

Streamlining complex implant rehabilitation a case report on a screw-retained surgical guide protocol

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OBJECTIVES

In patients with extended edentulous areas with osteointegrated implants, requiring new fixtures, the use of the existing implants for guide fixation presents a rational alternative.

AIM: to present a dental informatics protocol to develop a surgical guide screw-retained on existing implants, and the clinical procedure of the implant's surgery and rehabilitation.

METHODS

CLINICAL DATA

- 51yo female with no relevant systemic pathology.
- Edentulous maxillary arch. Lost implants #16 and #22.
- AIM: to replace the implants that were lost.

CLINICAL EXAM

- Provisional full-arch fixed implant-prosthesis in the maxilla. (Fig. 1)
- Implants in teeth #12, #14, #24 and #26. (Fig. 1)
- CBCT and intraoral scanner done after 4 months of implant's loss.

TREATMENT PLAN

- Maxillary full-arch metal-acrylic prosthesis supported by 6 implants.**
 - Design of a screw-retained guide on implants #12, #14, #24 and #26, to place two new implants in position #16 and #22. (Fig. 2-4)



Fig. 1 - Implant planning in CoDiagnostiX® software.



Fig. 2 - Exocad® design of a screw-retained bar.

3D IMPLANT PLANNING / SURGICAL GUIDE PRODUCTION

- Fixation pins & dental implants planned on CoDiagnostiX®. #16 and #22: Straumann® BLT Roxolid SLActive Ø 3.30*10mm (Fig. 1).
- CoDiagnostiX® menu: "Design Surgical Guide" – screw-retained bar is transferred using option "Add object" (5th step of guide's design) and merged with surgical guide designed (settings: "Integrate selected object with guide").
- 3D Printer: Phrozen®Mini 8k 3D, NextDent SG® resin. (Fig. 5)

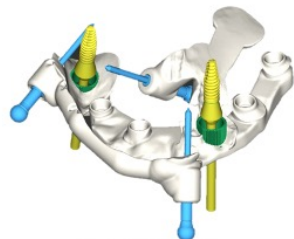


Fig. 3 - Guide's final design.

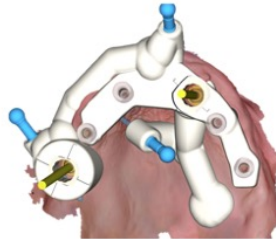
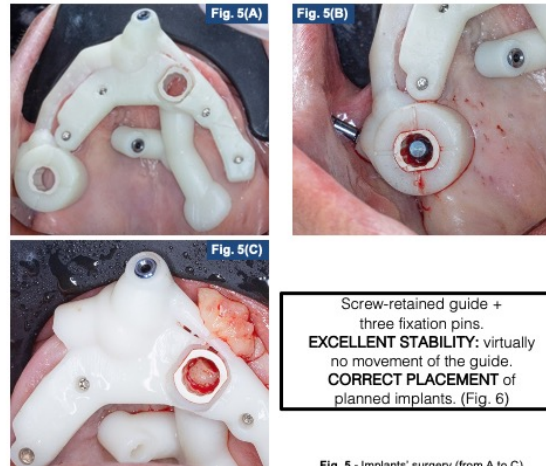


Fig. 4 - Screw-retained surgical guide.



Screw-retained guide + three fixation pins.
EXCELLENT STABILITY: virtually no movement of the guide.
CORRECT PLACEMENT of planned implants. (Fig. 6)

Fig. 5 - Implants' surgery (from A to C).

GUIDED SURGERY

- Implants placed, Straumann® guided surgery protocol. (Fig. 5)
- Pins orientation facilitate an easy insertion.
- Pin #16 enable stability of the free saddle.

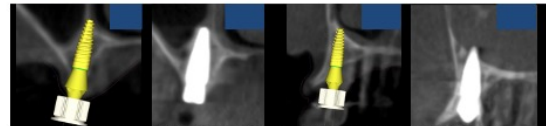


Fig. 6 - Virtual implant planning vs CBCT after placement (1A vs 1B and 2A vs 2B).

- No immediate loading was done due to lack of primary stability. Provisional prosthesis was screwed to the previous implants.

RESULTS

- 3 months after implant's placement: intra-oral scanning; denture's try-in; framework evaluation; final prosthetic placement (metal-acrylic).
- FOLLOW UP:** 1 year after, patient was satisfied with the final result, and no complications were observed.



Fig. 7 - Intra-oral scanning with scan-bodies.

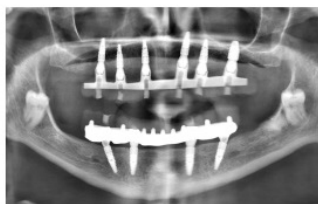


Fig. 8 - Final orthopantomography.



Fig. 9 - Final prosthetic placement.

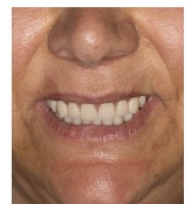


Fig. 10 - Patient's smile.

CONCLUSIONS

The design protocol presented demonstrates how a screw-retained surgical guide on existing dental implants can be designed to optimize implant placement with a prosthetically-driven implants surgery.