**Case Presentation**

**Age & Gender:**
- 62 years old female

**Overall Health:**
- Good

**Oral Hygiene:**
- Fair

**Chief Complaint**

“I hate my upper denture. I can’t taste food. I want an implant solution”

**Medical History**

*Hx of Smoking*
- 5 cigarettes per day

*Systemic Disease*
- Osteoarthritis

*Medication*
- Celebrex (for a few years)

**Intra-oral Pictures**

- Front View With Prosthesis: Maxillary complete Denture; Fabricated 2 years ago
- Front View Without Prosthesis: Residual ridge resorption; Pre-maxilla: flabby tissue; Existing teeth: J03-J06 restored; Plan of occlusion → X

**Intra/Extra-oral Pictures**

- Occlusal View: Ridge resorption, pre-maxilla; Adequate ridge width: posterior

**Radiographic Findings**

- Detachable Implant-supported FDP

**Possible Treatment Options**

- Implant-retained Overdenture
- Implant-supported Overdenture
- Detachable implant-supported FDP

**Advantages vs. Disadvantages**

<table>
<thead>
<tr>
<th></th>
<th>IS-FDP</th>
<th>IS-Overdenture</th>
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<tbody>
<tr>
<td>Load bearing</td>
<td>Implants</td>
<td>Implants (on tissues)</td>
</tr>
<tr>
<td>Retention stability</td>
<td>Fixed (fully retained)</td>
<td>Removable (partially retained)</td>
</tr>
<tr>
<td>Occlusion</td>
<td>Very high biting force</td>
<td>Removable biting force</td>
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<tr>
<td>Prosthetic space</td>
<td>Less space required</td>
<td>More space required</td>
</tr>
<tr>
<td>Tissue coverage</td>
<td>Minimum tissue coverage</td>
<td>Partial tissue coverage</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Low maintenance</td>
<td>High maintenance</td>
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Advantages vs. Disadvantages

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<tr>
<td>Hygiene</td>
<td>Fair (Middle: difficult)</td>
<td>Good</td>
</tr>
<tr>
<td>Cost</td>
<td>High fabrication cost</td>
<td>Lower fabrication cost</td>
</tr>
<tr>
<td>Appearance</td>
<td>Hard to replace atrophied ridge (O.H. problems)</td>
<td>Probability of replacing bone with full flanges</td>
</tr>
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Treatment Planning

Milled bar implant-supported overdenture

Why an IS-overdenture in this case?

- Lack of lip support
- Excessive Residual Ridge Resorption
- An extended buccal flange may make it difficult to observe oral hygiene if a fixed implant-supported prosthesis is planned.

Surgery: Stage I

- Radiographic stent
- Modified surgical stent
- Implant placement surgery

Surgery: Stage II

- Osseointegration & bone loss on sites 12 and 22
- Xenograft (Bio-oss collagen), GBR

Stage II Surgery + GBR

- Healing abutments in place after the stage II surgery

Prosthetic Treatment

Four months after surgical stage + GBR grafting

Six Months After Insertion of the IS-overdenture
Progressive Bone Loss
- Deep pockets around all of the implants (45/74 sites)
- Discharge noticed at implant sites 16, 24, 26
- No pain associated with the implant sites
- Osstell ISQ values: between 65 to 72
  Exception: site 12 with an ISQ value of 60

Etiology of marginal bone loss:
1) Genetic
2) Synergism of IL-1 & IL-1 gene (RN allele 2)
3) Smoking
4) Medications (i.e. NSAIDs)
5) Oral hygiene: Old denture, tissue conditioned: Oral rinse: Chlorhexidine
6) Antibiotics: Amoxicillin + Clindamycin

Deep Pockets
- The bars and prostheses were removed
- Oral rinse: Chlorhexidine
- Old dentures, tissue conditioned: Coll-soft Liner
- Oral hygiene: Reinforced

From Marginal Bone Loss to Peri-implantitis
Lisa Hult-Mayfield & Andrea Mombelli

Definition
An infectious condition of the tissues around osseointegrated implants with loss of supporting bone (>1.8 mm) and clinical signs of inflammation (bleeding and/or suppuration)

Prevalence
10% of implants; 20% of patients (3 to 14 years follow-up)

Etiology and Risk Factors
What do we know about progressive marginal bone loss and peri-implantitis around osseointegrated implants?

- Surgical Techniques: width of the peri-implant marginal bone
- Smoking and Oral hygiene
- Implant design and Surface Topography
- Genetics and Bone Metabolism
- Biomechanical concept: myth or truth?

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1) Surgical Techniques: width of the peri-implant marginal bone
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Antibiotic Therapy: The Outcome

Prevalence with or without further implant treatment:
- Grafting approach: Resective
- Photodynamic Therapy (PDT)
- Chlorhexidine

Etiology and Risk Factors

Systematic review including 35 papers:
- Efficacy of interventions to treat peri-implantitis: A Cochrane systematic review
- Clinical review of the periodontal condition of the dental and osseointegrated implants, Eur J Oral Implantol 7:1-8

Treatment Approaches

Which approach is more effective?
Surgical? Non-surgical? A combination of both?

What are the success rates?
Is there any evidence in the literature?

A desperate attempt to save the affected implants!

In conclusion: We know that Peri-implantitis is a major challenge in modern implant dentistry, and the treatment approaches vary depending on the extent and severity of the condition. Further research is needed to determine the most effective and long-lasting treatment options.
**Surgical Interventions**

- **Non-surgical therapy**: Not effective.
- **Laser treatments** show minor beneficial effects.

**Treatment Outcomes**

- **Non-surgical interventions**: Not effective.
- **Surgical interventions**: 1 to 2 mm of bone gain.

**Factors influencing the treatment outcomes:**

- Initial severity of disease
- Patient's oral hygiene
- Periodontitis of the existing teeth
- Configuration of bony defects (vertical vs. horizontal)
- Macrobios: Microstructure of implant's surface
- Position of the implant within the arch

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**Non-Surgical Interventions**

**Application of Local Antibiotics**

- **Bone gained (after 12 months)**
- **Probing depth reduction**

**Application of Photodynamic Therapy (PDT)**

- **Bone gained (after 12 months)**
- **Probing depth reduction**

**Application of ER:YAG Laser**

- **Bone gained (after 12 months)**
- **Probing depth reduction**

**Flap + instrumentation of bony defects**

- **Bone gained (after 12 months)**
- **Probing depth reduction**

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**Consensus 2008, surgical treatments**

- Bone graft techniques with or without membranes resulted in variable degrees of success.
- Such techniques did not address disease resolution but rather simply attempt to fill the cavitated defect.
- No single method of surface decontamination (chemical agents, abrasives and lasers) proved to be superior.

**Consensus 2008, non-surgical treatments**

1. Non-surgical therapy is not very effective.
2. Laser treatments show minor beneficial effects.

**Summary**

- **Surgical interventions** vs. **Non-surgical intervention** vs. **Surgical Intervention**
  - Suppression
  - Probing depth reduction
  - Bone gained

**Treatments**

- Manual Debridement + Local Antibiotics vs. YAG:ER Laser
- Plastic Instrument vs. ER:YAG Laser

**Flap surgery**: Implantoplasty + membrane + collagen membrane

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**Discussion**

- The effectiveness of various surgical and non-surgical interventions was assessed.
- Laser treatments showed minor beneficial effects compared to non-surgical therapies.
- Factors influencing treatment outcomes were discussed, including initial disease severity, patient hygiene, periodontitis, bony defect configuration, and implant surface structure.
**Success Criteria**

Implant survival with:
1) Probing depth (PD) of less than 5 mm
2) Absence of bleeding on probing (BoP)
3) Absence of suppuration
4) No further bone loss


**Surgical Intervention – Bone Grafting**

- One implant (22) failed prior to the grafting surgery
- GBR grafting procedure with resorbable membrane
- Six months submerged healing period

**Clinical stable and asymptomatic condition:**
- No Bleeding on Probing
- No Suppuration
- Reduced Probing Depth (2-3 mm of reduction)

**Surgical Intervention resulted in a stable condition; HOWEVER:**

- It could not significantly improve the clinical situation of the implants.

**Three Years After Surgical Intervention**

- Patient is satisfied with her IS overdenture
- She meticulously maintains her oral hygiene
- Interestingly, pockets are still shallow after 3 years
- There’s no signs and symptoms

**Prognosis of the Treatment?**

*Compromised Survival*

How long the implants would be able to survive with such a compromised condition?