MAGNET-RETAINED ALL-ON-X SYSTEM: PROSTHETICALLY DRIVEN SURGERY AND PROVISIONALIZATION

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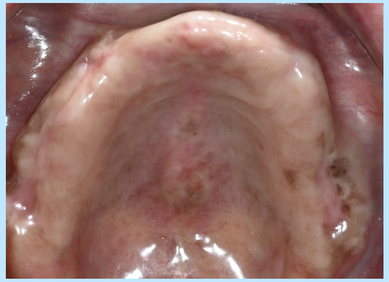
INTRODUCTION

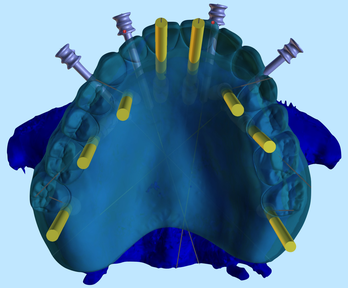
The conventional conversion of an existing denture to an ISFCD can be a time consuming process where occlusion, VDO, esthetics and structural integrity can all be compromised due to errors in 3-dimensional positioning of the prosthesis. This case report demonstrates a predictable way to fully guide prosthetically driven alveoloplasty, implant placement, and prosthesis position of All-on-X cases using a system of magnet-retained guides.

CASE PLANNING

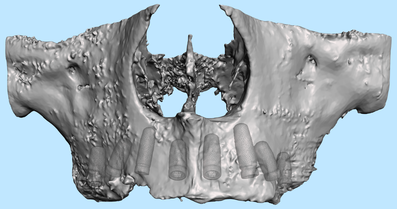
1. A 67 y/o female presented with the chief complaint: "I hate removing my teeth and want something that never comes out."



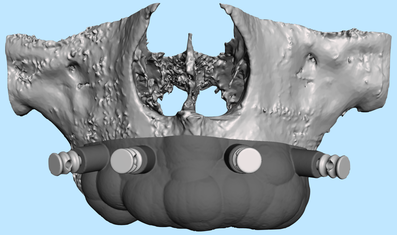
2. The patient presented with RCD / fixed dentition on natural teeth and implants. She had adequate lip support without prosthesis inserted.



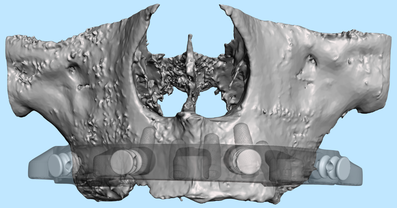
3. A dual scan CBCT protocol was completed to aid in a prosthetically driven treatment plan. Implants were planned in a digital implant planning software for a maxillary All-on-8 prosthesis.



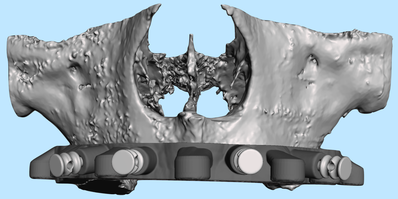
4. Planned implant and guide pin positions were exported to a 3D modeling software along with bone models.



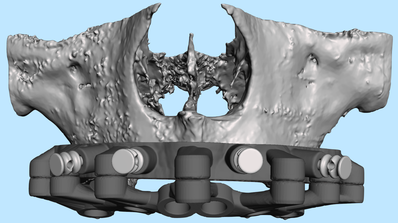
5. A **Bone Supported Pin Guide** was designed for creating the initial osteotomies for the guide pins.



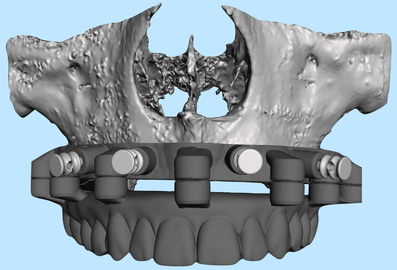
6. Using the coronal positions of the planned implants as landmarks, a pin supported **Alveoloplasty Guide** was designed and custom magnetic housing attachments affixed: This functions as the **System Base**.



7. Using the resulting **System Base**, a virtual alveoloplasty was completed on the bone model.

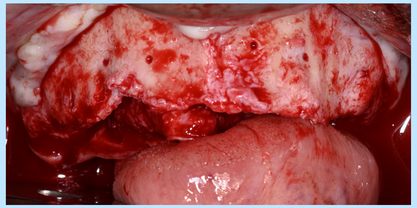


8. An implant surgical guide was designed, and custom magnetic housing attachments affixed: This functions as the **Magnet-Retained Implant Guide**. This could be magnetically attached to the **System Base** for fully guided implant placement.

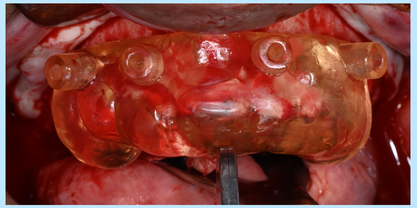


9. The implant supported fixed complete dental prosthesis was designed in a dental CAD software, imported into the modeling software, and affixed to custom magnetic housing attachments: This functions as the **Magnet-Retained Prosthesis**. Relating this prosthesis to the **System Base** allows for predictable pick up of the final prosthesis.

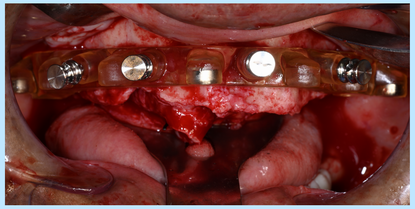
SURGERY



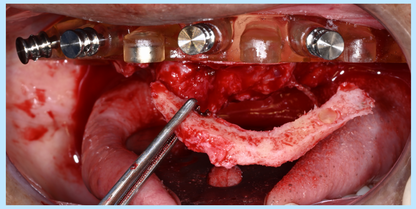
1. A full thickness flap was raised, exposing the maxilla.



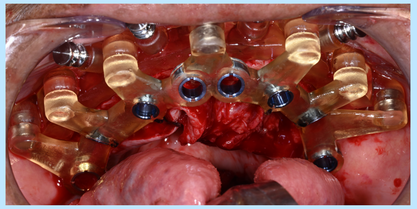
2. The **Bone Supported Pin Guide** was intimately seated against the exposed maxilla and pin osteotomies were prepared through the guide.



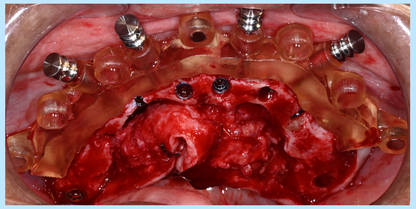
3. The **Alveoloplasty Guide / System Base** was placed and secured with guide pins through the prepared osteotomies.



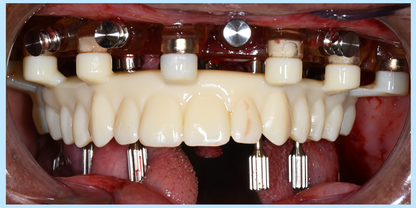
4. The alveoloplasty was completed with a reciprocating saw along the plane of the **System Base**.



5. The **Magnet-Retained Implant Guide** was then connected to the **System Base**, osteotomies were prepared, and fully guided surgery performed.



6. The **Magnet-Retained Implant Guide** was removed, revealing implant placements. Low-profile abutments were subsequently seated and torqued.



6. The **Magnet-Retained Prosthesis** was attached to the **System Base** and a conventional pick-up procedure was completed.

7. The **System Base** was removed, and the flap closed while the prosthesis was finished and polished.

8. The prosthesis was immediately delivered with only minimal adjustments to occlusion necessary.

CONCLUSIONS

Utilizing this workflow, alveoloplasty and implant placement were planned and executed based on the idealized position of the prosthesis. The relatability of the **Magnet-Retained Implant Guide** and **Prosthesis** to the **System Base** allowed for predictable implant placement and prosthesis positioning without needless repeated removal and replacement of pins. This magnet-retained All-on-X system allowed for predictable, prosthetically driven, fully guided surgery and the immediate restoration of this completely edentulous maxilla with minimal post-insertion adjustments.

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References available upon request