Local Mucosal Reconstruction for the Comprehensive Otolaryngologist

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Disclosures

- MeiraGTX – clinical trial support (xerostomia study)
- LivaNova – clinical trial support (hypoglossal nerve stimulator study)

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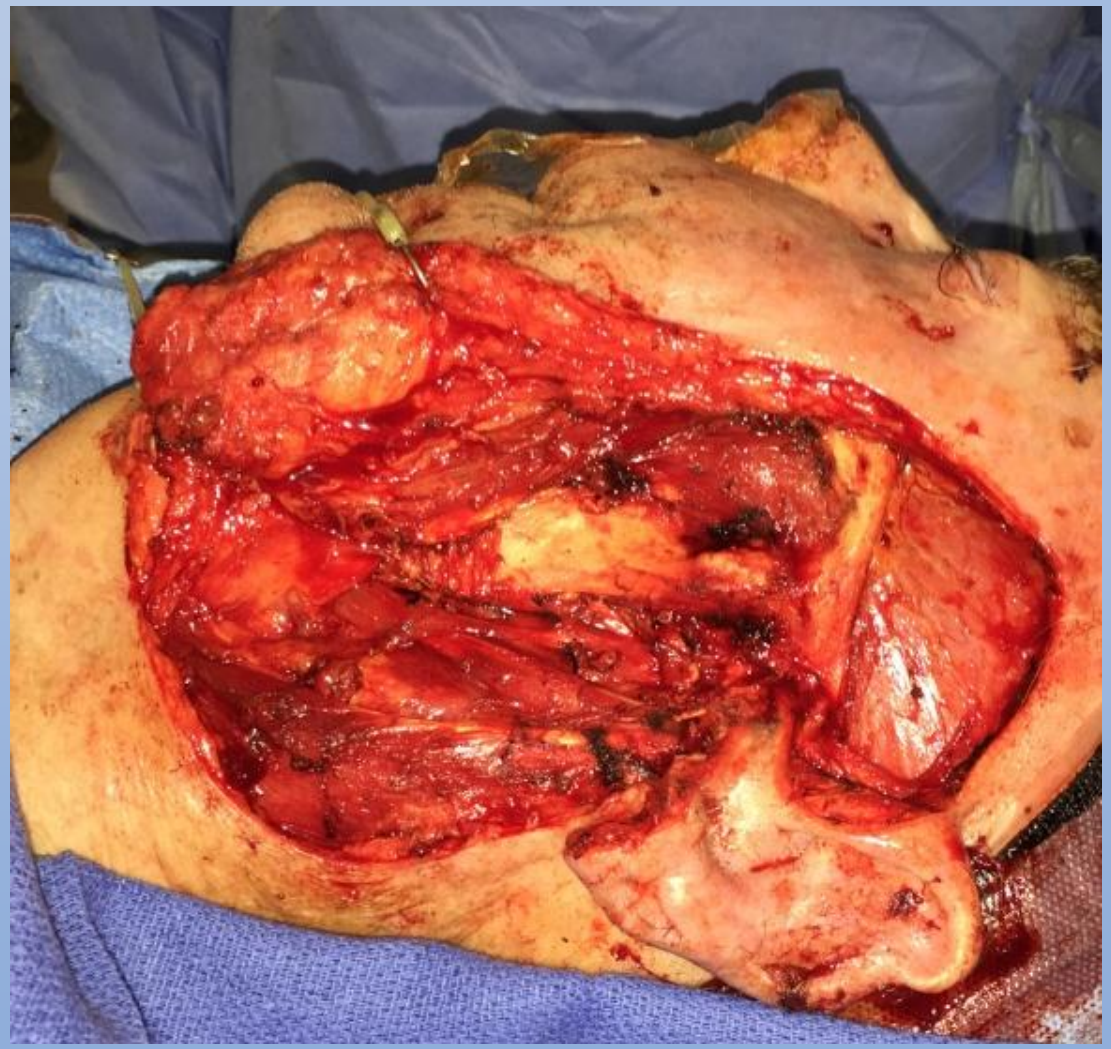
How would you reconstruct these defects?



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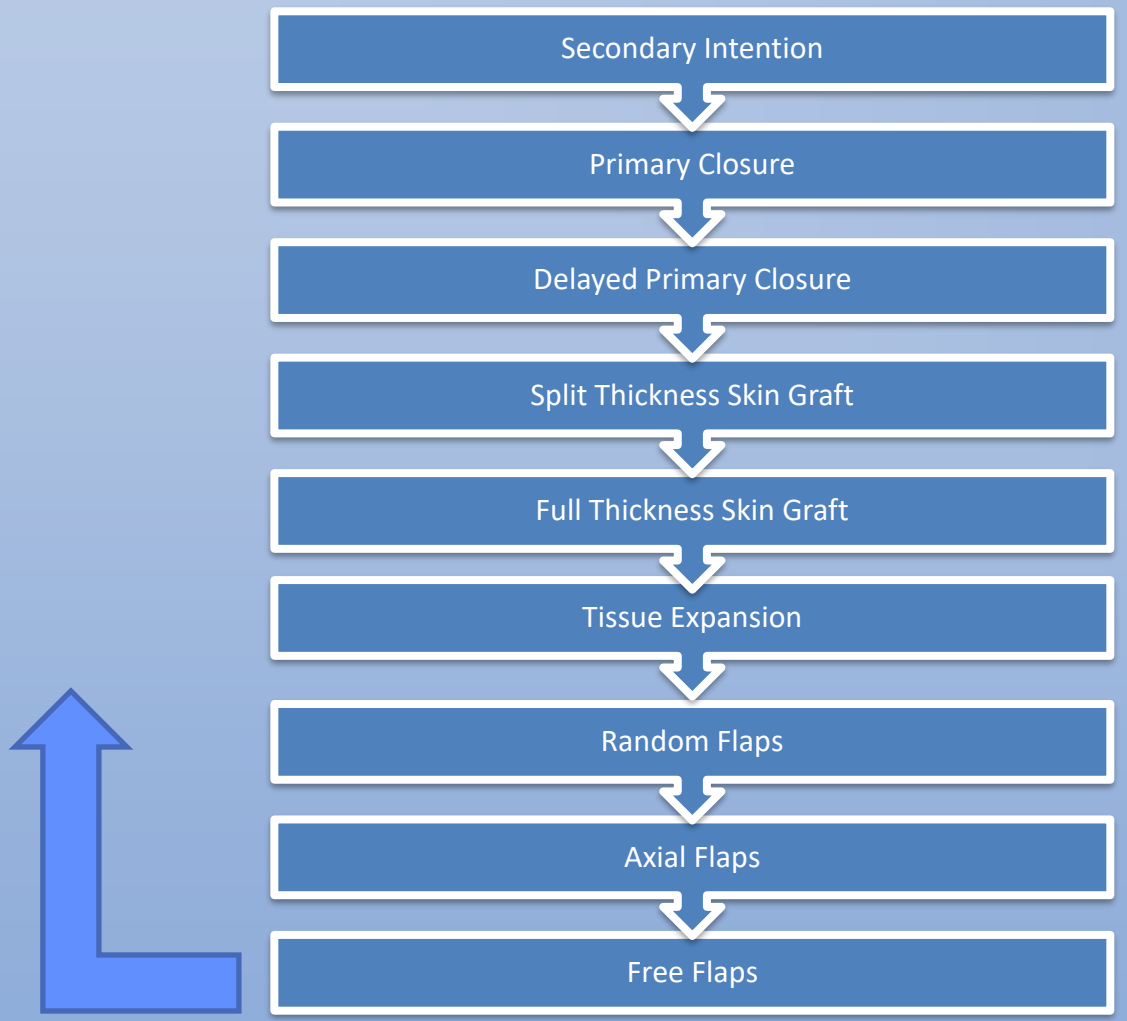
Reconstructive Ladder



Increasing preference for free flap reconstruction

Increasing applicability of vascularized reconstruction

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I don’t do micro!

- Should we:
  - Refer out
  - Put up a Pec Flap
  - Consider other “non-micro” reconstructive flaps

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Consider the Ideal Flap for the Reconstructive Surgeon

- Versatile
- Reliable
- Efficient
- Safe/Minimal Morbidity

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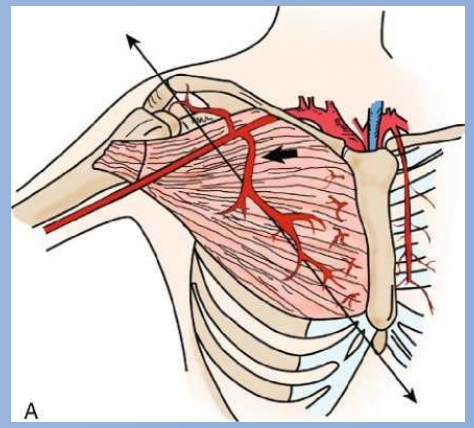
Pectoralis Flap

- Tried and true
- Very bulky – even in the emaciated cancer patient
- Limited reach – can not typically go above the zygoma
- Long neck or short chest can be detrimental
- Remember to tack skin to the muscle
- Remember to have at least 2/3 of the skin paddle over the muscle



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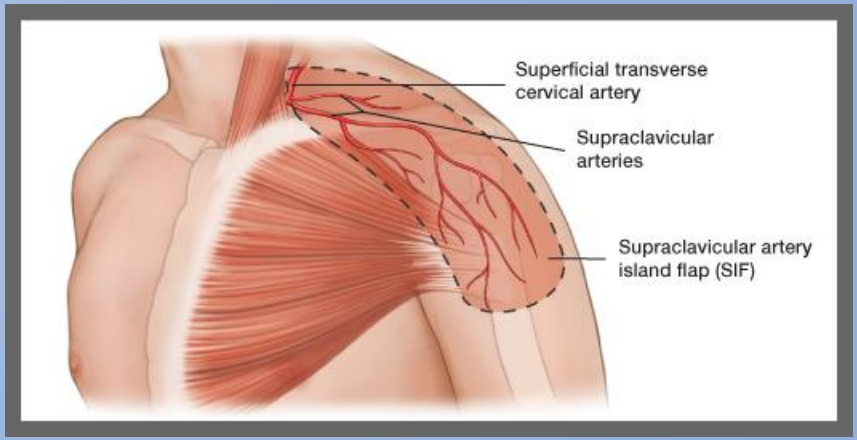
Supraclavicular Flap

- Fasciocutaneous flap
- Axial flap
- Perforator based
- Supraclavicular artery



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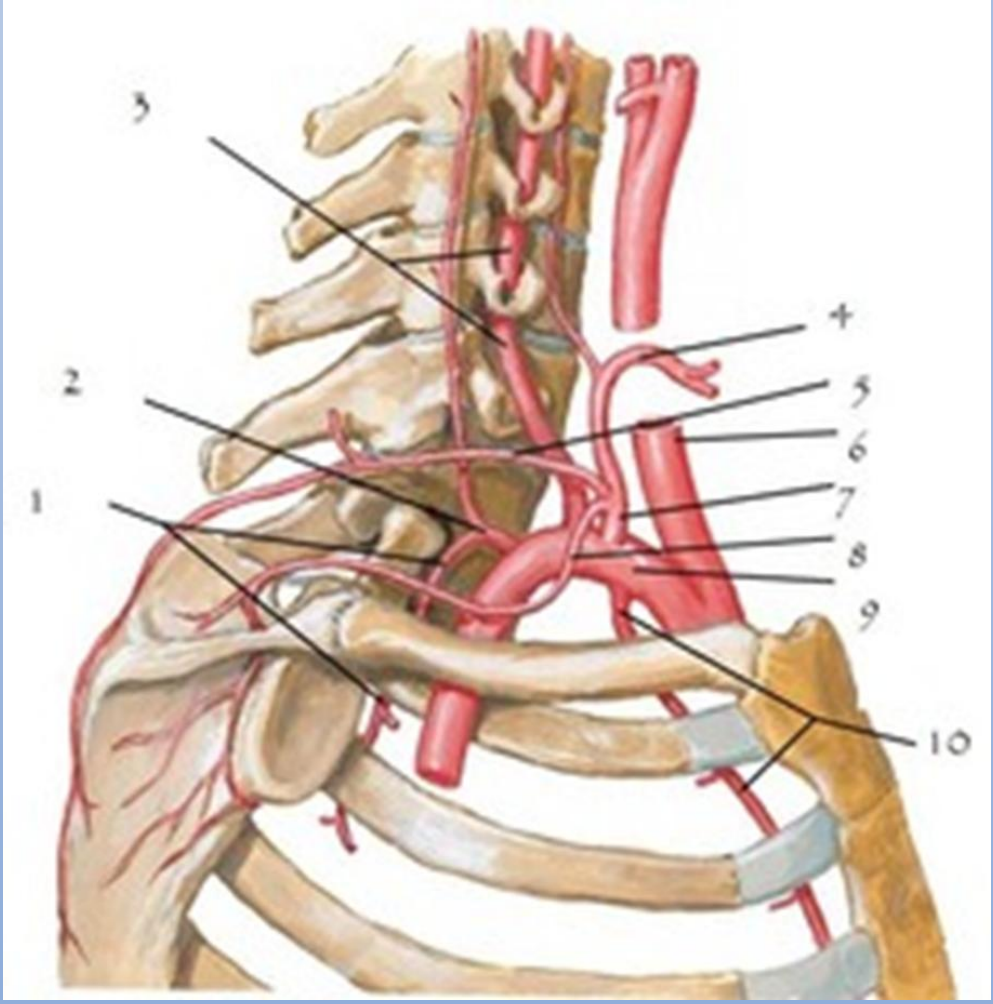
Vascular Anatomy



- Subclavian
- Thyrocervical trunk
- Transverse cervical (93%)
- Suprascapular (7%)

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History & Evolution

- 1949 – Kazanjian & Converse
- “in charretera” flap
- Acromion flap

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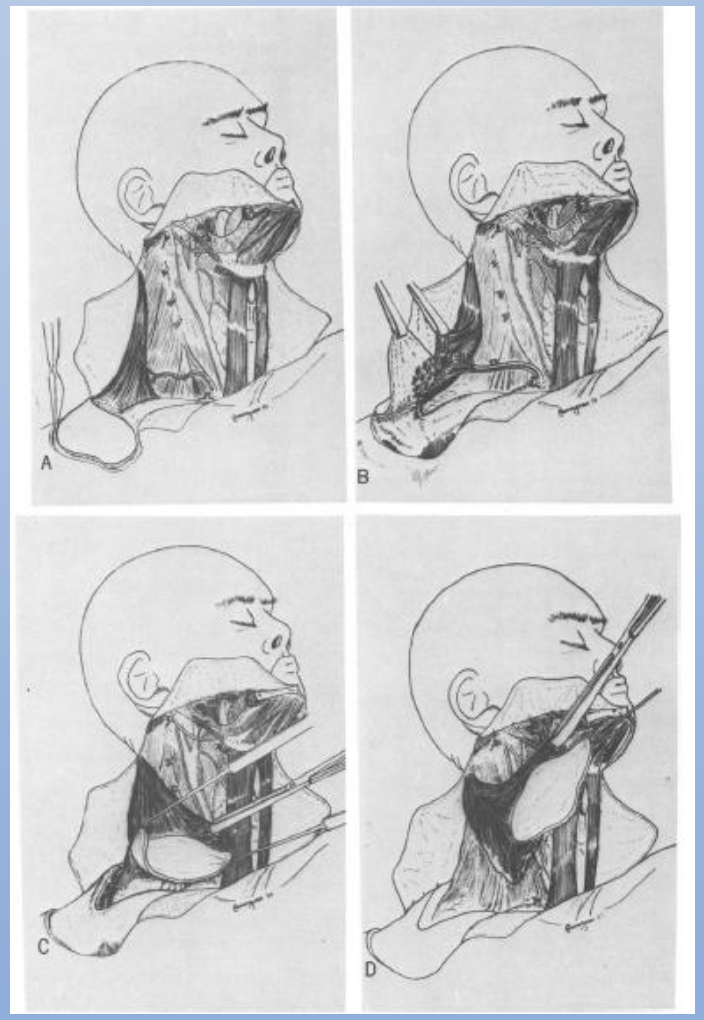
History & Evolution



- 1979 – Demergasso, Piazza
  - Trapezius myocutaneous flap
- 1979 – Mathes, Nahai
  - Lateral extension onto arm

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History & Evolution

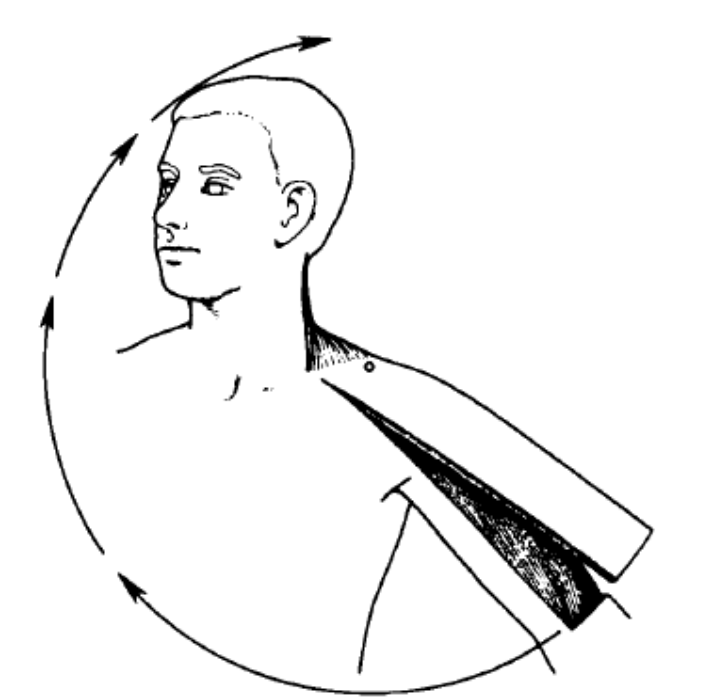

FIG. 3. The arc of rotation of the cervicohumeral flap.

- 1983 – Lamberty, Cormack
  - "cervicohumeral flap"

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History

- Flap fell out of favor in the 80s
  - Increased popularity of the pectoralis and DP flaps
  - Varying failure rates; distal tip necrosis
  - ? Vascular supply reliability
- Revisited more recently

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Question

- How can the pedicle of the flap be identified and preserved reliably?

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Vascular Anatomy

- Pallua et al
  - Detailed cadaveric studies with India Ink injection
  - Primarily skin overlying the ventral deltoid
    - NOT THE TRAPEZIUS OR PECTORALIS

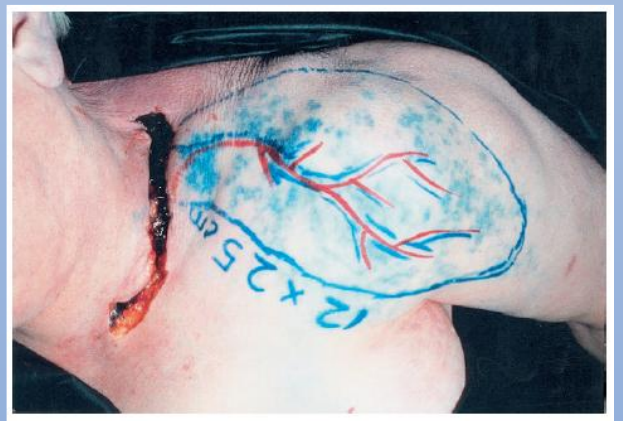


FIG. 3. Angiosome of the supraclavicular artery after filling with India ink. Note the extent of the vascular territory at the upper arm.

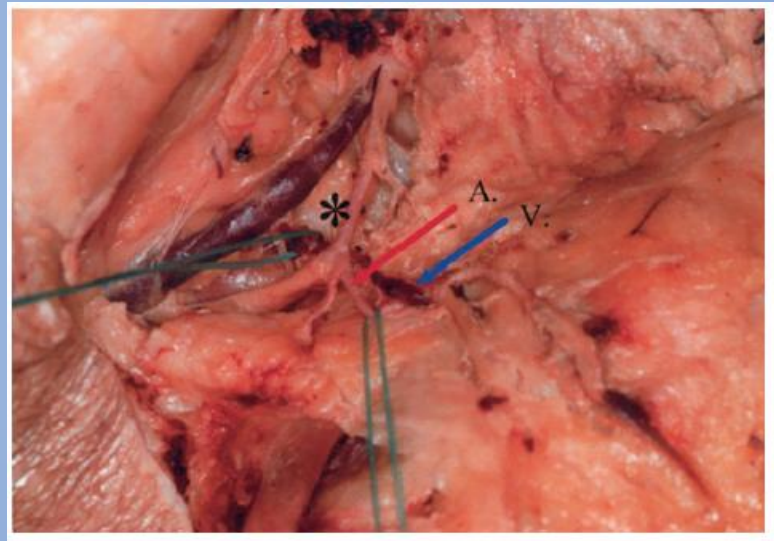
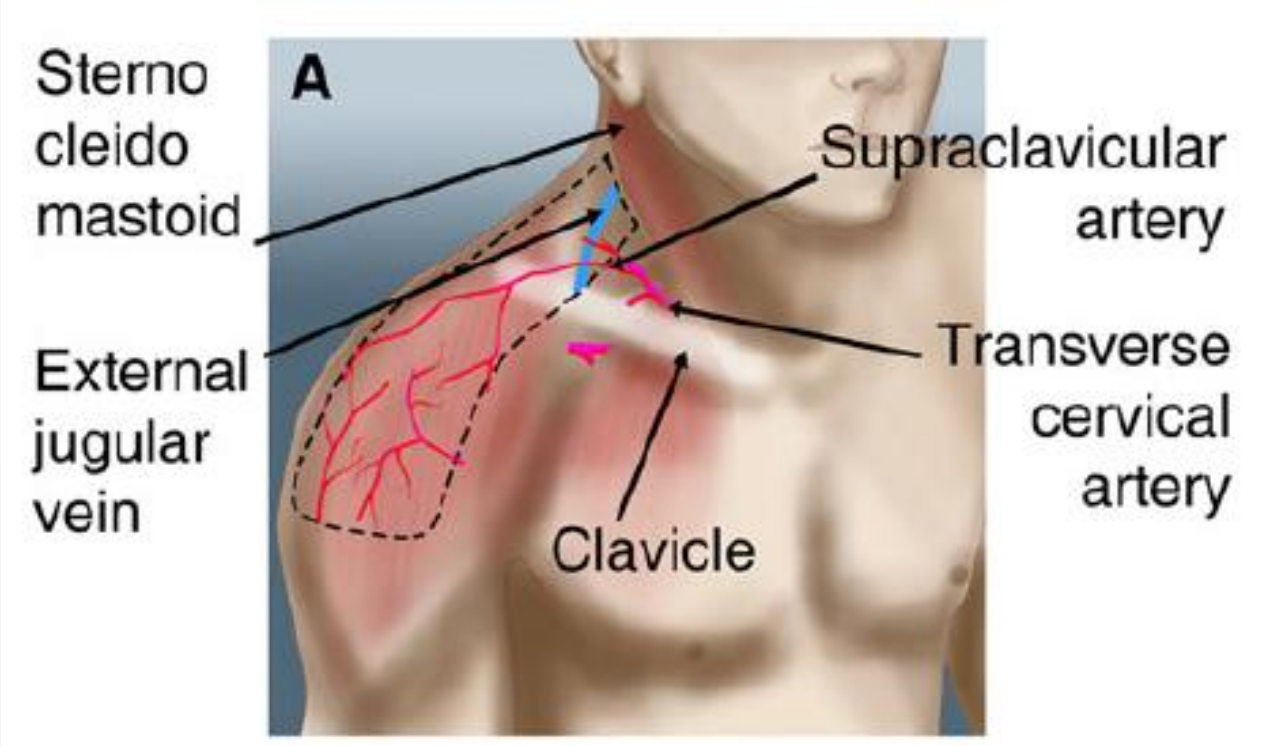


FIG. 2. Cadaver dissection of the supraclavicular artery (*A*) and the accompanying vein (*V*) exiting from the transverse cervical vessels (*).

External Landmarks

- Transverse cervical sits in the posterior triangle



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Further Evolution

- 1997 Pallua et al: supraclavicular artery island flap
- Tunneled flap
- Island flap

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Further evolution

- 2005 Di Benedetto
- Fascial pedicled flap
- Not an “island” flap

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Supraclavicular Flap

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Supraclavicular Flap

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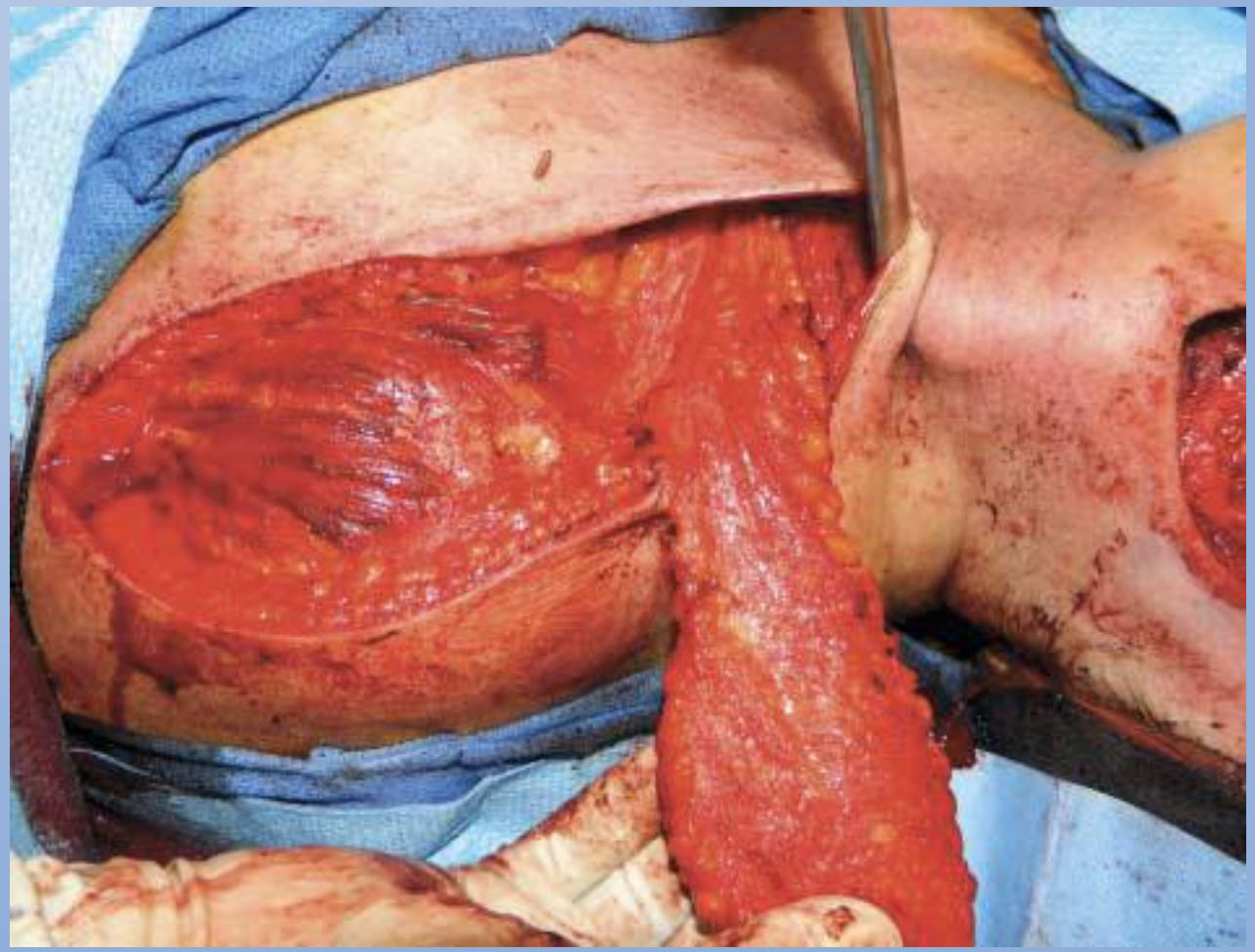
Supraclavicular Flap



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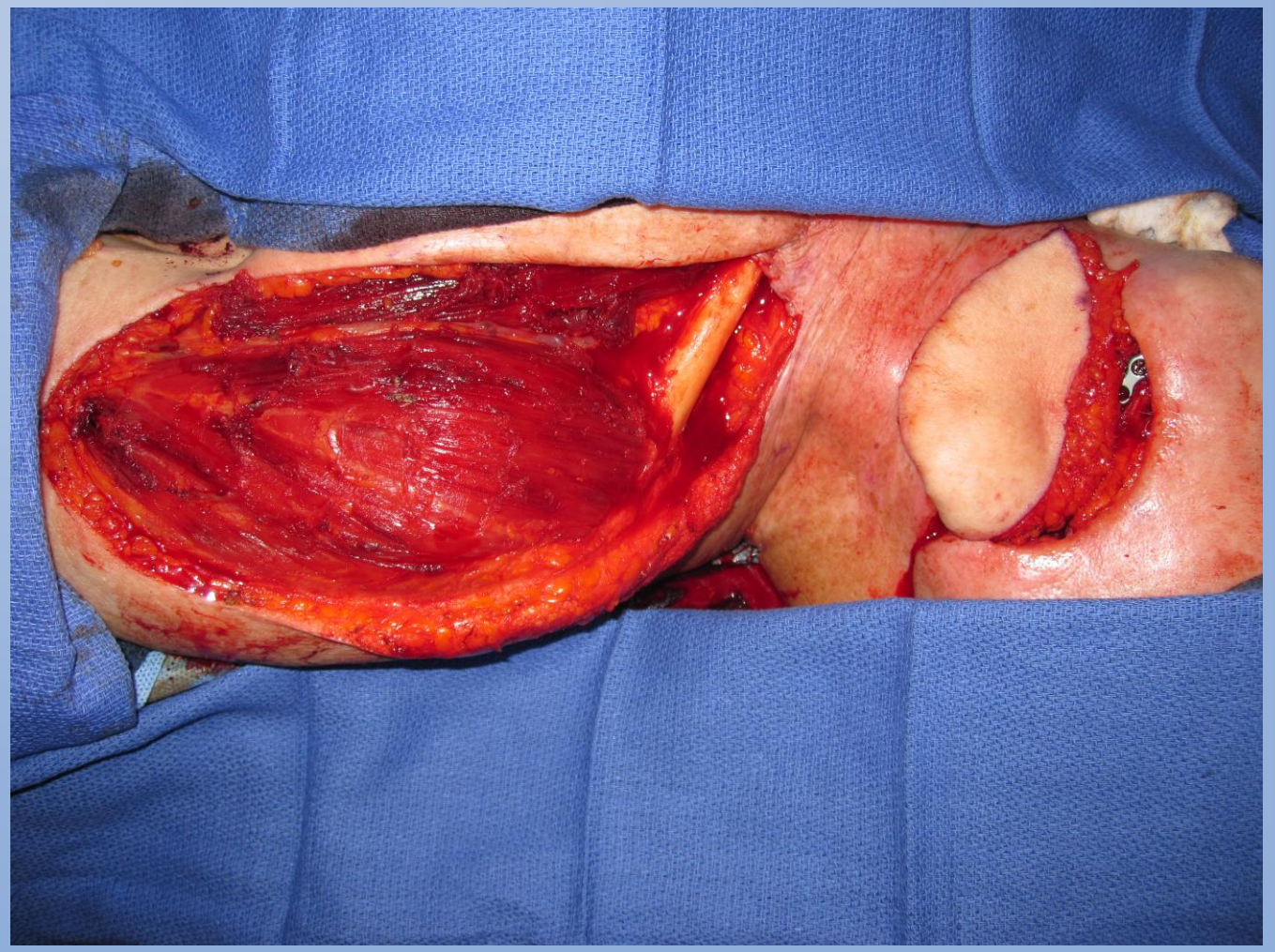
Supraclavicular Flap



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Supraclavicular Flap

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Donor Defect

- Close primarily with broad undermining
- Place drain
- Consider skin graft for skin defects > 16cm width

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Contraindications

- Previous Level V neck dissection
  - Possible prior sacrifice of transverse cervical
- (Relative) prior radiation to posterior neck
- Prior surgery in region of skin paddle (i.e. pacemaker, etc.)

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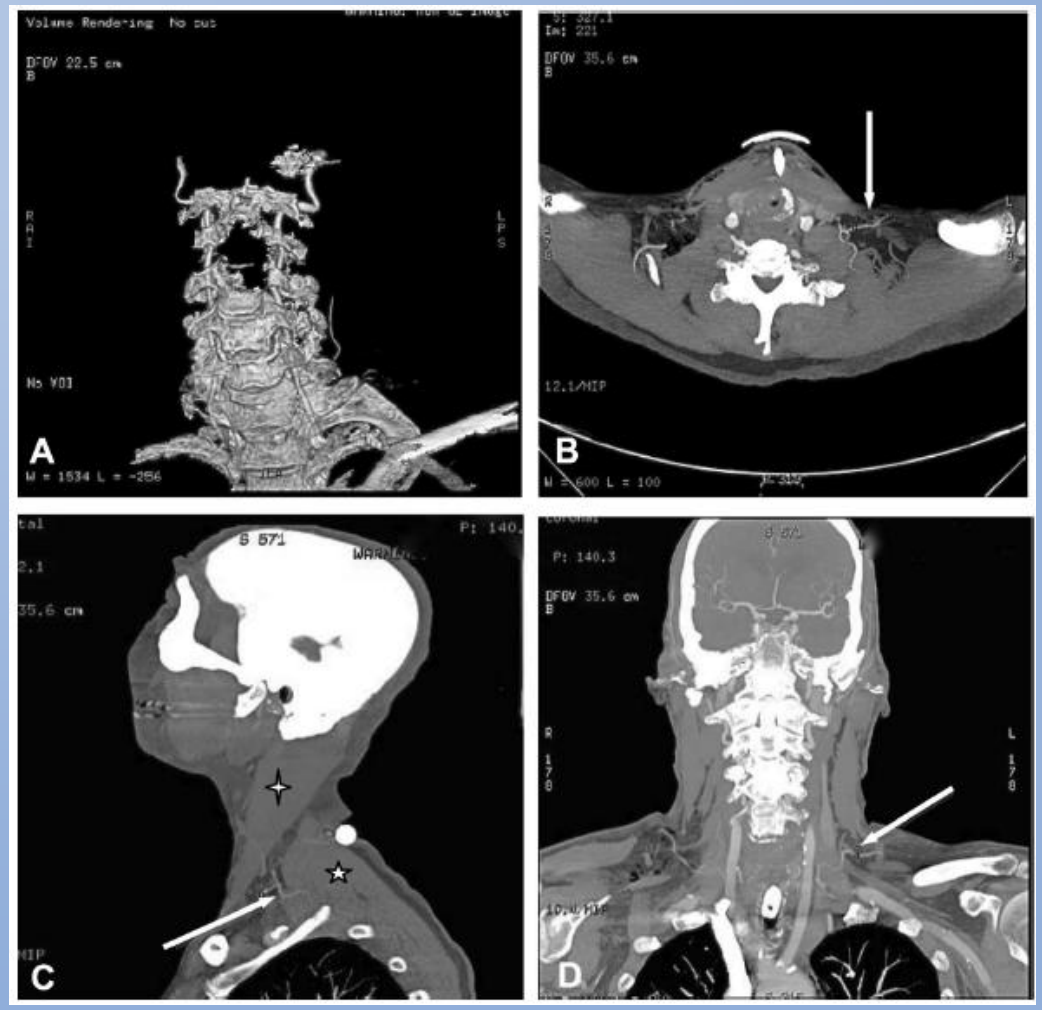
Pre op Imaging?



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Applications

- External skin defects
- Contour defects
- Laryngectomy
- Oral cavity/Oropharynx?
- Lateral Skull Base/Auriculectomy defects

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Cervical Hardware & Pharyngeal/Esophageal Fistulas

- Patients with pr
- Hardware expo

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Outcomes

- No muscle weakness or shoulder dysfunction

Risk factors for surgical site infection after supraclavicular flap reconstruction in patients undergoing major head and neck surgery

Neerav Goyal, MD, MPH,[1,2*] Kevin S. Emerick, MD,[1] Daniel G. Deschler, MD,[1] Derrick T. Lin, MD,[1] Bharat B. Yarlagadda, MD,[1,3] Debbie L. Rich, RN,[4] Marlene L. Durand, MD[5]

Shoulder Function Following Reconstruction With the Supraclavicular Artery Island Flap

Marc W. Herr, MD; Andrea Bonanno, PT, DPT, GCS, CLT; Lisa A. Montalbano, PT, DPT; Daniel G. Deschler, MD; Kevin S. Emerick, MD

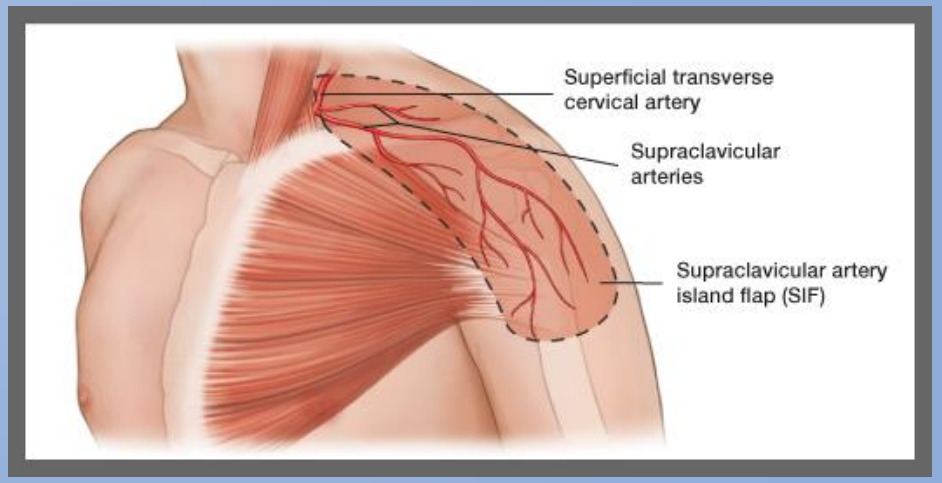
- Recent literature cites >90% flap reliability (many report 100%)
- Low rate of surgical site infection
- No difference in speech/swallow for OC/OP

Oral Cancer Reconstruction Using the Supraclavicular Artery Island Flap: Comparison to Free Radial Forearm Flap

Christian Welz, MD, Martin Canis, MD,† Sabina Schwenk-Zieger,‡ Jennifer L. Spiegel, MD,§ Bernhard G. Weiss, MD,‖ and Yiannis Pilavakis, MD,¶*

Highlights

- Fasciocutaneous pedicled flap
  - Based off of supraclavicular artery
- Paddle design should lie over ventral surface of deltoid
- Good skin color match to defects in H&N
- Donor site can be closed primarily
- Versatile flap with good reach and good reliability



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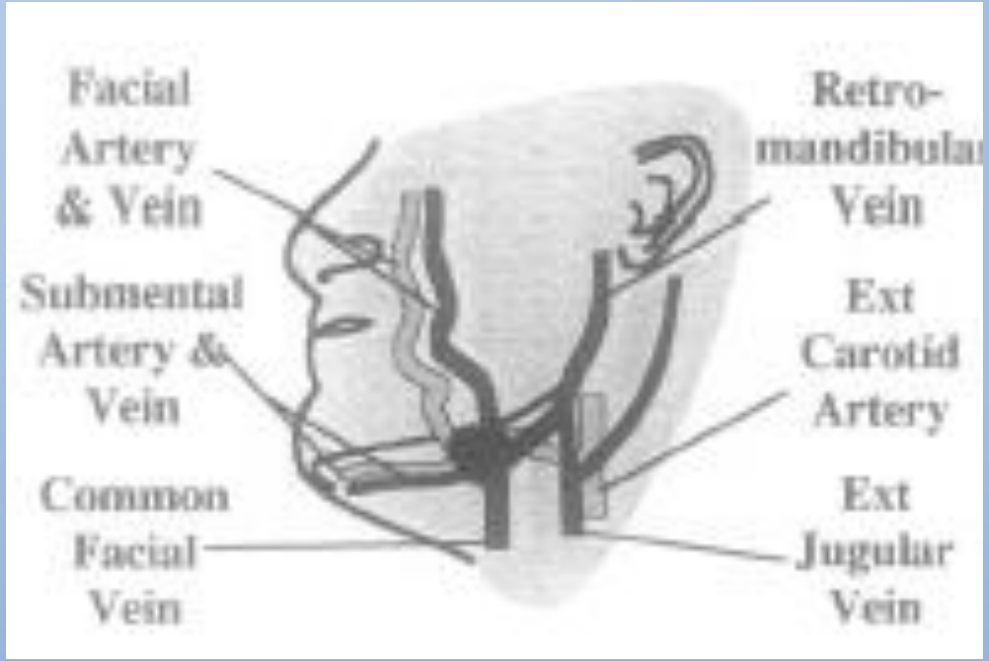
Submental Flap



- Musculocutaneous flap
- Axial flap
- Submental artery

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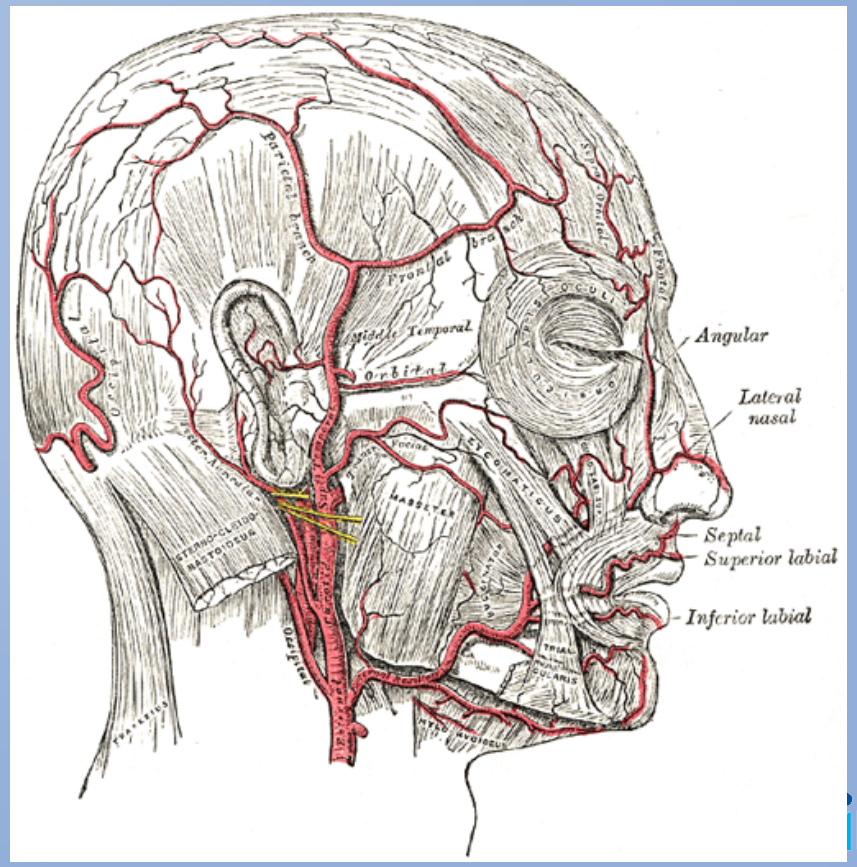
Vascular Anatomy

- Submental artery
  - 5-6.5cm from ECA
  - 2mm lumen
- Submental vein
  - From facial vein
  - Drain to IJV
  - Usually branch to EJV



History

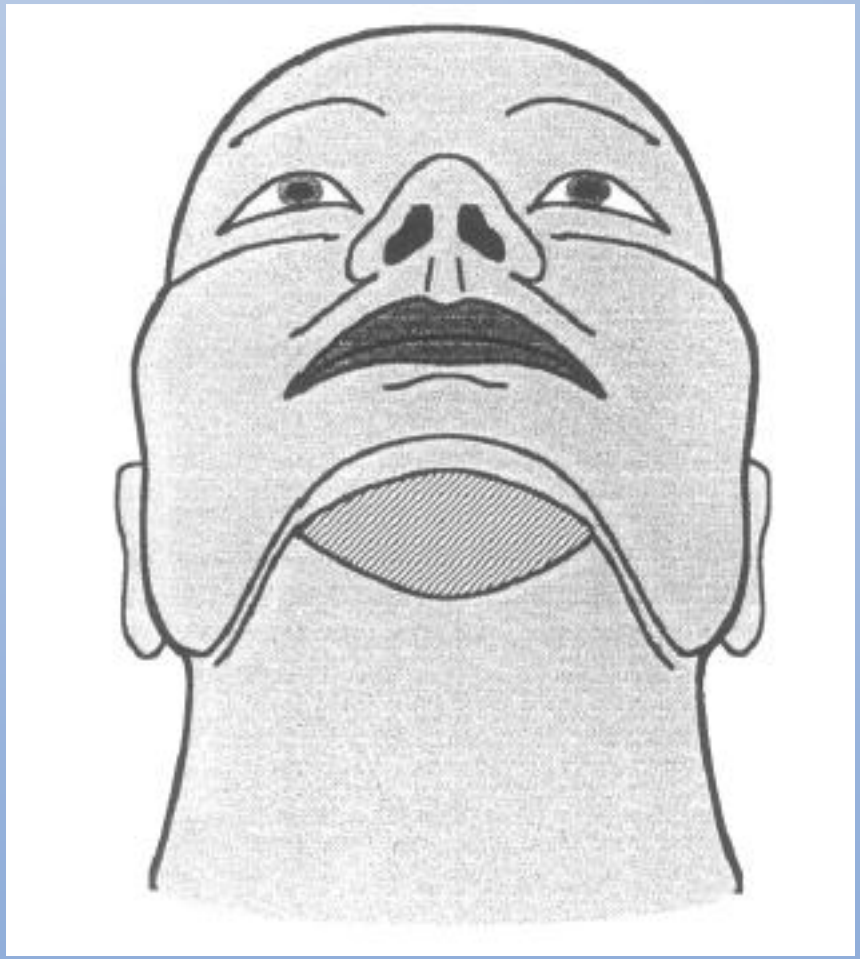
- 1983 – Mathes, Nahai
- 1983 – Hurwitz, Futrell

- “platysma flap”

- Based off submental artery

- 1993 – Martin
  - “submental” flap

Flap Design



- Skin paddle size dependent on skin laxity in submental region
- 6cmx12cm paddle possible

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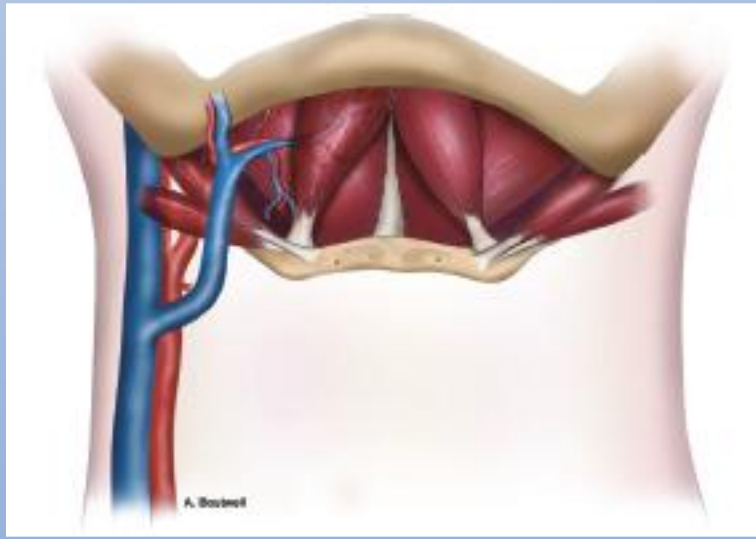
Technique

The Submental Flap: A Modified Technique for Resident Training

Urjeet A. Patel, MD; Stephen W. Bayles, MD; Richard E. Hayden, MD



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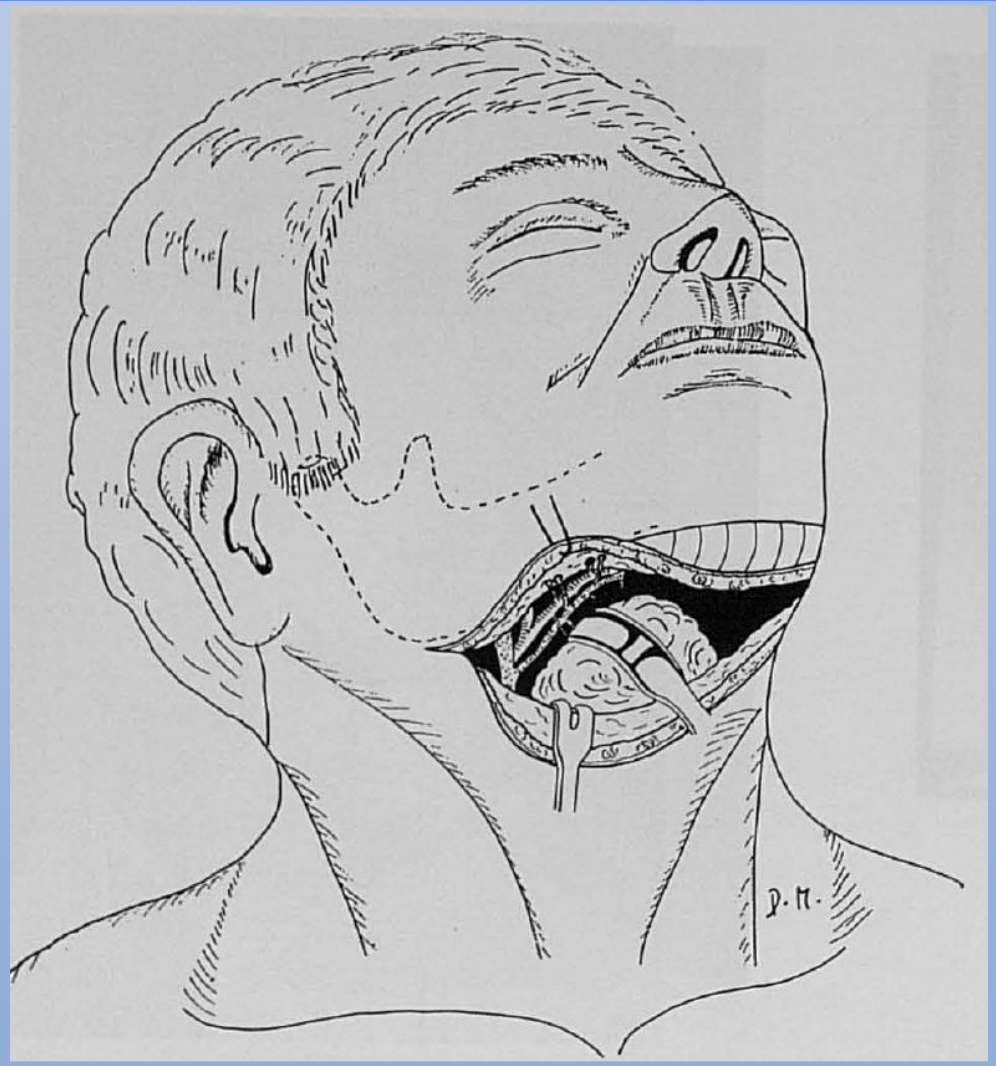
Approach



- Anterior incision
- Approach Level 1B
- Trace facial vein

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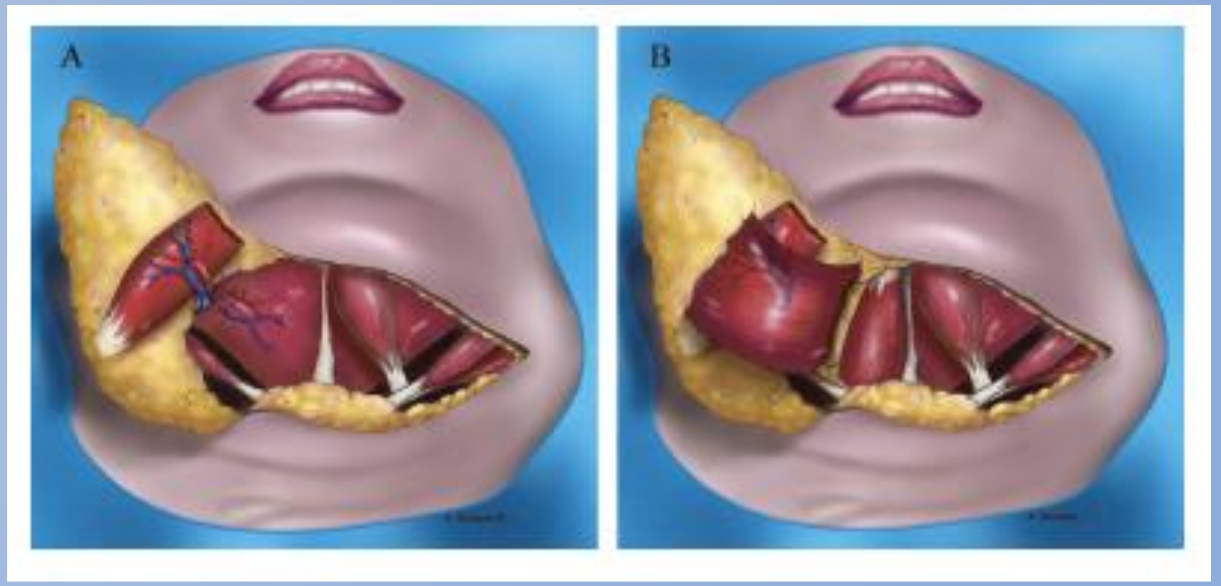
- Inferior incision
- Raise distal to proximal
- Raise mylohyoid and anterior belly of digastric with flap



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Modifications

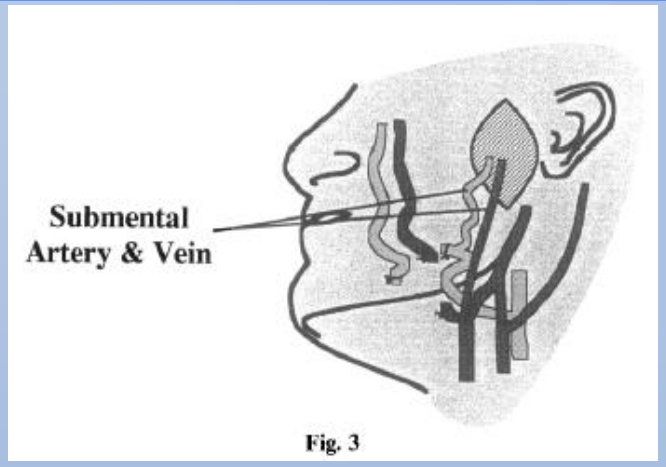

Fig. 3

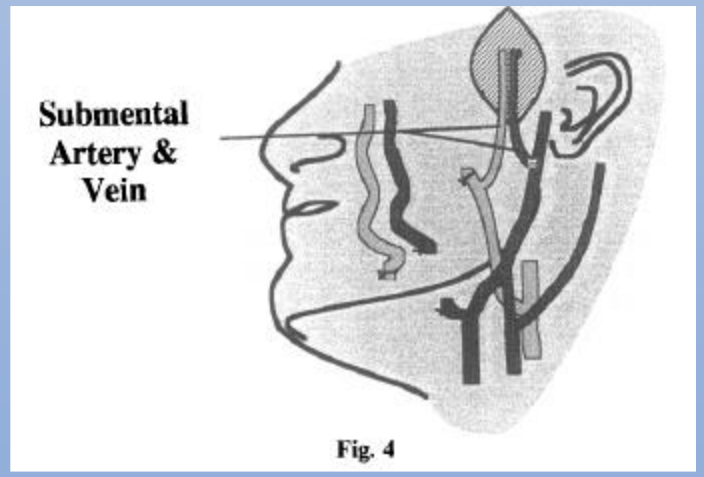

Fig. 4

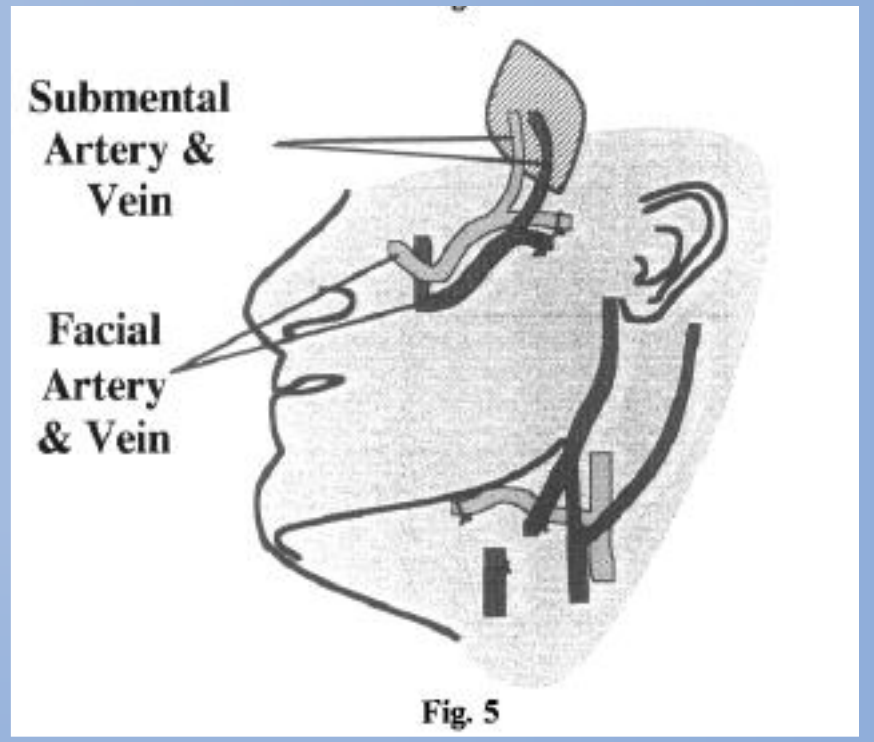

Fig. 5

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Limitations

- Hair bearing skin in men
- Limited by laxity of the neck
- Limited arc of rotation based on vessel pedicle (Relative)

Contraindications

- Prior Level 1 neck dissection
- (Relative) Evidence of Level 1 positive nodes at time of surgery

Oncologic Safety of the Submental Flap for Reconstruction in Oral Cavity Malignancies

Brittany E. Howard, MD[1], Thomas H. Nagel, MD[2], Carrlene B. Donald, PA-C[1], Michael L. Hinni, MD[1], and Richard E. Hayden, MD[1]

Submental island flap reconstruction in oral cavity cancer patients with level I lymph node metastasis

P. Sittitrai[a], C. Srivanitchapoom[b,*], D. Reunmakkaew[a], K. Yata[b]

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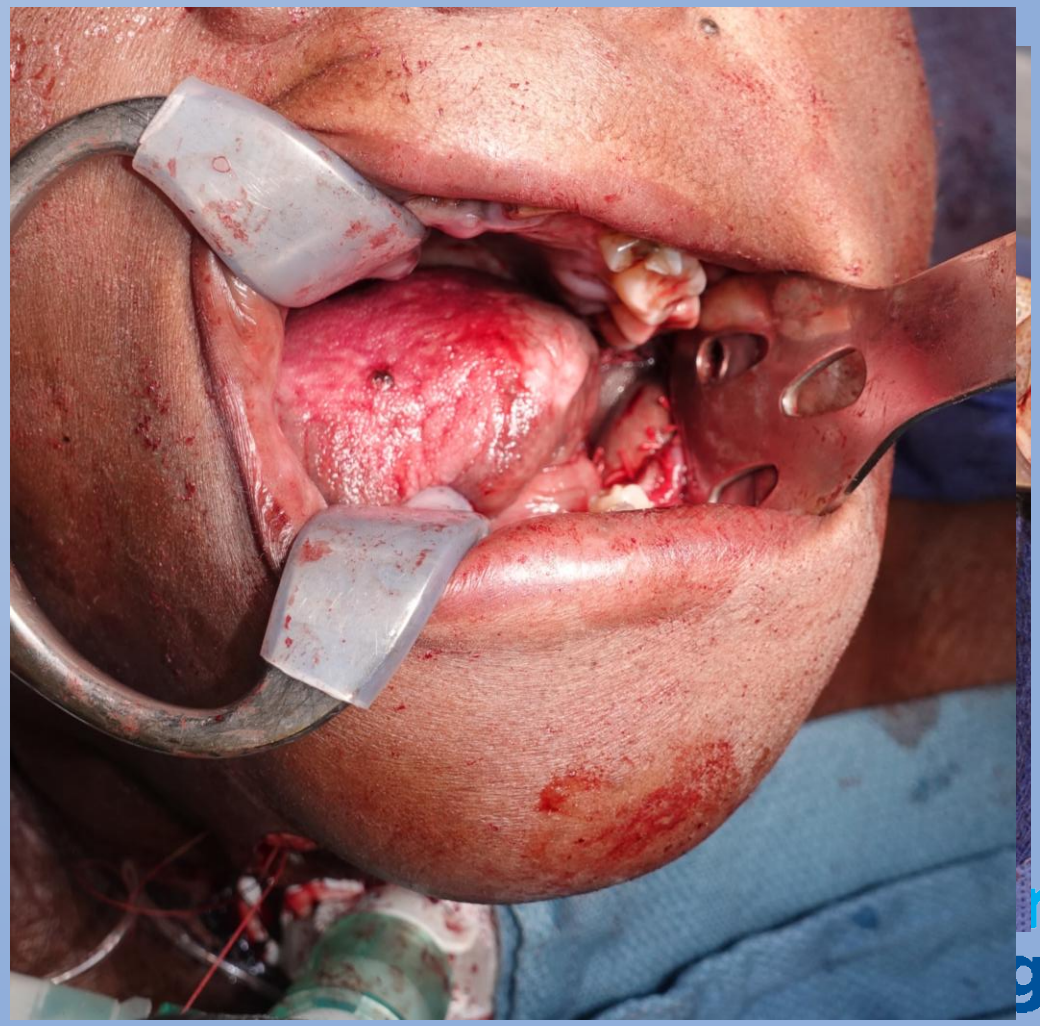

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Applications

- Oral cavity/Oropharynx
- Cutaneous defects of the lower face
- Contour defects
- Higher defects with modification

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The Parotid Defect

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- 10 total parotid defects
- Average follow up = 21 months (range 14-37.5)

- No flap losses
- No significant volume loss over follow up period
  - All received post op XRT

- Flap sizes as large as 6x8cm with primary closure of the donor defect

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Highlights

- Reliable musculocutaneous axial flap based off of submental artery
- Facial vein anastomoses with EJV, can be used to extend rotation of flap
- Take ipsilateral mylohyoid and digastric to ease protection of pedicle

- Hair bearing area for men

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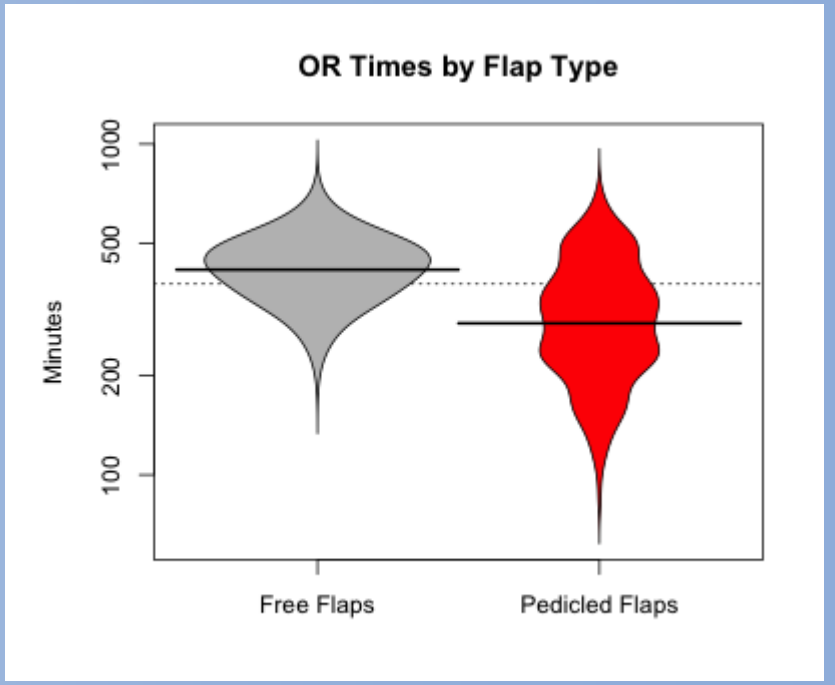
Why consider either of these pedicled flaps?

- Patient co morbidities
  - Decreased operative time
- Reliability
  - Modifications to flap elevation can help preserve the pedicle
- Minimal Defect Morbidity
  - No affect on function
  - Can be incorporated into incision design



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Why consider either of these pedicled flaps?

- Complication Rates
  - Infection rates
  - Readmission rates
  - Need for Blood Transfusion

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Surgical Site Infections in Major Head and Neck Surgeries Involving Pedicled Flap Reconstruction

Neerav Goyal, MD, MPH[1,2], Bharat B. Yarlagadda, MD[1,3], Daniel G. Deschler, MD[1], Kevin S. Emerick, MD[1], Derrick T. Lin, MD[1], Debbie L. Rich, RN[4], James W. Rocco, MD, PhD[5], and Marlene L. Durand, MD[6]

Risk Factors for Thirty-Day Readmission Following Flap Reconstruction of Oncologic Defects of the Head and Neck

Heather A. Osborn, MD; Vinay K. Rathi, MD; Tjoson Tjoa, MD; Neerav Goyal, MD; Bharat B. Yarlagadda, MD; Debbie L. Rich, RN; Kevin S. Emerick, MD; Derrick T. Lin, MD; Daniel G. Deschler, MD; Marlene L. Durand, MD

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Thank You

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