



Implant Surgical Planning In A Patient With Severely Atrophic Mandible

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Objective

Implant-retained mandibular overdenture is well recognized as a desirable treatment for edentulous patients. However, severely atrophic anterior mandible with extended lingual concavity is not uncommon and may cause severe surgical complications such as perforation of the lingual plate during osteotomy. Therefore, a delicate prosthetically-driven surgical plan is necessary before the surgery.

Patient Background

A 69-year-old female patient presented with existing dentures. Her chief complaint was the poor retention of her mandibular denture. Different treatment options were presented to the patient, including maxillary complete denture and, mandibular implant-supported fixed complete denture or mandibular implant-retained overdenture. Mandibular implant-retained overdenture with 2 dental implants was accepted by the patient.

Treatment Sequence and Methods

- 1) A pairs of wax dentures with new diagnostic teeth set-up was created in patient's centric relation at desirable vertical dimension.
- 2) After clinical trial insertion, the dual scan protocol was adopted in the following procedures: 6 fiducial markers were attached onto the diagnostic tooth arrangement. Two DICOM datasets were acquired by CBCT imaging: one is extraoral imaging on diagnostic tooth arrangement only and the other is intraoral imaging with diagnostic tooth arrangement in situ. The two sets of DICOM files were imported, processed and registered into the implant planning software program (CodiagnostiX).
- 3) The surgical template was generated and fabricated from the completed segmentation and surgical plan, which was according to the desirable definitive prosthesis contour and volume. The surgery was done under the guidance of this tissue-supported surgical template. And the prosthetically-driven surgical protocol facilitates the following prosthetic treatment.

RESULTS

Prosthetically-driven surgical plan can be realized by computer-guided implant surgery. The dual scan imaging protocol has a pivot role in evolution from analog to digital surgical planning.

With the use of 3D-printed surgical template, dental implants can be placed in the area with compromised anatomic structure safely.

REFERENCES

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