



Academy of Prosthodontics 2026 Annual Scientific Session
The Boca Raton Hotel, Boca Raton, FL | May 27-30, 2026

Program Speaker – Kale McMillan, DDS, MD

Title

Surgical Considerations in Free Flap Reconstruction

Abstract

Fibula free flap reconstruction remains a cornerstone technique for mandibular reconstruction following aggressive benign pathology, malignancy, or traumatic injury. Prosthetically-driven surgical planning, with the final functional and restorative outcome as the primary objective, is critical to achieving optimal patient results. Key surgical considerations—including the extent of osseous and soft tissue defects, vascular pedicle length, skin paddle design and orientation, and implant positioning—directly influence prosthetic rehabilitation and long-term functional outcomes. Optimal surgical planning is best achieved through a multidisciplinary approach involving ablative and reconstructive surgeons in close collaboration with prosthodontists.

Learning Objectives

- Identify the surgical indications for fibula free flap reconstruction.
- Describe key surgical considerations in fibula free flap surgery.
- Apply principles that optimize prosthetic rehabilitation and functional outcomes following fibula free flap reconstruction.

Biography

Dr. Kale McMillan received his Doctor of Dental Surgery degree from New York University College of Dentistry and completed specialty training in prosthodontics at the University of Minnesota. He is a Diplomate of the American Board of Prosthodontics and a Fellow of the Royal College of Dentists of Canada in prosthodontics. He subsequently completed residency training in oral and maxillofacial surgery at the Mayo Clinic in Rochester, Minnesota, where he also earned his Doctor of Medicine degree from the Mayo Clinic Alix School of Medicine. Dr. McMillan is a Diplomate of the American Board of Oral and Maxillofacial Surgery and a Fellow of the Royal College of Dentists of Canada in oral and maxillofacial surgery. Following residency, he completed a fellowship in head and neck oncology and microvascular surgery at the University of Michigan. Dr. McMillan currently practices in Ottawa, Ontario and holds hospital privileges at the Queensway Carleton Hospital.