

A case of implant-fixed prosthetic restoration in a patient with oral scleroderma due to chronic graft versus host disease (cGVHD)

Su Hyun Han, Su-Young Lee, Wonsup Lee

Department of Prosthodontics, Seoul St. Mary's Dental Hospital, College of Medicine, The Catholic University of Korea, Seoul, Korea

Introduction: Chronic graft versus host disease (cGVHD) is one of the common complications after hematopoietic stem cell transplantation. Skin scleroderma and dry mouth caused by chronic graft-versus-host disease reduce the patient's orifice and increase the activation of dental caries. In addition, when severe oral contracture is accompanied, oral hygiene management may be difficult, which may worsen dental caries. This case reports the restoration of full mouth rehabilitation with implant supported fixed prosthesis after full mouth extraction in a patient with Chronic graft versus host disease (cGVHD), with esthetically and functionally satisfactory results. (THE JOURNAL OF KOREAN ACADEMY OF OSSEOINTEGRATION 2022;14(1):30-35)

Key words: Chronic graft versus host disease, Dental implant, Implant supported fixed prosthesis, Full mouth rehabilitation

INTRODUCTION

Chronic graft versus host disease (cGVHD) is one of the common complications after hematopoietic stem cell transplantation. This occurs when the transfused lymphocytes cannot be destroyed by the host's immune mechanism during hematopoietic stem cell transplantation. It can appear all over the body in various forms of autoimmune disease, but the most commonly invaded area is the skin. Skin scleroderma and dry mouth caused by chronic graft-versus-host disease reduce the patient's orifice and increase the activation of dental caries¹. In addition, when severe oral contracture is accompanied, oral hygiene management may be difficult, which may worsen dental caries.

This case reports the restoration of full mouth rehabilitation with implant supported fixed prosthesis after full mouth extraction in a patient with Chronic graft versus host disease (cGVHD), with esthetically and functionally satisfactory results.

CASE REPORT

A 50-year-old male patient was referred from the Department of Hematology for multiple caries and chewing difficulty. According to the past medical history, he was diagnosed with Acute Myeloid Leukemia (AML) 15 years ago and underwent allogeneic

hematopoietic stem cell transplantation (Allo BMT). Afterwards, chronic graft-versus-host disease (cGVHD) developed and was being monitored. He complained of severe dry mouth syndrome due to the disease and medication.

According to intraoral findings, a fissured tongue and limited mouth opening due to scleroderma were observed. In radiographic view, all residual teeth were involved to dental caries which invaded the dentin (Figure 1). As Extraoral findings, skeletal class III with mandibular protrusion was observed.

As a treatment option, Mandibular and Maxillary complete denture after full mouth extraction could be considered. However, due to the dry mouth condition, various denture discomforts were expected. Therefore, a treatment plan was established with extraction of all remaining teeth and full mouth rehabilitation with implant supported fixed prosthesis.

4 months after tooth extraction, CBCT taking was performed to prepare implant diagnosis, and the bone quality and amount of the remaining alveolar bone was evaluated (Figure 2). The supporting bone seemed to be good enough for implant installation, so we decided to place 8 implants on maxilla and 6 implants on mandible. Implant first surgery (#16i, 14i, 13i, 11i, 21i, 23i, 24i, 26i, 46i, 44i, 43i, 33i, 34i, 36i) was done on planned location (Figure 3).

After 4 months of osseointegration period, the second implant surgery was performed, and after 2 weeks of soft tissue healing

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Corresponding Author: Su-Young Lee, Department of Prosthodontics, Seoul St. Mary's Dental Hospital, College of Medicine, The Catholic University of Korea, 222 Banpo-daero, Seocho-gu, Seoul 06591, Korea, Tel: +82-2-2258-1795, Fax: +82-2-537-2374, E-mail: lsuyoung@daum.net

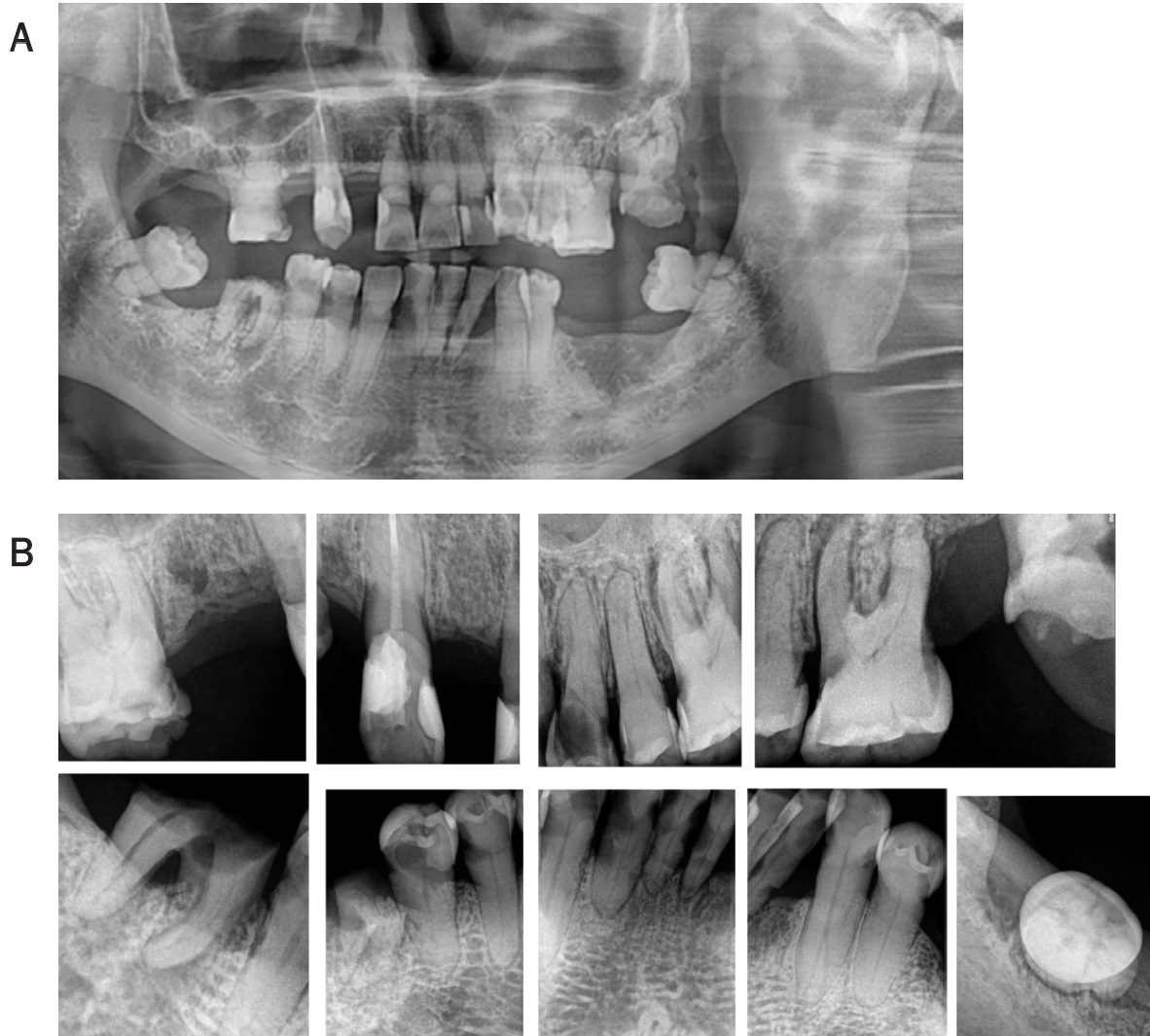


Figure 1. Pre-operative radiographic examination. (A) Panoramic view. (B) Periapical radiograph.

period, the restorative procedures were performed. Impression was taken using a transfer coping and stock tray with PVS material (Figure 4). Pick up impression coping couldn't be used due to limited mouth opening. After master cast fabrication (Figure 5), bite registration was done using temporary abutment and occlusal rim, and the centric relation at the desired vertical dimension was checked (Figure 6, 7). It was mounted on a semi-adjustable articulator using interocclusal record (Figure 8). The wax-up for the temporary prosthesis was carved (Figure 9). Temporary prosthesis on temporary abutment was made based on the wax-up model (Figure 10).

During the provisional period, centric and eccentric movement, anterior guidance was checked (Figure 11). After 2 month of provisional period, remaking of mandibular posterior tempo-

rary crown was decided due to posterior tooth wear and following VD loss. New Mandibular temporary crown and custom abutment was fabricated with 2 mm increase of VD, and custom abutments were designed supragingival margin for periodontal health (Figure 12). Maxillary custom abutments were also fabricated and bite registration was done (Figure 13). The final prosthesis was made of monolithic zirconia, except for the maxillary anterior teeth (Figure 14, 15). The maxillary anterior teeth were made of porcelain fused to gold crown in consideration of aesthetics. Careful occlusal adjustment was done to provide bilateral occlusion and mutually protected occlusion in lateral movement (Figure 16). The patient was followed up one week, one month, three months, six months after the prostheses were delivered (Figure 17).



Figure 2. CT analysis of implant surgery.



Figure 3. Post-operative Radiographic Examination.



Figure 4. Impression taking.

DISCUSSION

Chronic graft versus host disease (cGVHD) in the oral cavity that occurs after hematopoietic stem cell transplantation has been reported to have an incidence of 25~70% despite the use of pro-

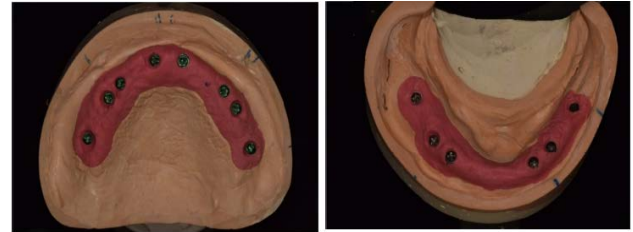


Figure 5. Master cast



Figure 6. Temporary abutment and occlusal rim.



Figure 7. Bite registration.

phylactic agents². Oral findings include erythema, ulceration, redness of the mucous membrane, and bleeding. The patient of this case also complained of severe dry mouth, and dental caries was observed in all residual teeth. Considering the high caries activity, full mouth rehabilitation after full mouth extraction was recommended rather than conservative treatment. Also removable denture was not recommended due to severe dry mouth condition.

Therefore, the treatment plan was established to implant supported fixed prosthesis, 8 implants on maxilla and 6 implants on

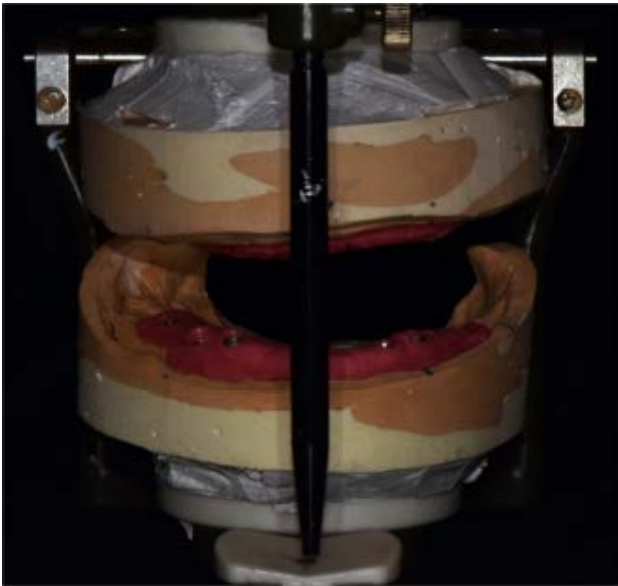


Figure 8. Mounting on a semi adjustable articulator.



Figure 9. Wax up.

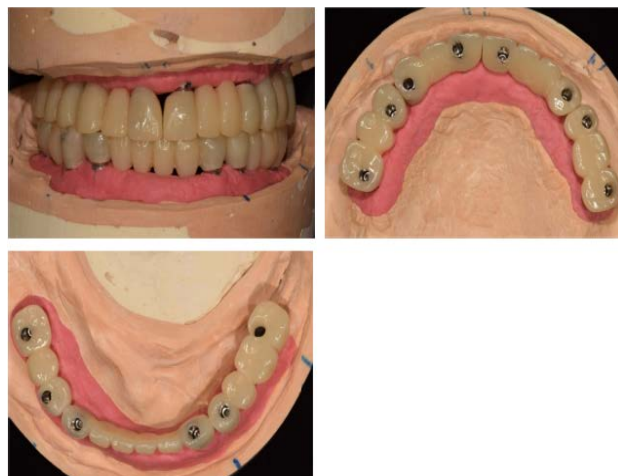


Figure 10. Temporary prosthesis.



Figure 11. Temporary prosthesis delivery.



Figure 12. Custom abutment and new mandibular provisional crown.

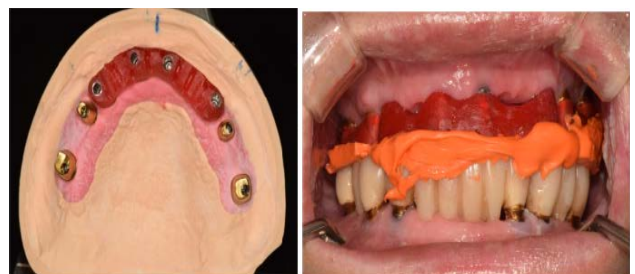


Figure 13. Maxillary custom abutment and bite registration.

mandible. According to Misch, these fixture number was minimal requirement to obtain adequate support in completely edentulous patients when restored with implant-fixed prosthesis³. Implant surgery was performed after consulting with the attending physician in charge of hematology, and broad-spectrum antibiotic therapy was followed before and after surgery. Since the mucous membrane was very dry and sensitive due to severe dry mouth,

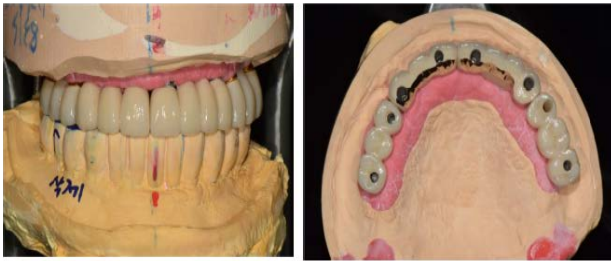


Figure 14. Maxillary final prosthesis.

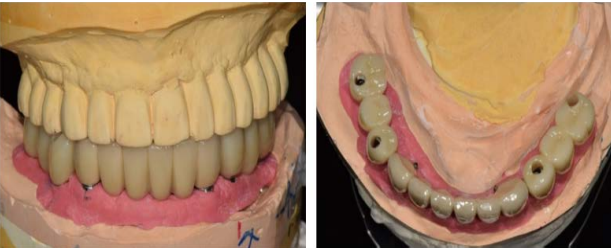


Figure 15. Mandibular final prosthesis.

appropriate lubricants such as saline and petrolatum were used in the middle of the procedure to minimize the patient's discomfort. Also, the corner of the mouth had a limited amount of opening due to repetitive ulceration and healing. Transfer impression coping rather than pick up impression coping was used to make impression considering limited mouth opening. And to minimize the number of impressions, additional abutment level impression was omitted. Furthermore, considering that patient with leukemia is vulnerable to periodontal disease, the margin of the abutments was set supragingival, and embrasure was sufficiently opened to facilitate oral hygiene management.

Implant occlusion considering biomechanical factors were given, as occlusal overload might lead to mechanical complication and implant failure. In this case, group function occlusion was given from the canine to the second premolar to obtain occlusal dispersion⁴. Nevertheless, an appropriate occlusion check



Figure 16. Final restoration.



Figure 17. 6 month follow up.

should be performed through regular check.

CONCLUSION

Implant-supported prosthetics might be a practicable treatment for patients with oral scleroderma due to chronic graft versus host disease (cGVHD).

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