



Novel All-in-one Multifunctional Surgical Template Design for Edentulous Guided Implant Surgery

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Background

Sequential guides and stackable guides are two common guide design concepts that have been applied to achieve the goals of bone reduction and accurate implant placement in edentulous guided implant surgery. However, both design concepts require multiple surgical templates and can result in a time-consuming surgical procedure. Therefore, this case report presents an all-in-one multifunctional guide design that eliminates the need for a separate bone reduction template, thereby simplifying the design process and surgical steps.

Materials and Methods

Edentulous maxillary arch was treatment-planned for fixed implant-supported prosthesis. After data acquisition and image registration, six implants were placed virtually in a prosthetically driven position. Horizontal ridge plane was drawn to ensure adequate restorative space and an invisible prosthesis-tissue junction. A mucosa- and pin-supported template was designed with osteotomy sleeves, three fixation pin holes and two additional pinholes to mark the reference points for bone reduction plane. Surgical execution was illustrated in figures.

Results

Implants were placed in the planned position and bone reduction was performed using the multifunctional template, which provided adequate restorative space and an ideal esthetic result. A full-arch implant-supported prosthesis was restored without complications.

Conclusion

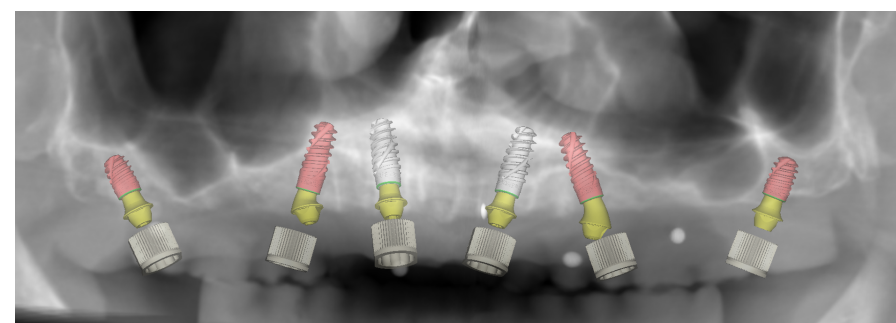
The multifunctional surgical template can be used for bone reduction, osteotomy, and implant placement in edentulous guided implant surgery. This approach eliminates the need for multiple templates and provides acceptable surgical results with a simplified planning process and reduced surgical time.

Acknowledgement

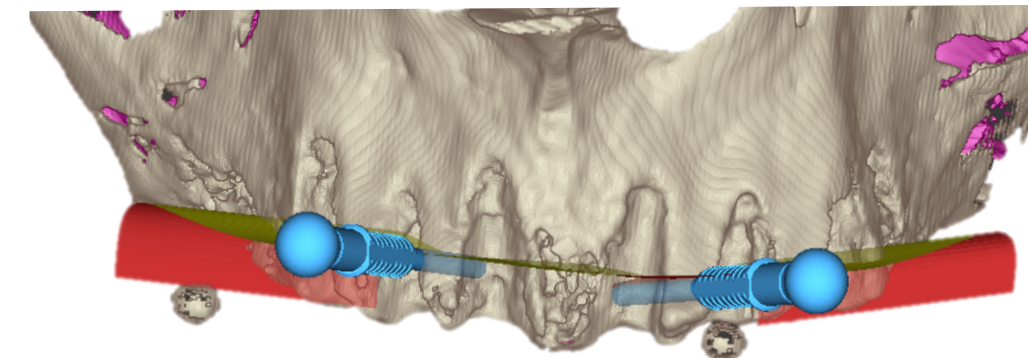
Special thanks to the prosthodontist Dr. Matt Thompson for his beautiful works in restoration and documentation.



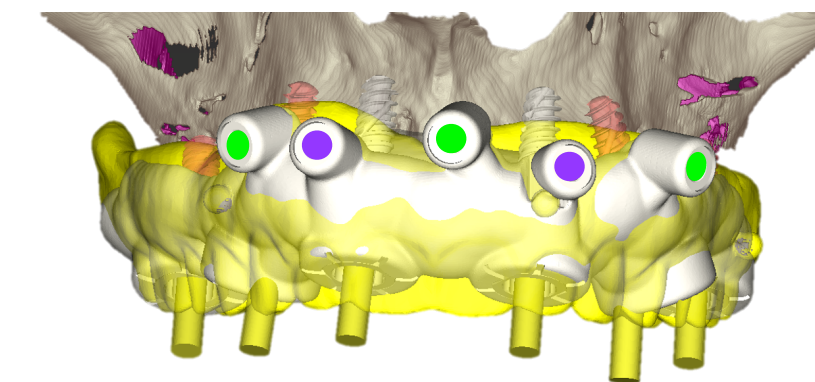
Guide Design



Implants placed in prosthetically driven position.



Use two virtual pins to mark the planned occlusal plane.

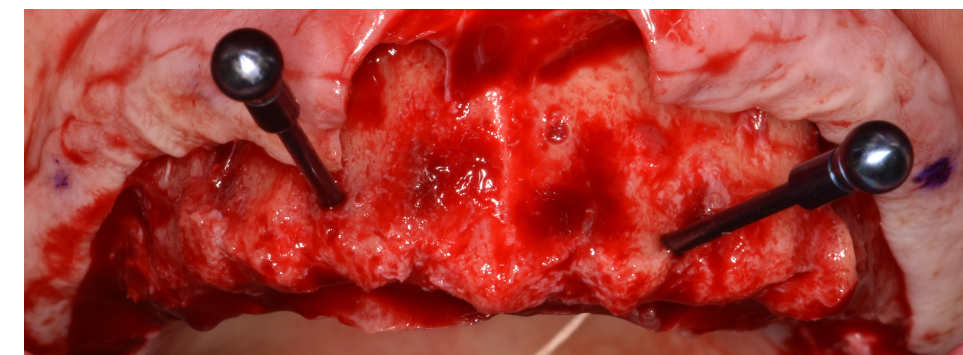


● Fixation pins ● Bone reduction markers

Surgery



Template was supported by three fixation pins
Two additional drill holes were for marking bone reduction plane.



Place two fixation pins to marked the occlusal plane for bone reduction.



After bone reduction.

Outcome

