

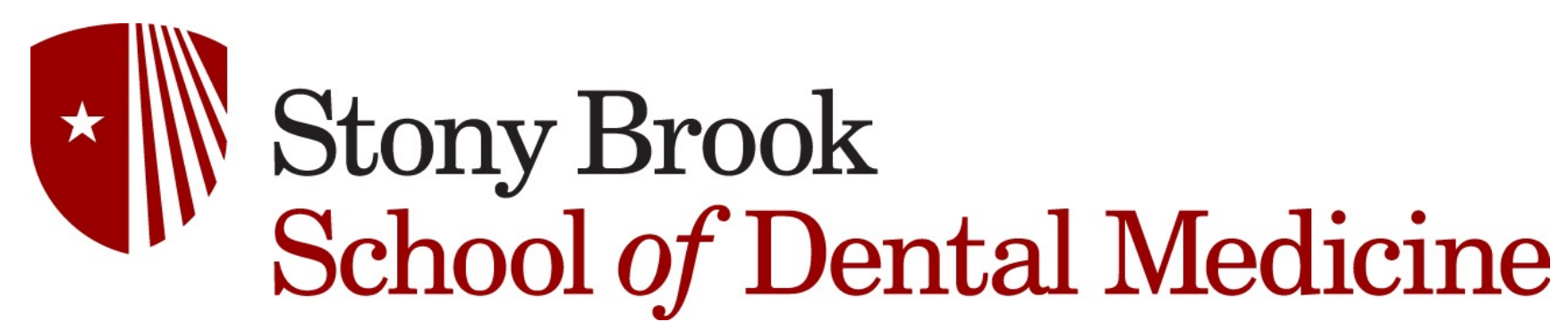
Effect of Acellular Dermal Matrix placement simultaneous with dental implantation on vertical soft tissue thickness:

A Randomized Controlled Clinical Trial

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Introduction

Soft tissue augmentation has different applications in dental implant-related processes such as improvement of esthetics and decreasing the bone remodeling after tooth extraction [1]. Free gingival graft and subepithelial connective tissue graft are commonly used for soft tissue augmentation [2]. However, they have drawbacks such as requiring a second surgical site [3,4], and postoperative pain and paresthesia [5,6].

The existing limitations of autogenous soft tissue grafts led to the development of some alternatives such as the acellular dermal matrix (ADM) membrane, which belongs to the family of allografts. Acellular dermal matrix (ADM) is commonly used for soft tissue augmentation in root coverage, increasing the width of keratinized gingiva, increasing the vestibular depth, or filling the localized alveolar bone defects

It has been demonstrated that vertical soft tissue augmentation may preserve the crestal bone while thin biotype of the peri-implant soft tissue may increase bone remodeling in the process of formation of biologic width[7,8,9]

Objective

- This study aimed to assess the effect of ADM membrane placement simultaneous with dental implantation on vertical soft tissue thickness.

Material and method

- In this parallel-design randomized controlled clinical trial, 25 submerged implants were placed for 25 patients (8 males, 17 females) with vertical soft tissue thickness < 3 mm at the surgical site. Patients were randomized into two groups, and the intervention group (n=13) received ADM over the implant for soft tissue augmentation while no augmentation was performed for the control group. After 3 months, the healing abutments were placed, and the soft tissue thickness at the surgical site was measured again with a periodontal probe in both groups. Data were analyzed using the Mann-Whitney and Wilcoxon tests.

Material and method

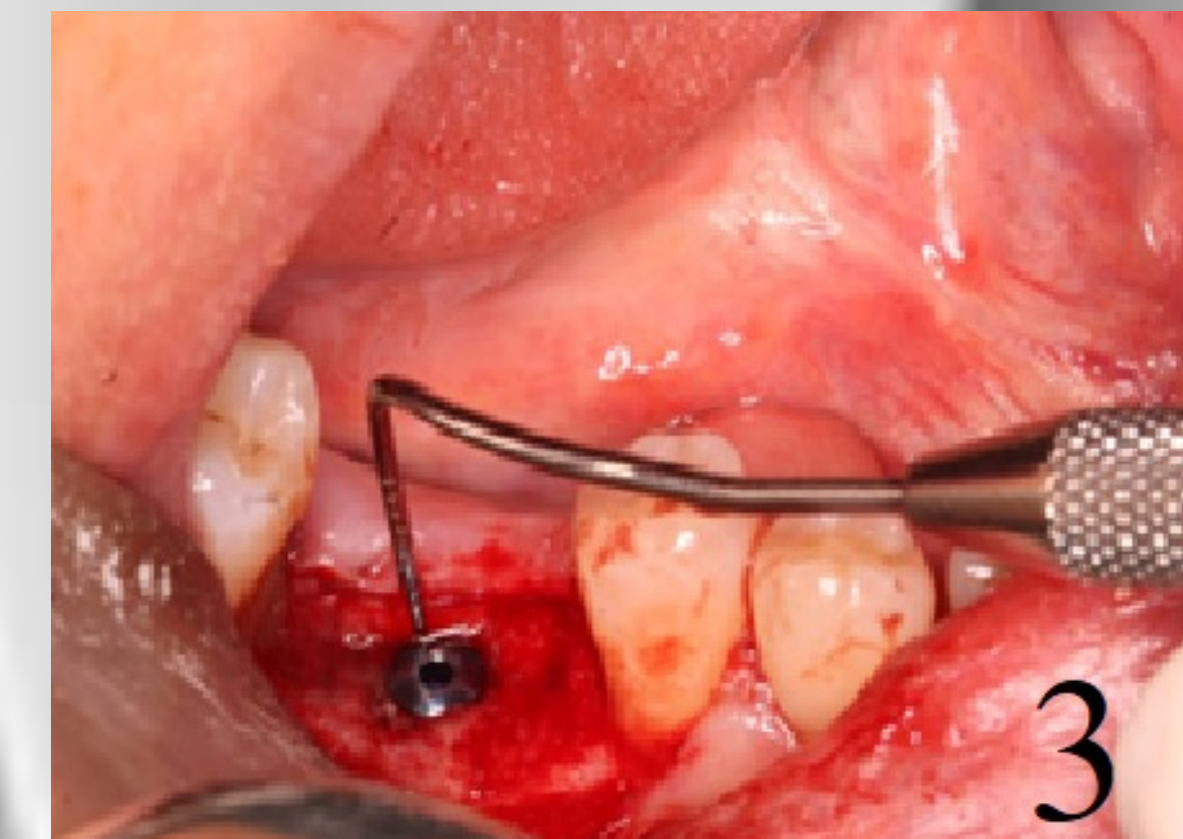
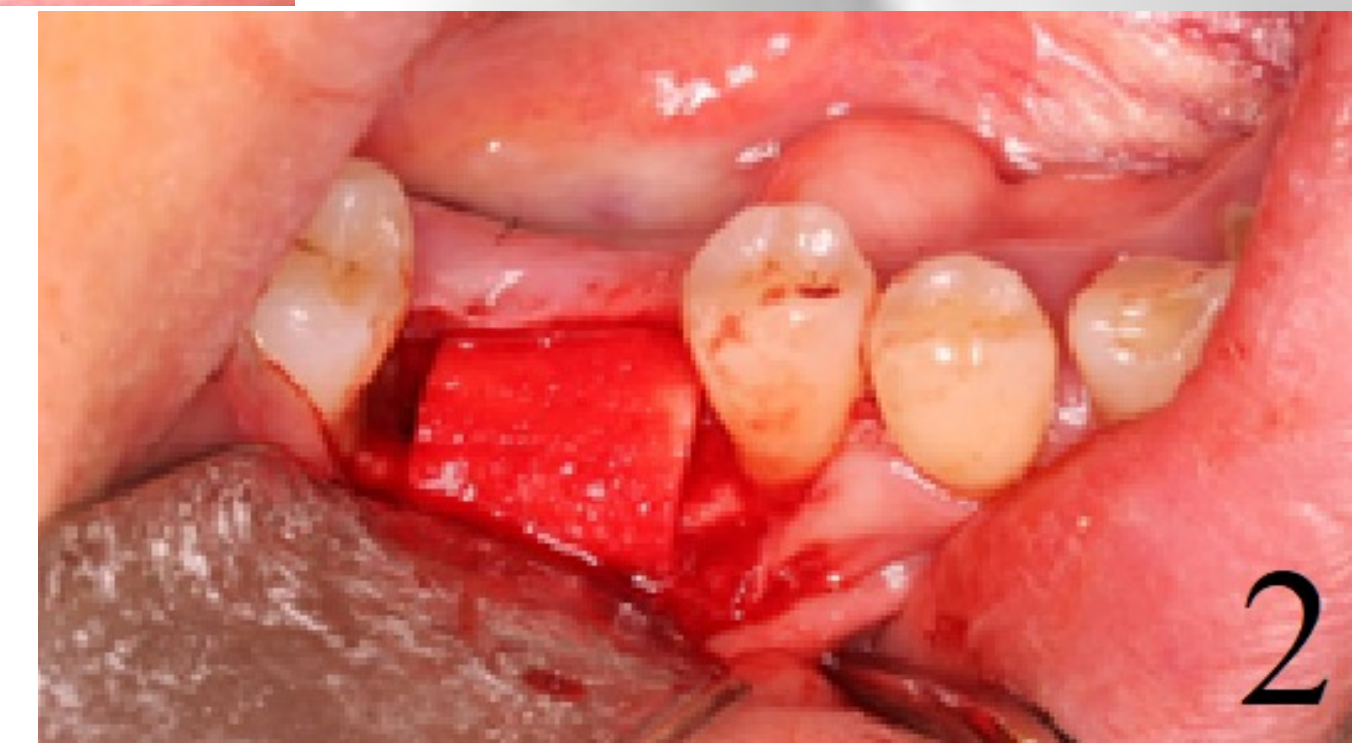
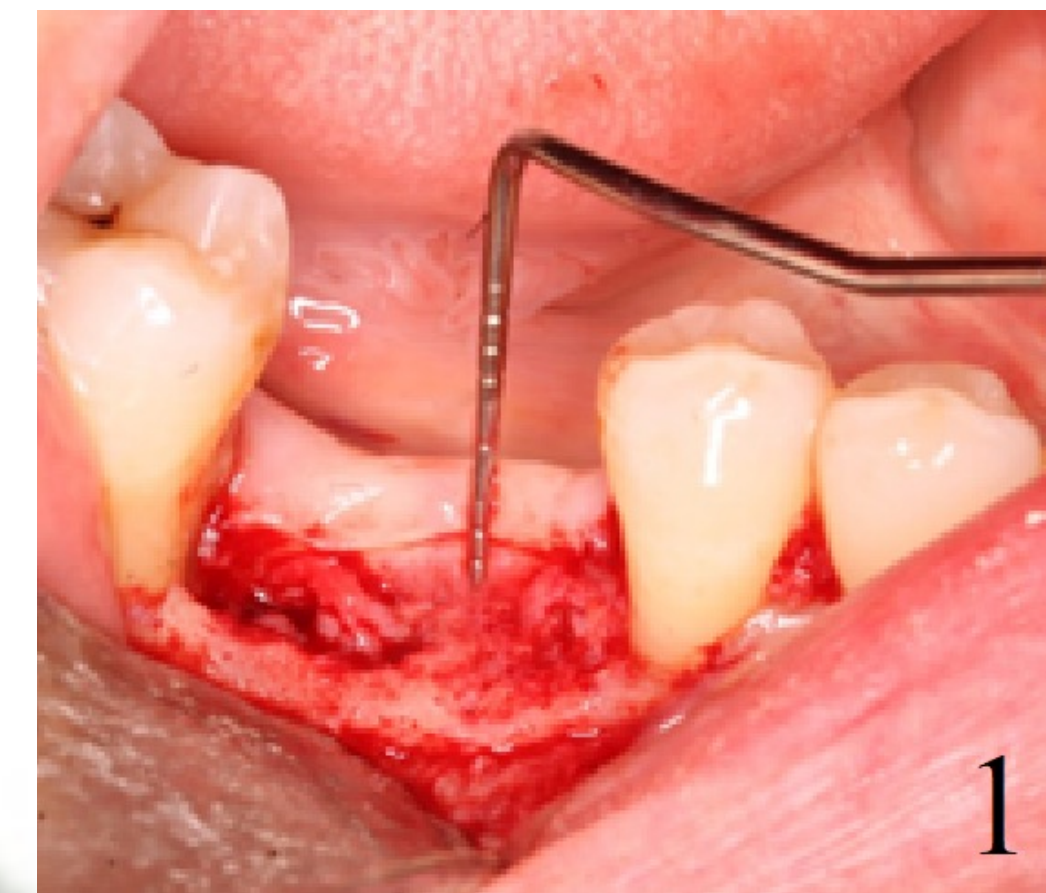


Figure 1. Measuring the soft tissue thickness by a periodontal probe prior to implant placement

Figure 2. Placement of ADM membrane over the alveolar bone for complete closure of the implant placement site

Figure 3. Measuring the augmented/non-augmented soft tissue thickness over the implant in the second-stage surgery

Results

- All 25 patients were successfully treated. The vertical soft tissue thickness was 2 mm and 1.92 mm in the control and test groups before the intervention ($P>0.05$). These values changed to 1.83 mm and 2.69 mm in the control and test groups, respectively after the intervention. The mean gain in soft tissue thickness was 0.76 mm in the test group. The difference in this respect was statistically significant between the two groups ($P<0.05$).

Conclusion

- ADM membrane can be successfully used for the augmentation of vertical soft tissue thickness simultaneous with dental implantation.

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