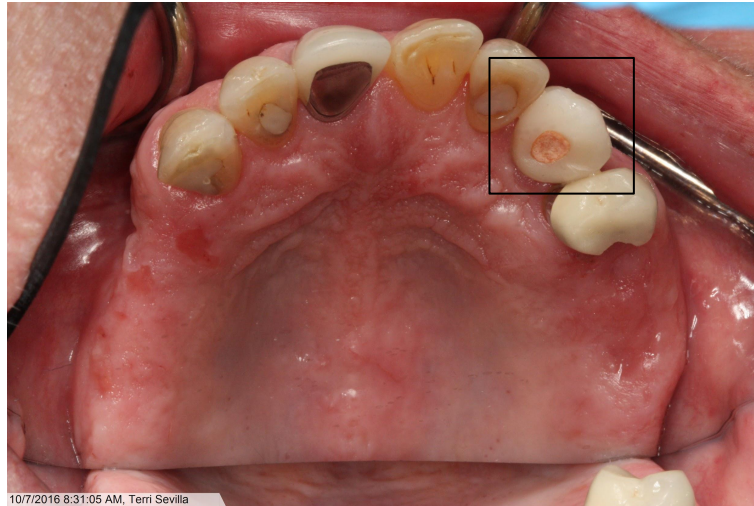


Accessing the screw



- Used diamond crown burs to drill through porcelain of implant crown from lingual approach similar to endo access. Going very carefully to not damage the screw, accessed, unscrewed and removed crown with zirconia abutment.
- Fracture of zirconia abutment was evident at the very tip - at interface between implant and abutment.

- By using thumb and forefinger with one hand and implant driver in the other, checked to see if there was any mobility of implant. No mobility was detected. Determined **fractured abutment was cause for looseness.**
- To temporize, we tried on essix retainer, however due to uncomfortable fit and esthetics, pt was not comfortable with wearing it.
- Decided to re-screw abutment and crown with old screw and fill access with pink Fuji as temporary.



After re-tightening implant crown, it no longer felt loose.

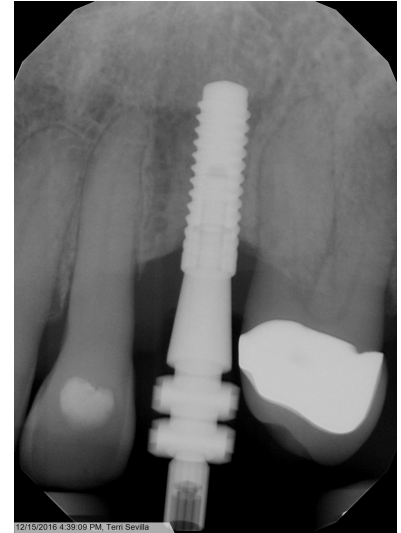
Treatment Options Presented:

1. Do nothing: wear stayplate, risk loosening implant crown, breaking screw and causing choking hazard, not long term solution
2. Obtain new screw, replace old screw, place final restoration (Cp), adjust stayplate, low cost, potential for failing again
3. New implant crown and new partial, long term solution with best prognosis (PFM crown with metal abutment), most expensive

Pt chose #3 - new crown and new partial to have best long term solution

New PFM Straumann Crown and Abutment

- Took final impression with heavy body and light body using open tray technique
- Sent to lab to fabricate new PFM crown
- Tried in crown, took xray to confirm seating and torqued
- Adjusted occlusion to avoid any forces causing fracture
- Re-established posterior support by fabricating bilateral extension based maxillary partial denture



The End

Learning considerations:

- Establish posterior support before restoring anterior missing teeth with implants. Make sure pt is compliant in wearing denture to prevent fracture.
- PFM vs zirconia abutment and crown (Is metal stronger than zirconia?)
- Do not re-screw or use old screw in tightening implant (risk for stripping)
- Adjusting occlusion on anterior implant crown to prevent any forces