Periodontitis & Implants

Dr Simon Hinckfuss
D.C.D (Melb), Cert.Perio, MS (Minn, USA)
Diplomat of the American Board of Periodontology

Objectives

• Diagnose common types of periodontal disease
• Describe the likely outcome of periodontal treatment
• Discuss implant treatment options for periodontal patients

Chronic Periodontitis
• Enlargement of risk factors are proportional to the amount of attachment loss
• Localized or generalized
• Slight, moderate or severe
• Includes Type II diabetics and smokers
  • (Armitage 1999)

Aggressive Periodontitis
• “attachment loss that is not consistent with the amount of plaque/calculus present”
• No contributing systemic illness
• Usually patients under 35
• Can be localized or generalized
  • (Armitage 1999)

Less Common

• Others
  • Genetic or aquired immune system defects (eg cyclic neutropenia, AIDS, chemo)
  • Connective tissue defects
  • Type I Diabetics
  • Muco-cutaneous disorders

Evidence Supporting efficacy of Periodontal treatment

• Natural Progression (Neely)
• Randomized controlled trials
  – Lindhe, Pihlstrom, Ramfjord, Kaldahl, Linda
• Long-term Private Practice
• Fewer studies for Aggressive Periodontitis.
Clinical Outcomes-Perio Tx

- Hirschfeld and Wasserman (1978)
  - 22 Year private practice retrospective study
- McGuire and Nunn (1996)
  - Prognosis

Biologic Outcome of Perio Tx

- Host status not changed
- Reduction in pathogens (Shiloah 1996) rebound occurs in deep pockets (Magnusson 1996)

What about Implants and periodontitis?


  - First study to raise the alarm.
  - Survival 90.5% vs 96.5%
  - Peri-implantitis 28% vs 5%
  - Difference only apparent after 6 years
  - Confounding factor of more smokers in the perio group

First systematic review


  - Systematic review- Only identified 2 studies with 5 and 10 year follow-up
  - No difference in survival of implants or superstructures
  - Risk ratio of 9 for peri-implantitis in perio group
  - Extra 0.5mm mean bone loss in perio group after 5 years

Karoussis rebutts himself


  - Cochrane style review. 15 studies including seven short-term and eight long-term
  - Only 3 studies with aggressive perio but short term
  - No difference in survival but deeper pockets, more bone loss and more peri-implantitis.
  - Because of considerable discrepancies among these studies, meta-analysis was not performed
  - Only included studies up to 2006. This has become a hot topic since and the number of published studies has escalated since

Adequate study size to find a difference

- Assume Type 1 error rate 0.05 and 90% power (chance that a true difference will be correctly reported)
Updated review

- Wider inclusion criteria so 23 studies. Included studies as short as 1 year, retrospective and prospective, minimum 5 patients
- Prosthesis survival: Only 1 study>5 years. 2/25 lost in perio patients and none lost in non-perio.
- Implant Survival: Only 1 study at 10 years. 90% in perio, 96.5% non-perio
- Peri-implantitis: 2 short term studies show no diff. 10 year study by Karoussis showed 38% vs 5%. More frequent in aggressive perio vs chronic perio
- One 3-year study showing attachment loss around implants is greater than teeth for aggressive, chronic and healthy patients. (Jannson 2005)

Dr Simon Hinckfuss © 2012

Is there a difference between Chronic and Aggressive Perio?

- De Breever AL, Quirynen M, Georgie W, Theuniers G, De Breever JA.
- 110 healthy (nsp), 68 chronic perio (cgp), 16 aggressive perio (agp) (patients) (513 Implants)
- 48 +/-25 months
- Implant Survival: nsp (97%), cgp (96%), agp (85%)
- Twice as much bone loss in gap, but nsp and cgp similar
- Smoking only an issue in agp group (survival reduced to 63%)
- Study did include TPS implants early on that had more failure that SLA surface

Dr Simon Hinckfuss © 2012

Risk Minimization

- Consider concept of multiple small risks adding together
  - Smoking, poor plaque control, diabetes, periodontitis, lack of maintenance, obesity, chronic steroid use, immediate placement, osteoporosis, immediate restoration, grafted bone, simultaneous implant in grafted sinus, short implant, inferior implant design

Dr Simon Hinckfuss © 2012

What about the bugs?

- De Breever and De Breever. Early colonization of non-submerged dental implants in patients with a history of advanced aggressive periodontitis. 2006
- 22 Aggressive Perio pts: SPT for 12-240 months at implant surgery (68 implants). Plq < 20% BOP<20%
- 10 days post-op 17/22 patients had similar pathogens around teeth and implants.
- did not hamper osseointegration and did not lead to peri-implantitis, mucositis or initiation of bone destruction (6 months).

Dr Simon Hinckfuss © 2012

What about the bugs?

- Quirynen M, Van Assche N.
- Microbial changes after full-mouth tooth extraction, followed by 2-stage implant placement. J Clin Periodontol 2011
- Microbial sampling prior to edentulation, 1 week post exo, 3 and 12 months. Sulci, tongue and saliva.
- Prior to exo, pockets were heavily colonized by pathogens.
- Presence of pathogens in saliva and tongue did not change after exo or over 12 month period, but the numbers reduced significantly, especially in saliva. A.a was exception.
- After one week, all pathogens were present around implants but total numbers much lower by log factor (except for A.a). Numbers remained stable up to 12 months.

Dr Simon Hinckfuss © 2012

Peri-implantitis

- Lindhe J, Meyle J; Group D of European Workshop on Periodontology
  - Peri-implant mucositis in 55% of implants
  - Peri-implantitis in 12-40% of implants
  - Risk factors are poor oral hygiene, Hx of peri, diabetes, smoking

Dr Simon Hinckfuss © 2012
• Lang NP, Berglundh T. Working Group of Seventh European Workshop on Periodontology.

• Mucositis is reversible (Salvi 2011)
• Mucositis will convert to peri-implantitis more easily than gingivitis converts to periodontitis
• Calculus formation on implants appears to be lower than on teeth
• TPS implants are more likely to develop peri-implantitis than minimally rough implants.
Treatment Plan

- **Phase I**
  - Full mouth scaling and root planing,
    re-evaluate plaque control.
- **Phase II**
  - GTR LL.
- **Phase III**
  - UR,UL direct sinus lift & ridge augmentation(Scarano 1996)
  - Extraction of hopeless teeth & ridge augmentation
  - Augmentation of edentulous sites
- **Phase IV**
  - Implants #16,14,11, 25,26, 44,45,32,42,46

---

Effect of SRP

- Blush/Purple membrane exposed
- In this case, entire buccal window osseous removed.
- Bacterial control critical

---

Sinus Lift UL

- Vertical incision distal to 25 high into sulcus
- Crestal incisions going distal
- Vertical incisions into sulcus around 27 site

---

Sinus Lift UL

- Membrane elevated. Medial wall visible
- FDBA placed firmly but not packed.
- Membrane trimmed to cover lateral window.

---

Ext 32, 31, 42 and ridge augmentation
Ext 32, 31, 42 and ridge augmentation

Tenting screw is placed no higher than the line drawn between crestal bone on mesial of 22 and 27.

Dr Simon Hinckfuss © 2012

2 weeks post-op

GTR 35, 36

What type of implants?

• No great evidence that one system is better than others for peri patients
• Progression of untreated peri-implantitis, is greater with a moderately rough surface than at implants with a polished surface (Berglundh et al 2007)
• Abutment seal and stability?
• Position of microgap?
Abutment/Fixture connections

- Bicon 4 Degrees
- Ankylos: 6 degrees
- Straumann Tissue level: 8 degrees
- Astra 11 Degrees
- Straumann Bone Level: 15 degrees
- NobelActive: 20+ degrees

Ext #25 and Implant #25, 26

Sinus lift has now been healing for 6 months

# 11 Particulate Allograft
Consider mesio-distal position. Can a 4mm implant be placed in the middle of a lateral incisor space? Not really.
Implants #16,14 and 11

Radiographic Re-­eval #36,35,34

Pre treatment

6.5months post-­grafting
Success of GTR v.s Exo & Implants

- Stability of grafted bone: (Flemmig et al, J.Periodontol 1998)
- Stability of long junctional epithelium (Beaumont J.Periodontol 1984)
- Consider complications associated with non-restored tooth vs. combined surgical prosthetic complications associated with implants (Samet & Jotkowitz et al, Quintessence, 2009)
How important is maintenance?


  - 112 patients in private practice (healthy, moderate and severe peri).
  - Implant survival 97%, 93%, 90% respectively.
  - For healthy peri, 2/24 patients who adhered to SPT lost an implant whereas 0/4 who did not adhere lost an implant.
  - For moderate peri, 1/26 patients who adhered to SPT lost an implant whereas 5/11 who did not adhere lost an implant.
  - For severe peri, 3/29 patients who adhered to SPT lost an implant whereas 4/7 who did not adhere lost an implant.
Non-surgical treatment of Peri-implantitis

  - Treated sites with bone loss>2.5mm, pocket and bleeding.
  - Method 1) Titanium curettes and prophy
  - Method 2) Ultrasonic debridement using special implant tip.
  - Results: Both methods were ineffective at reducing pockets or bacterial loads

Surgical treatment of Peri-implantitis

- Flap, debride with curettes, chlorhexidine and saline on gauze.
- Graft with Bio-Oss
- Probably doesn’t re-osseointegrate much.
- Defect fill, PD reductions and reductions in BOP can be maintained for 3 years (Roos-Jansaker et al. J Clin Perio 2001)

Maintenance - Critical

  - If no bleeding leave alone
  - If bleeding and deep pocket but no attachment loss, debride
  - If bleeding, deep pocket and attachment loss, open debridement

Thank you