

# CONTRIBUTION OF INTERPROXIMAL DENTO-IMPLANT ARCHITECTURE ON PAPILLA PRESENCE OR ABSENCE

## Introduction

The correct mesio-distal and vertical-horizontal position of an implant is ultimately determined by esthetic requirements and anatomical architecture. Implants being placed too close together, unfavorable positions and/ or axial disalignment should be avoided. Despite its significance, only little information is available on the interproximal dento-implant anatomy and its influence on the formation of papillae. The goal of this poster is to evaluate anatomical requirements for a predictable, non-surgical papillae regeneration in single-unit implant restorations. The results can be applied to pre-prosthetic, surgical and laboratory procedures.

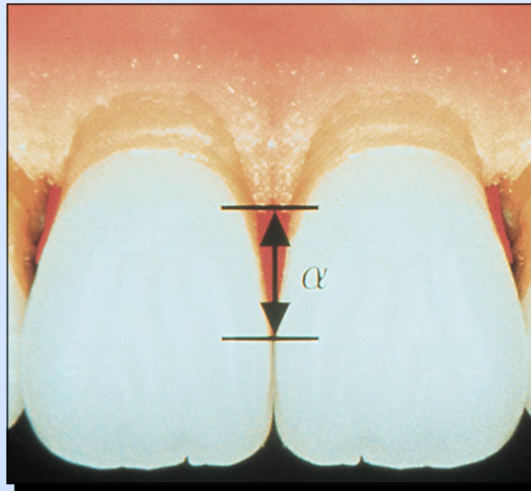
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## STUDY

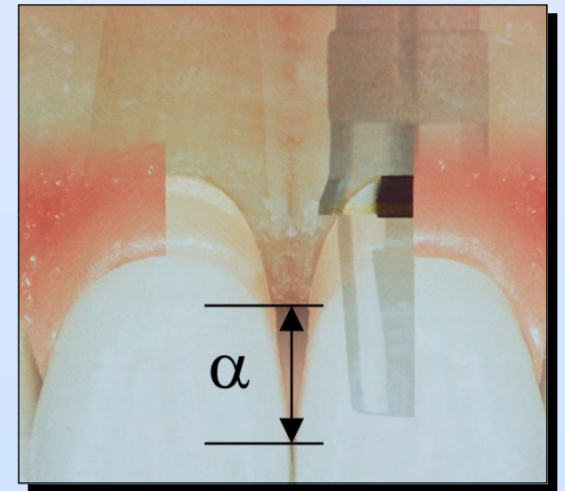
The purpose of the study was to determine the contribution of the vertical distance between contact point and the crest of bone, the horizontal distance between tooth and implant, and the time of implant placement on the presence or absence of the dento-implant papilla in humans.



### 120 FRIALIT®-2 in 104 Patients

♂ 50 (48%)  
♀ 54 (52%)

	incisor / canine	premolar	molar
maxilla	41	22	12
mandible	6	26	13



## MATERIALS AND METHODS

Within a group of patients treated for single-tooth replacement with root-analog implants (FRIALIT®-2, FRIADENT Mannheim/ Germany), 104 patients with 120 implants were selected for a standardized examination of the mesial and distal interproximal implant-tooth sites (n=240 values). The main interval between implant placement and evaluation of the restored interproximal implant-tooth site was 26 months (maximum 83 months, minimum 6 months).

### Evaluation of Vertical Distance

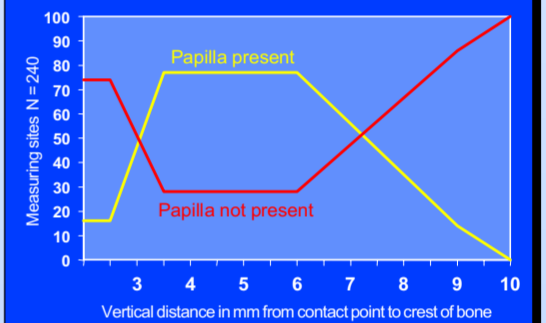
Perioprobe / HuFriedy PCB 11

- Subdivisions**
- < 3 mm
  - 3 - 6 mm
  - 6 - 9 mm
  - > 9 mm



### Presence / Absence of Papilla

Vertical height of dento-implant space



### Evaluation of Horizontal Distance

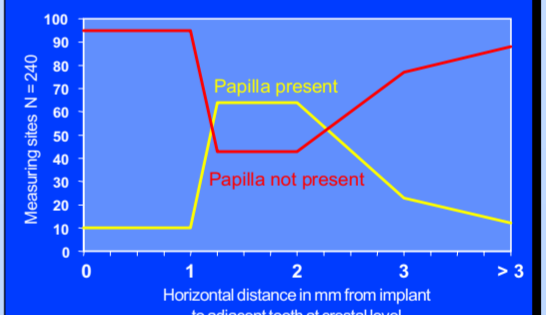
Panoramic radiographs

- Subdivisions**
- < 1 mm
  - 1 - 2 mm
  - 2 - 3 mm
  - > 3 mm

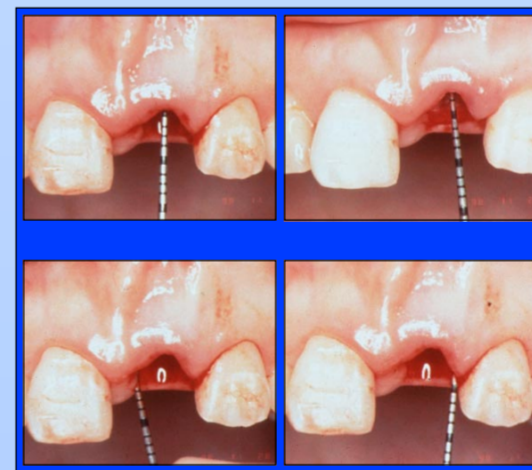


### Presence / Absence of Papilla

Horizontal distance of dento-implant space (crestal)

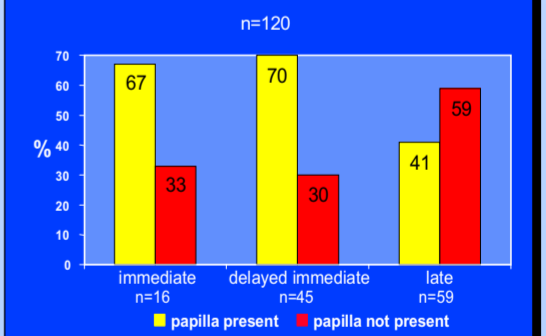


- **Immediate implant placement**  
= at time of tooth loss / extraction
- **Delayed immediate implant placement**  
= epithelial covering of extraction site
- **Late implant placement**  
= complete osseous healing of extraction site



### Presence / Absence of Papilla

Depending on Time of Implant Placement



## RESULTS

A vertical distance from the base of the contact point to the crest of bone between 3 to 6 mm is a good prerequisite for a spontaneous interproximal papilla. Vertical distances below 3 mm or above 9 mm reduce predictable papilla regeneration significantly. A horizontal distance between implant and adjacent tooth of 2 mm complies with anatomical data of teeth and favors the re-establishment of interproximal papillae. Horizontal distances below 2 mm and above 3 mm reduce the probability of papilla re-establishment considerably. The study results demonstrate also the importance of the time of implant placement on the predictability of papilla regeneration. When implant placement was performed after complete osseous healing of the extraction site, the papilla was present in less than half of the time. The earliest possible implant placement preserves peri-implant bone and determines the shape of overlying soft tissue contours.



## Conclusion

### Vertical

- + Increased papilla regeneration if... vertical distance from dento-implant contact point to bone crest: **3-6 mm**
- Decreased papilla regeneration if... vertical distance from dento-implant contact point to bone crest: **<3 or >6 mm**

### Horizontal

- + Increased papilla regeneration if... horizontal dento-implant space: **2 mm**
- Decreased papilla regeneration if... horizontal dento-implant space: **<2 or >4 mm**

## References

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