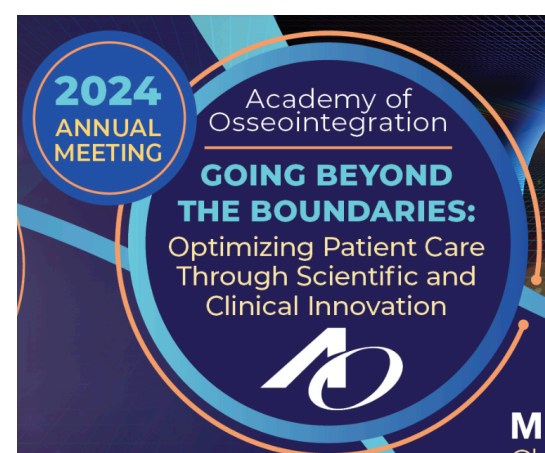




Trends in Soft Tissue Grafting Around Dental Implants – a Retrospective Cohort Study

Irina F. Dragan, DMD, DDS, MS, eMBA , Ramanpreet Kaur, DMD candidate, Shruti Jain, BDS, MPH, Samar Shaikh, BDS, MS



INTRODUCTION

Soft tissue grafting around dental implants plays a pivotal role in enhancing the esthetics, stability, and long-term success of implant-supported restorations. Achieving harmonious soft tissue contours is crucial for creating a natural and aesthetic smile, contributing to patient satisfaction and overall treatment success. Peri-implant soft tissue thickness has been reported to be a possible risk indicator for peri-implant bone loss and disease. The field of soft tissue grafting around dental implants has witnessed continuous evolution with various surgical techniques and biomaterials. An exploration of current trends and techniques in soft tissue grafting can provide valuable insights into optimizing and addressing specific patient needs.

OBJECTIVE

The aim of this retrospective study was to identify the frequency of soft tissue grafting occurrences around dental implants in the Department of Periodontology at Tufts University School of Dental Medicine (TUSDM). The secondary aim was to assess the timing and types of grafting materials used and identify the associations between implant-level and subject-level factors and the occurrence of soft tissue grafting.

METHODS

After the ethical approval was obtained, the IT department at TUSDM was contacted to obtain a list of patients who received soft tissue grafting around dental implants between January 1, 2005, and December 31, 2021, in the Department of Periodontology. The data was reviewed at various time points, as depicted in Figure 1: A. Prior to implant placement; B. During implant placement; C. During the implant uncover - second stage; D. After implant supported prosthesis insertion.

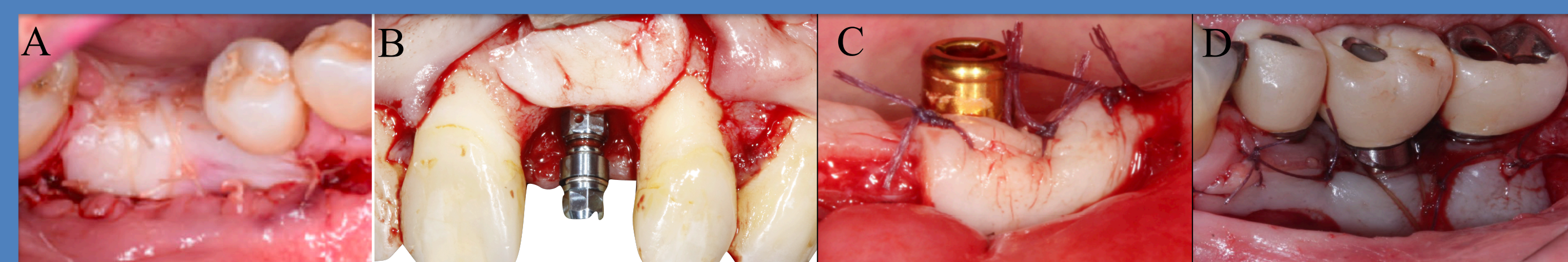


Figure 1: Overview of the 4 clinical case scenarios included in the study.

Data was gathered after the list of patients' electronic health records was obtained, with one implant for each patient included in the data collection. Descriptive statistics in the form of frequencies and percentages were calculated and stratified by arch and site. Associations with nominal outcomes were assessed using the chi-square test. Fisher's exact test was used when the cell counts were sparse. P values lower than 0.05 were considered statistically significant.

RESULTS

A total of 72 incidences of soft tissue grafting around dental implants were observed. Below are pictured the details of the results, based on the timing of soft tissue grafting (Figure 2), type of graft (Figure 3A), technique of graft (Figure 3B), reason for grafting (Figure 3C) and implant site (Figure 3D).

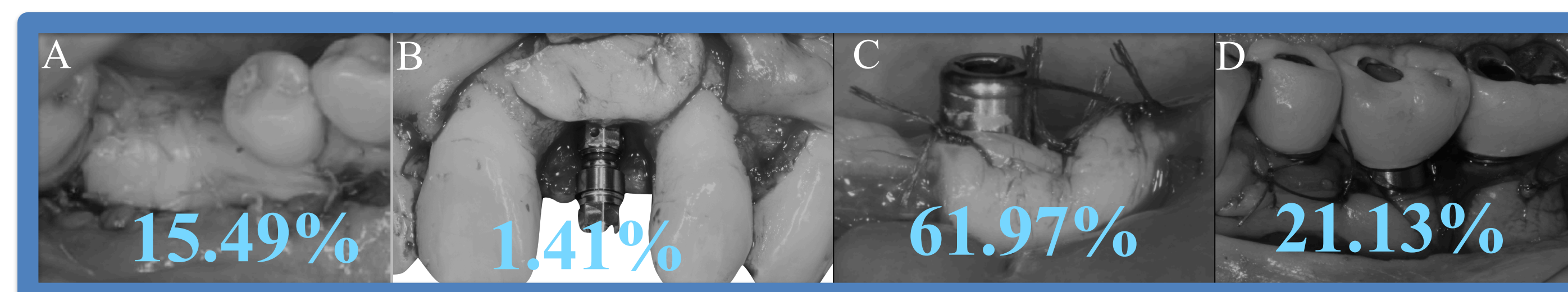


Figure 2: Timing of soft tissue grafting.

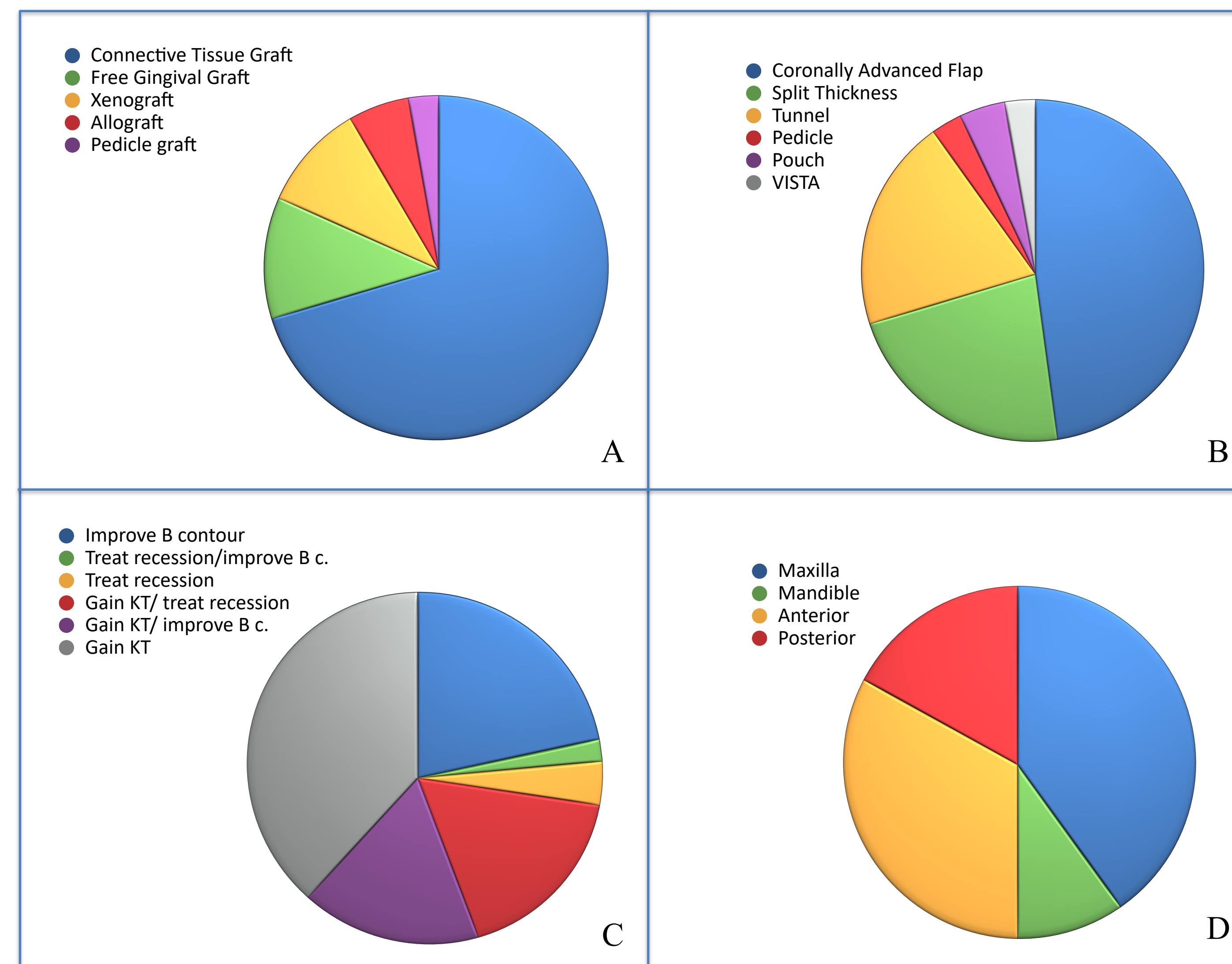


Figure 3: Overview key results.

DISCUSSION

The observed prevalence of autografts, particularly connective tissue grafts, reflects their recognized role in improving peri-implant health, widening KT (Figure 3C), and reducing plaque and gingival indices. The predominant use of autogenous underscores its continued prominence as a preferred choice and is considered the gold standard for grafting around dental implants (Figure 3A). In addition, there was higher utilization of grafts in the maxilla, particularly in the anterior region, which aligns with the reported importance of soft tissue augmentation in esthetically demanding areas (Figure 3D). The higher predilection for grafting at the time of the second stage indicates strategic timing in treatment progress (Figure 2). In addition, in 47.89% of cases, coronally advanced flap was the most frequently used technique for soft tissue grafting (Figure 3B).

FUTURE DIRECTIONS

In today's regenerative advancements, soft tissue alternatives hydrated with growth factors can also be used to augment the soft tissue around dental implants. Figure 4 depicts the use of volume stable collagen matrix to increase the soft tissue thickness around implants in maxillary anterior areas.

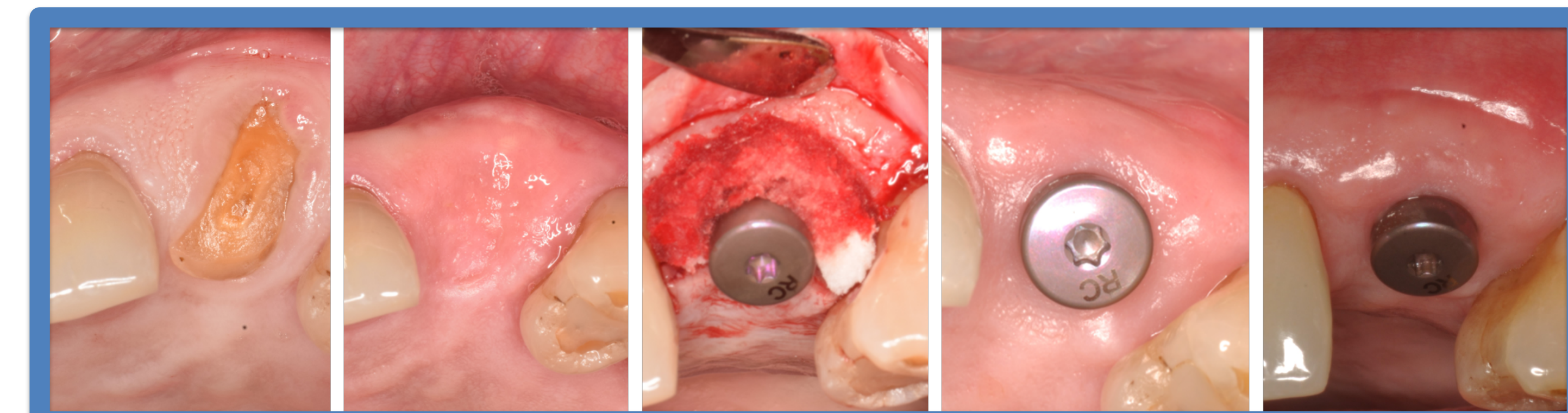


Figure 4: Clinical case of soft tissue alternative used at time of the implant uncover. Case courtesy of Dr. Irina Dragan from The Perio Studio, Boston - MA.

CONCLUSION

The preference for autogenous grafts, the strategic timing of grafting procedures, and the influence of graft types on implant success highlights the dynamic nature of soft tissue augmentation procedures. These findings contribute to the growing body of knowledge guiding clinicians in optimizing outcomes for patients undergoing dental implant therapy.

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