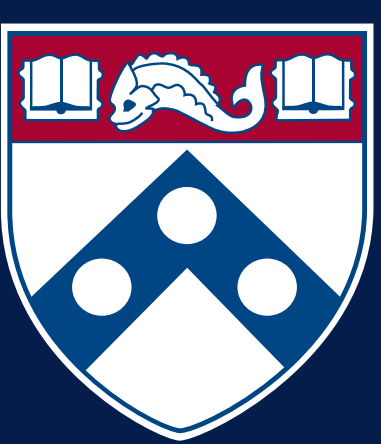




The Effects of Platelet- Rich Fibrin on Success of Guided Tissue Regeneration

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Background

Platelet-rich fibrin (PRF) is a fibrin network derived from the patient's blood that contains activated platelet and leukocyte clusters. This blood product acts as a valuable source of growth factors that can effectively accelerate wound healing. The use of PRF has become increasingly popular due to its ease of preparation, immediate availability, and wide applicability in a variety of procedures. In dentistry, PRF is used for procedures such as bone grafting, periodontal regeneration, and implantology. In orthopedics, PRF is used for the treatment of injuries, such as tendon and ligament injuries, and osteoarthritis.

PRF can also be used in combination with various biomaterials or as a standalone grafting material for a variety of procedures. This allows healthcare practitioners to customize treatment plans based on the patient's needs, ensuring the best possible outcomes. Furthermore, PRF is derived from the patient's own blood, reducing the risk of adverse reactions and increasing the success rate of the treatment. Overall, the versatility and efficacy of PRF make it a promising solution for enhancing wound healing and tissue regeneration in various medical fields.

Materials and Methods

A 58-year-old Asian female patient presented to a periodontics clinic for treatment of gum disease. Her chief complaint was that she had been told she had a gum condition. Her medical history included hypertension, hypercholesterolemia, osteopenia, and oral bisphosphonate use, and she was taking Amlodipine, Fenofibrate, and Ibandronate Sodium. In the intra-oral examination, tooth #24 had deep probing depth, and the mandibular anterior teeth were flared. After consultation with her physician, it was decided that she would take a drug holiday from Ibandronate.

On the day of the surgery, the patient was given topical and local anesthetic. A full-thickness mucoperiosteal flap was raised using sulcular incisions on the buccal and lingual from tooth #23-25. There was a non-contained two-wall osseous defect on the mesial of tooth #24, as shown in Figure 2b. All granulation tissue was removed using hand instruments and laser, and scaling and root planing (SRP) was performed with Gracey curettes. A Bioguide membrane was trimmed and positioned, and allograft bone material was mixed with platelet-rich fibrin (PRF) to form sticky bone. The graft material was held with forceps and molded to a rectangular shape, as seen in the picture on the left. The bone was then packed into the defect and covered with the Bioguide membrane, with a layer of PRF membrane placed over the graft and another layer placed above the Bioguide membrane. Simple interrupted and vertical sutures were placed with polypropylene suture. The mandibular incisors were splinted after the surgery.

Results

At 25 months post-surgery, the patient underwent a radiographic examination that showed maintained improvement in bone levels, as seen in Figure 4c. The probing depths of the left mandibular central incisor also improved from 7-9 mm pre-operatively to 1-3 mm at the 25-month re-evaluation. It's worth noting that the patient was still undergoing orthodontic aligner treatment during this time.

Conclusion

One of the key advantages of PRF is its ability to promote rapid soft tissue regeneration. Studies have shown that combining GTR with PRF can lead to improved clinical outcomes, including increased radiographic bone fill, clinical attachment gain, and reduced probing depths, when compared to using bone grafts alone. This case report provides tangible evidence that using PRF membrane is a promising option for promoting guided tissue regeneration procedures. By leveraging the natural healing properties of the patient's own blood, this approach can help to accelerate wound healing and improve periodontal health outcomes. As such, it represents an important tool in the periodontist's toolkit for promoting optimal patient outcomes.



Figure 1a: Pre-operative view.



Figure 2a: Defect view.



Figure 3a: After grafting and Bioguide membrane placement.



Figure 4a: PRF membrane placed.

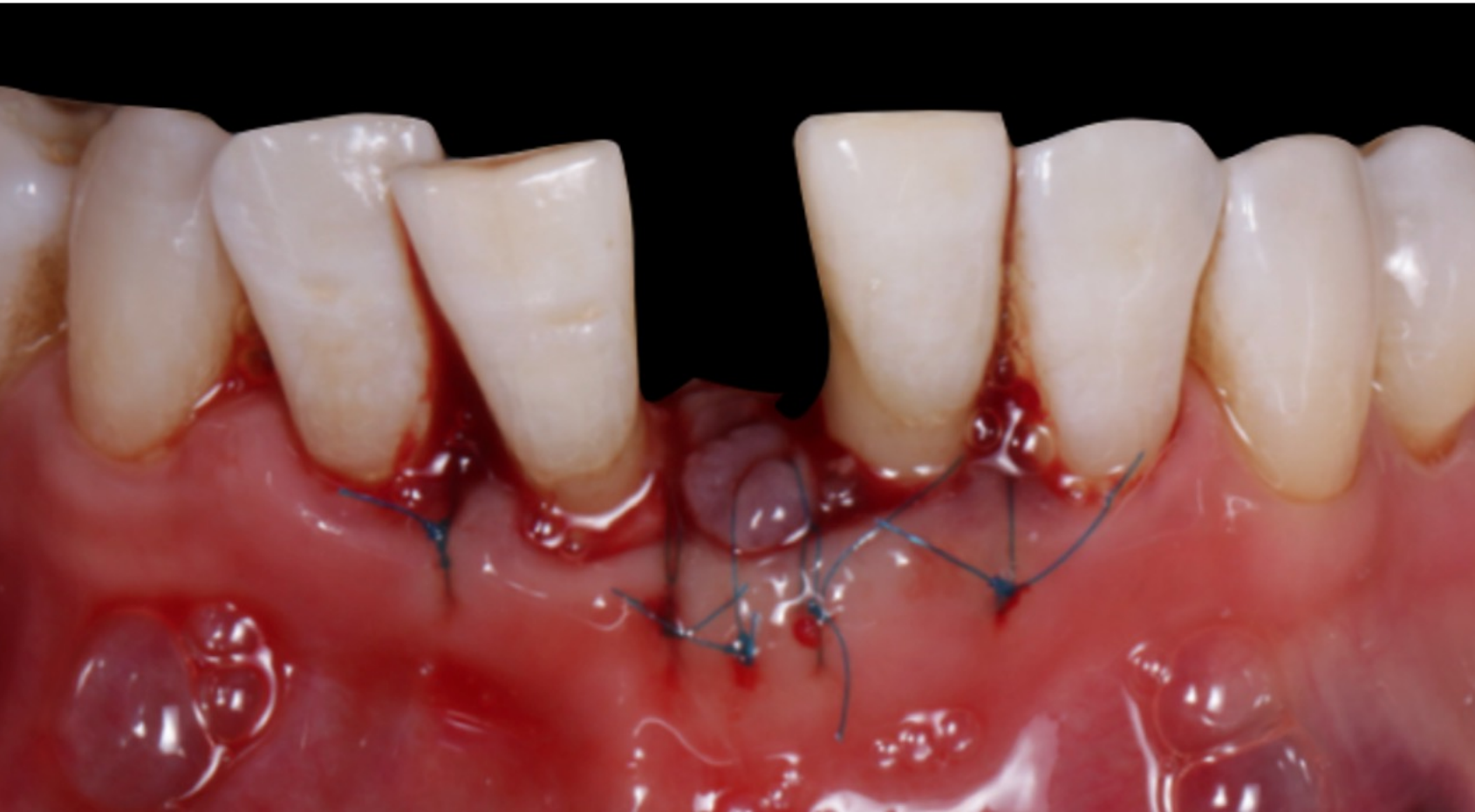


Figure 5a: Closure.



Figure 1b: 28 months postoperative.



Figure 1c: Pre-operative PA.



Figure 2c: Immediately post-operative PA.

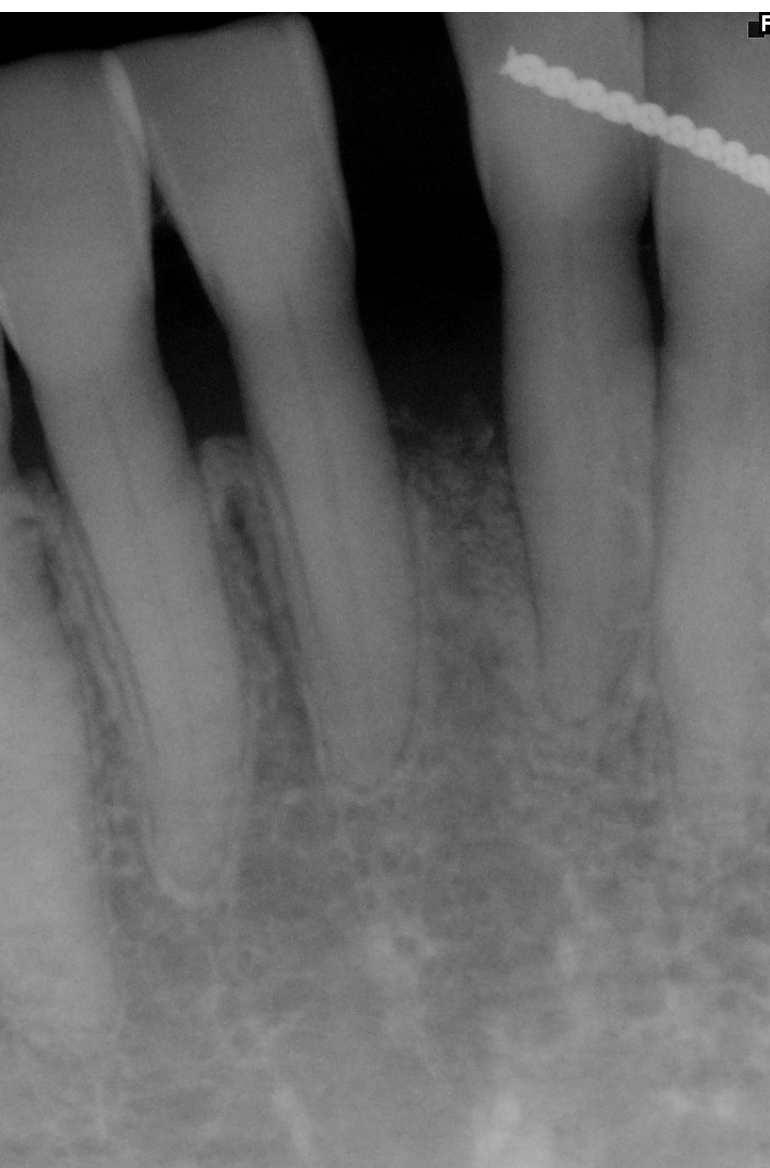


Figure 3c: 5 months post-operative PA.



Figure 4c: 25 months post-operative PA.

PD		#24
Pre Operative	Buccal	9 9 2
	Lingual	8 7 2
Post Operative	Buccal	3 2 2
	Lingual	3 2 2

Table 1. Pre Operative Probing depth vs 25 months post operative

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