



American Academy of Maxillofacial Prosthetics
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Program Speaker – Dan Hammer

Title

Returning the Warfighter back to the Fight: The Balboa Rapid Dental Restoration Protocol following Fibula Free Flap Maxillofacial Reconstruction

Abstract

Purpose:

Maxillofacial trauma can result in debilitating injuries affecting facial structure and function leading to adverse changes in speech, nutrition, swallow function, and esthetics. For this reason, facial reconstruction after trauma or pathology can pose a significant challenge to surgeons. Scientific data reports that appropriate maxillofacial surgery addressing the forementioned challenges, directly improves the overall psychosocial wellbeing and self-concept and identity of these patients. Dental rehabilitation must be part of the full restoration for patients to fully complete their restorative process to address function, but unfortunately, current data suggest that only 20% of patients complete their dental rehabilitation after undergoing jaw reconstruction with a free fibular flap at 2 years post reconstruction.

Patients with mandibular resections are historically known as “the forgotten patient” due to the multifactorial challenges for dental and oral rehabilitation [1]. Definitive dental rehabilitation of patients with free fibular flap reconstruction is often measured in years after initial surgery. Our mission at Naval Medical Center San Diego is to rapidly return our Warfighters to the fight and fully engage to accomplish their mission. Our service members cannot afford the current treatment delays and the tangible and intangible negative sequela follows. Our multi-disciplinary, Maxillofacial Restorative Surgery Platform has developed a definitive dental rehabilitation pathway by leveraging various digital technologies for service members requiring free flap maxillofacial reconstruction for both benign and malignant disease. Our team can deliver definitive dental restorations within six months of primary surgery.

Materials and Methods:

Our protocol has been applied to two service members since its inception in June 2021. The protocol has been utilized in both free fibular flap reconstruction for benign (ameloblastoma) and malignant disease (Primary Intraosseous Carcinoma). Both patients required full arch dental rehabilitation with osteo-cutaneous free tissue reconstruction.

Each patient had dental implants placed in the fibula and a conversion dental prosthesis delivered at the time of primary reconstruction. After 4 weeks, the prostheses were verified to be passive to the multi-unit abutments. After proper analysis and required adjustments of the vertical dimension of occlusion, hygiene, and overall serviceability of the prostheses, maxillomandibular relationship records were taken with an intraoral scanner. The conversion prostheses were then scanned with a desktop scanner with reverse/impression scanbodies attached to the dental prostheses. The desktop scans and intraoral scans were registered together using Computer Assisted Design-Computer Assisted Manufacture (CAD-CAM) software. Implant supported fixed dental prostheses were manufactured by the dental laboratory and delivered within 16 weeks from the primary surgeries. Homecare instructions were reinforced, and patient-specific continued observation appointments were coordinated with the surgery team to analyze the occlusion, hygiene, and overall serviceability of the dental prostheses.

Results and Conclusions:

Our protocol delivered definitive dental restorations for patients undergoing maxillofacial reconstruction free fibular flap for both benign and malignant disease at 16 weeks post primary surgery without complications. Further long-term outcomes and volume are needed to enhance technique.

References:

1. Curtis, TA, Cantor, R. The forgotten patient in maxillofacial prosthetics. *The Journal of Prosthetic Dentistry*. 1974; 31(6):662-680

Biography

Biographical info (short): Dr. Hammer is a Navy board-certified Oral and Maxillofacial Surgeon with a certificate of added qualification in Head and Neck Oncology and Reconstructive Surgery. After completing his dental education at the University of the Pacific, he completed his residency at Walter Reed National Military Medical Center. Most recently, he completed his fellowship at John Peter Smith Hospital in Fort Worth, Texas. He is currently the Vice Chair and Director of the Division of Oral, Head and Neck Oncology and Reconstructive Surgery in the Department of Oral and Maxillofacial Surgery at Naval Medical Center San Diego and was named the *2022 Hero of Navy Medicine*. He is an Associate Professor of Surgery at the Uniformed Services University School of Medicine and Volunteer Clinical Assistant Professor of Surgery in both the University of California, San Diego's Department of Otolaryngology and Division of Plastic and Reconstructive Surgery. He loves living in San Diego with his wife, Chrissy, and his two daughters, Mackenzie and Ryleigh.

Credentials: DDS, FACD, FACS