

# Bone transplant and bone substitutes in the treatment of periodontal disease

Meta-analysis of published results

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# Periodontal disease

- Chronic inflammatory process leads to
  - Destruction of gingival tissue
  - Destruction of bone
  - Dental loss
- Oral hygiene
- approx. 25% of german population >35 years

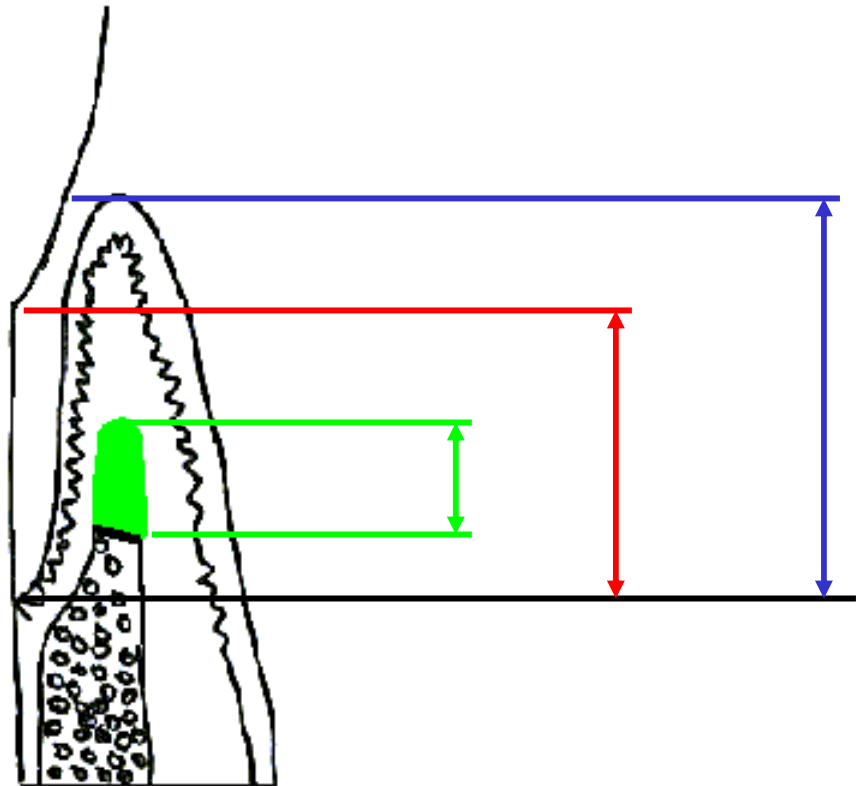
# Treatment

- Goal
  - Tissue regeneration (connective and bone tissue)
  - Prevent dental loss
- Options
  - Improvement of oral hygiene
  - Open Flap Debridement (OFD)
  - OFD + Transplantation of bone or bone substitutes

# Technology

- Biological
  - Demineralised freeze-dried bone allograft (DFDBA)
- Synthetical
  - Bioglas
  - Hydroxilapatit-Compounds
  - Ca-Compounds

# Outcomes measure



Probing Depth

Attachment Loss

Bone Gain

# Methods

- Systematic literature search
  - Medline, Embase, Healthstar, Cochrane...
- Inclusion criteria
  - RCT (bone material/bone substitute vs. OFD)
  - 1 year follow-up
  - Probing depth, attachment gain, bone gain
- Statistics
  - WMD (95% CI)
  - Random effects model

# Overall Results

- OFD+Technology vs. OFD alone

<b>Outcome</b>	<b>Deffects</b>	<b>WMD</b>	<b>95% CI</b>
Reduction of Probing Depth	376	0,66 mm	0,40-0,92
Gain of Clinical Attachement	392	0,78 mm	0,47-1,08
Gain of Bone	392	1,43 mm	1,07-1,78

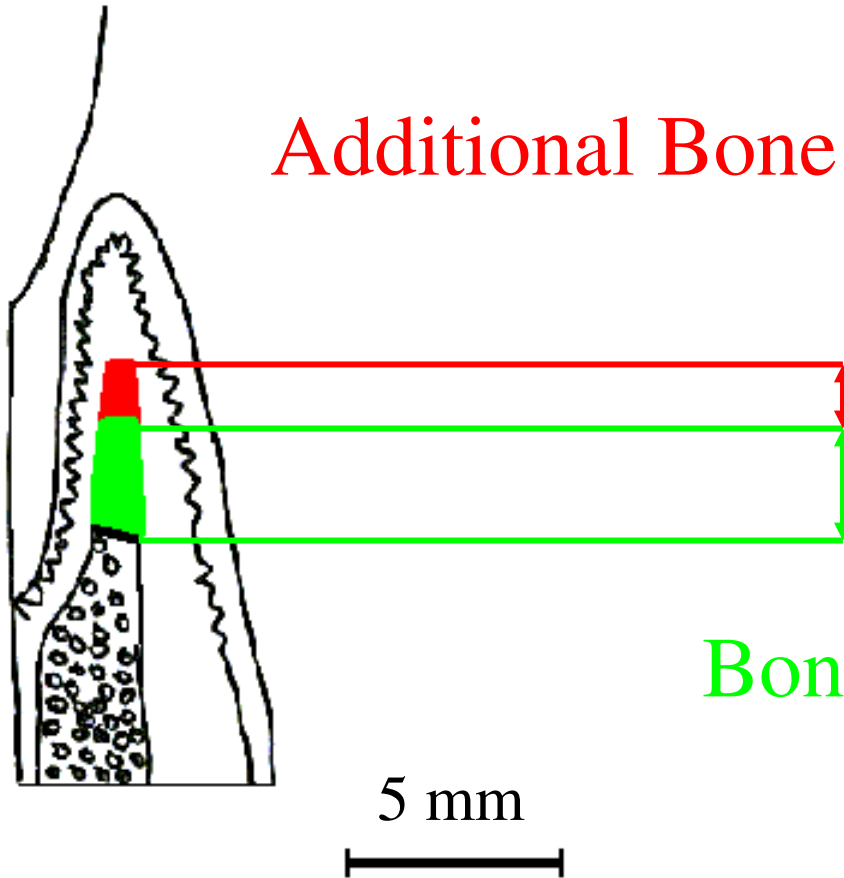
# Subgroup Results

- Allografts (DFDBA)
  - Benefit in all parameters
  - Greatest difference in Bone Gain (<2mm)
- Bone Substitutes
  - Benefit: Bioglas and Ca Compounds
  - No benefit: Hydroxilapatit Compounds



# Example Bone Gain

Additional Bone Gain OFD+Technology



Bone Gain with OFD alone

# Discussion

- Surrogate parameters
  - Magnitude of the differences
  - Prediction of dental loss
- Heterogeneity
  - Trial design
  - Accompanying therapy
  - Pre-operative parameters
  - Measure of parameters (bone)
- Safety
  - Infections
  - Antigeneity

# Conclusion

- The addition of Bone Allografts, Bioglas or Ca-Compounds to the conventional treatment of periodontal disease leads to slightly better results as OFD alone in surrogate parameters
- The role of the technology in the prevention of dental loss stills need to be cleared