A case of implant-supported removable partial denture in a patient with mandibular unilateral residual tooth

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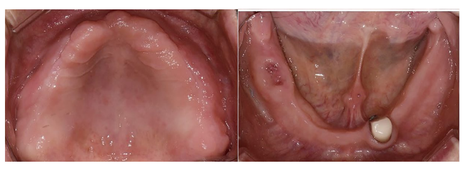
INTRODUCTION

- The abutment teeth are essential for the support, maintenance, and stability of partial dentures and are an important element in functional denture fabrication.
- Dentures are easy to fabricate if there are enough periodontally sound abutments and are located on both sides, but if abutments are lacking or located on one side, it becomes biomechanically disadvantageous and it is relatively difficult to make functional dentures.
- Recently, implant-supported partial dentures, which reinforce support, maintenance, and stability by adding an implant surveyed crown to removable partial dentures, are frequently selected as a treatment plan.
- Masticatory efficiency, esthetics, patient comfort, and improvement in pronunciation can be obtained by adding an implant surveyed crown to cases with only a few remaining teeth.
- The patient in this case had only one left canine remaining after extraction of the abutment on the right side of the mandible due to dental caries, and therefore visited the hospital with low dental stability.
- An implant was placed in the premolar area on the opposite side of the remaining abutment tooth, and a surveyed crown using it as an abutment tooth was fabricated, and both the patient and the operator were satisfied with the result.

PATIENT INFORMATION

- Age/ Gender : 73Y/ Male
- Medical Hx. : DM, Hypertension with meditation
- Dental Hx.: Mx. CD & Mn. RPD with #33 surveyed crown
- Chief Complaint : Poor retention of Mn. RPD

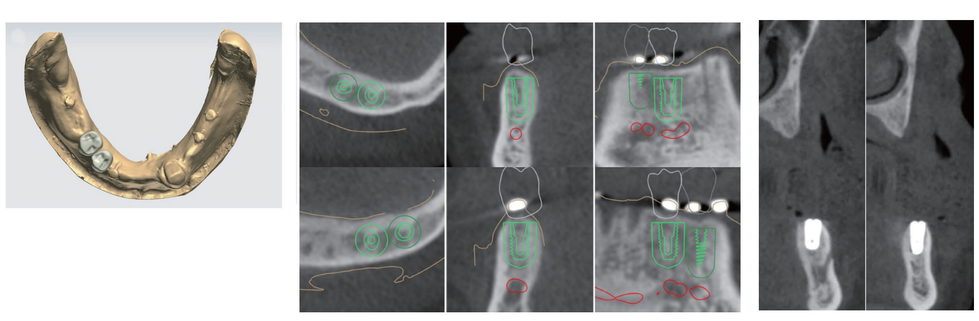


PROCEDURE

Delivery of Provisional Dentures

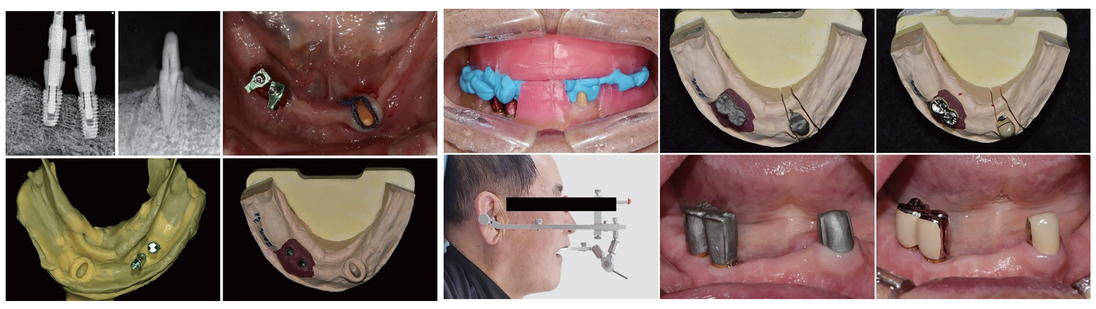
Provisional dentures for the proper vertical dimension setting & esthetic evaluation

Implant planning & Implantation



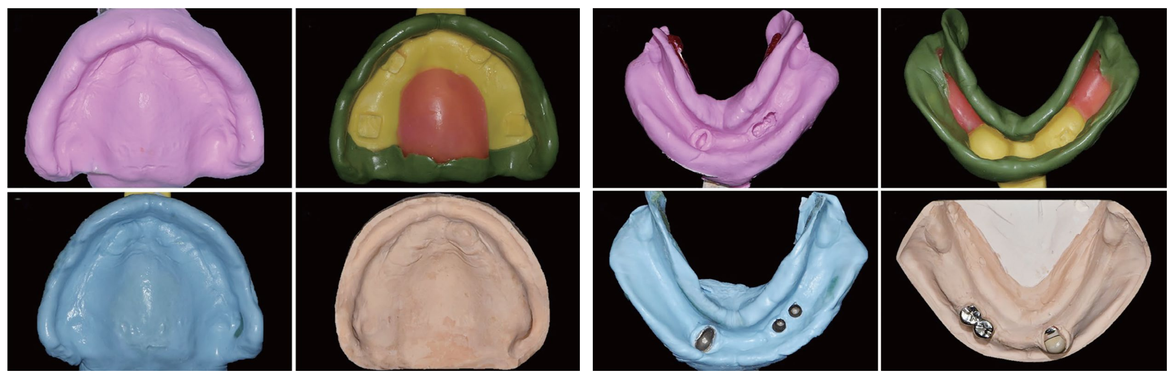
- Implant planning with implant diagnosis program
  : Virtual wax up with Implant studio (3 Shape, Copenhagen, Denmark) on #44i, 45i
- Surgical guide fabrication with 3D printer (Ka;rv, Shinwon Dental, Seoul, Korea)
- Implantation
  a. #44i, Osstem TSIIII SA ø4.5*10㎜, Osstem Implant, Seoul, Korea
  b. #45i, Osstem TSIII SA ø4.5*8.5㎜, Osstem Implant, Seoul, Korea

Fabrication of PFM surveyed crown



- Final impression for #33 surveyed crown & #44i-45i implant surveyed crown
  Using Pick-up impression coping and elastomeric impression materials
  (Addition Silicone (Imprint II Garant light/regular body, 3M ESPE, St. Paul, MN. USA))
- Implant abutment : by milling the ready-made cement-retaining abutment.
- The abutment are designed,
  1. #33 : the cingulum rest
  2. #44i, 45i : Proximal and distal rest seats
  3. #44i, 45i : metal occlusal surface to prevent abrasion of the denture resin teeth.
  4. #44i, 45i : splinting
  to obtain the maximum denture support rage and stability of the partial denture.

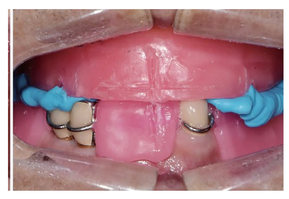
Maxillary & Mandibular final impression



Maxilla Mandible

Metal framework

Metal framework try-in



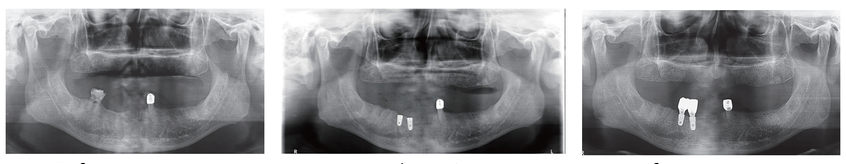
Interocclusal relationship record

Wax denture Try-in

Artificial teeth arrangement Wax denture try-in

Delivery of Definitive prosthesis

Intraoral photo



Before treatment Implantation After treatment

DISCUSSION

- There are several considerations when using implants for partial dentures,
  a. Design to minimize the lateral forces applied to implants
  b. Place multiple implants as large length and diameter as possible for the distribution of stress
  c. Splinting the prosthesis to reduce lateral force and minimize screw loosening.
- The implant-supported partial dentures,
  a. Use the wrought wire clasp to minimize the lateral force to implants
  b. Extend distally as much as possible to cover posterior edentulous area
  c. Establish the bilateral occlusion

CONCLUSION

- In this case, the symmetry of the abutment teeth was secured. The maintenance and stability of the dentures were improved by placing implants with a small number of residual teeth on one side of the mandible. Fabrication of partial dentures with symmetric support using implants can help with the periodontal health and long-term prognosis of the remaining abutments.
- For a long-term prognosis, periodic examination is necessary to check changes in occlusion and to carry out continuous maintenance .

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