

# Building a Successful Head and Neck Osteocutaneous Free Flap Dental Restoration Program



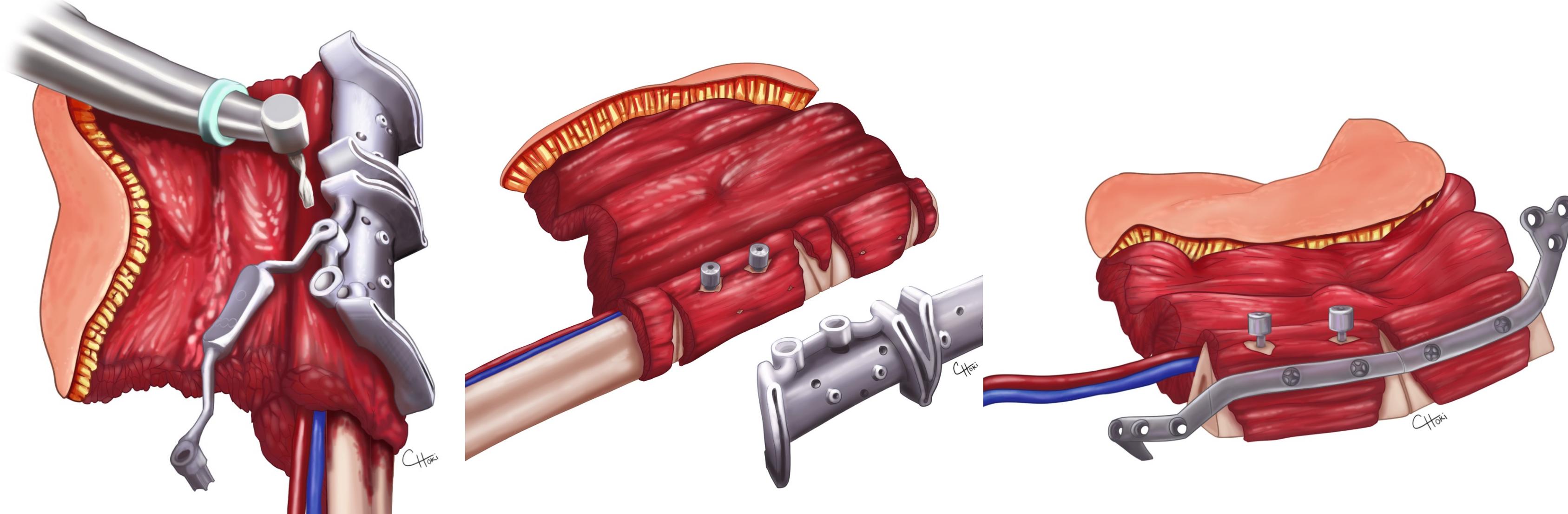
Nikhil Bellamkonda, MD; Jacob Beiriger, BS; Brayden Seliger, BS; Samuel M. Nelson, BS; Nilam Patel, MD; J. Rhet Tucker, DMD; Richard B Cannon, MD; David Adams, DDS; Hilary C. McCrary, MD



Department of Otolaryngology – Head and Neck Surgery, Huntsman Cancer Institute  
University of Utah

## INTRODUCTION

- Immediate dental implantation and expedited dental restoration in patients undergoing osteocutaneous free flap reconstruction for head and neck surgical defects can greatly improve patients' quality of life.
- Radiation, particularly when doses exceed 70 Gy, has been associated with decreased tissue vascularization, lower infection resistance, local inflammation leading to decreased osseointegration and subsequent implant failure. Thus, performing implants prior to adjuvant radiation can reduce these risks
- A successful dental restoration program requires interdisciplinary coordination, and access to virtual surgical planning or the technical skills to perform free-hand implantation.



## RESULTS

- **53 Patients** underwent immediate dental implantation between September 2023 and April 2025
- 1 "Jaw-in-a-day"
- **Only 3 (4%) cases of bony free flap failure requiring explantation**
  - One with arterial anastomosis failure
  - One with delayed flap failure (4mo after surgery)
- **Skin paddle/soft tissue failure rate of 11%, comparable to published skin paddle failure rates (11-15%)**
- ~4 months average time to first stage vestibuloplasty
- ~12 months average time to completion of dental restoration.

## METHODS

- **Objective:** To evaluate the outcomes of the first 1.5 years of an immediate dental implantation program at a single high-volume center
- Retrospective review of patients who had mandible or maxilla resection and osteocutaneous reconstruction with intra-operative dental implant placement.
- Involved Disciplines:
  - Head & Neck Surgery
  - Oral & Maxillofacial Surgery
  - Prosthodontics
  - Virtual Surgical Planning/Industry Partners

## PATIENT SELECTION

- Typically offered to patients with:
  - Pre-existing dentition
  - Motivation for rehabilitation
  - Osteoradionecrosis
  - Reliability for dental follow-up
- Avoid in patients with highly aggressive tumors with high recurrence risk
- CTA for fibula free flap
- Virtual Surgical Planning preferred – minimum 2 weeks for fabrication
  - H&N Surgery
  - OMFS
  - Engineers

## CONCLUSIONS

- Coordination between head and neck microvascular/reconstruction and oromaxillofacial surgeons allowed for dental implantation of 53 patients in ~1.5 years
- There were only 2 instances of total free flap failure, one of which was related to vascular compromise rather than implant related
- Partial and total free flap failure rates are comparable to published literature for head and neck free flaps without dental implants.

Patient Data	N (%)	Surgery Data	N (%)
<b>Total</b>	53	<b>Resection Site</b>	
Male	29 (55%)	Mandibulectomy	41 (77%)
Female	24 (45%)	Maxillectomy	12 (23%)
<b>Mean Age</b>	57	<b>Free Flap Donor Site</b>	
<b>Ethnicity</b>		Fibula	50 (94%)
White	49 (92%)	Scapula	3 (6%)
Hispanic/Latino	2 (4%)	<b># of Dental Implants</b>	
Other	2 (4%)	≤ 2	38 (72%)
		> 2	15 (28%)
<b>Original Pathology</b>		<b>Soft Tissue Flap Failure</b>	6 (11%)
Squamous Cell Carc.	33 (62%)	<b>Bony Flap Failure</b>	3 (6%)
Osteosarcoma	1 (2%)	<b>2nd Stage Vestibuloplasty Completed</b>	25 (47%)
Ameloblastoma	6 (11%)	<b>Dental Restoration Completed</b>	12 (23%)
Salivary Cancer	1 (2%)		
Osteoradionecrosis	6 (11%)		
Trauma	4 (8%)		
Osteomyelitis	1 (2%)		
Rhabdomyosarcoma	1 (2%)		

### References:

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