Use of complete digital workflow for MGUIDE fabrication and for restoring a mandibular missing first molar with a C1 WP implant and a 5.7 mm CONNECT abutment.

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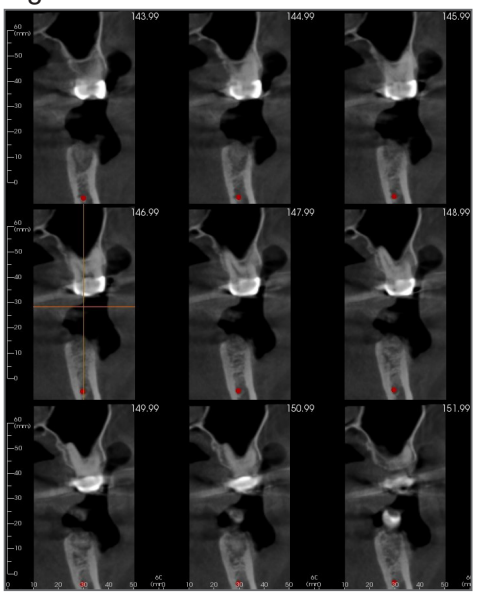
A patient in his early 30's presented with a missing mandibular left first molar. Medical and other dental history were non-contributary. Clinical examination revealed a wide residual alveolar ridge with limited vertical bone loss and ample keratinized gingival tissue (Fig. 1).

Fig. 1

Pre-opretive occlusal view of a wide edentouls site of a missing mandibular first molar.

Fig. 2



Pre-operative CBCT.

A CBCT scan (OP-3D, Kavo) (Fig. 2) as well as diagnostic intraoral scans (Trios 3, 3Shape) (Figs. 3a and 3b) were made for the purpose of facilitating the fabrication of a virtual diagnostic wax-up (Fig. 4), evaluating prospective implant position, selecting implant diameter and length, selecting CONNECT abutment dimensions, and for an MGUIDE CAD/CAM surgical guide fabrication to facilitate an uneventful and precise implant placement (Figs. 5a and 5b).

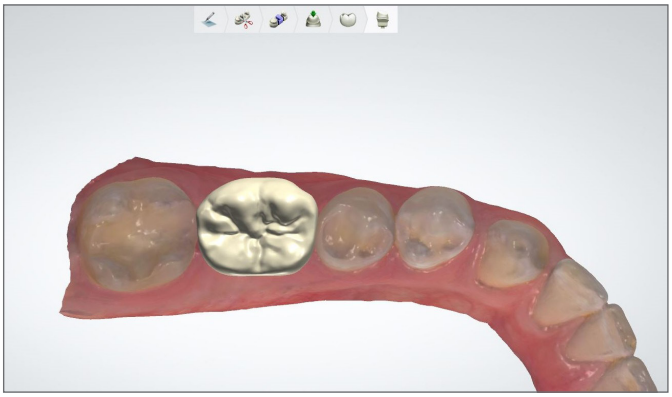
Fig. 3a

Occlusal view of an intraoral scan of the mandibular arch.

Fig. 3b

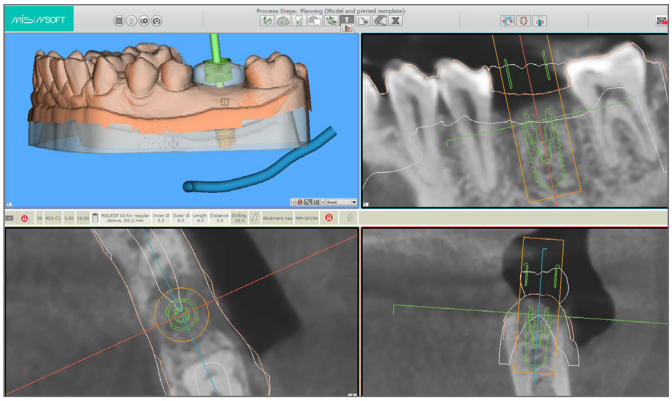
View of the intraoral scan of the maxillary and mandibular arches in maximal intercuspal position.

Fig. 4



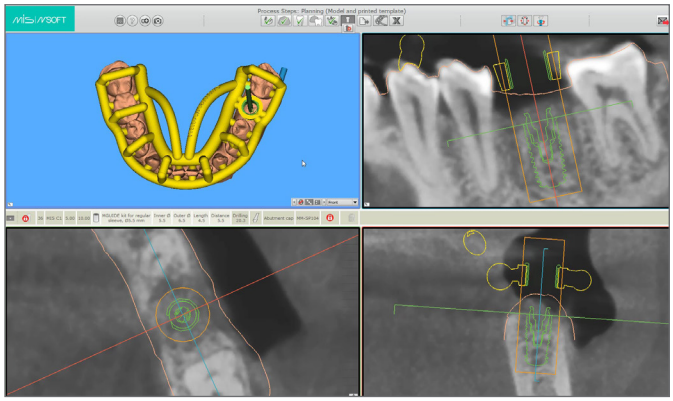
Occlusal view of the virtual diagnostic wax-up.

Fig. 5a



A view of the MSOFT software. Superimposing the virtual wax-up model on the CBCT in the process of desingning the implant position (with the CONNECT abutment) and the MGUIDE.

Fig. 5b



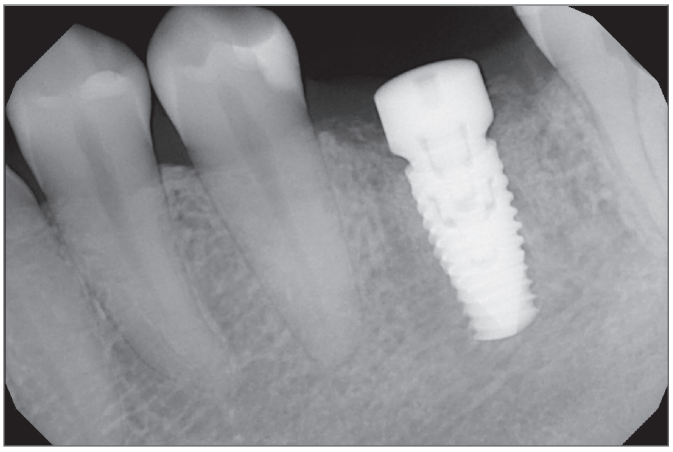
A view of the MSOFT software with the definitive design of the tooth-supported MGUIDE.

Using a tooth-supported MGUIDE, a 5.0 mm by 10 mm MIS C1 WP implant was placed subcrestally with a flapless surgical procedure (Fig. 6). Subsequently, a 5.7 by 1.5 mm CONNECT abutment was placed and torqued to 30 Ncm, and a 5.7 mm by 3.0 mm height CONNECT abutment healing cap was placed and torqued to 10 Ncm (Fig. 7).

Fig. 6

Post-Operative occlusal view of the site immediatly after implant placement with the MGUIDE in place, demonstrating adequate implant position.

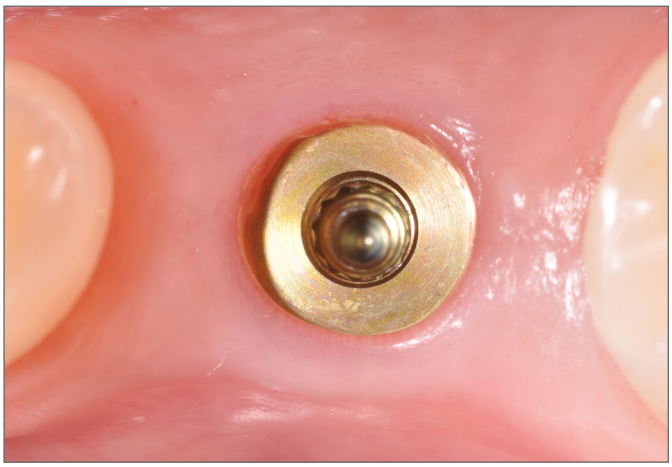
Fig. 7



Post-Operative periapical radiogrpah immediatly after implant placement demonstrating adequate implant position.

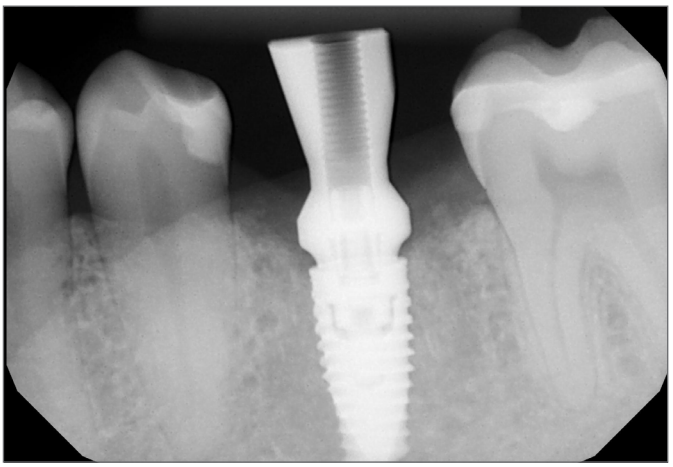
Four months later, when implant integration was achieved, an intraoral scan with the healing abutment in place was made, followed by a scan of the opposing dentition and of the occlusion. Subsequently, the healing abutment was removed and a scan of the soft tissue emergence was made (Fig. 8). Afterwards, an engaging 5.7 CONNECT abutment scan post was placed and torqued to 20 Ncm. Once a periapical radiograph confirmed adequate seat of the scan post (Fig. 9), an intraoral scan of the scan post was made (Fig. 10). All required digital information was sent to the dental laboratory for the fabrication of a screw-retained monolithic zirconia restoration (Katana HTML, Kurary Noritake) with the zirconia bonded to a final esthetic abutment (Ti-base) for 5.7mm CONNECT abutment with anti-rotation and 4.0 mm height (Fig. 11).

Fig. 8



Occlusal view of the 5.7 CONNECT abutment after removal of the healing abutment 4 months after implant placement.

Fig. 9



Periapical radiogrpah of the 5.7 CONNECT abutment scan post confirming adequate seat.

Fig. 10

Buccal view of the intraoral scan of the 5.7 CONNECT abutment scan post.

Fig. 11

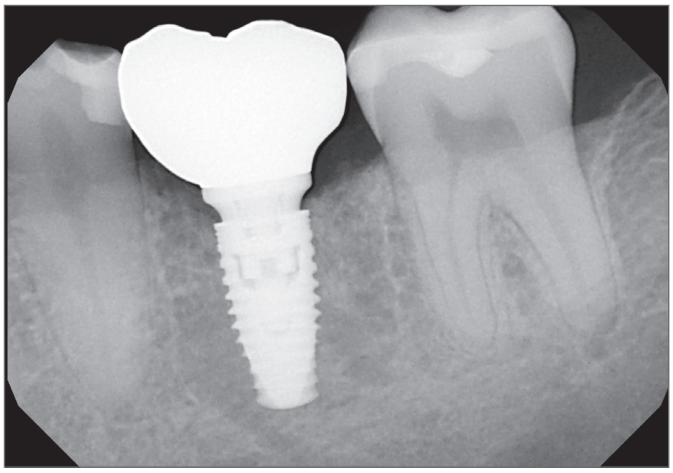
Occlusal view of the monolithic zirconia screw-retained crown.

Once received from the dental laboratory, the screw-retained implant-supported crown was placed and secured intraorally on the CONNECT abutment. Afterwards, the screw was torqued to 30 Ncm followed by the restoration of the screw access hole with Teflon tape and direct composite-resin (Figs. 11-13).

Fig. 12

Buccal view of the monolithic zirconia screw-retained crown.

Fig. 13



Post-operative periapical radiograph of the screw-retained implant-supported crown.

MGuide design and fabrication: Louis Wostien, MIS, Israel
Ceramics: Cusp Dental Laboratory. Malden, MA, USA.