Published online: 2019-10-31

Radial Forearm Free Tissue Transfer to Clival Defect

Jennifer D. Moy[1] Paul A. Gardner[2,3] Shaum Sridharan[1] Eric W. Wang[1,3]

[1] Department of Otolaryngology, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania, United States
[2] Department of Neurological Surgery, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania, United States
[3] Center for Cranial Base Surgery, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, United States

Address for correspondence Eric W. Wang, MD, UPMC, Center for Cranial Base Surgery, Eye and Ear Institute, 200 Lothrop Street, Suite 500, Pittsburgh, PA 15213, United States (e-mail: wangew@upmc.edu).

J Neurol Surg B 2019;80(suppl S4):S380–S381.

Abstract

Introduction Reconstruction of craniocervical junction (CCJ) defects after endoscopic endonasal skull base surgery (ESBS) remains challenging, despite advancements in vascularized intranasal and regional flaps. Microvascular free tissue transfers have revolutionized reconstruction in open skull base surgery but have been utilized rarely in ESBS. We describe the use of a radial forearm free flap (RFFF) for reconstruction of a recalcitrant CCJ defect after resection of a clival chordoma.

Case Report A 54-year-old female who underwent ESBS for a clival chordoma complicated by a C1–C2 epidural abscess after proton beam therapy presented with pneumocephalus 4 years after her resection (►**Fig. 1**). At the CCJ, she developed a 1-cm skull-base defect. An occult cerebrospinal fluid (CSF) leak persisted despite an extracranial pericranial flap and a lateral nasal wall flap. Her definite reconstruction was a RFFF inset through a transmaxillary approach. Using a maxillary vestibular incision, anterior, lateral, and medial maxillotomies allowed the introduction of the flap into the nasal cavity and the passage of the RFFF pedicle across the posterior maxillary wall, into the premassateric space and to the facial vessels at the mandible. An endonasal inset supplemented with transoral suturing of the distal end of the flap to the posterior oropharynx halted further CSF egress. Vascularization of the flap was confirmed with intraoperative indocyanine green angiography and postoperative computed tomography (CT) angiography and magnetic resonance imaging (MRI).

Conclusion A RFFF inset through a transmaxillary approach to the facial vessels has an adequate reconstructive surface and pedicle to cover the central and posterior fossa skull base after ESBS (►**Fig. 2**).

The link to the video can be found at: https://youtu.be/rQ5vJKyD5qg.

Keywords
- craniocervical junction
- clival chordoma
- endoscopic endonasal
- radial forearm free flap

Conflict of Interest
None declared.

www.thieme.com/skullbasevideos

www.thieme.com/jnlsbvideos

received
April 5, 2019
accepted after revision
August 25, 2019
published online
October 31, 2019

DOI https://doi.org/10.1055/s-0039-1700890.
ISSN 2193-6331.

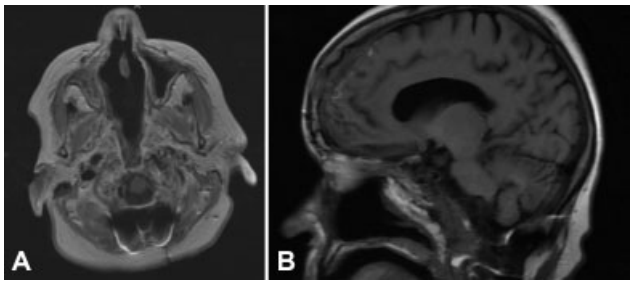

Fig. 1 (**A**) T1 with contrast axial section demonstrating the skull base defect at the craniocervical junction. This location corresponds to the patient's prior C1–C2 epidural abscess location two years prior. (**B**) T1 with contrast sagittal image demonstrating the extent of the radial forearm free flap from the sphenoid planum to the craniocervical junction.

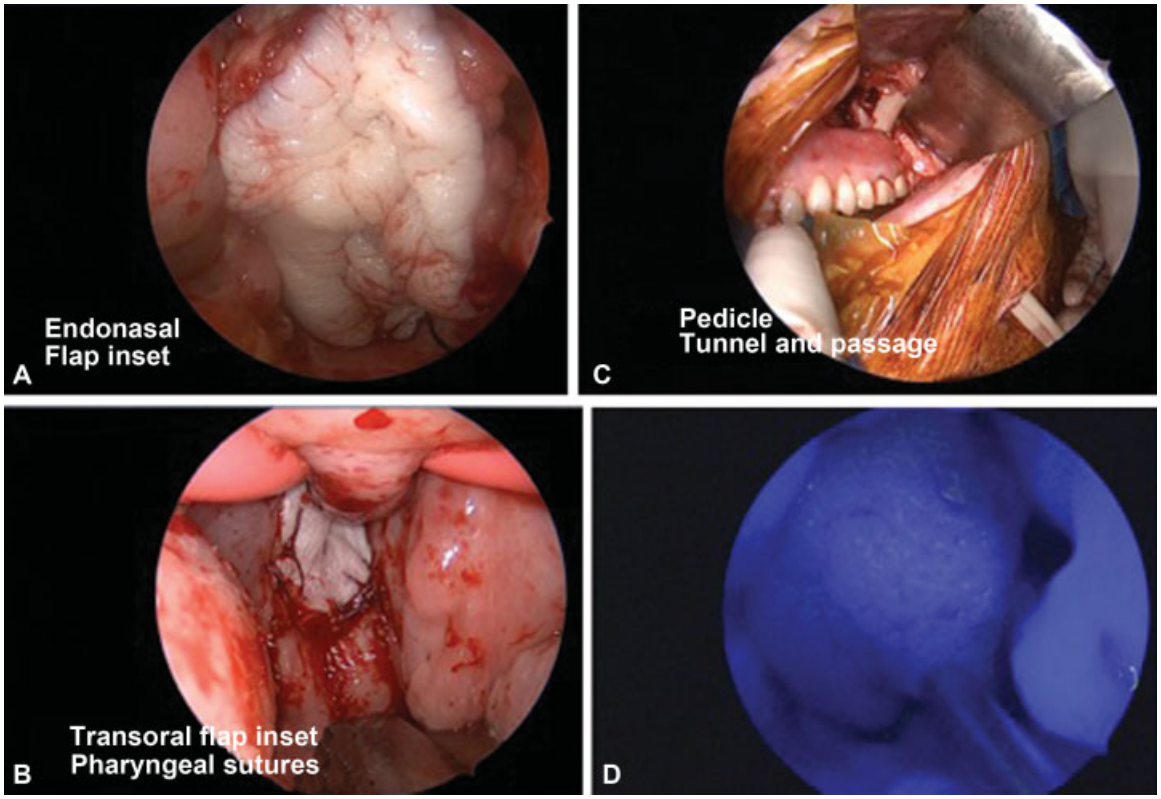

Fig. 2 (**A**) Endoscopic endonasal image of the radial forearm free flap covering the central and posterior skull base. (**B**) Transoral endoscopic image of the oropharyngeal suturing of the distal end of the radial forearm free flap to the posterior oropharyngeal mucosa. (**C**) Passage of the radial forearm free flap pedicle across the posterior maxillary wall into the premasseteric space and exiting at the facial artery and vein above the mandible. (**D**) Indocyanine green angiography demonstrating vascularization of the radial forearm skin paddle.