

INTRODUCTION

Nanoparticle systems have been extensively studied in recent years to enhance drug specificity through controlled release and improve the solubility of hydrophobic substances by reducing particle size. Chitosan, a biopolymer derived from chitin found in crustacean exoskeletons, has shown promise in tissue engineering due to its various biological applications. By making physicochemical modifications to the chitosan nano particle, it has been developed a novel EPX biomolecule, it can extend its medical applications, particularly in tissue healing, antibacterial and pro inflammatory activity.

CLINICAL CASE

Clinical case:

Female patient, 55 years old with chief complain of pain in the lower right area, attended the postgraduate program of Periodontics at the Universidad Autónoma de Baja California campus Mexicali, classified as ASA III (Glycosylated hemoglobin of 7.3), diagnosed with peri-implantitis and purulent discharge in area #4.5 and 4.6 previously received active periodontal treatment. Undergoes a surgical phase involving the removal of granulomatous tissue (Figure 1a), implant detoxification (Figure 1b) and bone regeneration in the peri-implant area (Figure 1d). After 14 days post surgical phase, the collagen membrane was exposed (Figure 2a). The EPX biomolecule gel was then applied to the wound for 2 minutes (Figure 2b) and rinsed with saline solution.

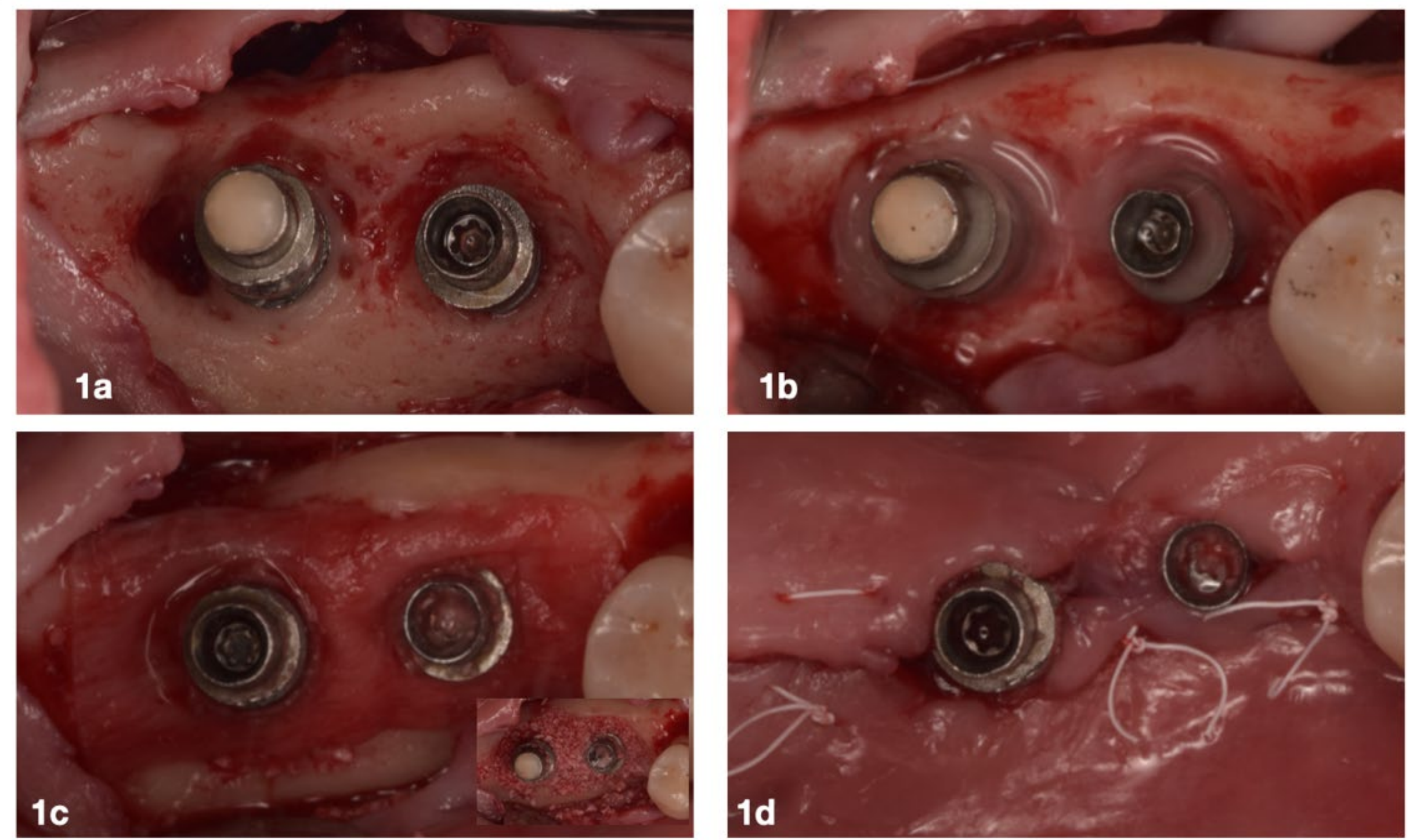


Figure 1. Surgical Periimplantitis Phase

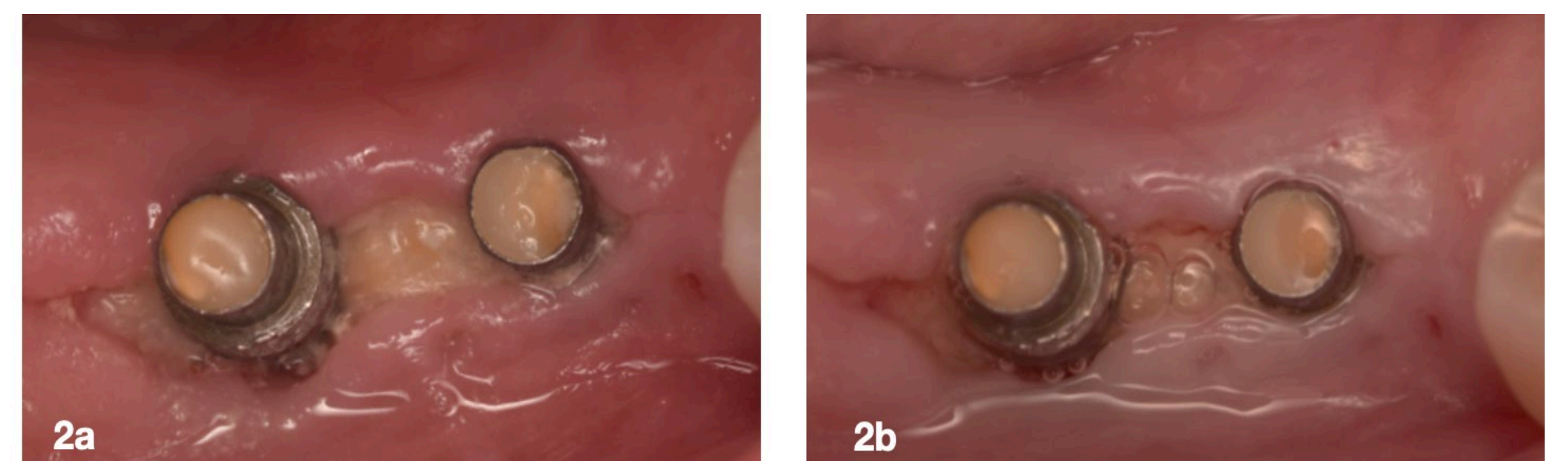


Figure 2. Exposed membrane and Chitosan application Week 2

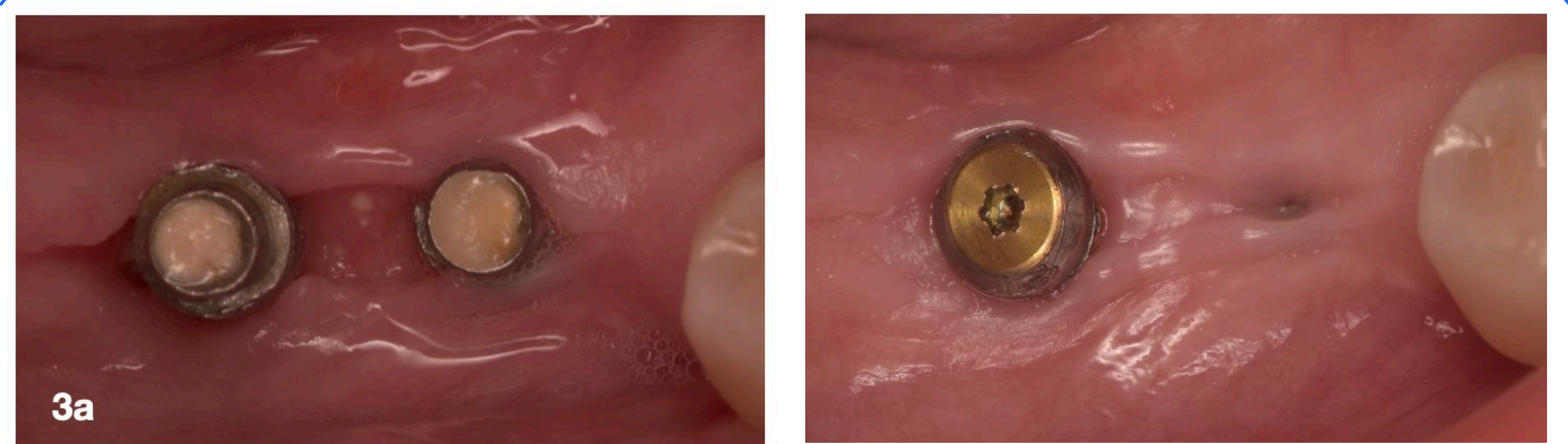
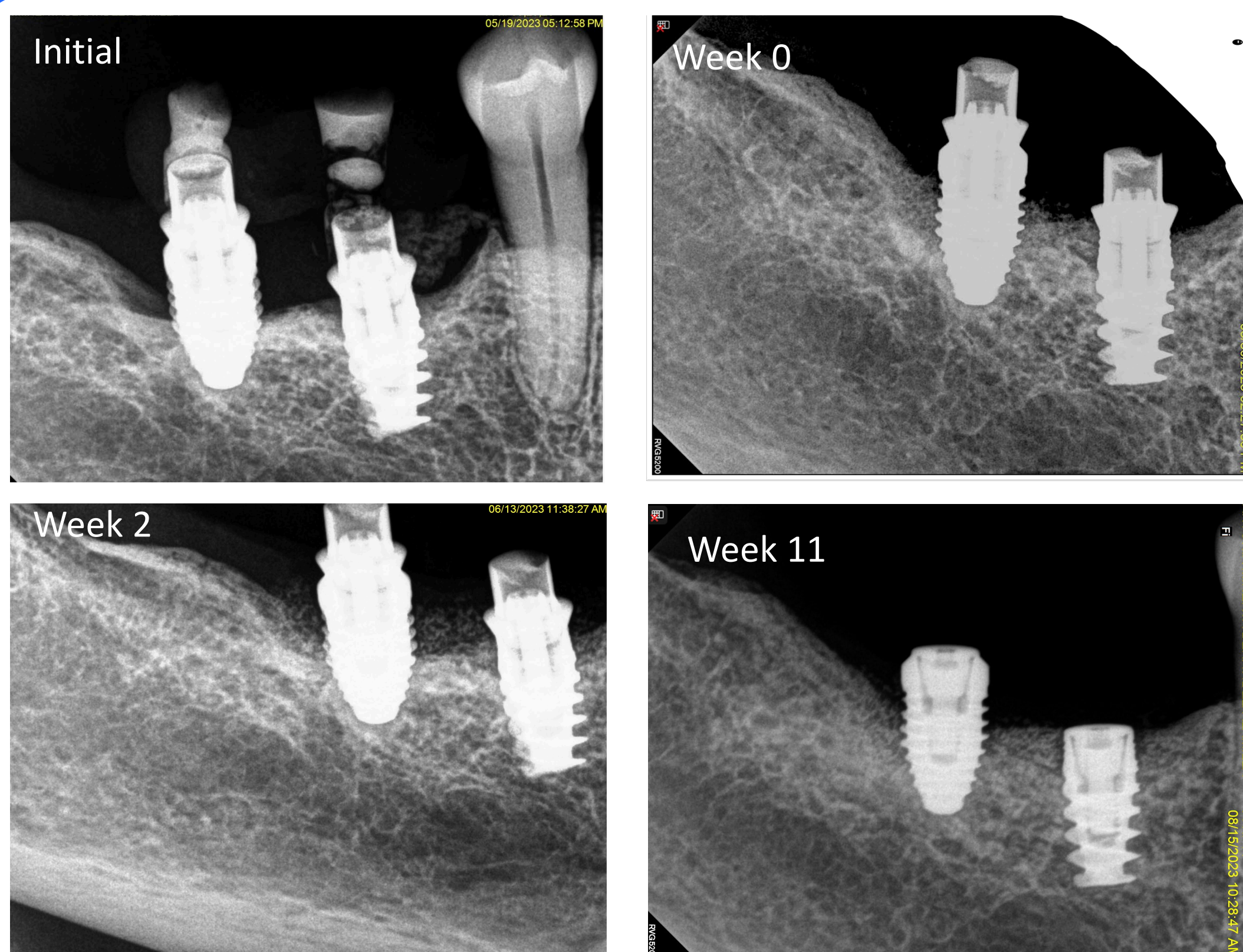


Figure 3. Successful reepithelization Week 1 after applied Chitosan Week 11



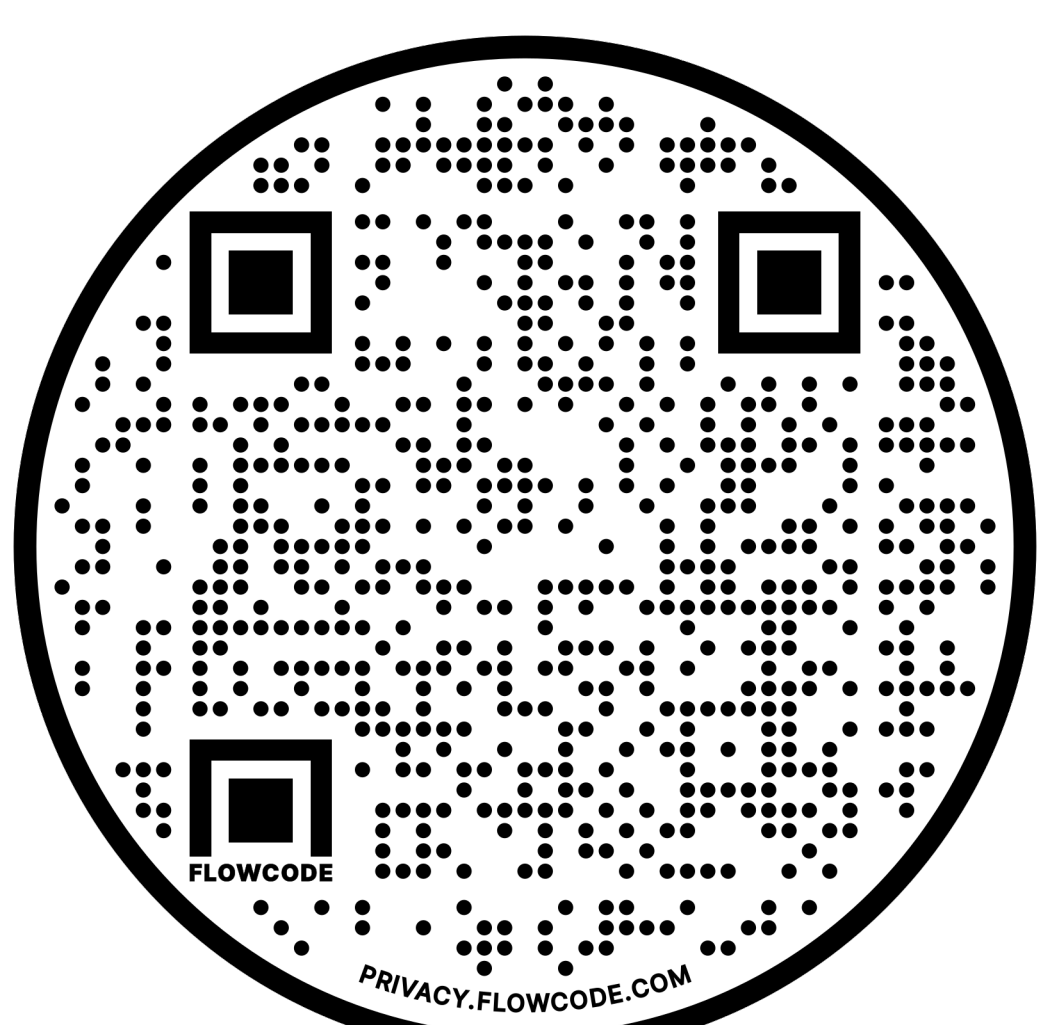
RESULTS

Notably, within a span of 4 weeks, complete wound healing was achieved, accompanied by a successful process of reepithelialization. (Figure 3a,3b)

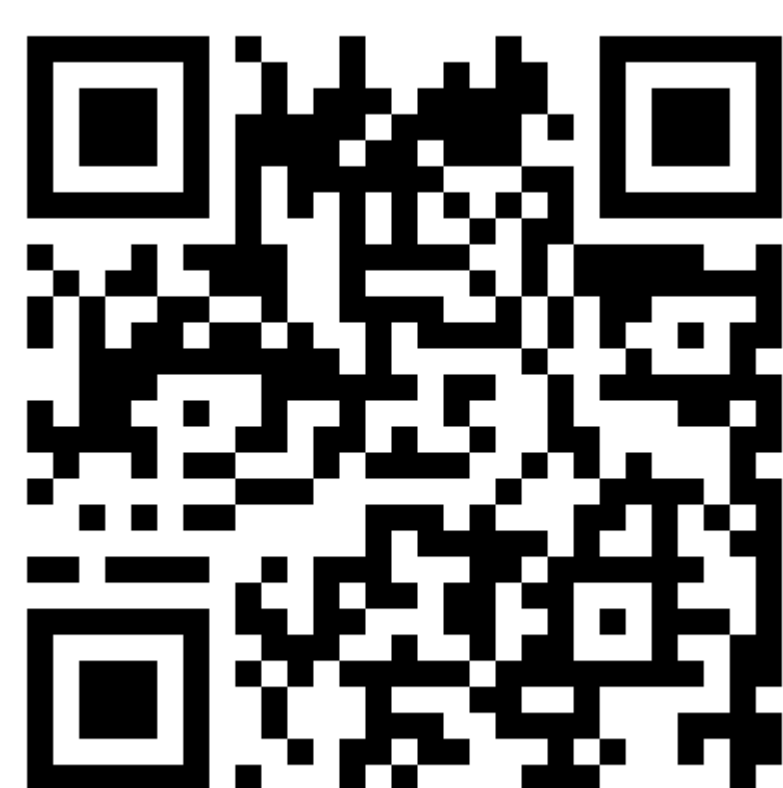
CONCLUSION

The use of nanoparticle systems, particularly with chitosan-based EPX biomolecule gel, holds great potential in enhancing drug specificity, promoting tissue healing, and combating bacterial activity. Demonstrates a promising use in the treatment of peri implantitis. Further research and clinical trials are needed to explore the full extent of these innovative treatments and their potential impact on medical applications and patient outcomes.

REFERENCES



REFERENCES



VIDEO