Prosthodontic Management of Fully Guided Implant Surgery Utilizing Existing Implants with Modified Scan Bodies

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Introduction

Surgical procedures on patients with terminal dentition and existing implants involve extracting the remaining non-restorable teeth, and placement of additional implants to achieve a full-arch fixed implant rehabilitation. In this case report, the scan bodies were modified using gutta percha. The purpose of these scan bodies was to act as extra fiducial markers when merging the various scans along with allowing the authors to better verify implant positioning.

Case Description

A 52 y/o male patient presents to the Prosthodontic clinic with posterior maxillary implants and terminal anterior dentition. Patient was wearing a full arch provisional splinted to teeth and implants. The planned treatment is extraction and immediate implant placement for future implant FPDs.

Figure 1: Pre-treatment intraoral (left). Lab processed provisional (right). Pre-treatment Panoramic radiograph (bottom).

Figure 2: Modified scan bodies with gutta percha (left). Maxillary arch with scan bodies in preparation for scan (right).

Figure 3: Digital scan with provisional (left). Scan w/o provisional (center). Scan with scan bodies using Trios4 (right).

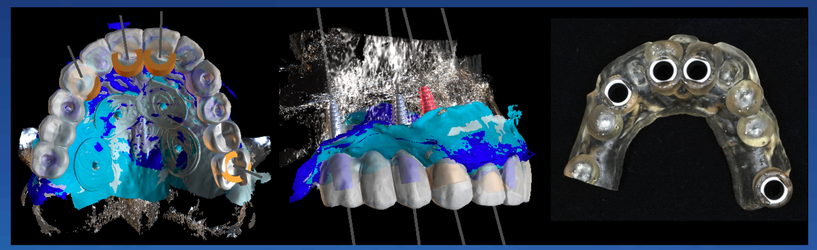

Figure 4: Prosthetically driven, surgical planning using BlueSkyBio software (left and center). 3D printed guide using FormLabs 3B+ software and surgical guide resin (right).

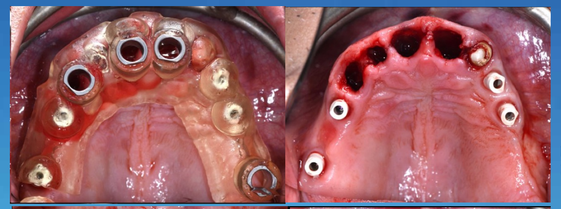

Figure 5: Surgical guide try in (left). Post extractions (right).

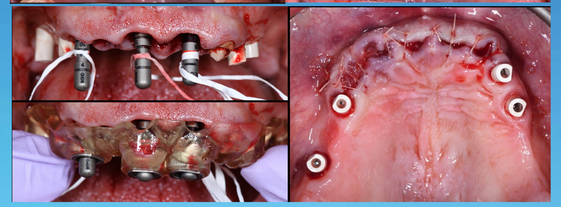

Figure 6: Angulation pin try in (top-left). Angulation pins with guide (bottom-left). Sutured surgical site (right).

Figure 7: Post-op Panoramic radiograph.

Conclusions

In this case study, the authors were able to use the preexisting implants to plan the ideal location of new implants. The scan bodies were utilized as hard stops for creation of a surgical guide. The authors concluded that the usage of modified scan bodies serving as both digital and physical reference points along with a digital workflow to conduct a fully guided implant surgery can be a very predictive modality when planned accordingly. More clinical studies are needed to investigate the potential capabilities of this technique.

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Discloser: The authors have no financial interest to declare on any systems used in patient treatment