

Topic: Implant therapy outcomes, surgical aspects

Background and Aim

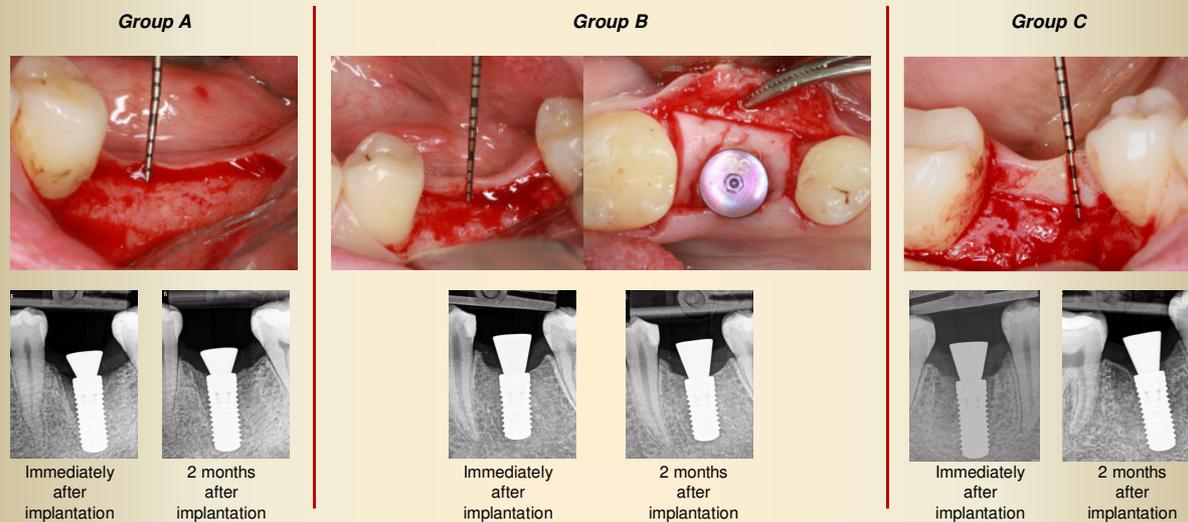
Mucosal tissue thickness has been shown as an important factor in etiology of early crestal bone loss around dental implants. Few animal studies have shown that if we have thin tissues during implant placement, crestal bone loss may occur during the formation of the biologic width. Recently, prospective controlled clinical study reported that if tissue thickness at the crest was 2 mm or less, all implants, irrespective to their position to the bone level, developed crestal bone loss within 1-year of follow-up. On the contrary, in thick tissue pattern, supracrestally placed implants had significantly less bone loss, compared to crestally positioned implants.

Mucosal tissue thickness becomes very important also in short implant placement. In regions with very limited bone height, when only 6 mm or less implant could be installed, even the smallest inch of the bone support is important for the survival and stability of the implant. Sometimes limited bone height is accompanied by thin tissue biotype, thus the risk to loose crestal bone around short implants is very high.

Methods and Materials

This study evaluated 123 implants in 86 patients (54 woman and 32 man, age from 24 to 62 years old). All patients received Straumann Bone Level implants. During implantation mucosal tissue thickness was measured with periodontal probe mesially and distally. Patients were divided into 3 groups: thin biotype (**group A**), thin augmented during implantation with 2 mm xenogenic membrane (mucoderm®, Botiss) biotype (**group B**) and thick (**group C**) biotype. Healing caps were replaced immediately after implantation.

Dental radiographs were taken perpendicularly with Kodak Dental Software right after operation and 2 months post operative. Radiographs were done that all implant threads were clearly visible. Bone loss was measured mesially and distally. All measurements were performed by the same person.



Results

Bone loss (mesially and distally) in two months in each group is presented table below.

| Groups | Position of bone level | n | Crestal Bone loss, mm | St. error |
|---------------------------|------------------------|----|-----------------------|-----------|
| A, thin tissues | Mesial | 44 | 0.31 | 0.07 |
| | Distal | 44 | 0.28 | 0.08 |
| B, thin augmented tissues | Mesial | 40 | 0.14 | 0.06 |
| | Distal | 40 | 0.17 | 0.08 |
| C, thick tissues | Mesial | 39 | 0.23 | 0.10 |
| | Distal | 39 | 0.22 | 0.08 |

No statistical difference was observed between the groups:

| Groups | Side | p |
|---------|--------|-------|
| A and B | Mesial | 0,075 |
| | Distal | 0,078 |
| A and C | Mesial | 0,913 |
| | Distal | 0,582 |
| B and C | Mesial | 0,215 |
| | Distal | 0,669 |

Conclusions

In this clinical trial study crestal bone loss around dental implants was compared between thin (group A) mucosal tissues, thin augmented (group B) mucosal tissues and thick mucosal tissues (group C). No statistical difference between these three groups was found. It should be noticed that bone loss at augmented thin mucosal tissues was less than at thin mucosal tissues. It could be explained that 2 months are not enough for the statistical difference between the groups to occur, moreover the implants were not loaded.

Tissue thickness might be an overwhelming factor in crestal bone preservation, which in turn forms the basis for predictable esthetics. Crestal bone influence on the esthetic results is obvious and needs no further proof. Thickening of the mucosal tissues with xenogenic membrane during implant placement could be an advantageous procedure to maintain crestal bone. Our goal is to develop the protocol of safe implant placement in thin mucosal tissues.

References

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