Use of LOCKiT attachments with mandibular C1 implants to restore function and esthetics on a medically compromised patient with financial limitations.

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A patient presented with a medical history of diabetes, hypertension, knee replacement, and atrial fibrillation. Clinical and radiographic examinations lead to the following Diagnoses: Generalized Chronic Moderate with Localized Severe Periodontitis, Class II division II Malocclusion with reverse posterior occlusal plane and no posterior support, Partial Edentulism, Acquired Horizontal and Vertical Hard and Soft Tissue Ridge Deficiencies, Erosion, and failing fixed partial dentures (bridges) with Secondary Caries.

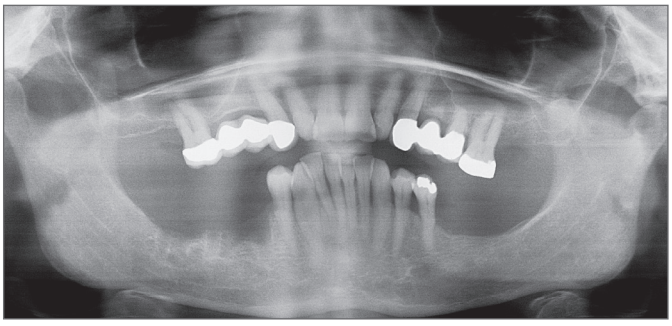
Fig. 1

Preoperative intraoral frontal view of the patient's failing dentition in maximum intercuspal position.

Fig. 2

Preoperative occlusal view of the patient's mandibular arch.

Fig. 3



Preoperative panoramic radiograph.

Due to the patient's medical challenges and financial limitations, the patient agreed to move forward with complete mouth extractions and placement of immediate complete dentures (ICDs), followed by placement of 4 implants in the anterior mandible to retain and support a mandibular overdenture opposing a maxillary complete denture.

Master alginate impressions were made for the fabrication of the ICDs as well as for the fabrication of bone reduction guides for the required maxillary and mandibular alveoloplasty procedures. Record bases with occlusion rims were made, and teeth shape, position, and shade were selected. Next, a centric relation record was made at the desired vertical dimension of occlusion. Once the ICDs' fabrication was complete, all teeth were extracted, alveoloplasty was performed, and the ICDs were delivered immediately. These were relined with temporary soft liner as needed.

Seven months later, the mandibular ICD was duplicated for a radiographic guide and a CBCT with the duplicate mandibular ICD was made to determine implants position, diameter, and length.

Fig. 4a

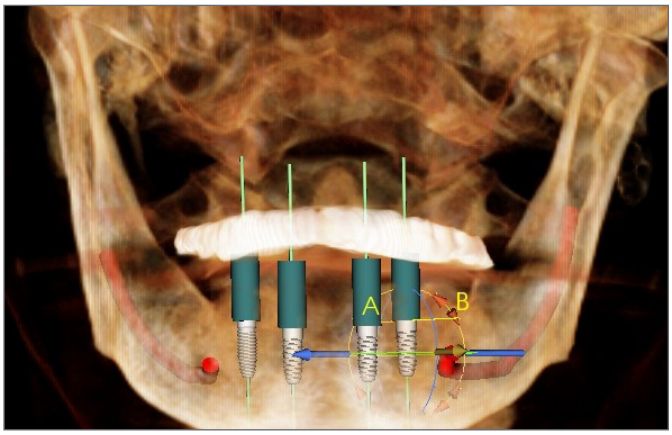
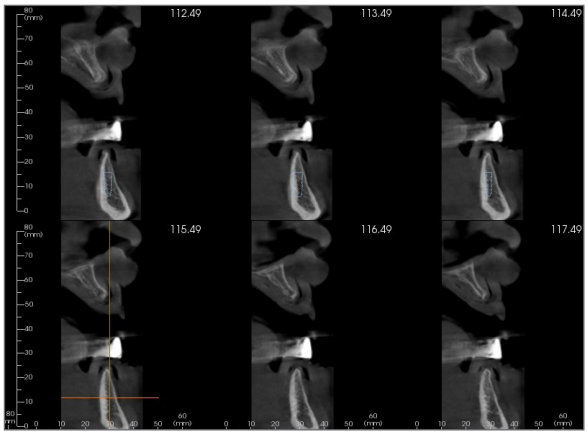


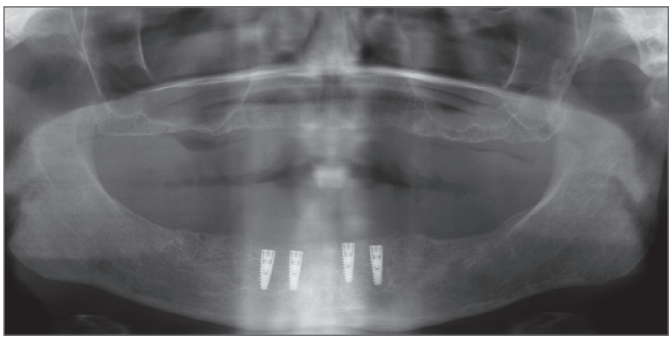
Fig. 4b



A CBCT with a radiographic guide (duplicate of the mandibular immediate complete denture) and implant position and dimensions assessment.

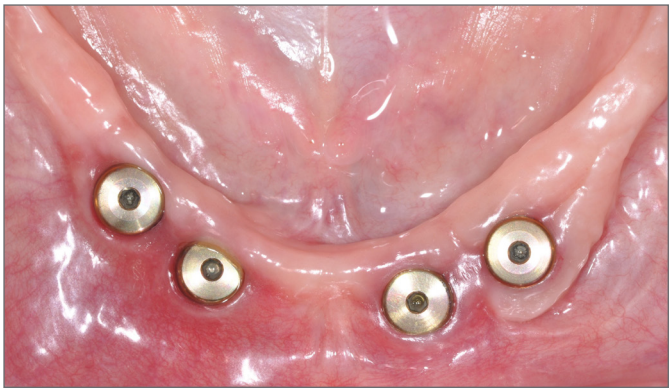
Approximately six months later, 4 MIS C1 SP 3.75 X 10.0 mm implants were placed using a surgical guide and the soft tissue was reapproximated on top of the implant's cover screws. The implants were placed approximately at the sites of the mandibular first premolars and lateral incisors. Subsequently, and throughout the prospective surgical and prospective procedures, the mandibular ICD was relived and relined with a temporary soft liner as needed.

Fig. 5



Panoramic radiograph 4 months after 4 C1 SP 3.75 X 10 mm implants were placed and submerged approximately at the sites of the mandibular lateral incisors and first premolars.

Fig. 6



Occlusal view of the mandibular arch 6 weeks after implants' uncovery and placment of healing abutments.

Fig. 7a

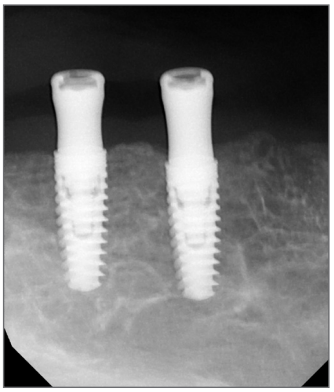
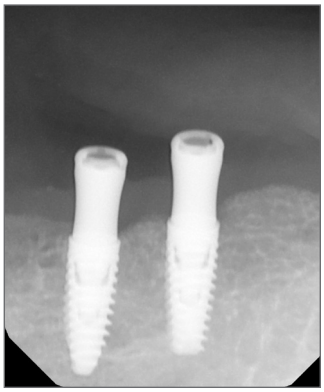


Fig. 7b



Periapical radiographs after 4 LOCKiT abutments were torqued to 30 Ncm.

Ten months after implant placement (Covid-19 and patient's mobility issues due to a broken femur prolonged the duration of treatment), the patient was presented for a second stage surgery and healing abutments were placed after implant uncovery. Once initial soft-tissue healing was achieved, 4 LOCKiT abutments (for LOCKiT stud attachments, all with a 5.0 mm cuff height, excluding the implant at the site of the mandibular left lateral incisor which had a cuff height of 4.0 mm) were placed on the implants torqued to 30 Ncm. Periapical radiographs were made to verify complete abutments seat.

Fig. 8

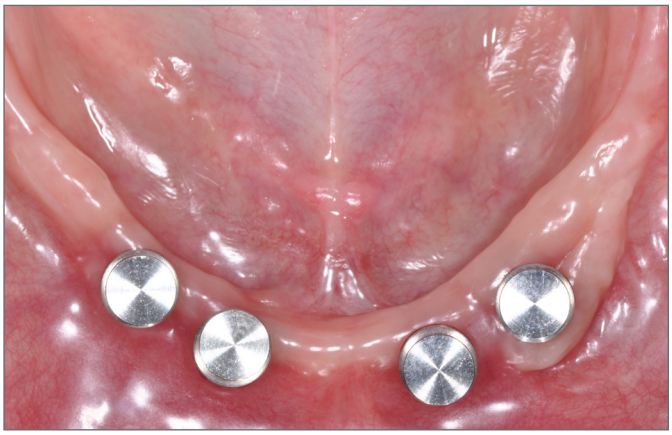
Occlusal view of the mandibular arch with the LOCKiT abutments in place.

Fig. 9

Facial view of the mandibular arch with the LOCKiT abutments in place.

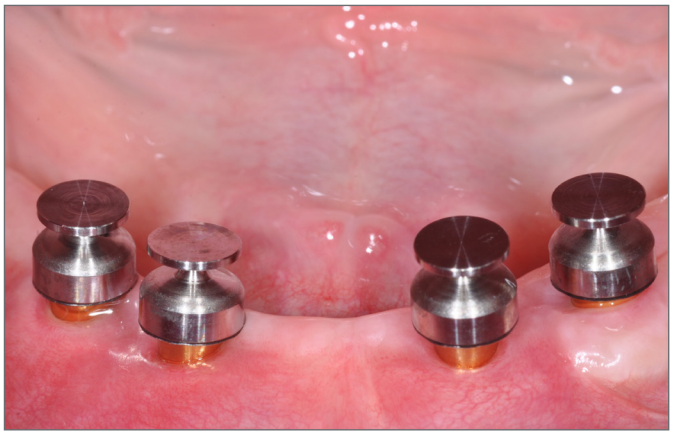
Subsequently, LOCKiT transfer copings were placed and master impressions with polyether impression material were made for a metal-based mandibular overdenture with LOCKiT attachments and a maxillary complete denture.

Fig. 10



Occlusal view of the mandibular arch with the LOCKiT transfer copings in place prior to master impression making.

Fig. 11



Facial view of the mandibular arch with the LOCKiT transfer copings in place prior to master impression making.

Record bases with occlusion rims were used to make a centric relation record at the desired vertical dimension of occlusion, and teeth shade, position, and shape were selected. Next, trial dentures were made in wax and assessed in the patient's mouth for fit, occlusion, and esthetics. Once approved by the patient, the trial maxillary and mandibular prostheses were processed in the lab with the blue (light retention) attachments for the mandibular overdenture and both prostheses were delivered to the patient.

Fig. 12

Occlusal view of the mandibular definitive cast with the LOCKiT abutment analogs.

Fig. 13

Frontal view in centric occlusion of the trial maxillary denture and the trial mandibular overdenture on the articulator.

The patient expressed her comfort and satisfaction with the occlusion and esthetics, and particularly with the stability and retention of the mandibular overdenture, at delivery, 24-hour, and 3-month recall appointments.

Fig. 14

Occlusal view of the intaglio surface of the mandibular metal base overdenture. Note that 4 least retentive blue caps were used while still achieving satisfactory retention.

Fig. 15

Intraoral frontal view in centric occlusion of the maxillary denture and mandibular overdenture after delivery.

Surgery: Dr. Harbinder Bal, Diplomate of the American Board of Periodontology
Dental Laboratory: Thorn Ford Dental Laboratory. Bothell, WA, USA.