



Full Arch Implant Provisionalization Using Magnet-Stackable Surgical Guides: A Dental Technique

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Objectives

The utilization of a digital approach in fully-guided implant placement protocols enables the consolidation of surgical and prosthetic steps into a single-visit procedure.^{1,2,3,4,5} This new digital surgical and prosthetic protocol allows for prosthesis fabrication using magnet-stackable guides.^{6,7,8,9} This protocol utilizes magnets that ensure accurate alignment of the stackable surgical guides. The presented protocol can be used without a digital scan during surgery, thus providing precise prosthesis placement on the same day.

Additionally, magnet-incorporated guides offered easy removal and placement of the stackable guides.

Technical Steps

- 1.The patient underwent an intraoral scan with and without an overlay wax rim at the proposed vertical dimension of occlusion (Fig. 1, 2, 3).
- 2.The intraoral scan and CBCT were merged, and three guides were designed using BlueSkyBio, Exocad, and Meshmixer:
 - Tooth-borne positioning guide for anchorage pins.
 - Implant drilling and placement guide.
 - Magnet-stackable prosthesis loading guide.
- 3.The final magnetically retained loading guide was used to deliver a full-arch implant-supported prosthesis without the need for additional scans or impressions on the day of surgery.
- 4.The first guide was utilized over the teeth to drill anchorage pin osteotomies (Fig. 4).
- 5.After teeth extraction, the second fully-guided implant placement guide was secured into the same anchorage pin osteotomies (Fig. 5).
- 6.Multi-unit abutments were placed on the implants to achieve the desired parallelism as designed (Fig. 6).
- 7.Temporary abutments were placed on the multi-unit abutments.
- 8.The third two-piece magnet-stackable guide was secured into the same anchorage pin osteotomies (Fig. 7).
- 9.The prosthesis and the magnet-stackable guide assembly were secured intraorally using magnets and guiding pins (Fig. 8, 9).
- 10.PMMA was used to connect temporary abutments to the prosthesis, which was then finished extraorally while surgical sites were sutured.
- 11.The completed interim prosthesis was inserted, and the patient was followed up at two weeks (Fig. 10, 11, 12).

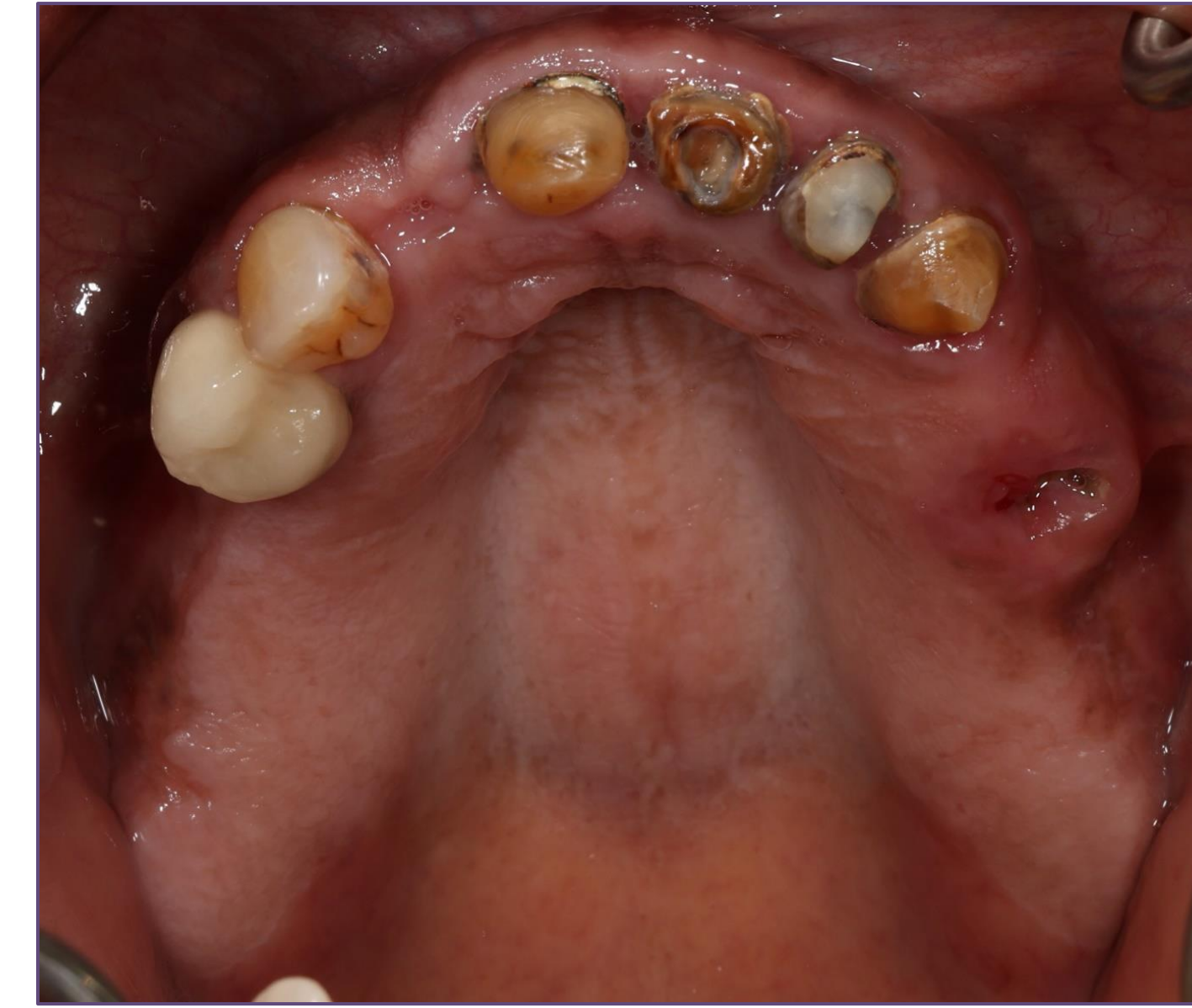


Fig 1. Pre-op occlusal view



Fig 2. Restorative space evaluation using wax rim



Fig 3. Pre-op frontal view



Fig 4. Tooth borne positioning guide for anchorage

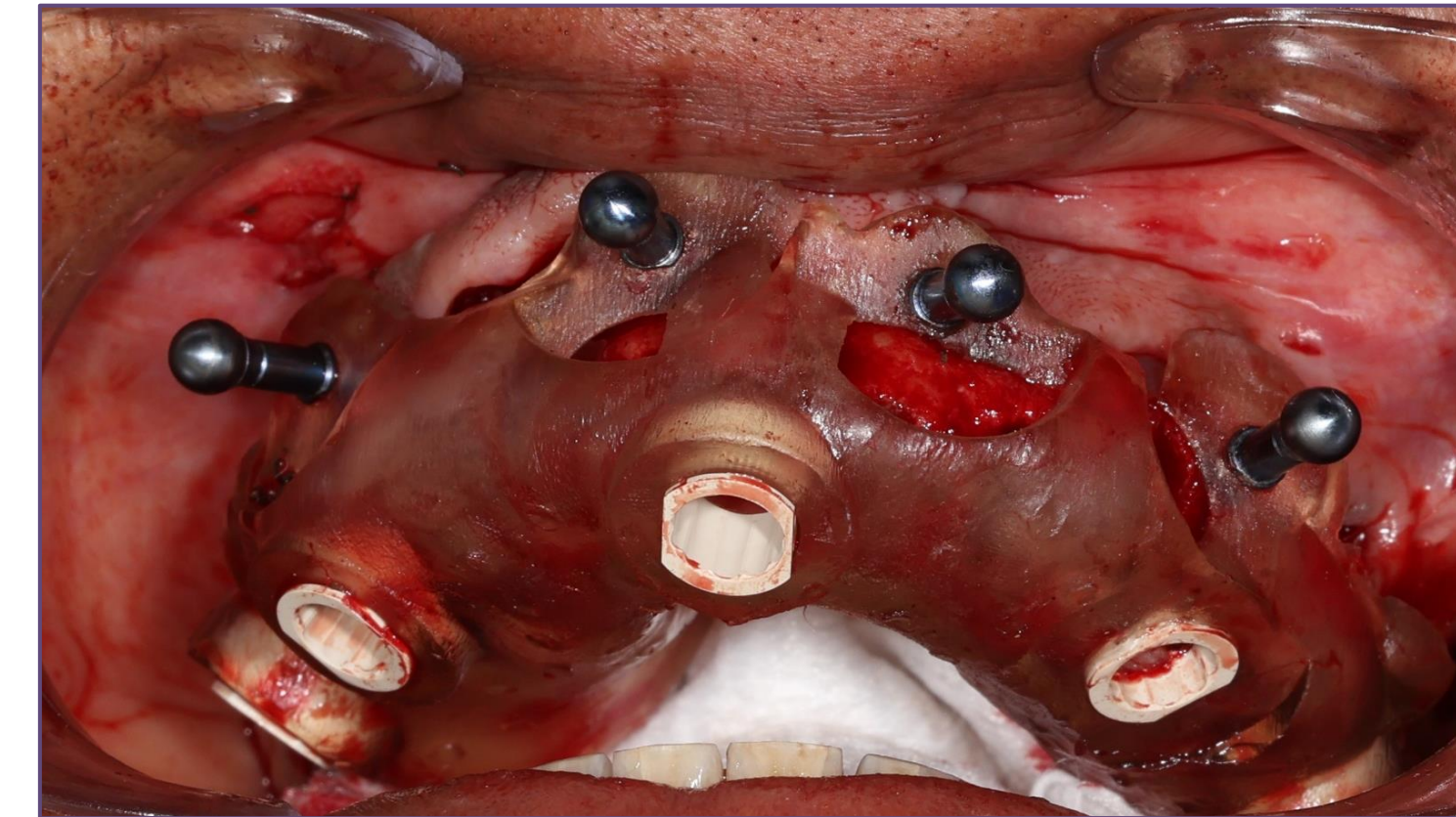


Fig 5. Anchorage of implant drilling guide

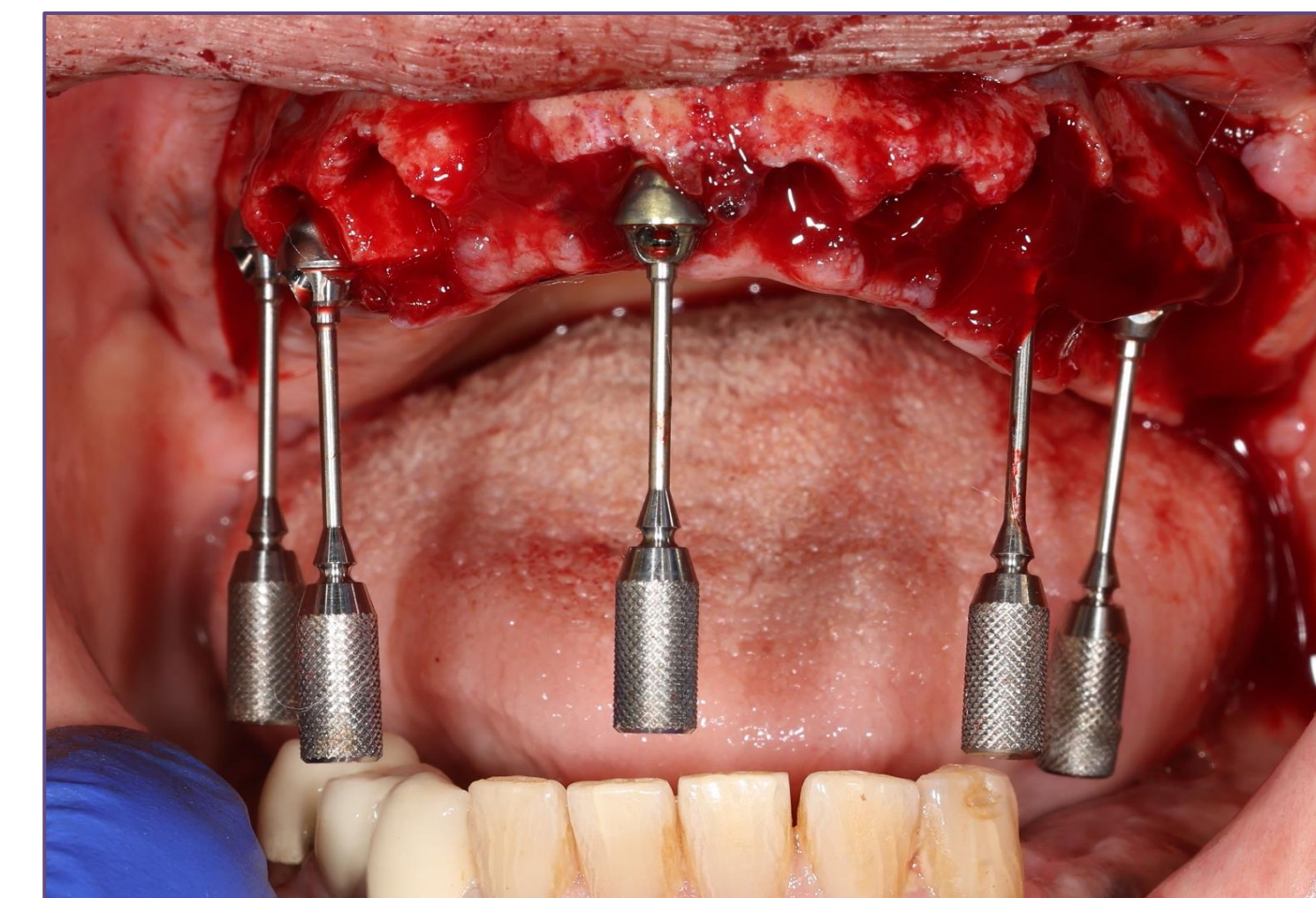


Fig 6. Multi-unit abutment angulation

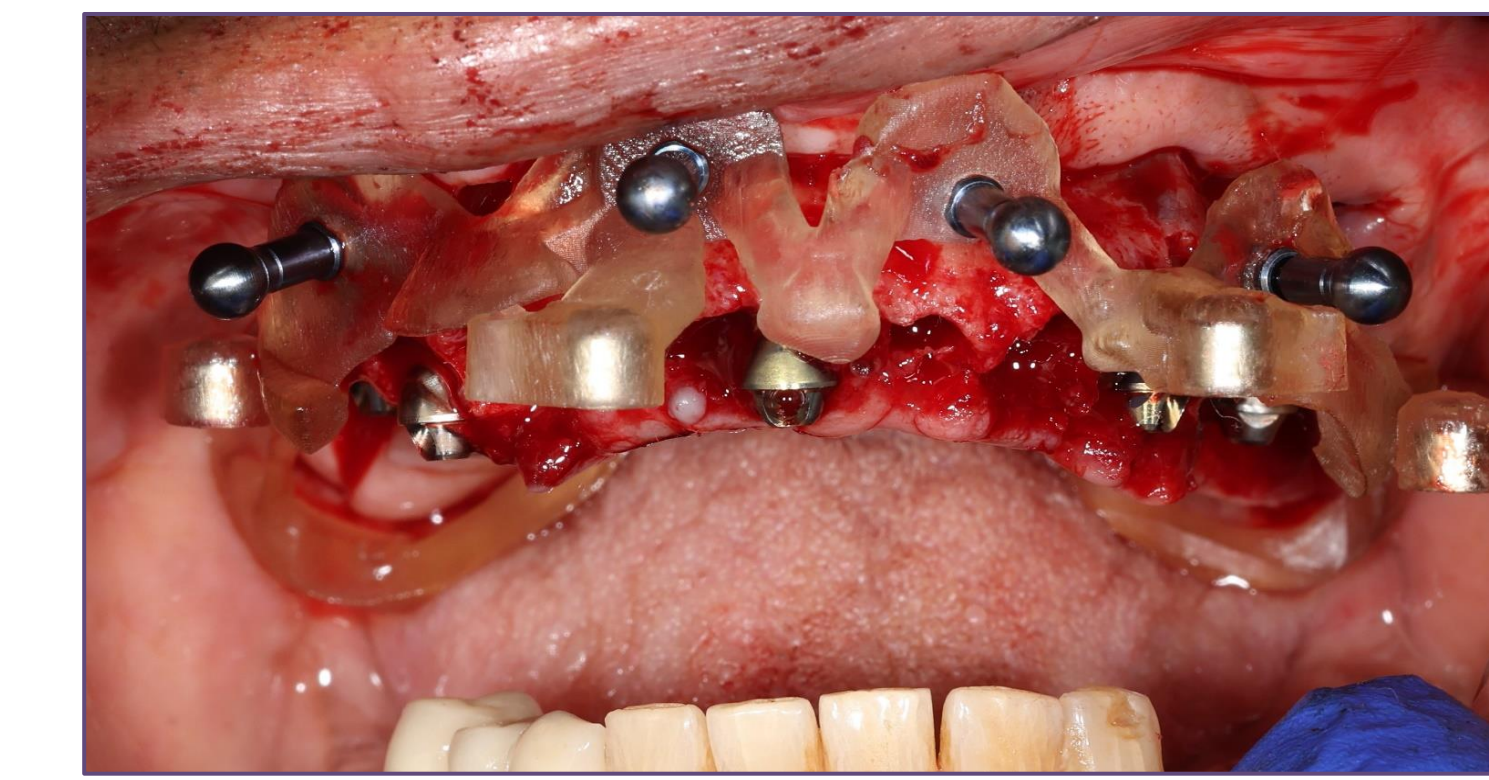


Fig 7. Anchorage of magnet-stackable guide



Fig 8. Prosthesis with magnet-stackable guide assembly

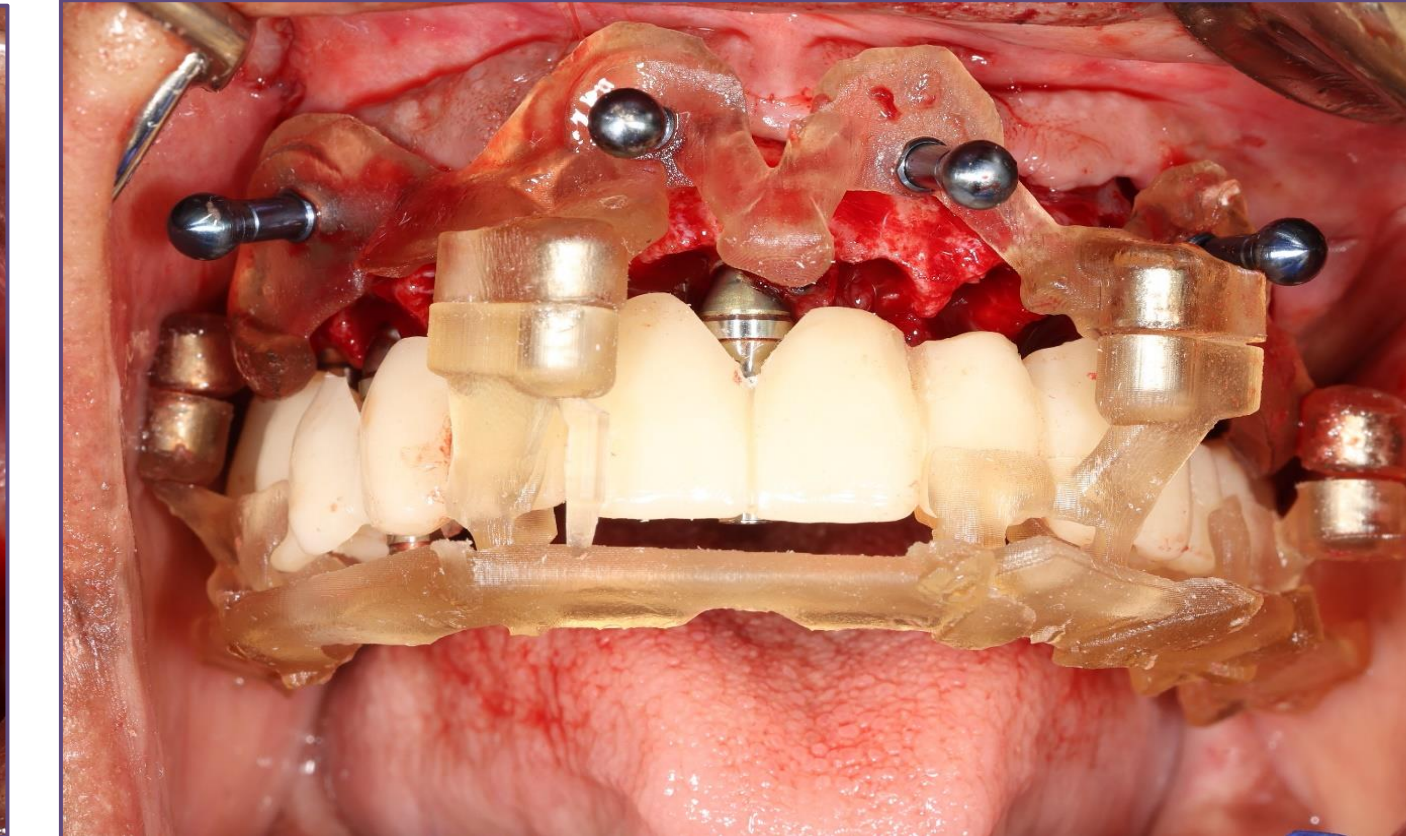


Fig 9. Placement of the prosthesis using a magnet-stackable guide

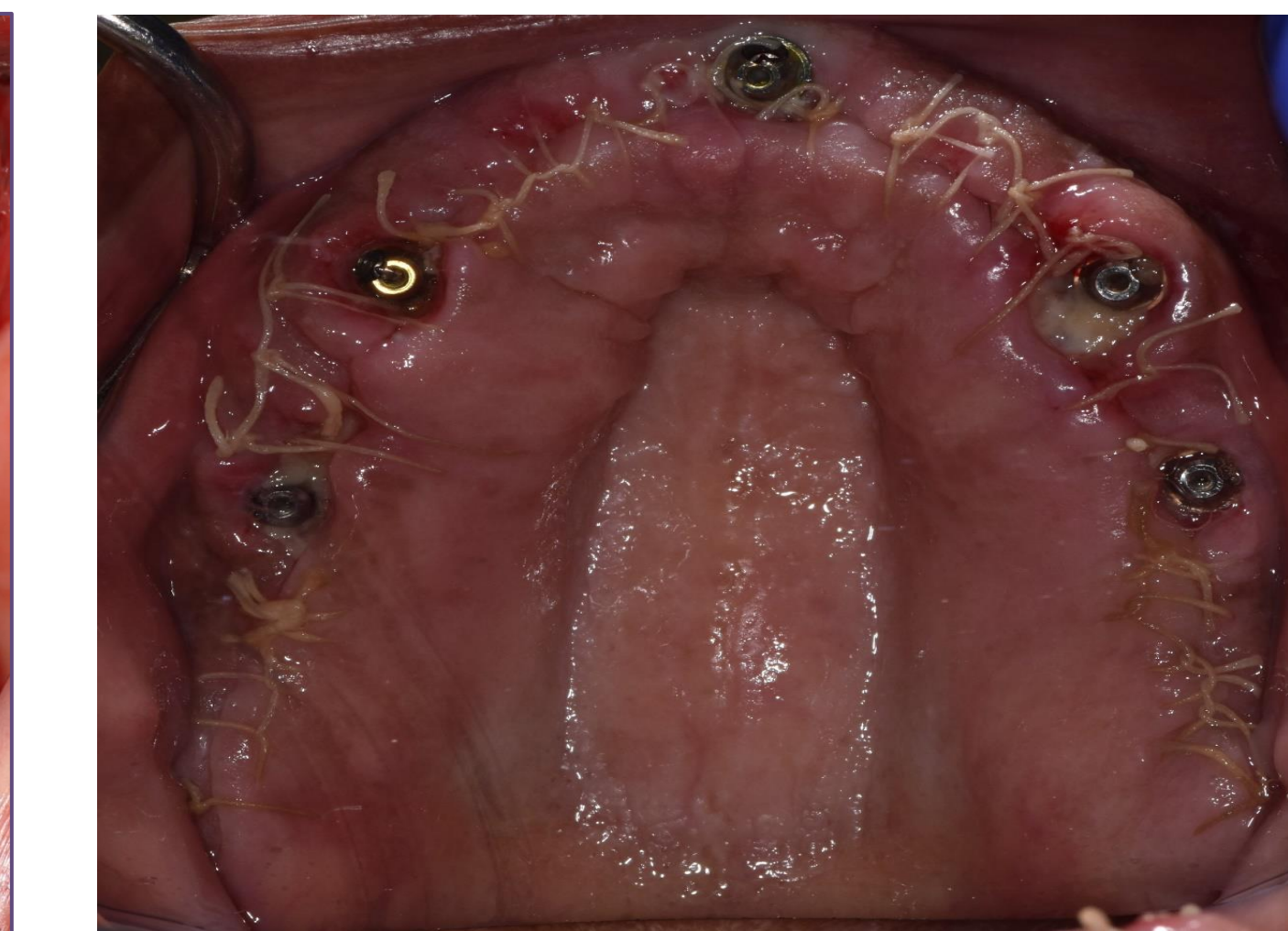


Fig 10. 2-week post-op occlusal view



Fig 11. 2-week post-op frontal view

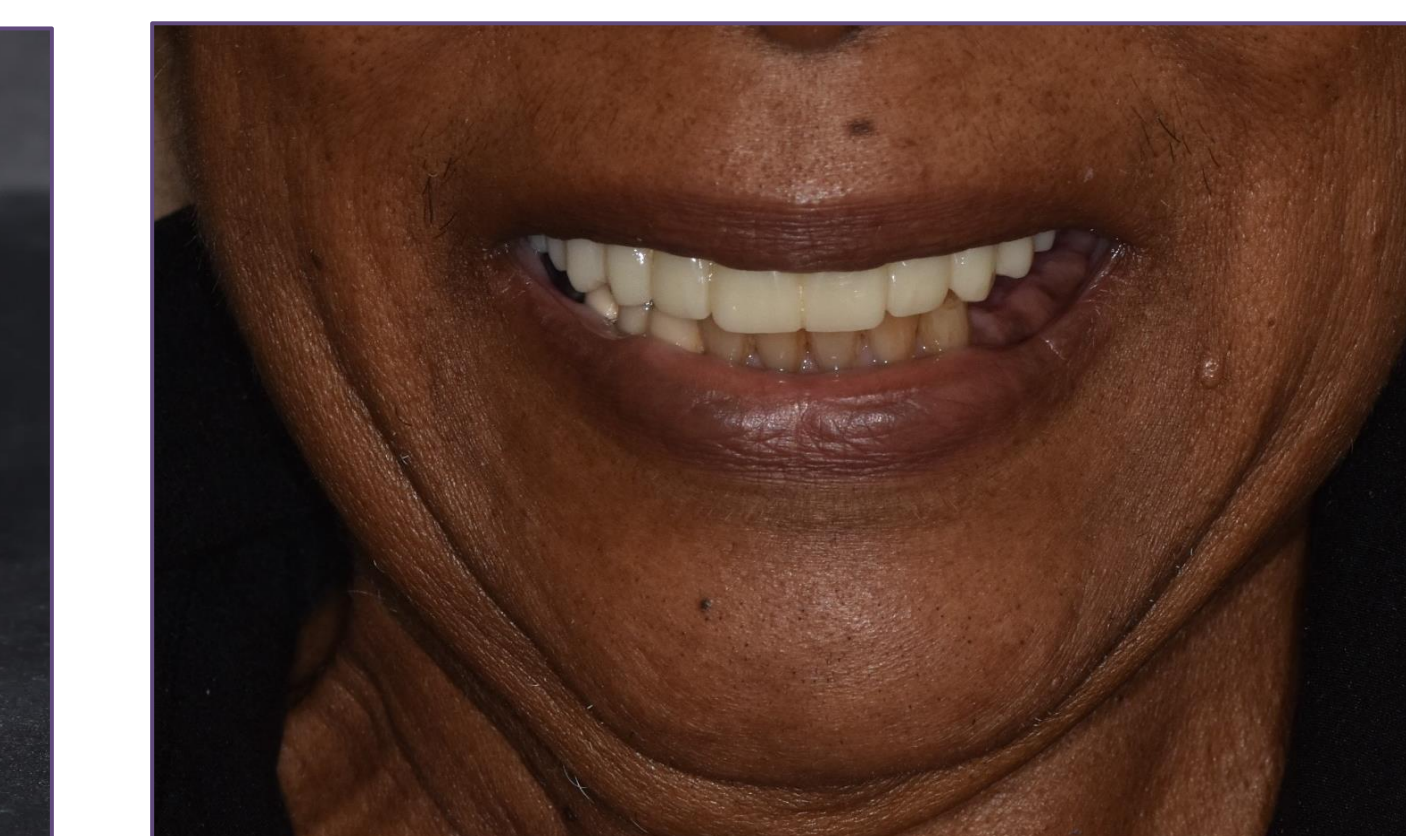


Fig 12. 2-week post-op smile

Discussion

The guided approach presented requires thorough analog and digital planning before surgery. A magnet-stackable guide enables the use of a single-pin anchorage guide for bone reduction, implant placement, and prosthesis loading. This guide ensures more predictable spatial and axial placement of implants and the pre-planned prosthesis. Additionally, magnet-stackable guides offer easy access and clear visualization of the surgical site during the procedure.

Conclusion

The presented protocol allows for predictable and time-efficient accurate positioning of implants and implant-supported provisional prostheses.

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