Implant Complications (Case Selection Considerations)

MICHAEL L. BILLINGSLEY, DDS, ABOMS
Dental Implants – “Revolutionary Era in Prosthetic Dentistry”

- A Major Paradigm shift in tooth replacement.
- “Game Changer”
- Remarkable 20-30 years of 95-98% success rates in large multi-center studies
- However, “The mouth is a hostile environment, not a friendly place for dental prostheses.
- Not for everyone, and complications are to be expected. Like everything else in dentistry, “Spit Happens.”
Complicating Factors

- **Local** -
  - Soft tissue Quality and Quantity (keratinization and thickness)
  - Bone Quality and Quantity
  - Occlusion and Bruxism/ para-functional habits
- **Systemic** –
  - Uncontrolled disease/ Medication side effects
  - Poor diet/ tobacco/ substance abuse
  - Age > 65 (+/-)
Failures occur for a variety of reasons

- Any Dentist who says, “I’ve never had a failure in my practice, implants are practically foolproof.,” probably hasn’t done enough cases. Complications will appear sooner or later.

- Remember, “Nothing is fool-proof to a sufficiently talented fool.”
Reasons for failure (Loss)

- Many reasons for failure, but end result is peri-implantitis and irreversible bone loss leading to a loss of osteointegration and loosening of the implant.

- Three levels of integration
  1) bone
  2) soft tissue
  3) pus
Peri-Implant Mucositis – (early sign)

- Peri-implant mucositis is an inflammatory condition resulting from bacterial colonization which takes place in biofilms (plaques) within the gingival sulcus around the base of the implant and neck of the abutment.

- Research shows that 2/3 of patients with mucositis, if untreated, will progress to peri-implantitis and likely implant failure within 5 years of placement.
Microbial Factors

- The usual bacterial suspects are common to Peri-implantitis and Periodontitis.
- Most harmful tend to be Anaerobic bacteria such as Actinobacter, Porphyromones, and mycobacterium species in the deeper sulcular areas around the necks of the implants and the abutments. Smooth or polished surfaces are more resistant but do not prevent colonization.
Contributing Factors to Implant Loss

- Microbial – Plaque Index/ Hygiene
- Soft Tissue Quality – Keratinization / Thickness
- Bone Quality and Quantity
- Occlusion – sufficient numbers/ placement?
- Occlusal Overload/ Bruxism/ Deep Class II bite
- Predisposing Medical Conditions
- Noxious Habits – Smoking, Substance Abuse
- Iatrogenic issues
Predisposing Medical Conditions and/or Habits

THE KEY QUESTION –

“Do the patient’s medical condition and/or noxious habits compromise the ability to provide an **Adequate Blood Supply** to the oral tissues?”

**Perfusion is the key to hard and soft tissue health.**
Patient Selection

- Need to be very careful with any uncontrolled systemic disease, especially:
  - CA, Acute CV and stroke, and end stage Congestive Heart Failure – contraindicated
  - Diabetes M. Type II – If HbA1C > 7.5%
  - Autoimmune Disease
  - Certain Bone Diseases, i.e. Paget’s disease, osteoporosis
Age > 65

- Recommend a presurgical medical evaluation by PCP if not under current or periodic medical protocol.

- Rule out asymptomatic medical problems and correct poor systemic disease management.
Pre-implant Dental Evaluation

- Medical assessment
- Comprehensive Dental exam to include at least a Panoramic X-ray and study models.
- CBCT imaging in more complicated cases (rapidly becoming a standard of care issue)
- Use surgical guides (provide to Surgeon)
- Very important to outline alternative treatment options, risks, and sign informed consent.
- Refer for Specialty consultation where appropriate for complex cases.
Basic Panorex to Rule Out Pathology
Cone Beam Computerized Tomography. (CBCT)
Surgical Guides eliminate guesswork
Pre-implant Dental Evaluation

- Medical assessment
- Comprehensive Dental exam to include at least a Panoramic X-ray and study models.
- CBCT imaging in more complicated cases (rapidly becoming a standard of care issue)
- Surgical Guides
- Very important to outline alternative treatment options, risks, and sign informed consent.
- Refer for Specialty consultation where appropriate for complex cases.
The Problem with Smoking

- Not only tobacco but also weed (cannabis)
- **Decrease** in –
  - Capillary Blood Flow (nicotine)
  - Oxygen Carrying Capacity of RBC’s (CO2)
  - Osteoblast activity and bone deposition impairment (hydrogen cyanide)
- **Minimal Patient Commitment** - Agree to quit at least 2 weeks prior to surgery and for at least 6 months post-placement of Implants.
Osteoporosis Treated with Bisphosphonates, MRONJ

- Oral Bisphosphonates, i.e., Fosamax and others have had a low incidence of osteonecrosis of the jaws. General guidance for implant placement is 3 years after oral meds stopped and CTX >150.

- IV Bisphosphonates, Zomedia, Aredia, others are used for Multiple Myeloma, cause much higher incidence of MRONJ, and are considered a contraindication for implants.
Osteoradionecrosis of Jaws

- Depends on amount of total radiation to Orofacial region. Should be less than 5000 Rads (50 Gy {Grey units}) in fractionated units over several months, and Patient 5 years post radiotherapy.

- Hyperbaric Oxygen (HBO) can be very helpful in pre/post operative management
Post-Resection/ Facial Reconstruction

- Vascularized Free-Fibula mandibular reconstruction cases have generally been good candidates for implant placement.

- However, soft tissue management can be problematic/ difficult to achieve functionally equivalent mastication (attached) gingival coverage. May require follow-up vestibuloplasty with skin grafting, to achieve acceptable soft tissue interface.
Iatrogenic (Provider) Factors

- Philosophy of Implant Care
- Case Selection
- Appropriate Planning
- Imaging (CBCT?)
- Site Preparation (Grafting)
- Implant surgery
- Immediate vs. Delayed loading
- Post-op Care and follow-up
Philosophy of Implant Treatment
What is the place of implants in my practice?

- Single tooth replacement
- Multi-unit to full arch
- All on 4 – All on 16–or something in between
- Fixed vs. Removable
- “Put the implant where the bone is, or let the prosthesis dictate where the implant goes.”
- Plan from the final prosthesis backward
- Cemented or Screw Retained
Hybrid of regular implants and minis
Hybrid regulars and minis
Case Selection

- What is my comfort Level?
- What will I refer to a specialist?
- If I refer the case out, am I willing to do part of the work, and how do I coordinate the treatment plan if I am participating?
Adequate Treatment Planning.

- Medical/ Dental history
- Patient’s treatment goals/ budget
- Exam, X-rays/ CBCT, Models, Wax-ups
- Consultant recommendations
- Case presentation with alternative treatment, patient acceptance, informed consent.
- Surgical guides, sequence and timing of treatment, follow-up plan, treatment alteration if implant failure or other complications
Immediate vs. Delayed Loading

- Provisional appliances during healing stages
- Patient expectations and management of transitional treatment issues.
Post-op care and Follow-up

- Recommend at least:
  - Immediate or ASAP follow-up for any patient complaints.
  - 3 month, 6 month, 1 year follow-up with Panorex
Final thoughts

- PPPPPPPP. (The seven P’s)

- “Proper prior planning prevents P.... Poor Performance”
Recommended Reading

TODAY'S TRENDS IN ORAL SURGERY
Recommend Reading

Dental Implant Complications
Etiology, Prevention, and Treatment
Edited by Stuart J. Froum
Recommended Membership