



Applications of Sleeveless Guided Surgery

Junior Jaramillo¹ Riley K. Allen, DDS,² Sompop. Bencharit DDS, MS, PhD,³

¹ Adams School of Dentistry, University of North Carolina at Chapel Hill, Chapel Hill, NC;

² Graduate Prosthodontics, Adams School of Dentistry, University of North Carolina at Chapel Hill, Chapel Hill, NC;

³ Philips Institute for Oral Health Research, School of Dentistry, Virginia Commonwealth University, Richmond, VA, USA

Introduction

- Static guided implant surgery promises high accuracy dental implant placements; however, most static implant guided systems require metal surgical sleeves that are compatible with their respective implant and guided surgery systems.
- Recently, our group presented an in-vitro study demonstrating that static implant guides without a metal sleeve may promise equivalent, if not better, implant placement accuracy. However, there is currently a void in clinical studies regarding this matter.
- The aim of this presentation is to demonstrate the clinical application of sleeveless static guided implant surgery in an edentulous patient through the placement of four maxillary and four mandibular implant placements.

Patient's Medical History and Dental History

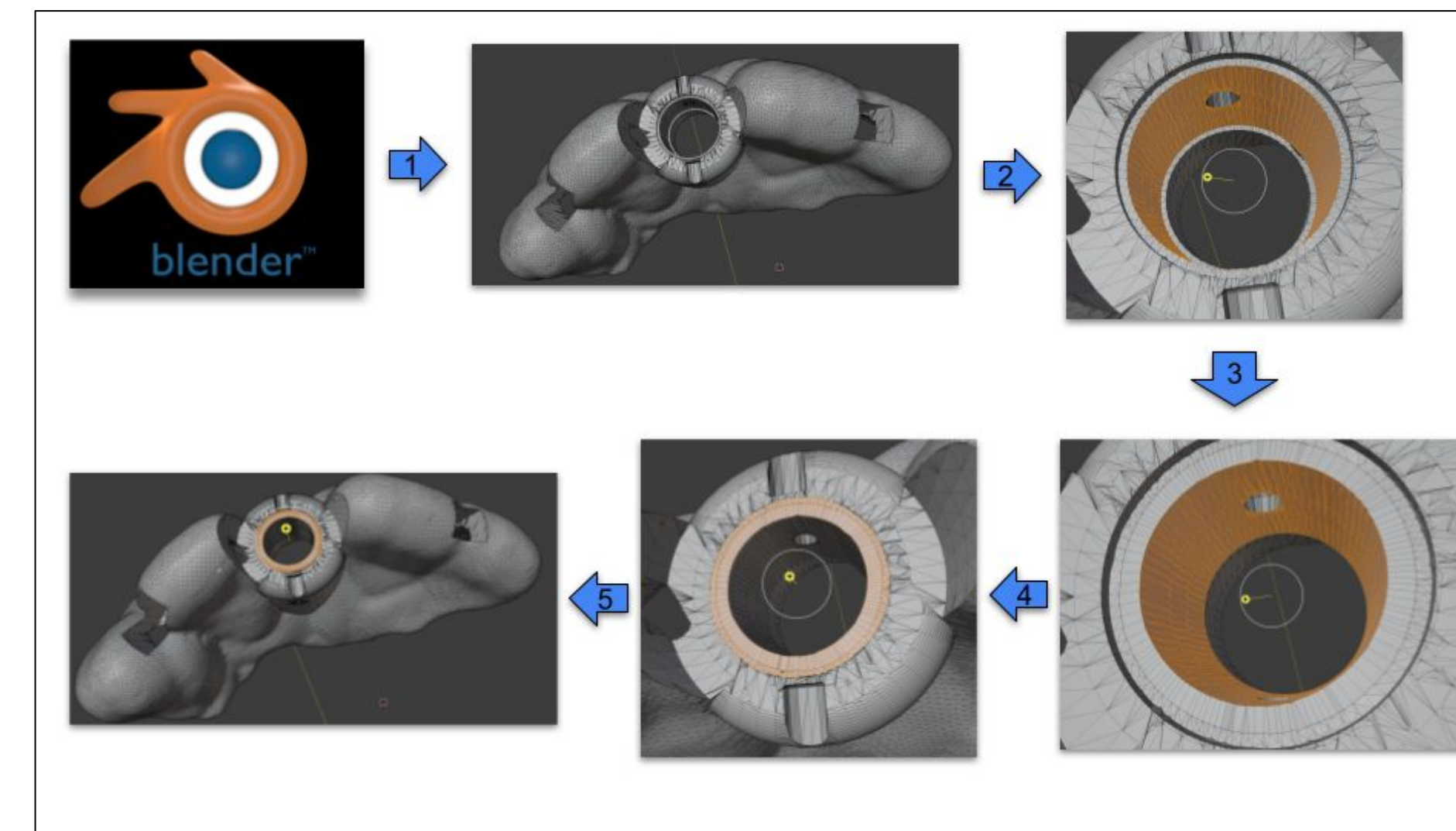
- 50 year old caucasian male presented with the chief complaint: "My teeth are bad. I cannot chew or eat. They hurt and I want implants."
- Patient stated that due to the loss of numerous teeth, he was unable to eat and chew properly. Patient's desires revolved around implant placement.
- The patient is a gulf war veteran who was referred from the local VA hospital.
- The patient's medical history included PTSD and was on sertraline (Zoloft). Patient also had a history of injuries to his hands and spine. The result of the spinal injury was paraplegia, paralysis from the waist down. Patient was not wheelchair bound.
- The patient denied any other medical problems; however, his lifestyle consisted of smoking a few cigarettes daily.

Treatment Plan

The following treatment plan was proposed and accepted by the patient after discussion of possible alternative treatment plans.

1. Extraction of remaining dentition.
2. Fabrication of digital denture to verify VDO and CR as well as assess esthetics and phonetics.
3. CBCT using dual-scan protocol of the patient's digital 3D printed setups.
4. Implant placement using guided implant surgery.
5. Fabrication of definitive maxillary overdenture and mandibular implant supported fixed hybrid prosthesis.

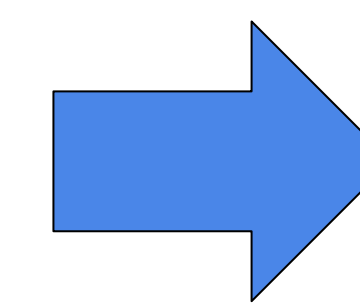
Designing of the Surgical Guide



Guide sleeves were built in using Blender.

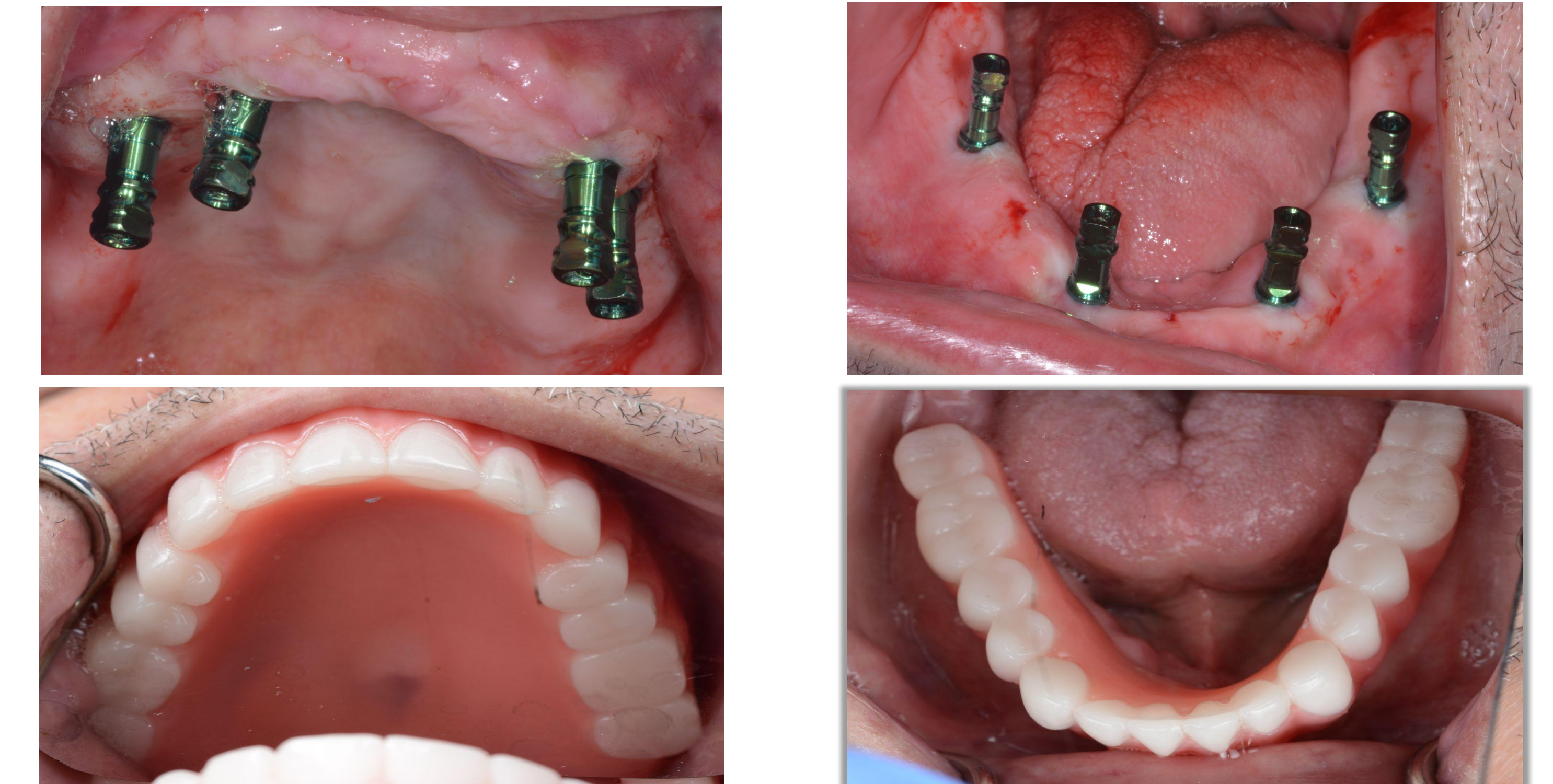


3D printed setups



Guides in the mouth

Implant Surgery and Definitive Prostheses



- Implant surgery was performed under local anesthesia using a flapless protocol.
- Eight implants were placed according to the guided implant surgical protocol.
- The implants were placed using metal sleeveless guides.

Conclusion

- Sleeveless static guided implant surgery can be done with minimal in-silico manipulation of the guide design. This facilitates surgical implant placement without the need of metal guide sleeves.

Acknowledgements

- Coleman Adams for help with guide printing and design.

Reference

Adams CR, Ammoun R, Deeb GR, Bencharit S. Influence of Metal Guide Sleeves on the Accuracy and Precision of Dental Implant Placement Using Guided Implant Surgery: An In Vitro Study. J Prosthodont. 2022 Mar 8. doi: 10.1111/jopr.13503. Epub ahead of print. PMID: 35257456.