



Digital workflow for the fabrication of a tooth-supported stackable guide for bone reduction and implant placement with an added interlocking mechanism



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Purpose:

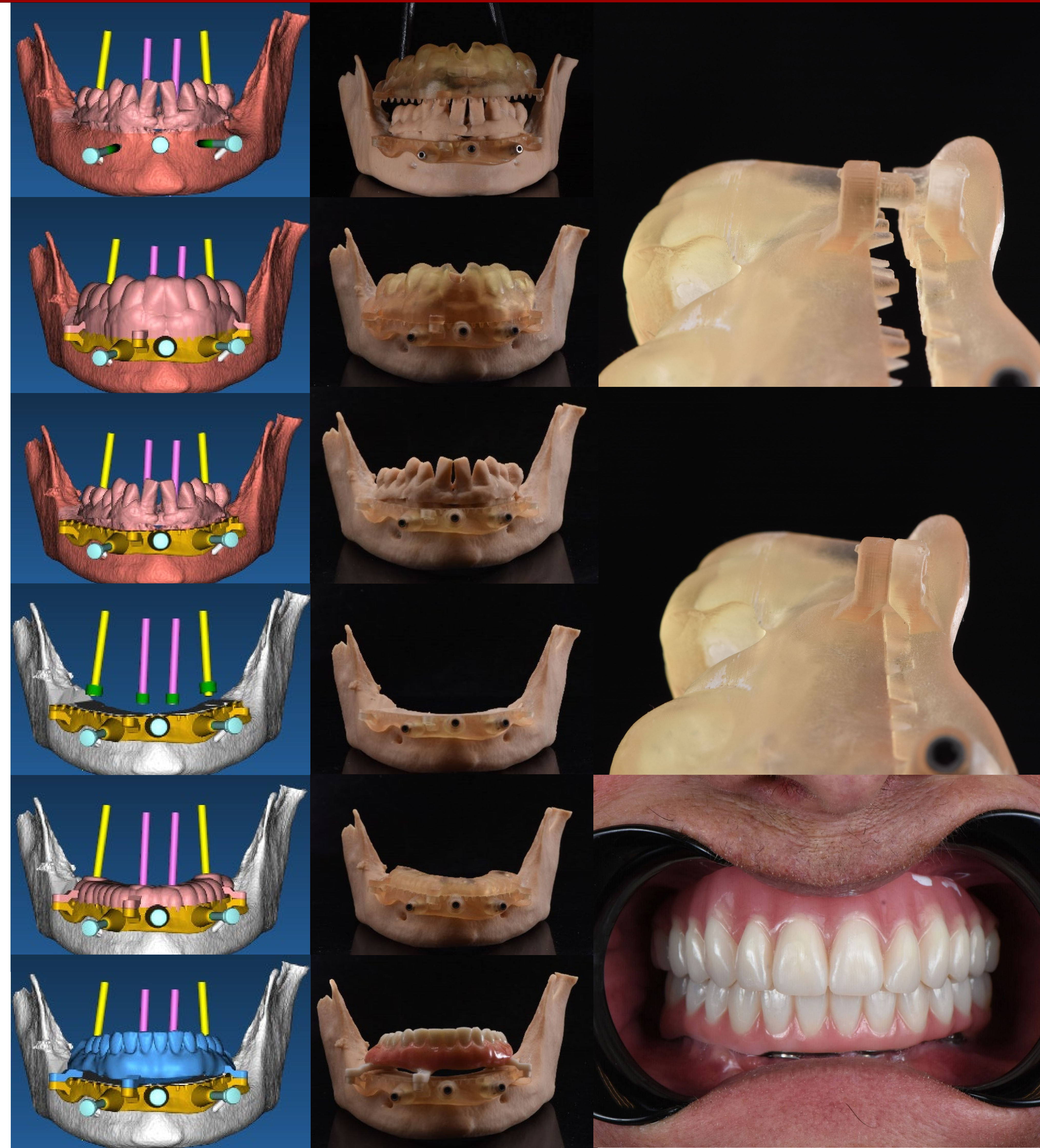
- Describe a digital workflow for the fabrication of a tooth-supported stackable guide for bone reduction and implant placement with an added interlocking mechanism.

Introduction:

- A 63-year-old female patient with terminal dentition needed a full mouth rehabilitation using implants in the mandibular arch, and a complete denture in the maxilla.
- The mandibular crestal bone was thin and significant bone reduction was needed to reach enough bone width for the implants.

Methodology:

- Using a designing software, the Intraoral scans were superimposed on the CBCT file using the teeth as a reference, and implants and fixation pins were planned.
- A bone model was created after segmenting the CBCT and splinted to the teeth scan to create one STL model. A tooth-supported guide was created on that model.
- Digital bone reduction was done using a custom shape at the implant level through the guide and model resulting in a tooth-supported piece, a strap for the pins at the bone reduction level, and the bone reduced model. Then connectors were added between the strap and tooth-supported piece.



- An osteotomy guide was created at a higher level than the reduced bone and then cut using the same shape used before to interlock with the bone reduction strap, and connectors were added.

- The provisional was connected to the bone reduction strap using the same connectors.

- The bone reduction strap, the tooth guide, and the osteotomy guide were printed in surgical guide resin and the provisional was printed in provisional crown and bridge material.

Results:

- All the guides interlock with the bone reduction strap, providing more stability and retention.
- Implants were placed and immediately loaded.
- 4 months later, the final prosthesis was delivered.

Conclusions:

- The tooth-supported stackable guide allowed for more accurate and efficient implant placement.
- Immediate loading was fast and accurate, and minimal adjustments were needed.
- The interlocking mechanism improved the retention and stability of the different parts of the guide.