

Peri-implant soft tissues

UK IMPLANTOLOGY YEAR COURSE
Module 5
13th October 2017

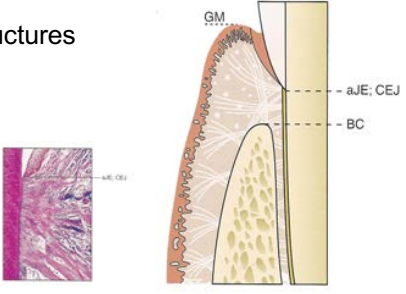
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Aims & Objectives

- Comparison with teeth
- Peri-implant tissues in health
- Biology of soft tissues
- Pathology of soft tissues
- Biological width

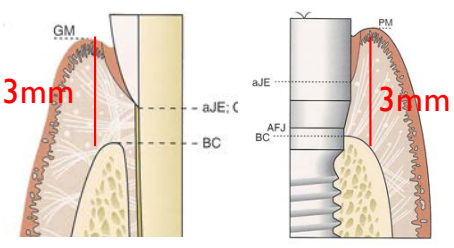
Periodontal soft tissues

Teeth:
Unique structures



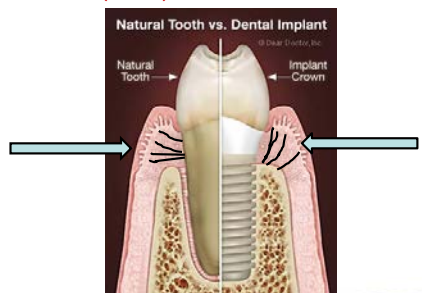
Comparing teeth and implants – similarities

Berglundh *et al* (1991):



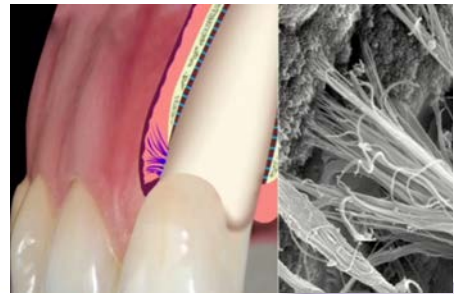
Comparing teeth and implant

Berglundh *et al* (1991):



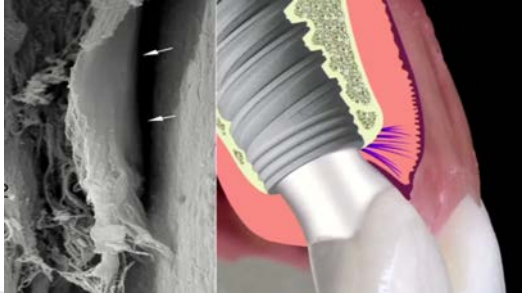
Comparing teeth and implant

TEETH:



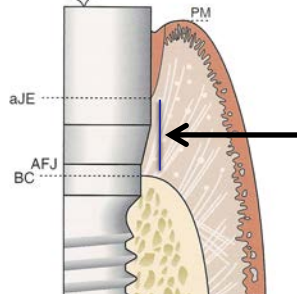
Comparing teeth and implant

IMPLANTS:



This image shows a side-by-side comparison of a natural tooth and a dental implant. The tooth on the left has a natural root structure with a pulp chamber. The implant on the right is a cylindrical, threaded structure. Arrows point to the junctions between the crown and root of the tooth and between the crown and the implant body.


Peri-implant connective tissue interface



The diagram illustrates the peri-implant connective tissue interface. It shows a cross-section of an implant abutment with labels: aJE (alveolar junction epithelium), AFJ (abutment-furcation junction), and BC (bone crest). The PM (peri-implant mucosa) is shown as a layer of tissue surrounding the implant. A black arrow points to the junction between the implant and the surrounding tissue.

Peri-implant connective tissue interface

Rupture of the soft tissue sealing



FRANCE LAMBERT

This slide shows a clinical view on the left where a red, inflamed area is visible around the neck of a dental implant, indicating a rupture of the soft tissue seal. On the right, a microscopic view shows the implant surface with a clear gap between the implant and the surrounding tissue.

Peri-implant connective tissue interface

Rupture of the soft tissue sealing



FRANCE LAMBERT

This slide is identical to the previous one, showing a clinical view of a red, inflamed area around the neck of a dental implant and a microscopic view of the implant surface with a gap between the implant and the surrounding tissue.

Abutments – does material matter?

Abrahamsson et al (1998):

Ti – good mucosal seal

Gold – poor mucosal seal



This slide displays three gold-colored abutments in the foreground and two titanium-colored abutments in the background. The titanium abutments have a more tapered, conical shape compared to the gold ones.

Abutments – does material matter?

Abrahamsson et al (1998):

Zirconia – good mucosal seal

Porcelain – poor mucosal seal



This slide shows two zirconia-colored abutments in the foreground and two porcelain-colored abutments in the background. The zirconia abutments have a more tapered, conical shape compared to the porcelain ones.

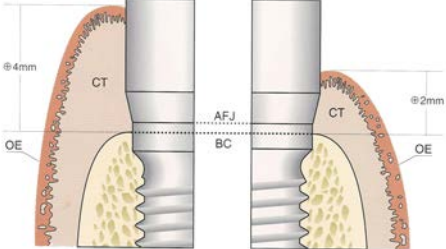
Abutments – does material matter?

Crown margins with zirconia:



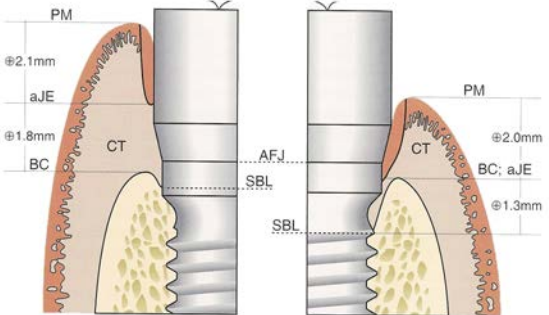
Biological width

Berglundh & Lindhe (1996):



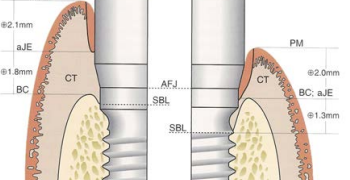
Biological width

Berglundh & Lindhe (1996):



Biological width

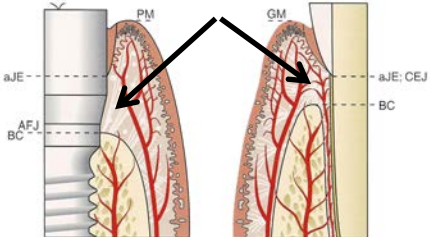
Berglundh & Lindhe (1996):



'A certain minimum width of the peri-implant mucosa is required and that if this is not achieved bone resorption may occur to allow the proper soft tissue attachment to form'

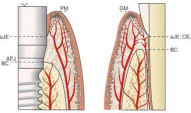
Comparing teeth and implant – blood supply

Berglundh et al (1994):



Comparing teeth and implant – blood supply

Berglundh et al (1994):



Does this indicate that peri-implant soft tissue may have impaired defense capacity against exogenous irritation such as bacterial plaque????

How good is the seal around implants?

Berglundh *et al* (1994):

Short term plaque response

Pontoriero *et al* (1994):

Longer term plaque response

Pontoriero *et al* (1994):

Longer term plaque response

Pontoriero *et al* (1994):

Conclusions for peri-implant soft tissues

- Ideal soft tissue attachment is about 3mm (Biological Width)
- Consists of approx 2mm Junctional Epithelium and 1mm Connective tissue
- Important for protection of zone of osseointegration from bacterial plaque
- Differs in regard to collagen fibre orientation to teeth
- Differs in vascular supply to area apical of junctional epithelium with teeth
- Has a weaker attachment to abutment than cementum of teeth
- Has the characteristic of 'scar tissue'

Practical implications

Need for excellent oral hygiene measures

Practical implications – biological width

Placement of implant-abutment junction – to allow at least 3mm of overlying soft tissue

Practical implications – biological width

Sometimes means the implant head has to be placed below bone crest level

Practical implications – platform shifting

The join between implant and abutment may result in microgap – allowing bacteria to colonize and result in bone loss.

1. Narrow platform brings this join away from margin bone
2. Also allows thicker overlying soft tissues (biological width)

Practical implications – platform shifting

Nobel Replace – RP Conical Connection

Practical implications – platform shifting

Nobel replace – Conical Connection

THE END