

Robotically guided full arch dental implant placement and bone reduction assisted by haptic technology. A case report

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Sequencing

Introduction

In full-mouth rehabilitation, fundamental prosthetic and surgical principles must be considered and understood regardless of the chosen workflow. As clinicians, it is our responsibility to analyze each case and select the most appropriate workflow. For the surgical component of full-mouth cases, we have several options from freehand, to guided techniques, dynamic navigation, and now haptic robotic systems. A case presentation, where a haptic robotic system was used, is presented.

Purpose

The current study aims to determine a workflow on restoring a full mouth implant case, where a haptic robotic system was used to perform the surgery.

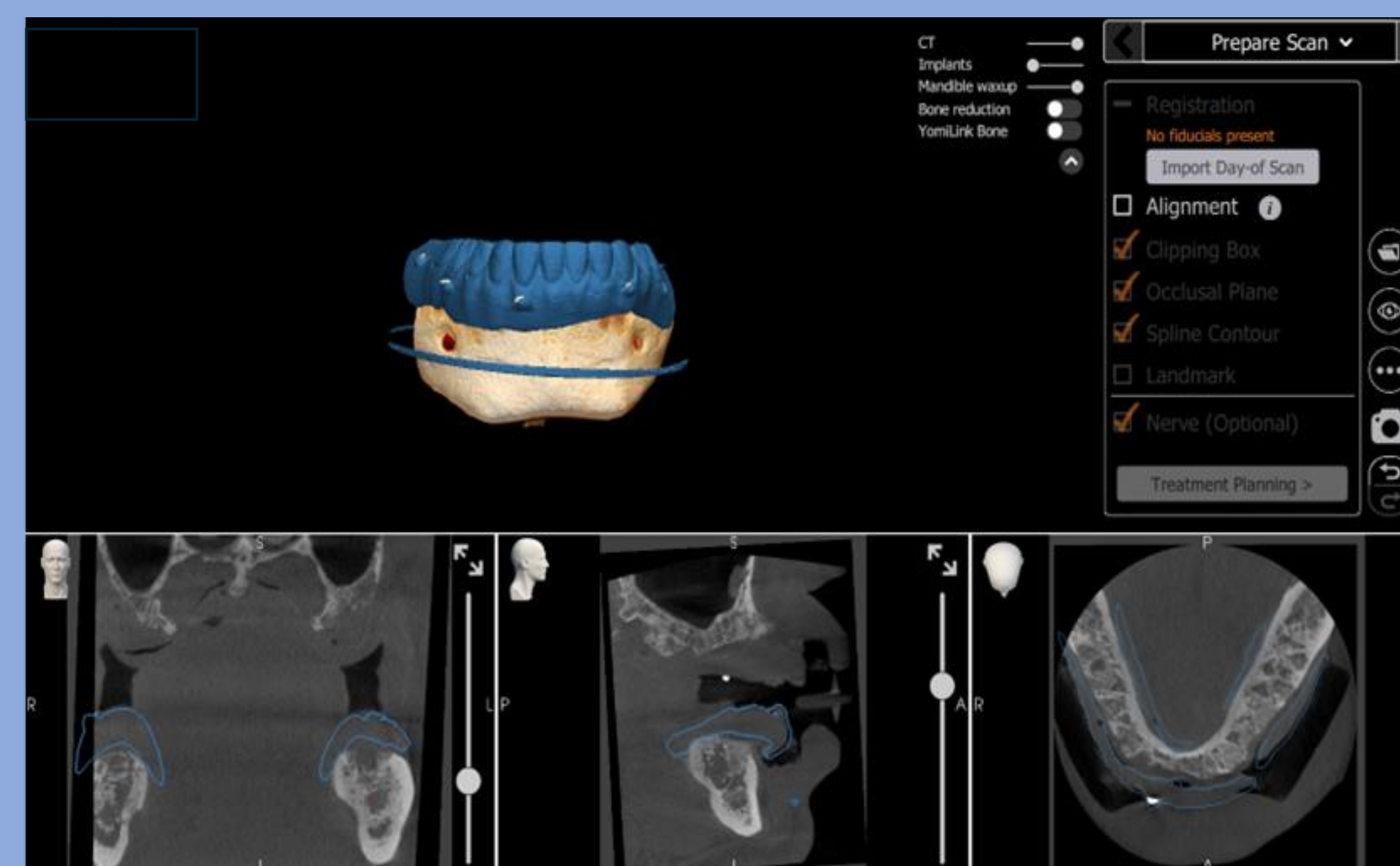
Materials & Methods

A 52-year-old male patient presented at NSU PG Prosthodontics Clinic with a failing dentition after discussing several alternatives, the patient decided for an upper and lower fixed detachable prosthesis. A set of immediate dentures were delivered, and surgeries planned. We decided to use robotic technology (Yomi) for implant placement and as a bone reduction guide. Five implants were placed in the mandibular arch. After implants Osseo integrated, patient's existing lower denture was converted into a provisional hybrid prosthesis.



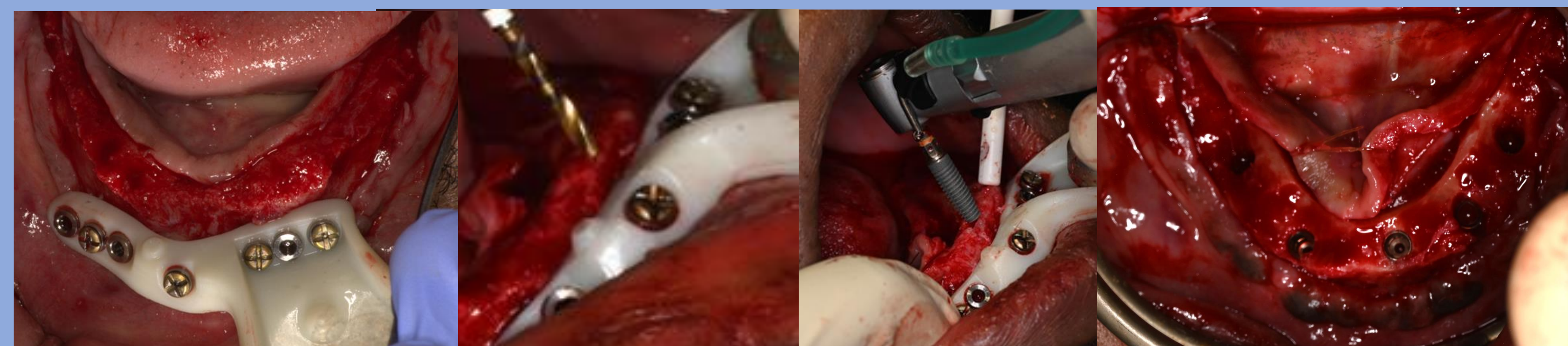
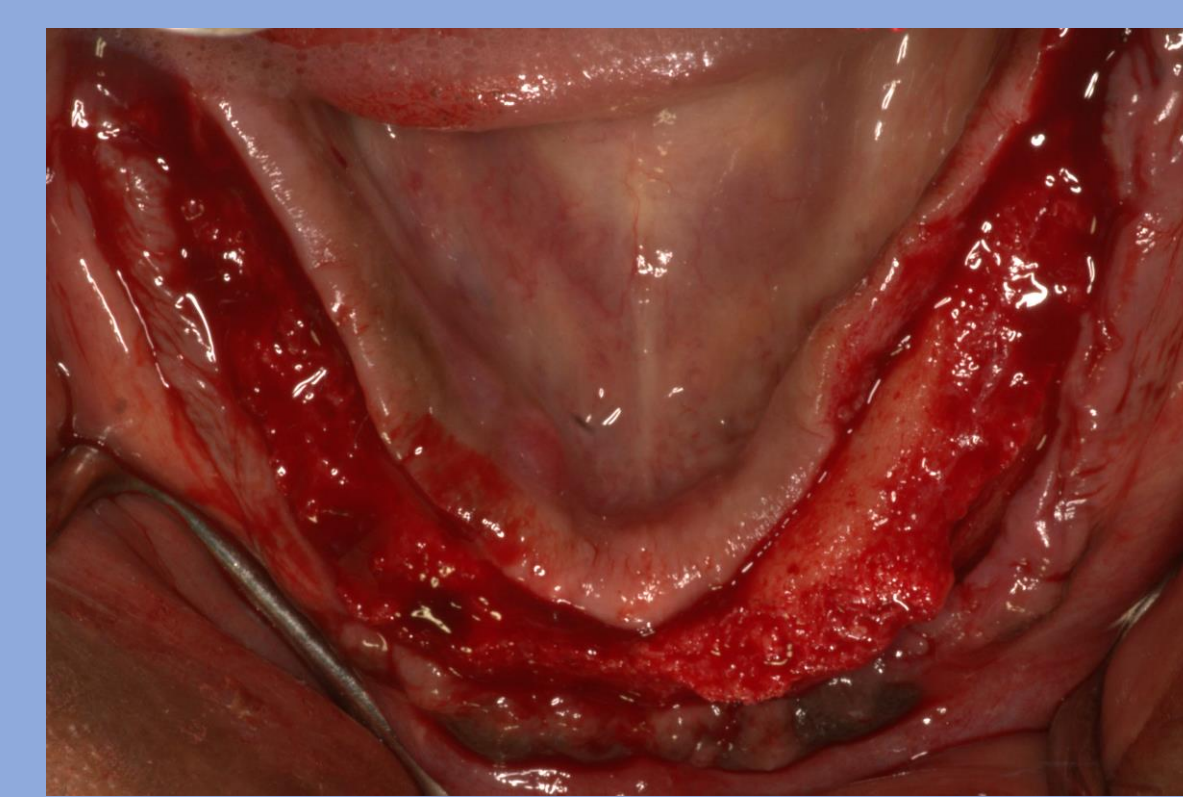
Pre surgery.

- 1-Patient selection
- 2-Tooth position. CD delivery.
- 3-Pre-operative CBCT scan for implant planning (Dual Scan).



Day of surgery .

- 1-Flap.
- 2-Fixation of markers and CBCT pre-surgery (to be merge with previous planning).
- 3-Osteotomy, implant placement, and bone reduction.



Post Surgery

- 1- 7 days follow up .
- 2-Suture removal.
- 3- Implant uncover and conversion 4 months after surgery.
- 4- Occlusal view with multiunits
- 5-Lower conversion



Results

Robotically assisted implant placement aided in accurate implementation of the digital plan to analog execution. The procedure allowed intra operative alterations to implant locations and adequate visibility and cooling of the osteotomy sites.

Conclusion

Multiple workflows can assist in planning a full-mouth. Haptic surgery is an innovative approach, offering real-time feedback through dynamic navigation without compromising the surgeon's manipulation and freedom during the surgery. In the case presented, this method resulted in a satisfactory outcome, with the final implant position, depth, and angulation aligned with the initial plan.

References

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