



All-on-5 fixed implant supported prosthesis restoration of a mandibular edentulous patient with severe alveolar bone resorption : A case report

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Introduction

For a rehabilitation of mandibular edentulous patient whose posterior alveolar bone is severely resorbed, 'all-on-X' concept is considered for esthetic and functional treatment option. This concept includes 4 or more implants which is located in anterior area with immediate loading of fixed prosthesis after the implant installation. In this case, the provisional denture which is well-fabricated and favorably adapted to patient, is used for making 3D printed implant surgical guide, provisional fixed prosthesis and a final restoration with a digital technology. This digital workflow is not only for planning the accurate position of several implants, but also for esthetically and functionally well-fabricated final restoration.

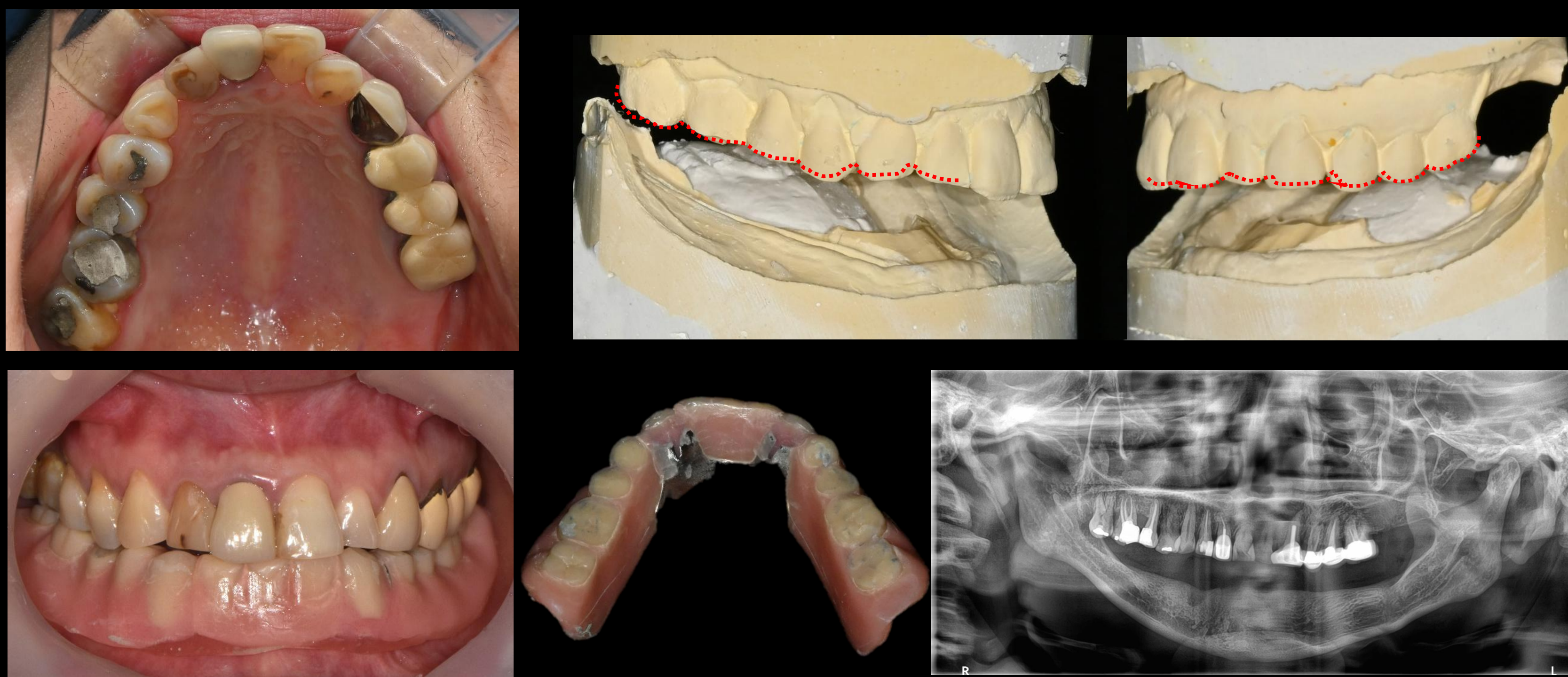
Case presentation

• CC: 'Lower complete denture is lack of retention.'



- PMH: Osteoarthritis(ankle) on med Intellectual disability
- PDH: Mn RPD transfer to CD 3 months ago after extraction of two canines.

Problem list



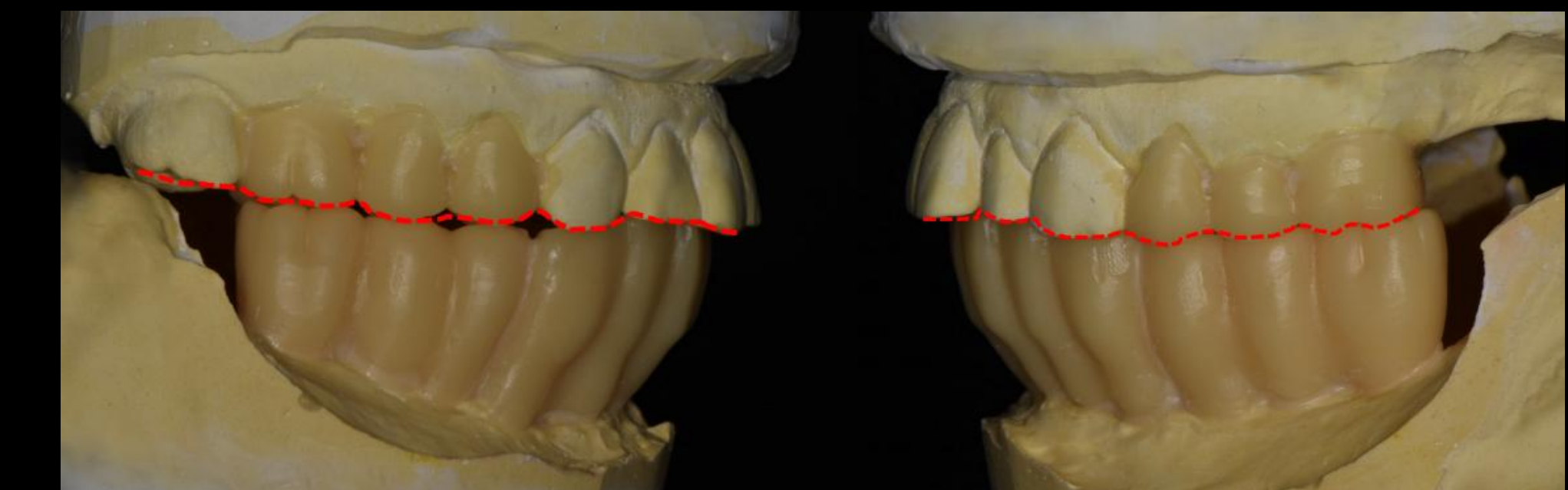
- Irregular occlusal plane
- Generalized severe mandibular alveolar bone resorption
- Insufficient retention of Mn.CD
- Severe attrition of artificial teeth of Mn CD

Treatment plan

- 1) Prosthesis restoration on #14,15,16,24,25,26 for an ideal occlusal plane
- 2) Mn provisional denture fabrication
- 3) All-on-5 implant installation planning

Treatment progress

• Wax-up model



• Provisional restoration



• CBCT taking with replication of provisional denture



Denture scan with resin marker

G-aenial universal flo, GC, Tokyo, Japan

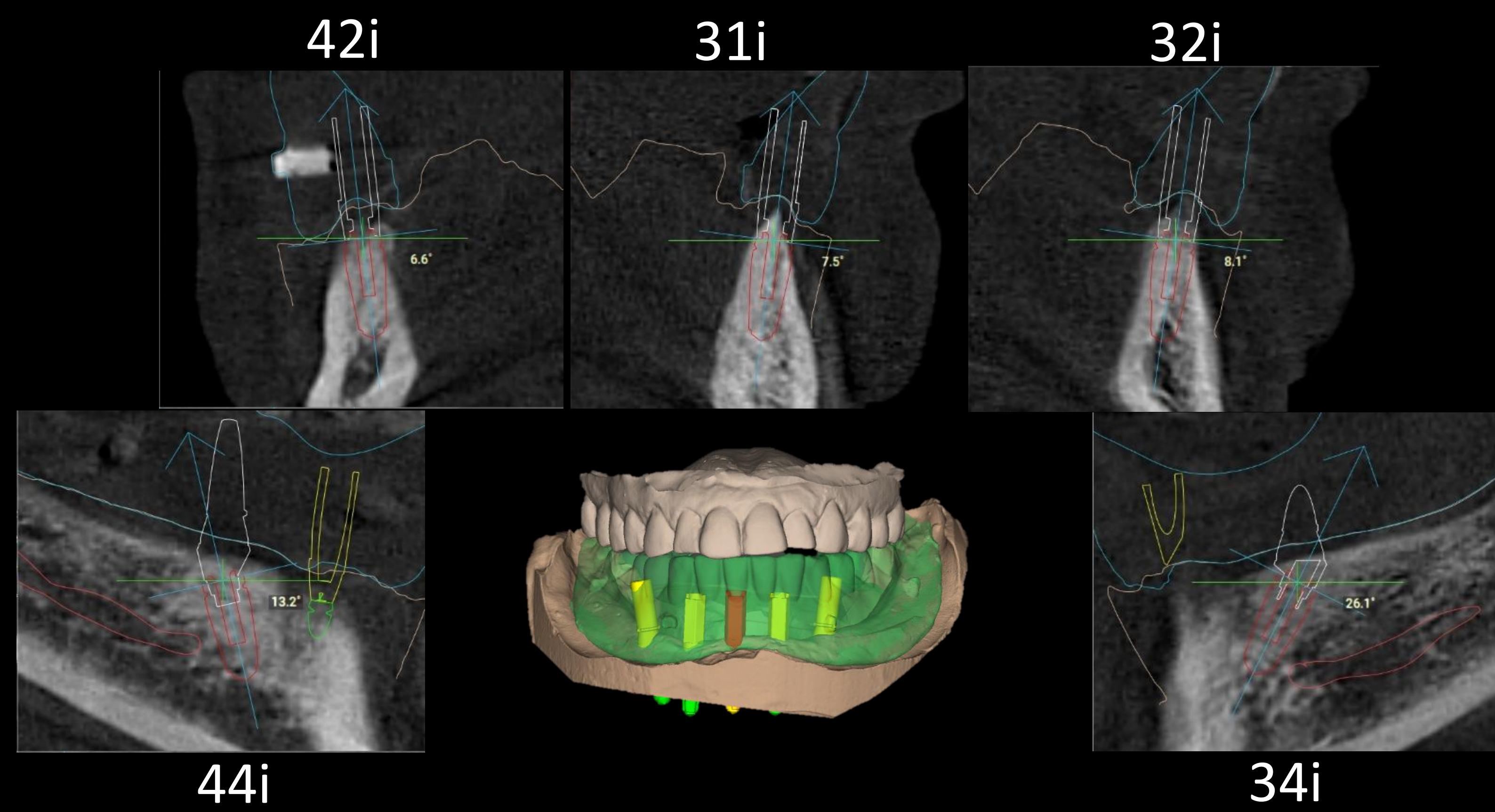


CBCT taking with denture



CBCT & denture scan file matching

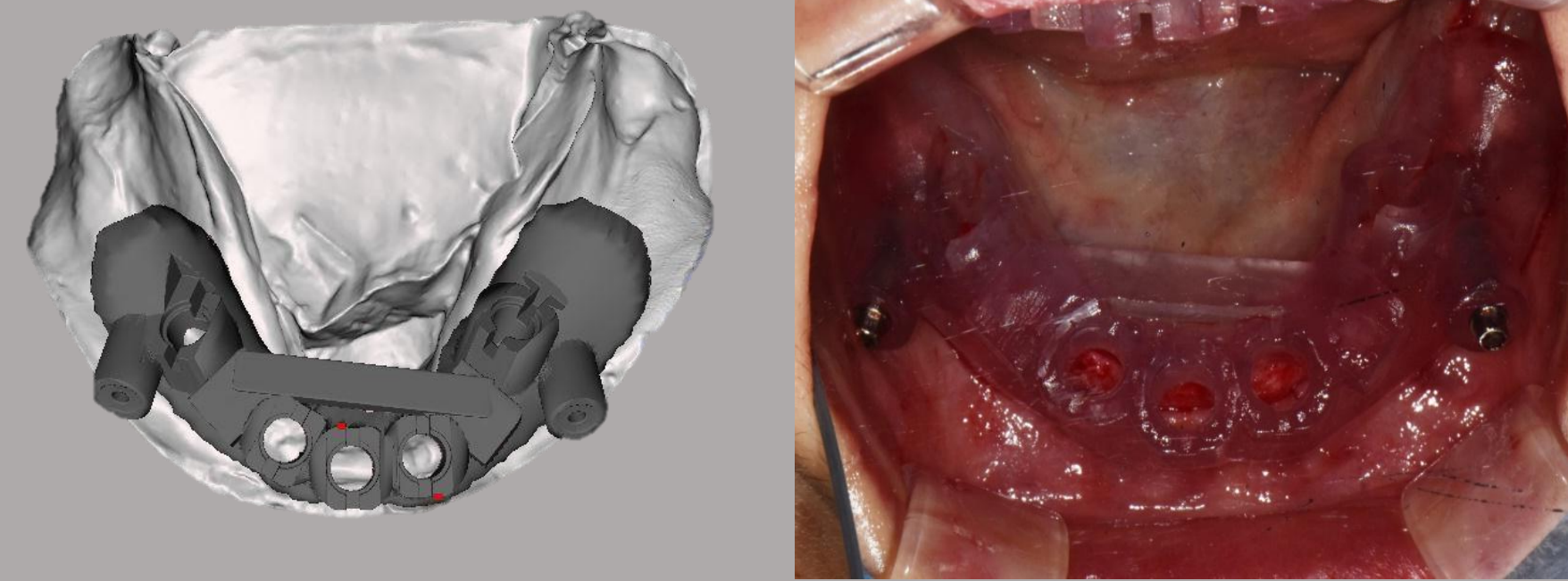
R2 studio Q, Megagen, Seoul, South Korea
R2GATE, Seoul, South Korea



• 3D printing of Implant surgical guide & provisional immediate fixed prosthesis

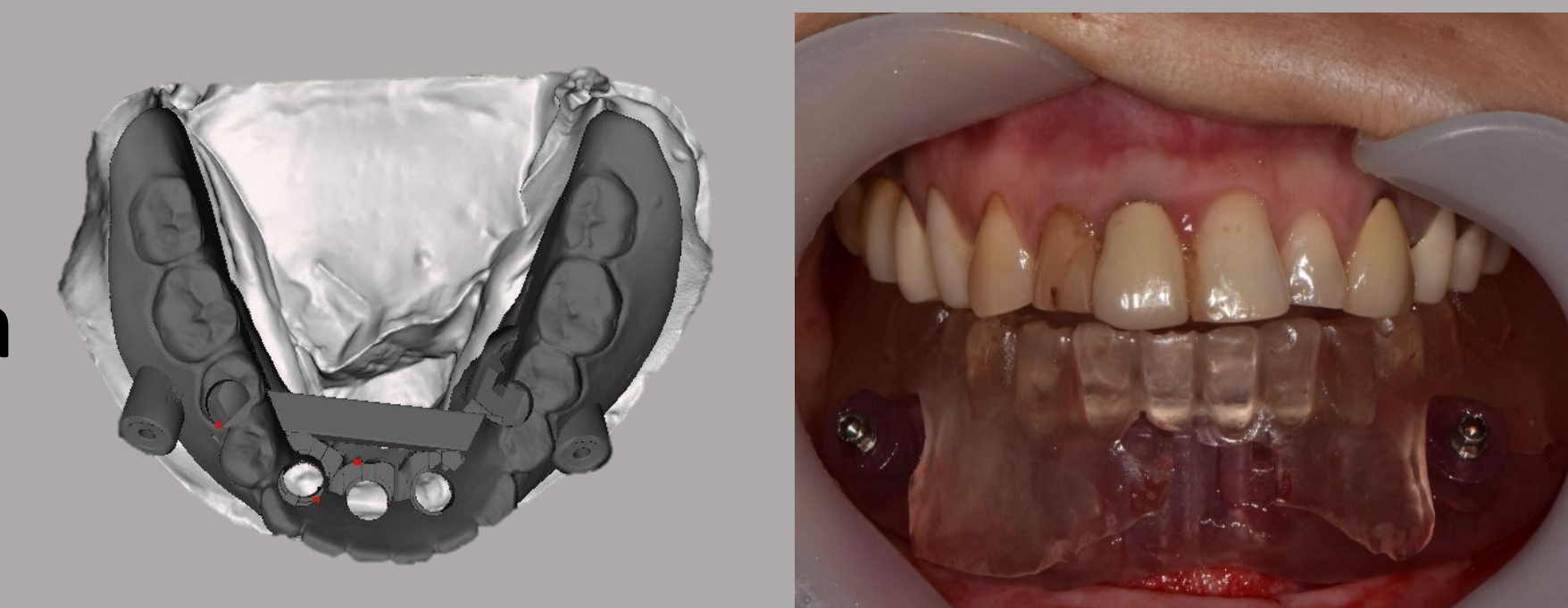
» Lower surgical guide

Graphy tera harz SG-100, graphy, Seoul, South Korea



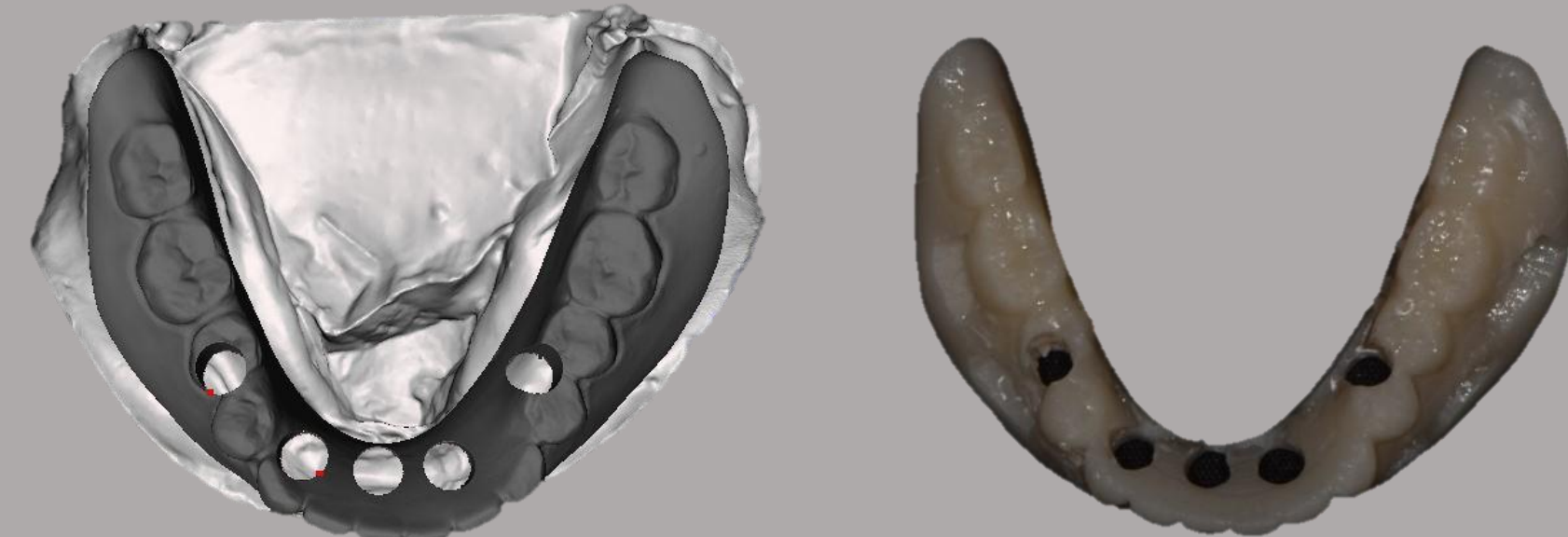
» Upper guide: overlapped with surgical guide occluded with opposite natural teeth

Graphy tera harz SG-100, graphy, Seoul, South Korea



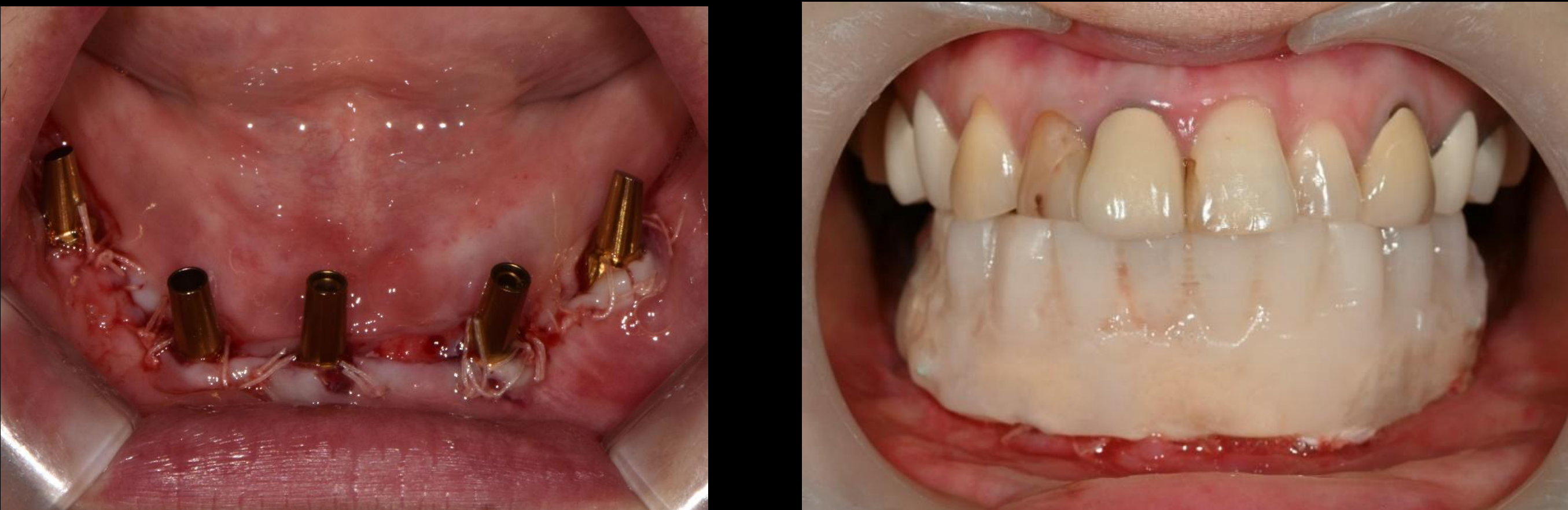
» Provisional fixed prosthesis with abutment hole design

Graphy tera harz TC-80DPA2, graphy, Seoul, South Korea



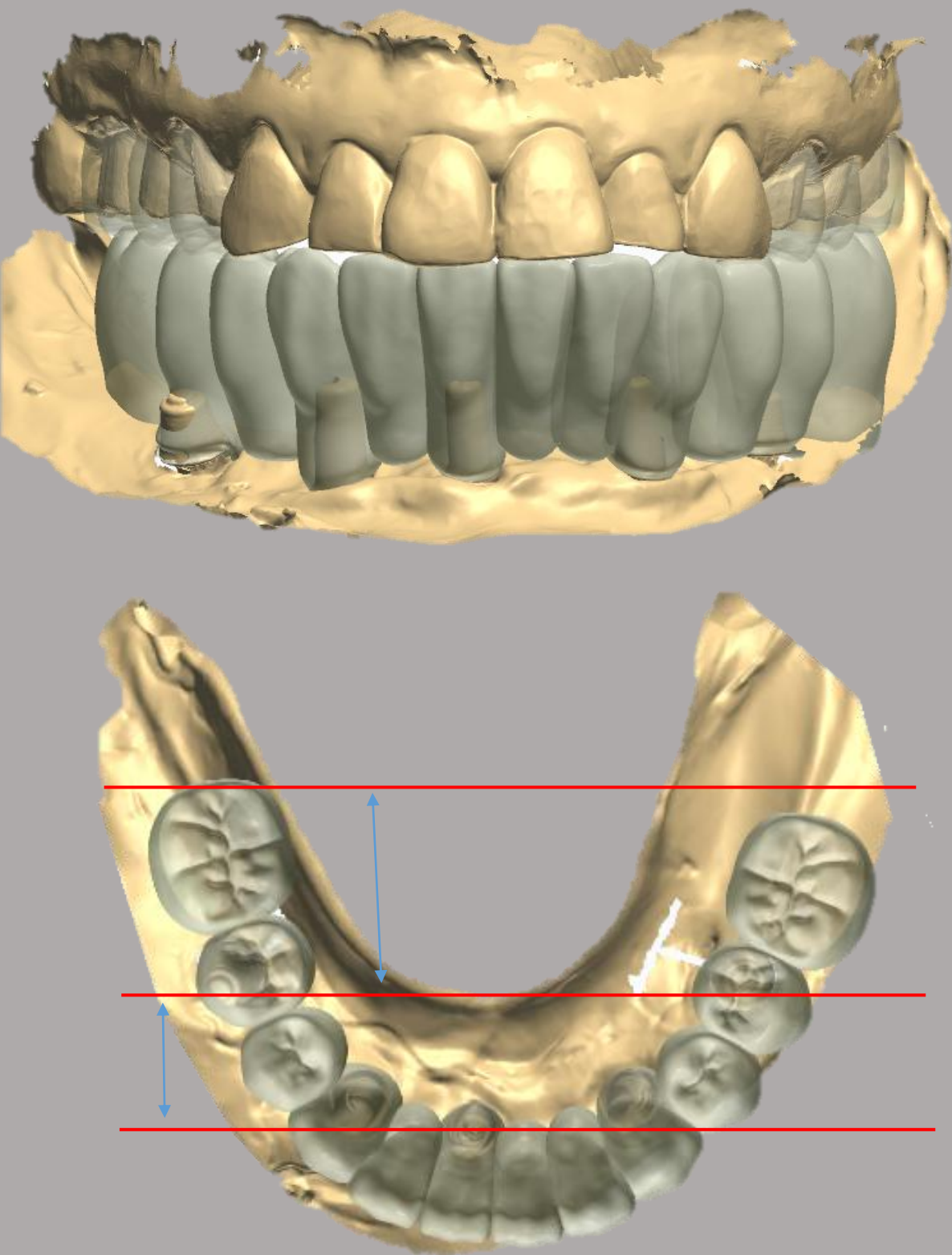
Provisional denture

• Implant installation & immediate loading



ISQ (N)	44i	42i	41i	32i	34i
B	83	72	70	70	86
L	83	74	78	74	86

• Intraoral scan(double scanning) & CAD design



AP spread: 12.5mm
cantilever: 18.2mm

AP spread : cantilever = 1:1.4

• Final restoration



Exocad, DENTALCAD 3.0 GALWAY, Exocad GmbH, Germany
3Shape Trios 4, 3Shape, Copenhagen, Denmark
Multi scanbody, Osstem, Seoul, South Korea

Conclusion

A well-fabricated provisional denture is used for a whole process which is from a planning of implant surgery, provisional fixed prosthesis, and to the final restoration of 'all-on-X' prosthesis using a digital workflow. It is an efficient and well-acceptable result for the patient who is already adapted to the provisional denture.