

A photograph of a medical professional, likely a pediatrician or ENT specialist, wearing glasses and a white lab coat. They are using an otoscope to examine the ear of a baby. The baby is being held by a parent, whose face is partially visible on the right. The baby is looking directly at the camera with a curious expression. The background is a soft-focus clinical setting.

# Head & Neck Seminar

Reconstructive surgery following  
resection of lip cancer

Presenter R2 吳仲升  
Supervisor VS 洪偉誠

# Patient's profile

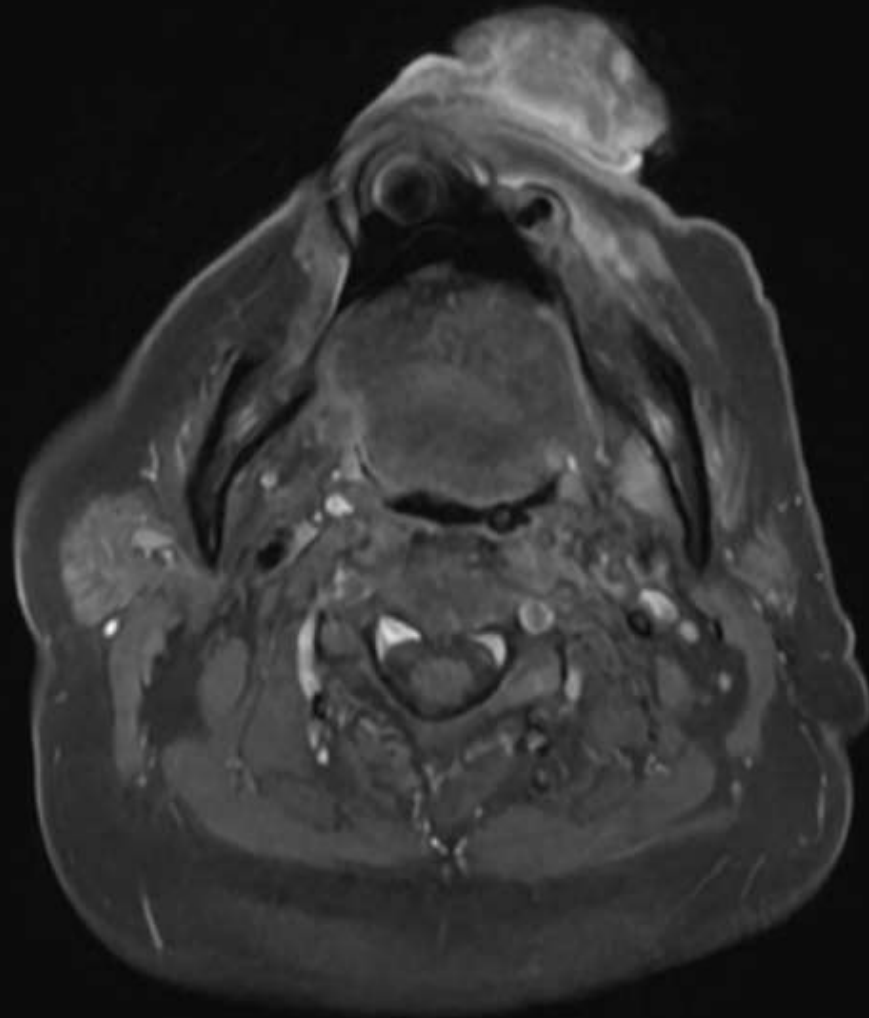
- Name: 謝o世
- Chart num:
- Age: 74y/o
- Gender: male
- BH:155cm BW:53kg
- Social status: married
- A(quit)B(quit)C(quit)

# Present Illness

- Past history:  
**HTN(+), DM(+)**, CAD(-), asthma(-), HBV(-), HCV(-), other:  
**old CVA with Lt hemiplegia**
- 2024.07.18-31 admission to nephro due to AKI
  - **left lower lip tumor** noticed
  - biopsy: **squamous cell carcinoma**
- 2024.08.18 - 09.08
  - admitted for staging and surgery

# Present Illness

- MRI **cT4aN0M0, stage IVA**
- Abdominal echo: s/p post-cholecystectomy
- PES: reflux esophagitis+ hiatal hernia
- Bone scan: **no significant distant metastasis**
- Neck echo: **no obvious metastasis**



# Present Illness

- Diagnosis:  
Left lower lip squamous cell carcinoma, **cT4aN0M0, stage IVA**
- Wide excision of lower lip cancer + **bernard burrow webster flap/tongue flap reconstruction** of lower lip + bilateral neck SOHND + teeth extraction #13 #21 #33 #37 on 2024-08-26

\* Histologic type of the tumor: Squamous cell carcinoma

\* Histologic grade: **Moderately differentiation**

\* Tumor size (invasive): 2.5 x 2.4 cm

**Depth of invasion (DOI): 22mm**

\* Lymphovascular invasion: Not identified

\* **Perineural invasion: Present**

\* Worst pattern of invasion (WPOI): 3

\* Other tissue(s)/organ(s):

Mandible: No invasion by tumor

Submandibular gland: Free of cancer

\* Margins:

Superior: Free (>5 mm in distance) Inferior: Free (>5 mm in distance)

Anterior: Free (>5 mm in distance) Posterior: Free (>5 mm in distance)

Medial: Free (>3 mm in distance) Lateral: Free (>5 mm in distance)

Deep (soft tissue): >5 mm in distance

Deep (mandible): Free (>3 mm in distance)

\* Lymph nodes (positive/total):

Left level Ib,III: 0/2

Left level IIa: 0/3

Left level II,III: 0/9

Level Ia: 0/4

Right level Ib: 0/1

Right level II: 0/2

Right level III: 0/7

Extranodal Extension (ENE): Not applicable

\* Pathologic stage classification

(pTNM, AJCC 8th edition): **pT4aN0**









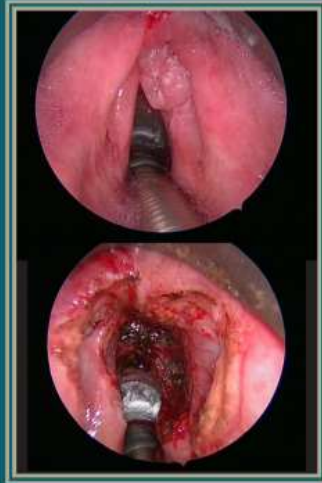




# **Discussion - Reconstructive surgery following resection of lip cancer**

EIGHTH EDITION

*Scott-Brown's Otorhinolaryngology  
Head & Neck Surgery*



VOLUME 3

**Head & Neck Surgery  
Plastic Surgery**

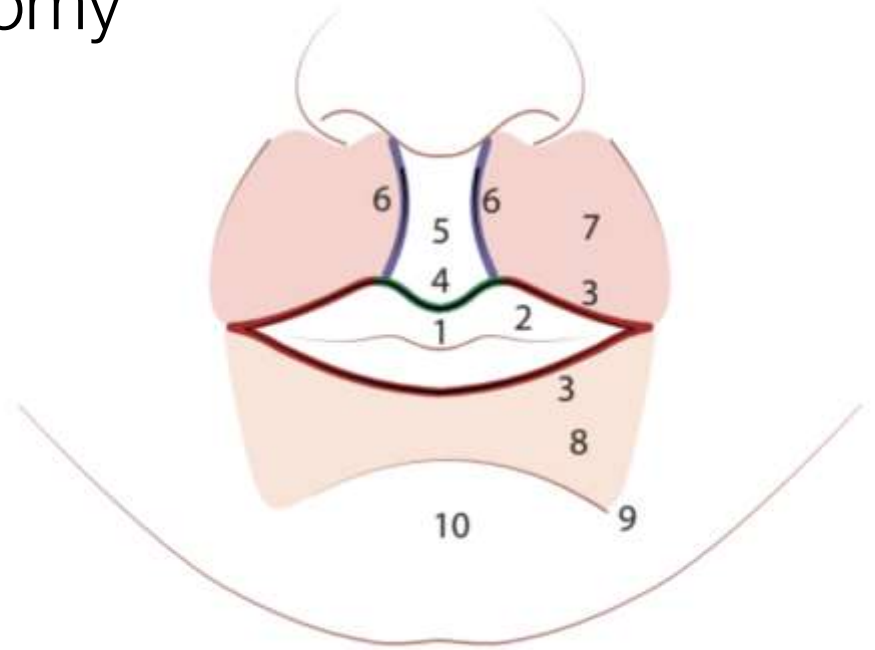
**LIP RECONSTRUCTION**

Omar A. Ahmed



# Lips - Functions and Anatomy

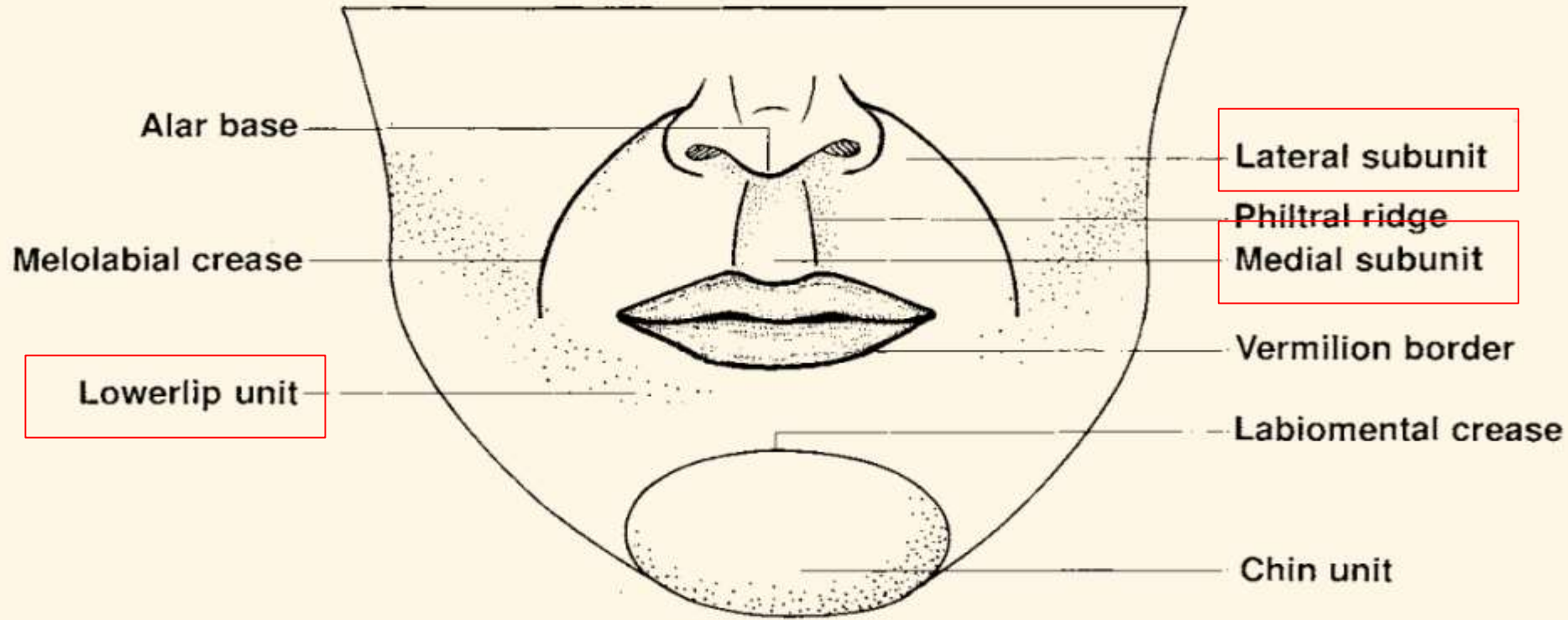
- Mastication  
swallowing  
phonation  
blowing (sphincter action)  
component for facial esthetics
- Externally: skin  
internally: mucous membrane  
superiorly: nose  
inferiorly chin  
lateral: nasolabial folds



**Figure 12.5 Subunits of the lip.** 1. Tubercle. 2. Vermilion. 3. Vermilion border. 4. Cupid's bow. 5. Philtrum. 6. Philtral columns. 7. Cutaneous upper lip. 8. Cutaneous lower lip. 9. Labiomental sulcus. 10. Chin.

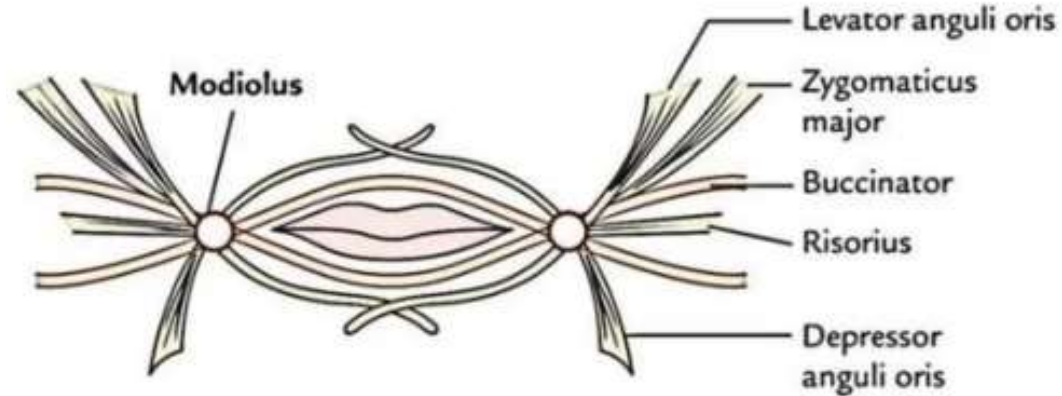


# Anatomy



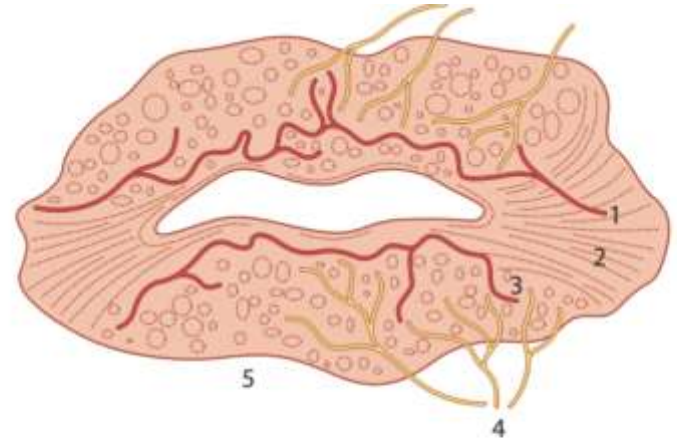
# Importance of the **Modiolus**

- Lateral corners of lips
- Muscle fibers from superior, inferior fascicles of **orbicularis oris muscle** interweave with **extrinsic muscles** (levator anguli oris, zygomaticus major, buccinator, risorius, depressor anguli oris)



# Nerve supply

- Motor:  
Elevators+ orbicularis oris:  
**buccal branch** (facial nerve)  
Depressors: **Marginal  
mandibular n.**
- Sensory:  
**Infraorbital nerve** for upper lip  
**Mental nerve** for lower lip

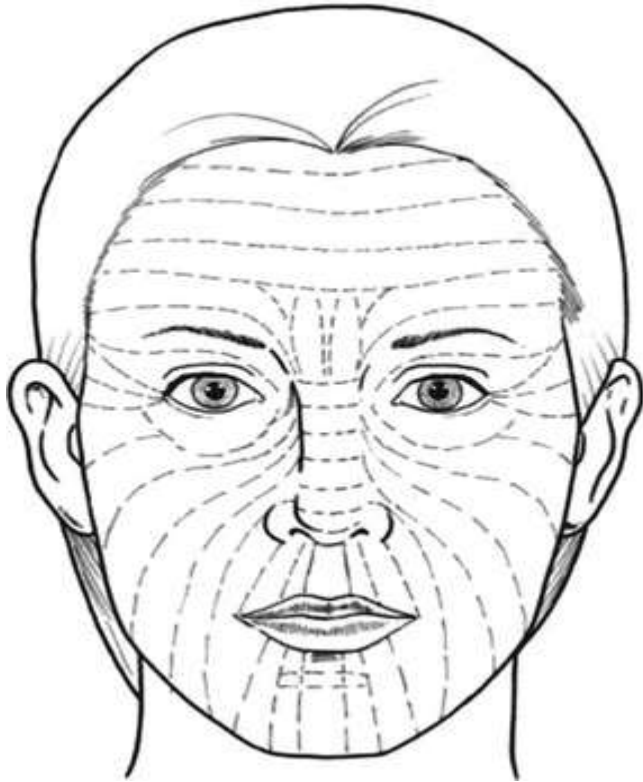


**Figure 12.6 Coronal cross-section through lips.** 1. Superior labial artery. 2. Muscle fibres. 3. Inferior labial artery. 4. Sensory nerve supply from the infraorbital nerve and motor supply from the lower buccal and mandibular branches of the facial nerve. 5. Fat and subcutaneous tissue.

# Goals of reconstruction

- Restore
  1. Function: competence, articulation
  2. Esthetics: symmetry, adequate **stomal diameter**
  3. Avoidance of scar

# Relaxed skin tension line (RSTL)





# Defect classification

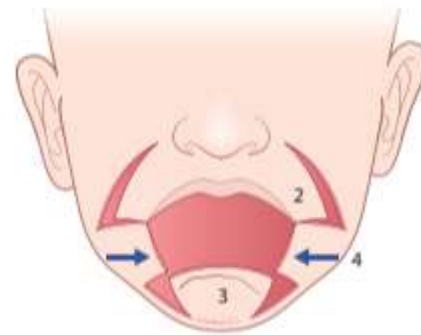
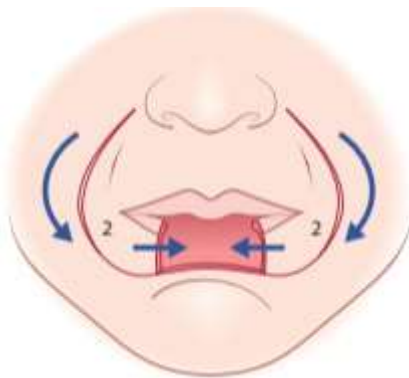
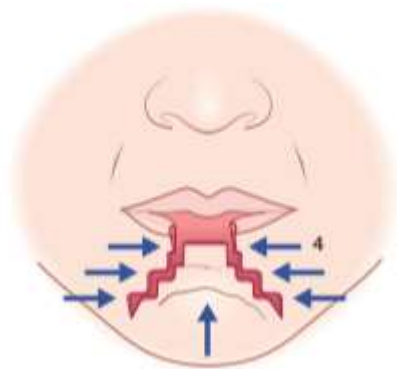
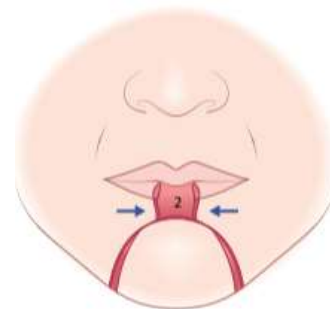
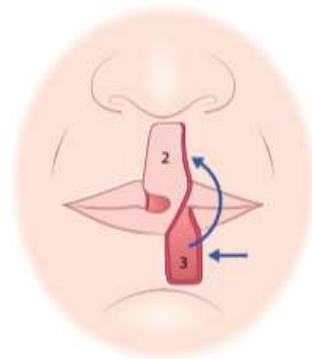
- Anatomic location: skin, vermilion or skin + vermilion
- Thickness: partial or full
- Size:  $<1/3$ ,  $1/3-2/3$ ,  $>2/3$  of width

# Principles of reconstruction of lip

- Use **remaining lip** tissue, not create **microstomia**
  - **Local tissue** better choice (match in color, thickness and composition)
  - Use adjacent cheek, nasolabial region if not enough lip tissue
- Direct **closure** or **advancement** for defect **<1/3** width
  - Use **opposite lip** if insufficient lip to close
- Replace entire **subunit** if defect takes up most portion of a subunit

# Techniques of Name

- Abbe flap (阿比)
- Estlander flap
- Schuchardt flap (咻kurt)
- Johanson step
- Karapandzic flap
- Bernard-Von Burow flap



# Outline

- Vermilion
- Upper lip & Lower lip

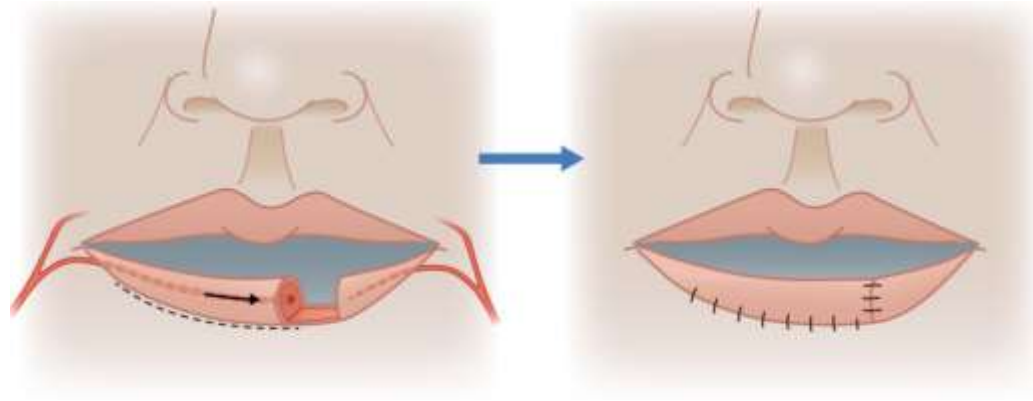
# Vermilion

- **Primary closure**
  - Small vermillion defect, or small crosses vermillion border defect, or small cutaneous defect
- **Secondary intention** healing
  - For **lateral superficial**, small partial-thickness vermillion defect **away from white roll**
  - Drawback: wound retraction and distortion



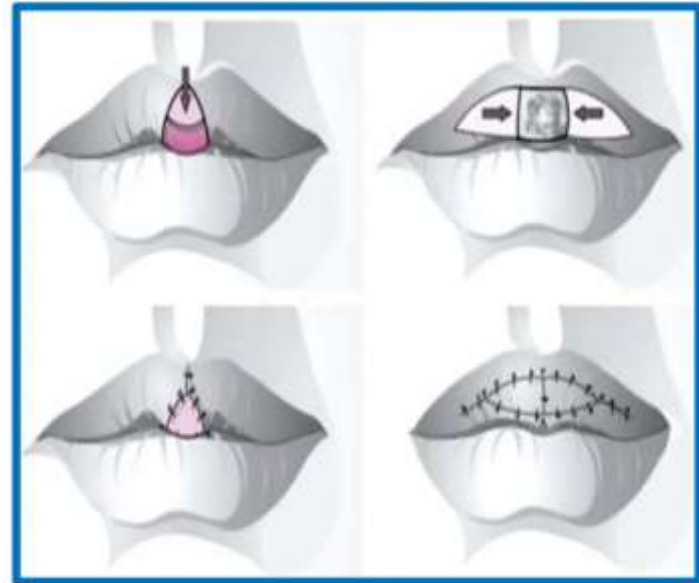
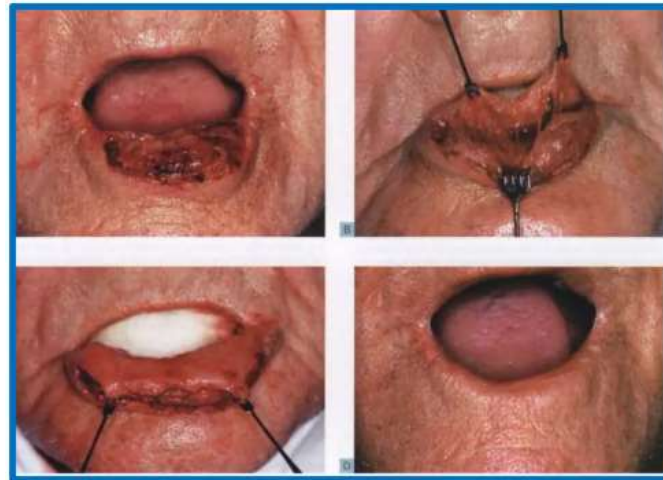
# Vermilion advancement flap

- **External incision** on the vermillion border, **mucosal incision** is made at the corresponding level inside the lip.
- Reliable flaps based on the **labial vessel**.



# Mucosal advancement

- Larger vermilion defect
- **No microstomia**
- Drawback: vermilion **border distortion**, lip **thinning**



# Vermilion switch flap

- Vermilion is cut similar to a vermillion advancement, but flap inset to the **opposite lip**.
- Secondary defect is **closed directly** or by vermillion advancement flap.



a



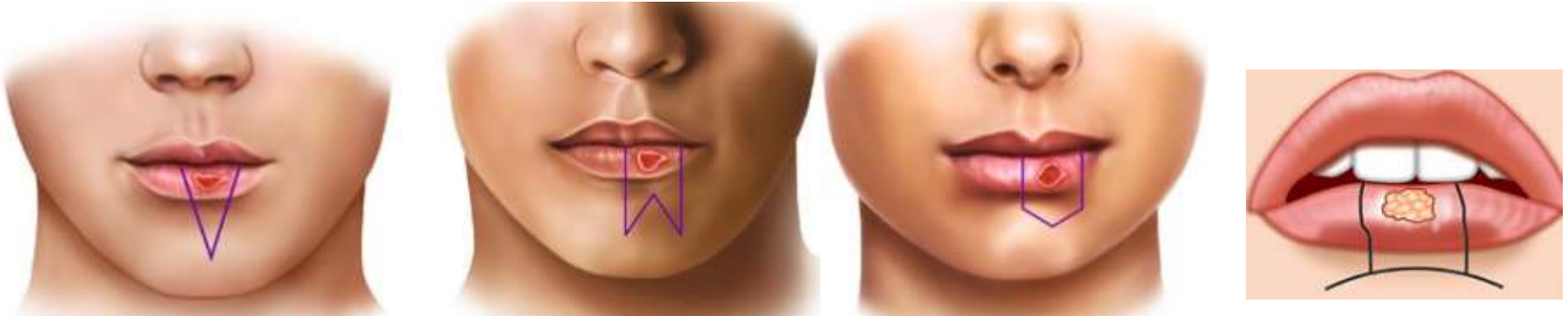
b



c

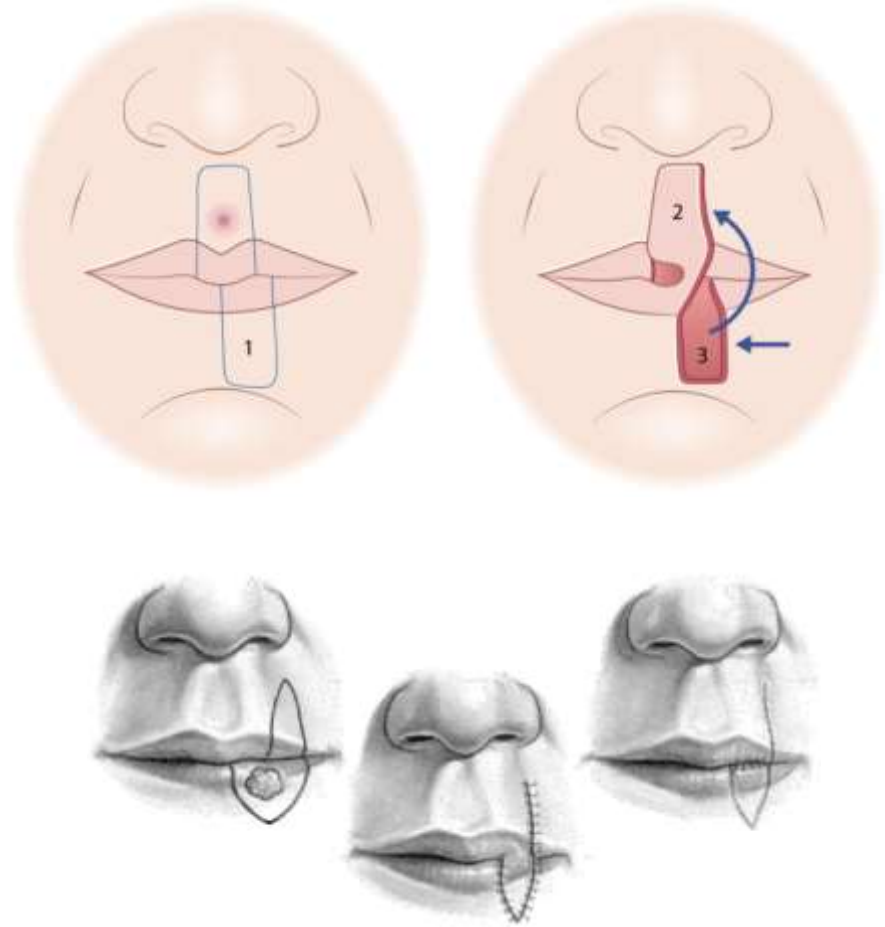
# Upper, lower lips

- V-shaped excision: smaller lesion (maximum of 1.5 cm)
- W or pentagonal excision: larger defect
- Rectangular excision: one half of lip (3.0 cm)



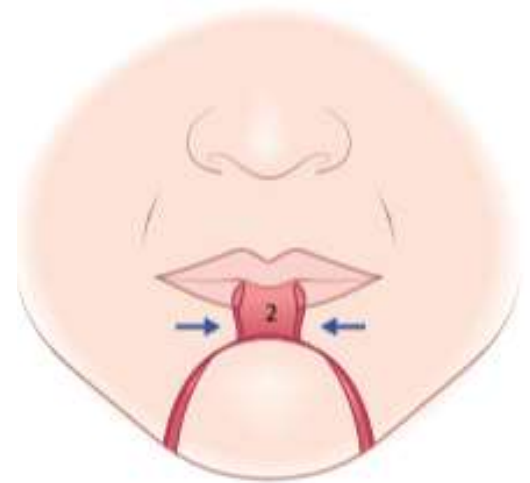
# Abbe flap

- For 1/3-2/3 of lip defect
- **"V"** shaped incision, flap of equal height but **50% of** width
- Shortening of upper and lower lips by equal amounts
- Drawbacks: blunting of commissure, **microstomia**



# Schuchardt flap

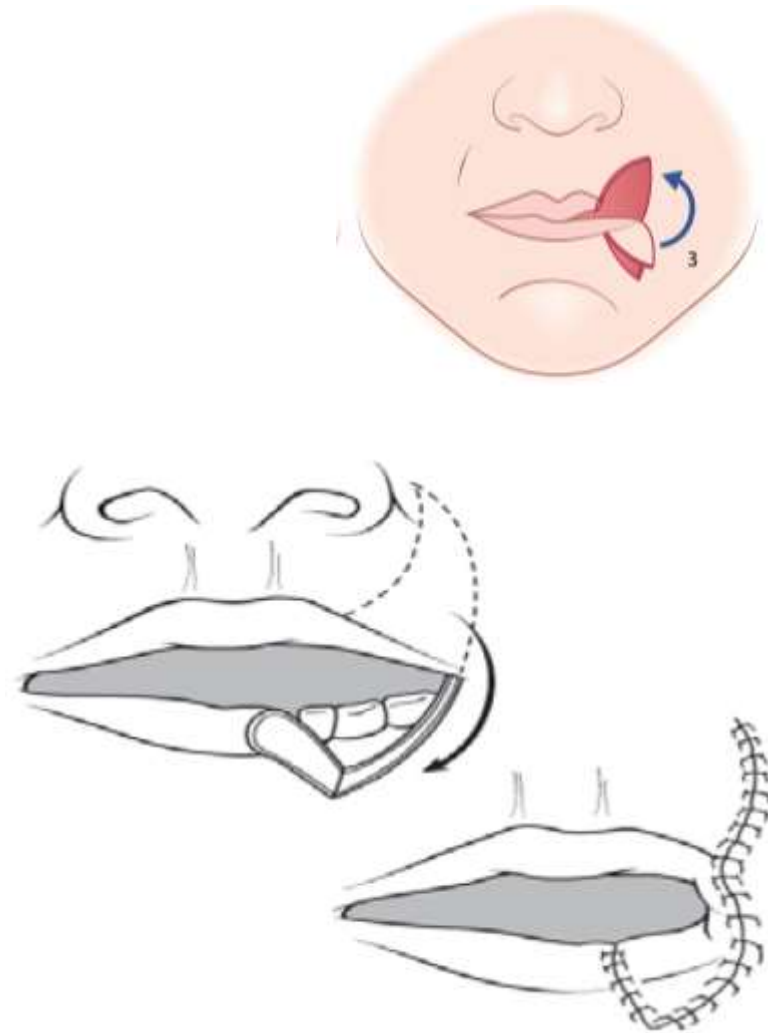
- For central subtotal defects of lower lip
- **Removal of** bilateral **crescents** along labiomental crease, with bilateral advancement
- Drawbacks: microstomia





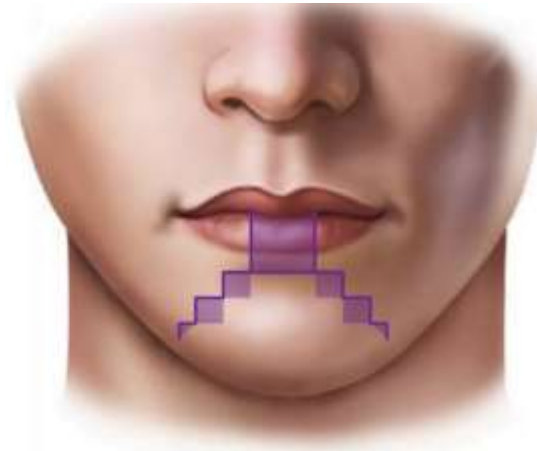
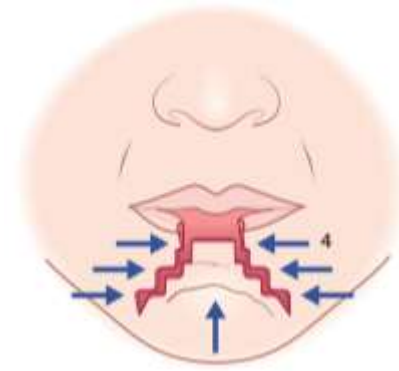
# Estlander flap

- For 1/3-2/3 of lip defect
- **"V" shaped** incision, flap in upper lip with **height 1-2 mm > defect**, rotated into defect
- May need commissuroplasty
- Drawback: **blunting of commissure, microstomia**



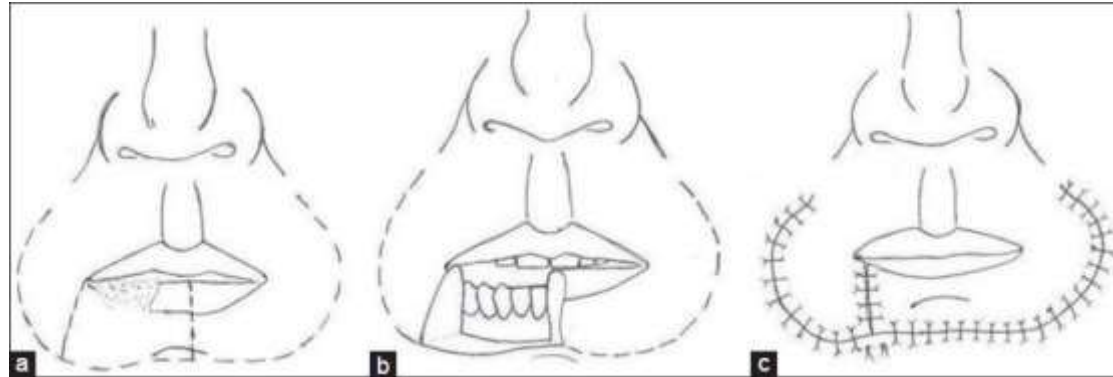
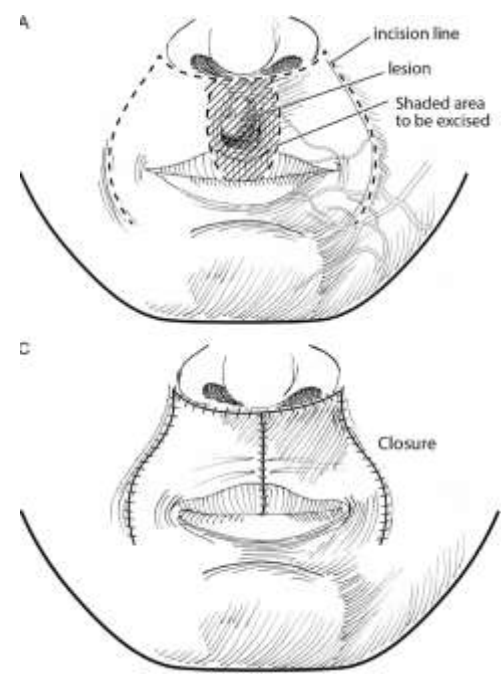
# Staircase flap (Johanson step technique)

- For central defects of lower lip, 1/3-2/3 width
- **Direction of muscle fiber** not altered
- Drawback: **unnatural incision** not follow labiomental crease



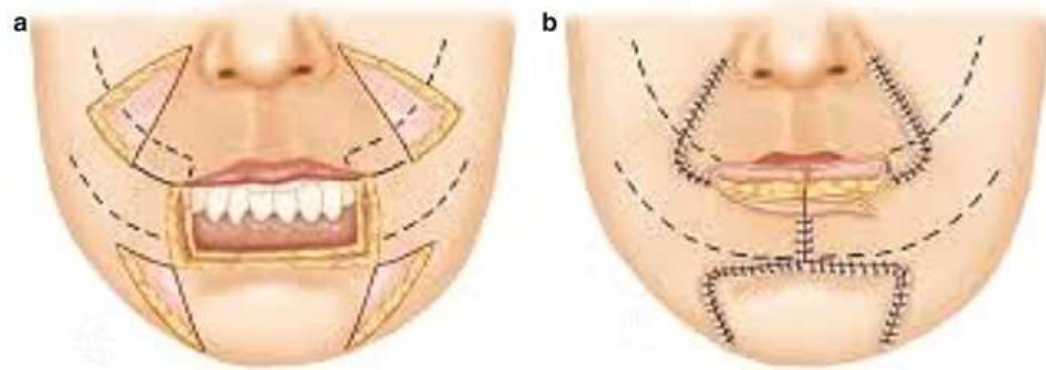
# Karapandzic flap

- For 1/3-2/3 upper lip, 3/4 lower lip
- Unilateral or bilateral circumoral advancement-rotation
- **Mask scar** within labiomental or melolabial creases
- Drawback: **blunting** of commissure, microstomia



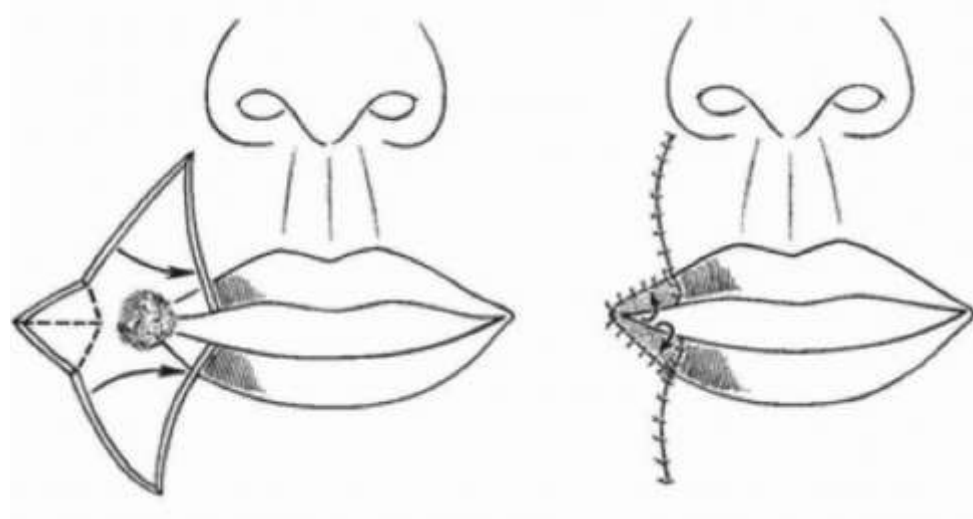
# Bernard-Von Burow flap

- Bilateral cheek advancement flap, for **> 2/3 width**
- Horizontal incision laterally, excision of von Burow triangles
- Need other techniques such as buccal flap or tongue flap to restore vermillion



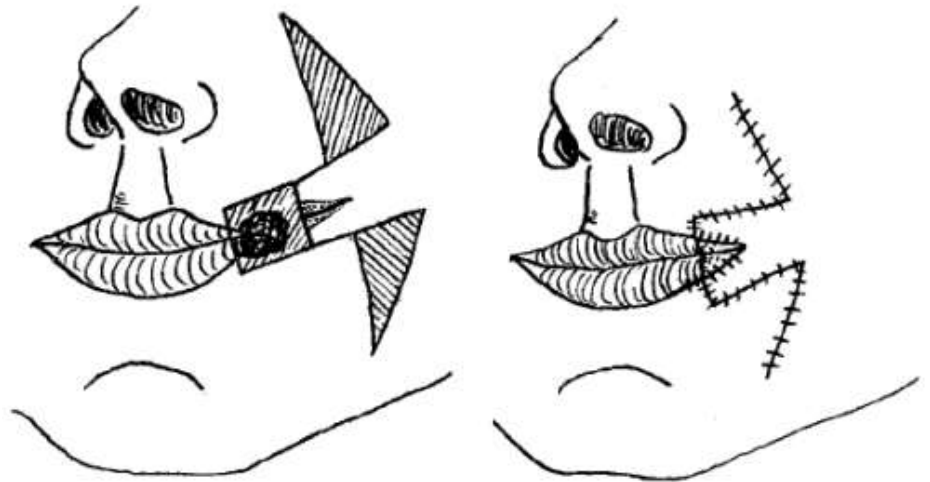
# Advancement flap

- **Crescent** excision of tumor, horizontal incision in cheek and **de-epithelization of two triangular areas**
- Drawbacks: gaping of commissure, requiring commissuroplasty



# Sliding U-shaped cheek flap

- More invasive, **rectangular** or square incision around lesion, **triangular flaps** above and below defect, advanced to cover defect
- Drawbacks: gaping of commissure, requiring commissuroplasty





# Transposition flap

- From submental skin or melolabial flap
- Enabled to hide scar in labiomental fold or melolabial fold
- Drawbacks: obliteration of fold, may recreate a fold



Otero-Rivas, M. M., Alonso-Alonso, T., Pérez-Bustillo, A., & Rodríguez-Prieto, M. A. Reconstruction of surgical defects of the labial commissure. *Actas Dermo-Sifiliográficas* (English Edition), 2015;106(9), e49-e54.

# Rhomboidal flap

- Repair large defects, provide **ample tissue**, **reduce tension** in scar
- Not ensure sphincteric **competence**



## Distant or microvascular free flap

- Scalp and forehead, submandibular, deltopectoral, pectoralis major, radial forearm
- Provide tissue for wound closure and replacement of lip, **not able to restore adequate function**

Back to our patient







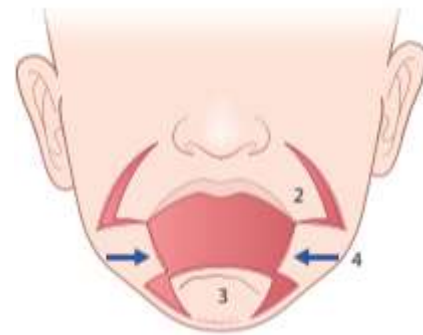
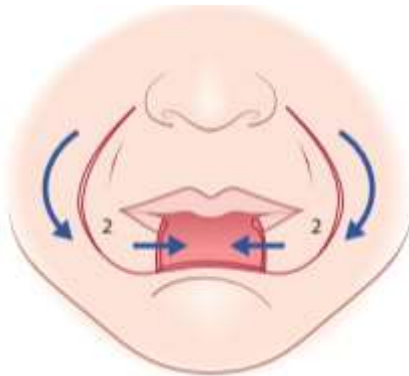
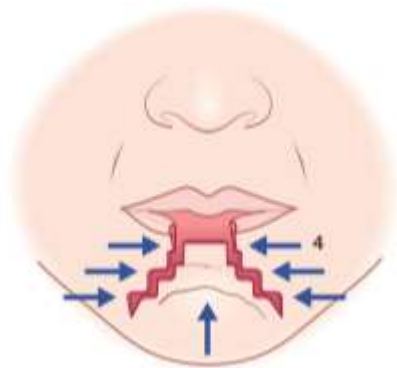
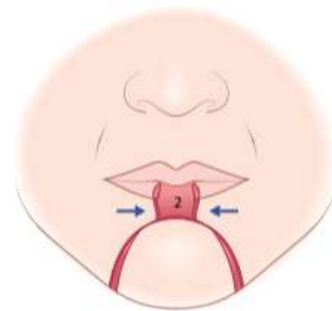
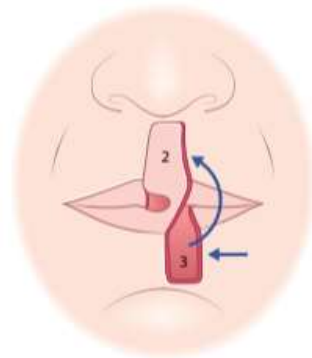


# Take home message

- Vermilion
  - **Primary** closure, **Secondary** intention , advancement , **switch** flap
- Upper, lower lips
  - **V**-shaped(1.5 cm) > **W** or pentagonal > **Rectangular**(1/2)
  - **1/3-2/3**:
    - Abbe flap, Schuchardt flap, Estlander flap, Johanson step, Karapandzic flap
  - **2/3**:
    - Bernard-Von Burow flap, Transposition flap, Rhomboidal flap

# Techniques of Name

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