CRNC8: Implant Supported Overdenture Rehabilitation with A 3D Printed Framework for A Mandibulectomy Patient: A Case Report

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Background: Surgical defects over maxillofacial area usually cause difficulties for prosthodontic rehabilitation. The size, location and ways of defect reconstructed can influence the method of prosthodontic rehabilitation. A prosthetic procedure for a complete edentulous patient with large mandibulectomy defect will be described.

Methods: A 44-year-old male, suffered from squamous cell carcinoma over right mandible, received marginal mandibulectomy and anterolateral thigh free flap reconstruction. The traditional complete dentures were no longer serviceable for the patient due to the size, location of the defect and the restriction of scar contraction close to the midline. Five dental implants were placed to gain denture stability and support. Since the denture width was limited to the scar tissue, a computer designed 3D printed cobalt-chrome customized framework was imbedded into the mandibular overdenture to enhance the rigidity.

Results: Most mandibular defects reconstructed with soft tissue flaps should lead to a better life quality and functional outcome. However, the lack of hard tissue support may cause difficulty during masticatory. Dental implants provide better support and stability to the mandibular denture during functional movements. Even the right part of the mandibular denture cannot hold either dental implants or bone graft provides balancing force during lateral movements. This helps achieving equilibrium.

Conclusion: With conventional prosthesis, this patient would find difficulty reaching normal masticatory function. One reason may be the different resiliency between the bony-supported normal side, and the ALT-flap-reconstructed affected side. Using dental implants and custom designed 3D printing technique can provide better service.

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