

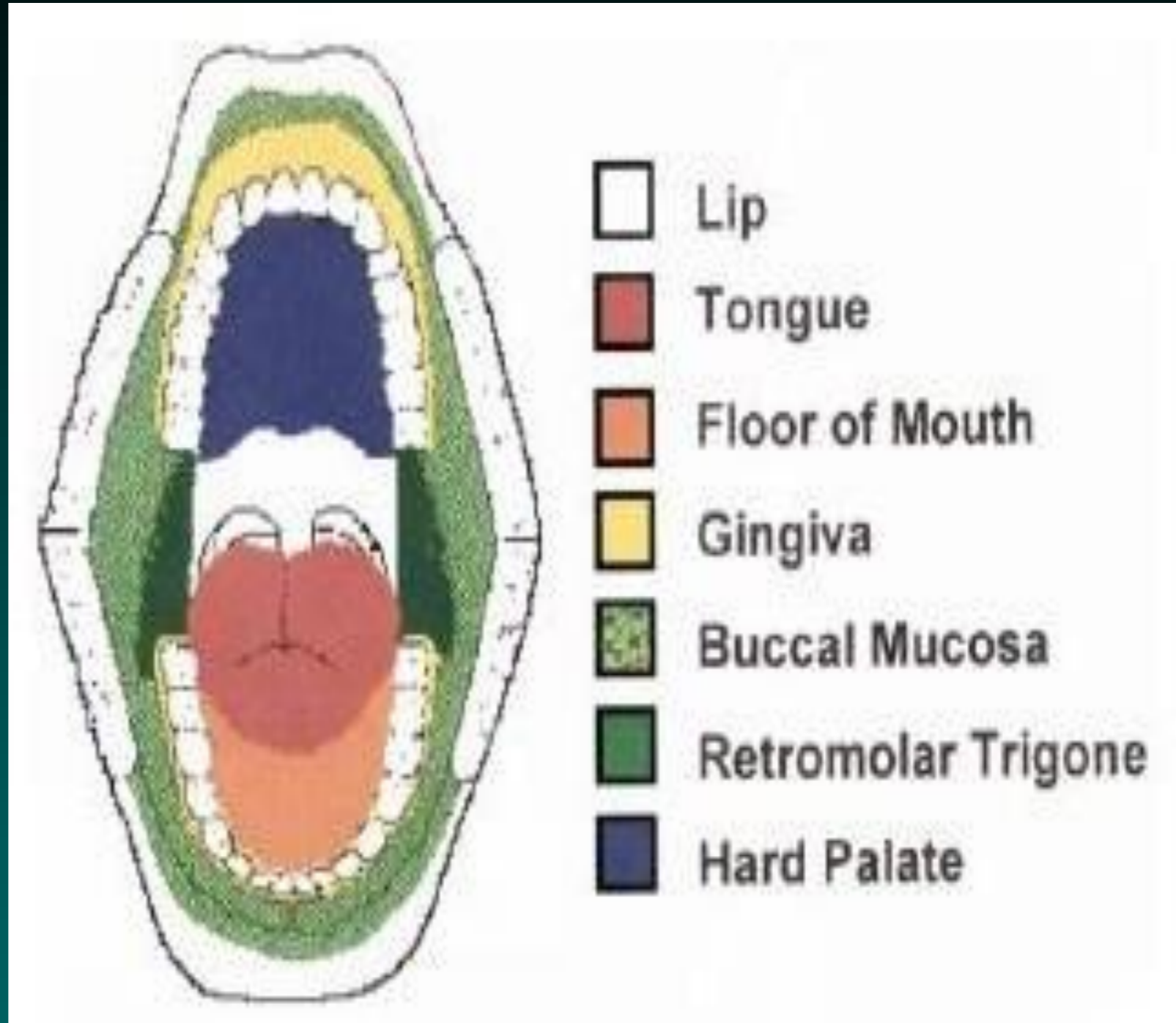


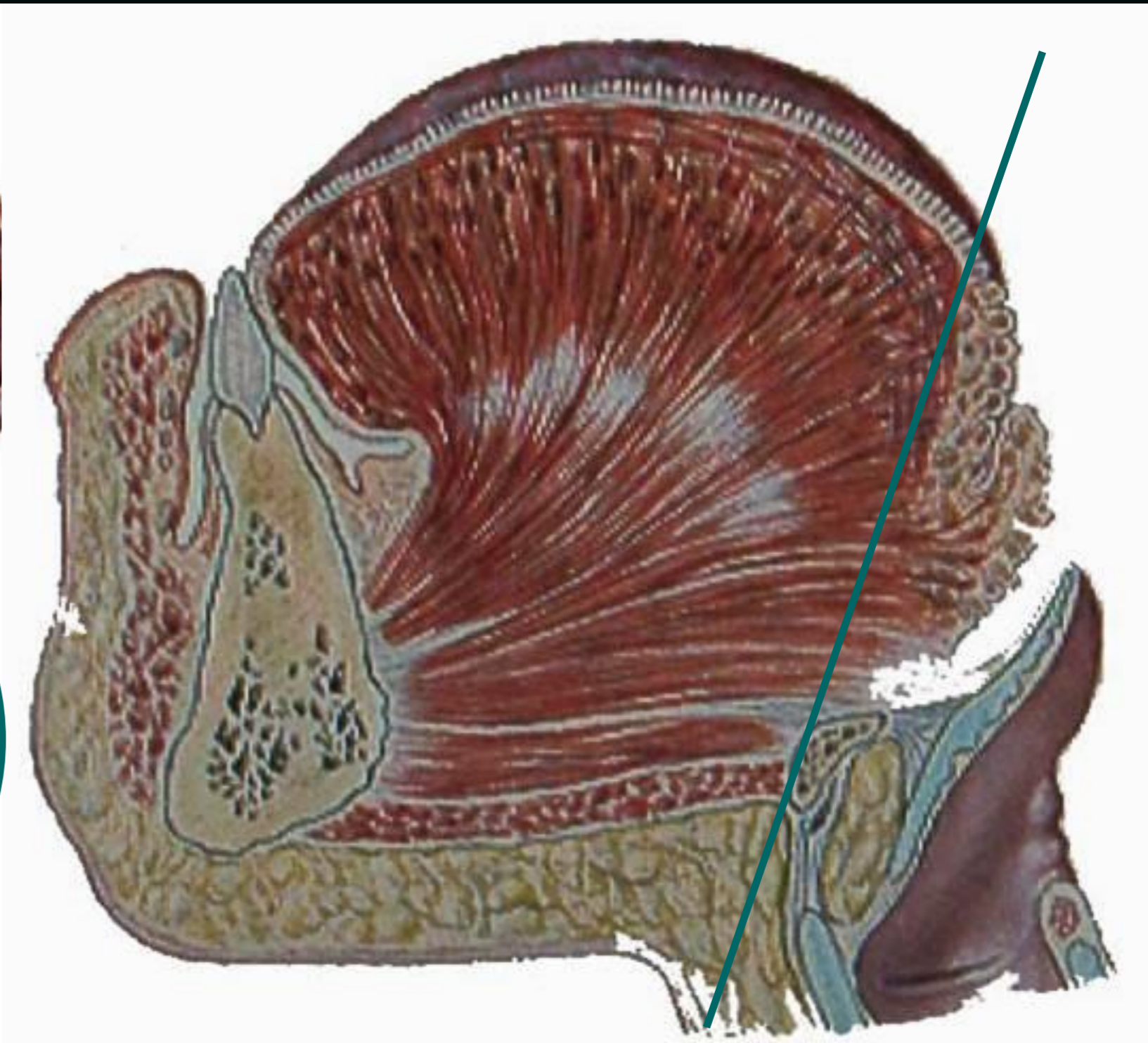
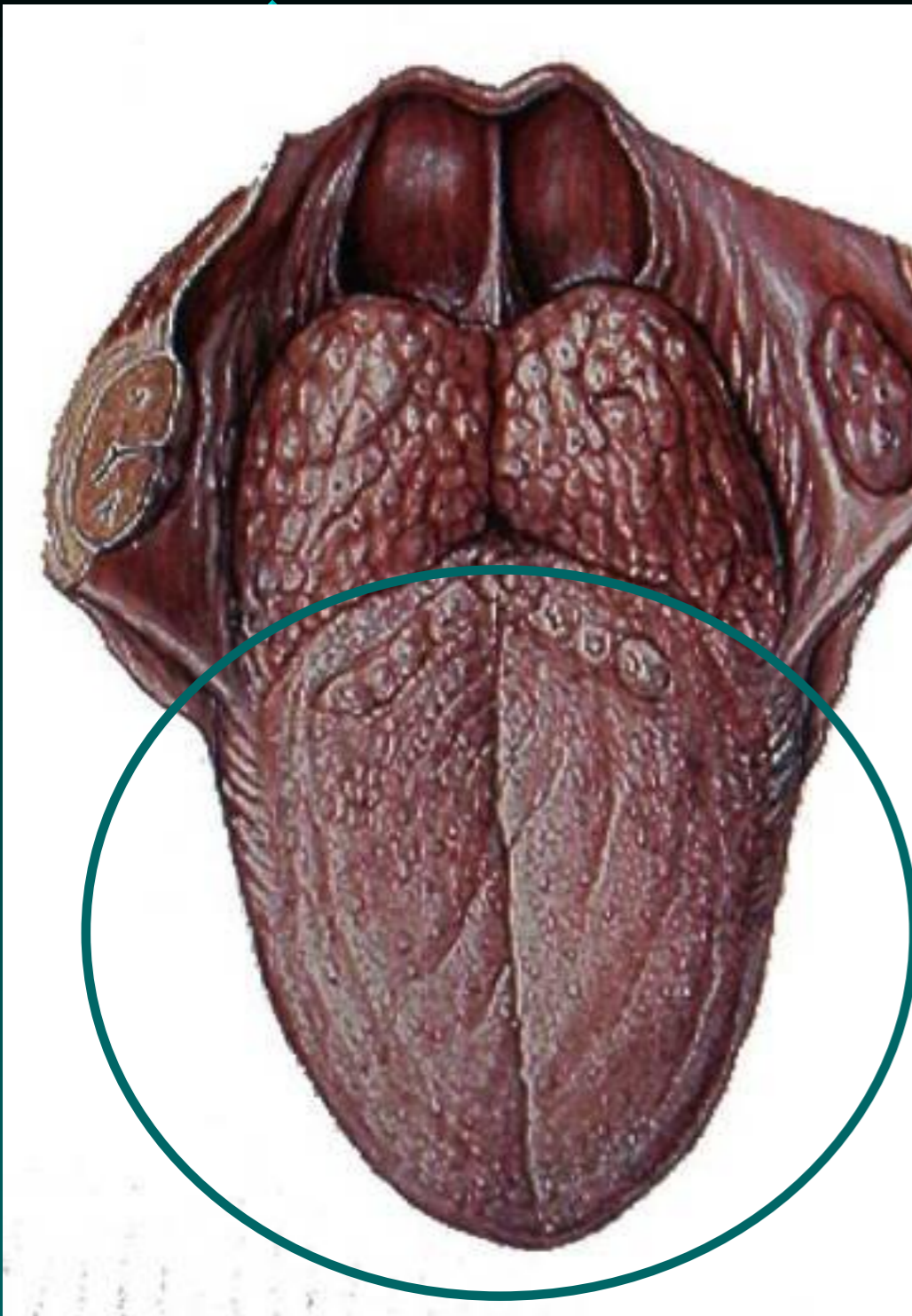
# Management of Oral Cavity Cancer

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Rajavithi Hospital, Ministry of Public Health, Bangkok, Thailand.

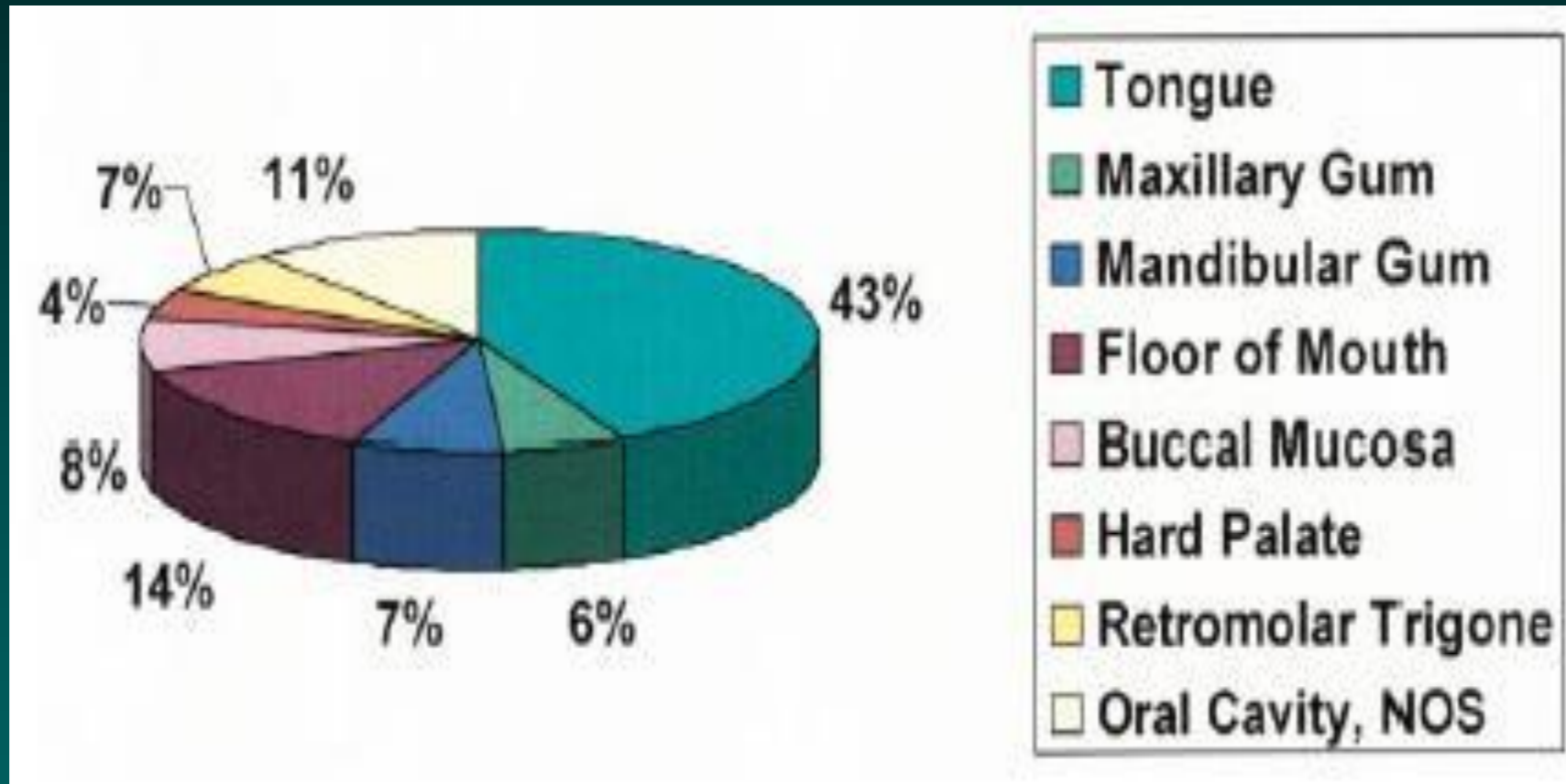








# Epidemiology



# Etiology

## Risk factors

- tobacco
- alcohol
- painters
- woodworkers
- radioactive radiation





# ORAL CAVITY CANCER

## HISTOPATHOLOGY

SQUAMOUS CELL CA.	93.7 %
VERRUCOUS CA.	4.1 %
OTHER	2.2 %



# Premalignant lesion

- Leukoplakia
- Erythroplakia

*Malignant transformation leukoplakia: 1 –17 %*





# Leukoplakia Clinical variants

*Axell, J Oral Pathol Med 1996; 25:49-54*

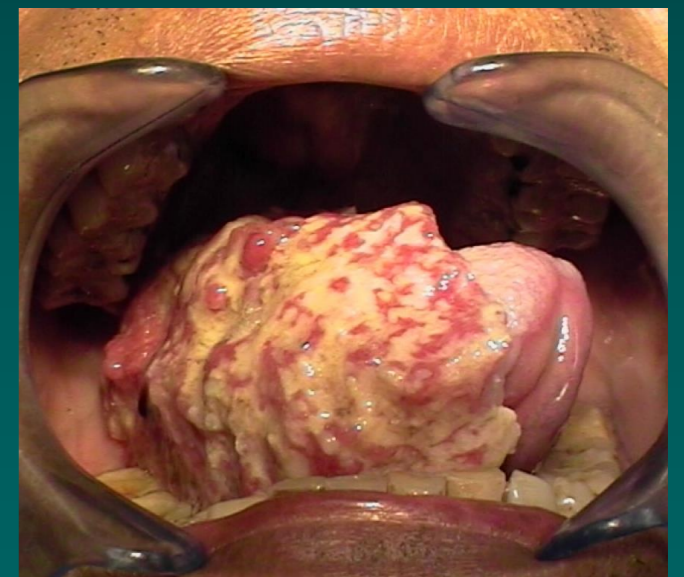
Homogeneous



Non-homogeneous

- verrucous
- nodular
- exophytic

Erythro(leuko)plakia







# Leukoplakia Successful treatment

- CO <sub>2</sub> laser	73 – 97 %
- Excision	66 – 90 %
- Cryosurgery	75 – 100 %

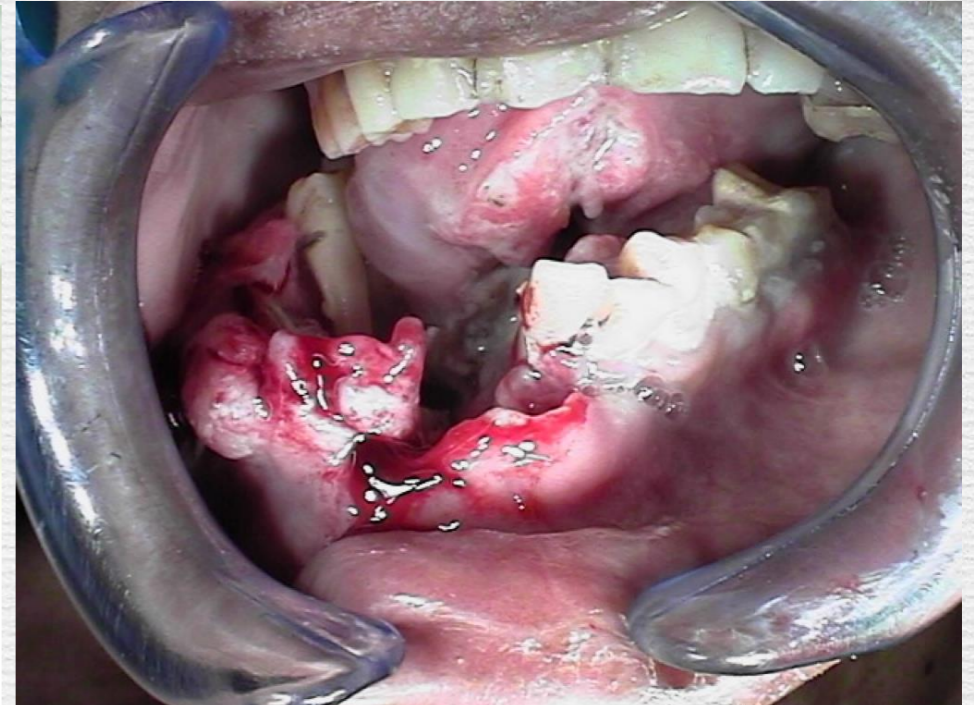
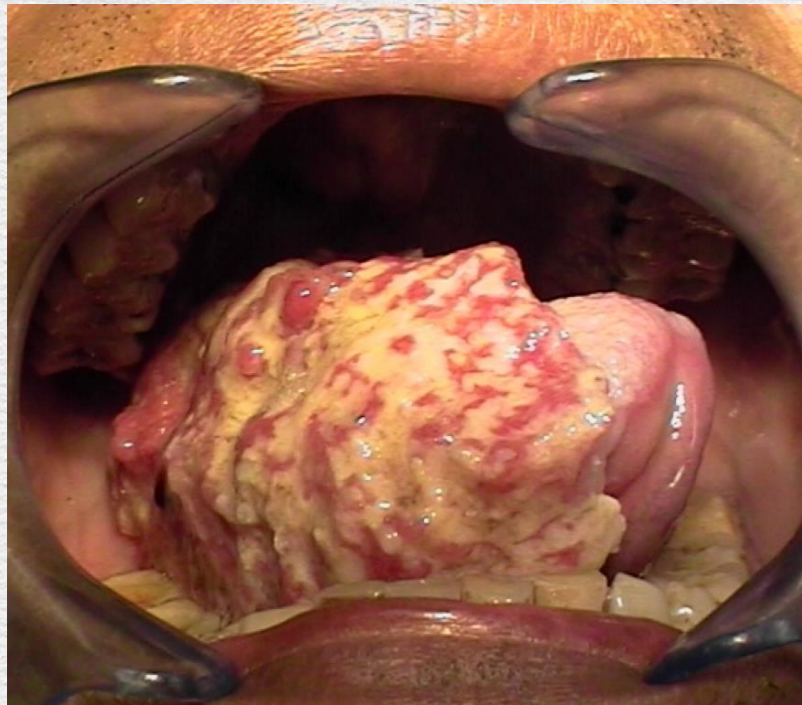




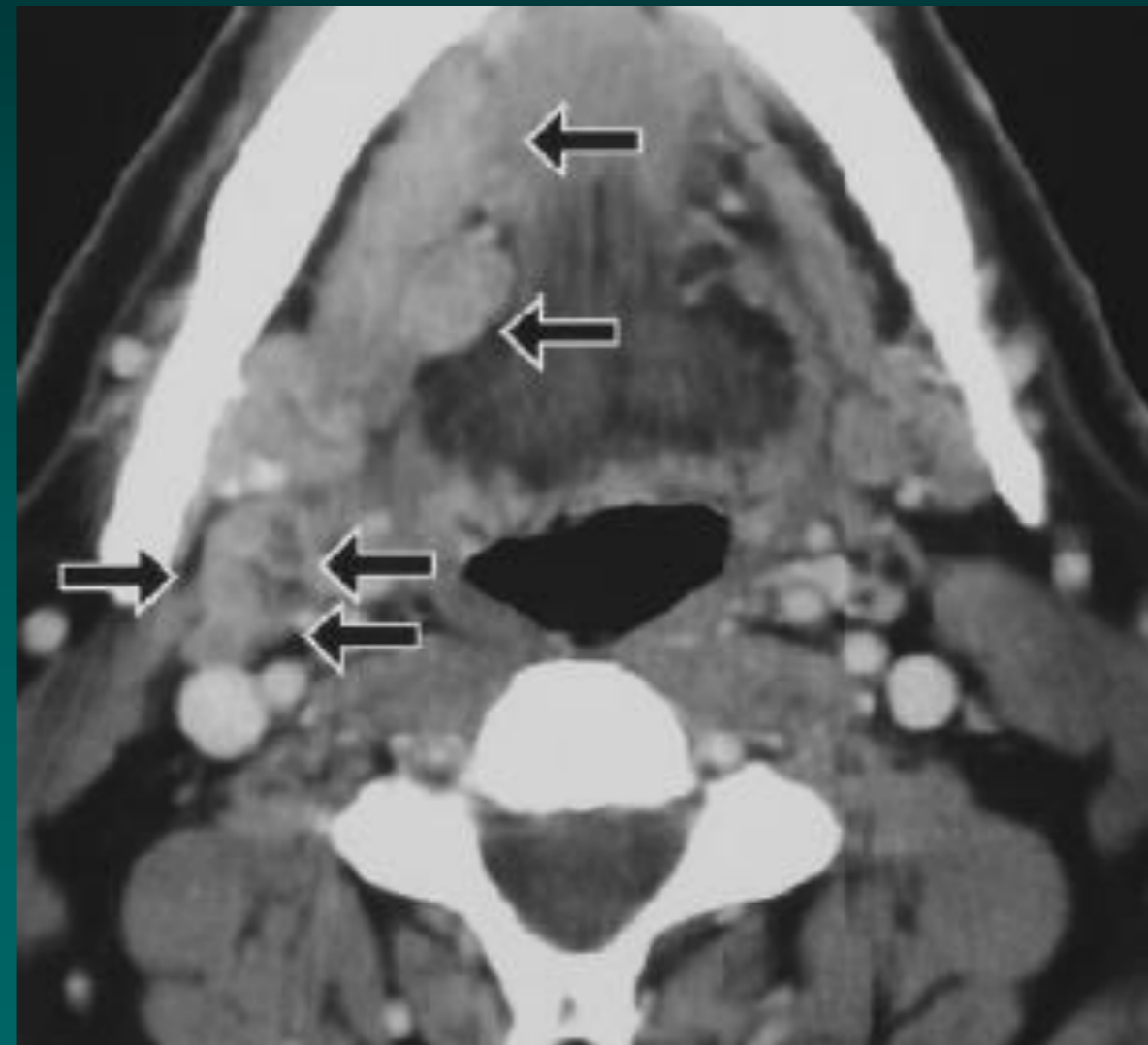
# Tongue Cancer



# Advanced Oral Cavity Cancer



# Imaging





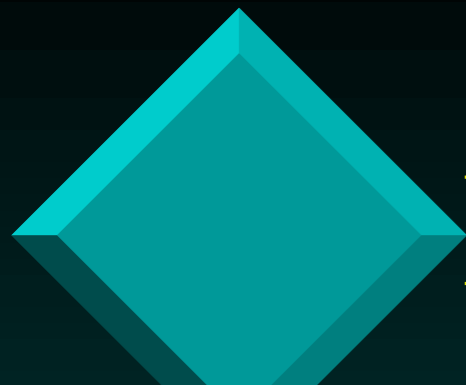
# Imaging of mandibular invasion

1 OPG

2 CT / MRI

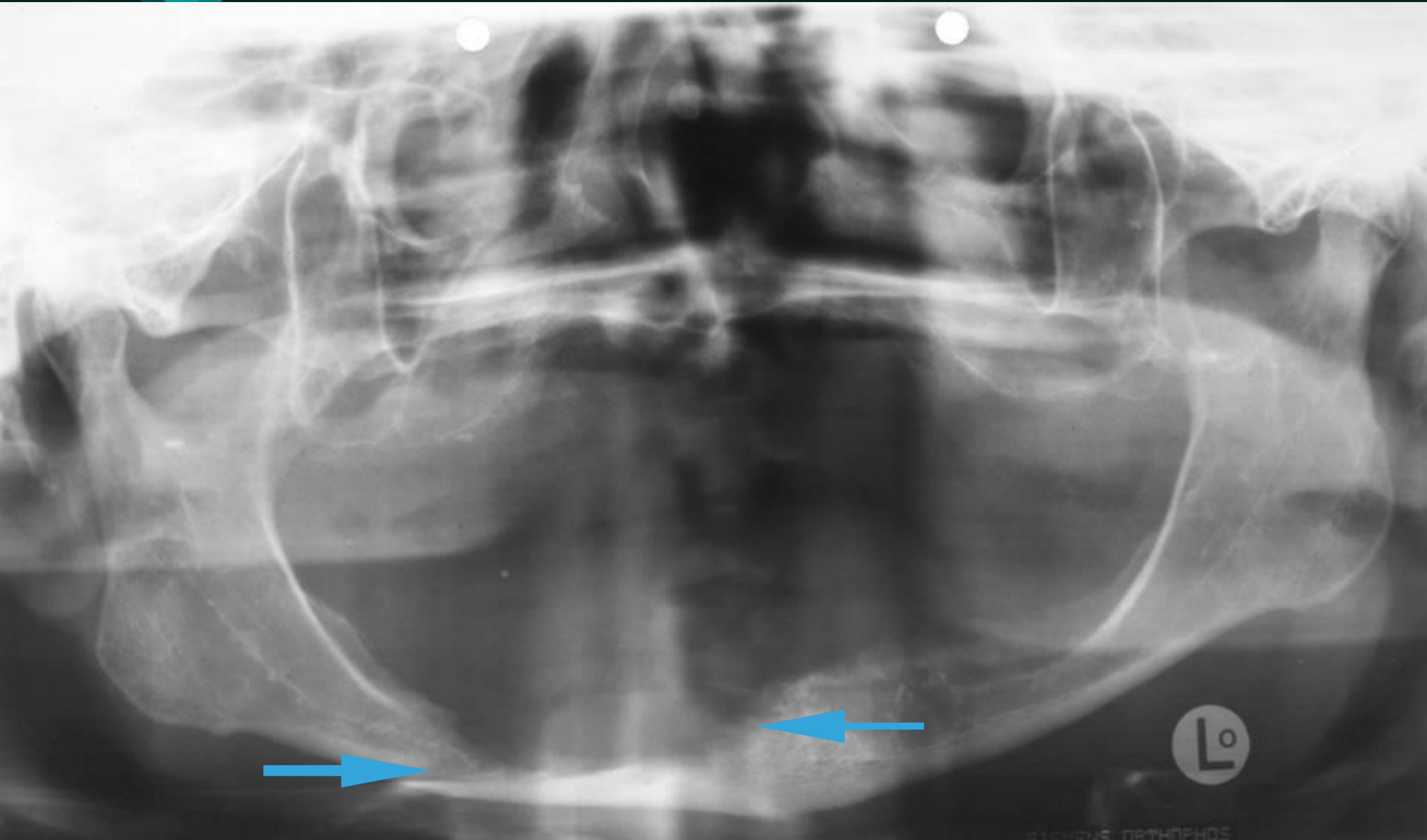
3 PET





# Mandibular invasion

Radiologic pattern (OPG)





# Imaging

## Clinical examination and imaging (CT / MRI)





# Screening for distant metastases

CT-thorax more sensitive than X-thorax for screening of pulmonary lesions

## Indications

- 3 or more N<sup>+</sup>
- low jugular N<sup>+</sup>
- bilateral N<sup>+</sup>
- N3





# Multiple primary tumors (MPT)

- *the prevalence of MPT in patients with oral cancer is 14 %*

- relative distribution

- head and neck	48 %
- lung	16 %
- esophagus	12 %
- other	24 %

# Oral Cavity Cancer

## T-stage AJCC/UICC (7<sup>th</sup>)

LIP AND ORAL CAVITY STAGING FORM			
CLINICAL <i>Extent of disease before any treatment</i>	STAGE CATEGORY DEFINITIONS		PATHOLOGIC <i>Extent of disease during and from surgery</i>
<input type="checkbox"/> y clinical – staging completed after neoadjuvant therapy but before subsequent surgery	<b>TUMOR SIZE:</b> _____	<b>LATERALITY:</b> <input type="checkbox"/> left <input type="checkbox"/> right <input type="checkbox"/> bilateral	<input type="checkbox"/> y pathologic – staging completed after neoadjuvant therapy AND subsequent surgery
<input type="checkbox"/> TX <input type="checkbox"/> T0 <input type="checkbox"/> Tis <input type="checkbox"/> T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4a  <input type="checkbox"/> T4b	<p align="center"><b>PRIMARY TUMOR (T)</b></p> <p>Primary tumor cannot be assessed</p> <p>No evidence of primary tumor</p> <p>Carcinoma <i>in situ</i></p> <p>Tumor 2 cm or less in greatest dimension</p> <p>Tumor more than 2 cm but not more than 4 cm in greatest dimension</p> <p>Tumor more than 4 cm in greatest dimension</p> <p>Moderately advanced local disease.            (lip) Tumor invades through cortical bone, inferior alveolar nerve, floor of mouth, or skin of face, i.e., chin or nose            (oral cavity) Tumor invades adjacent structures only (e.g., through cortical bone, [mandible or maxilla] into deep [extrinsic] muscle of tongue [genioglossus, hyoglossus, palatoglossus, and styloglossus], maxillary sinus, skin of face)</p> <p>T4b Very advanced local disease.            Tumor invades masticator space, pterygoid plates, or skull base and/or encases internal carotid artery</p> <p>Note: Superficial erosion alone of bone/tooth socket by gingival primary is not sufficient to classify a tumor as T4.</p>		<input type="checkbox"/> TX <input type="checkbox"/> T0 <input type="checkbox"/> Tis <input type="checkbox"/> T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4a  <input type="checkbox"/> T4b



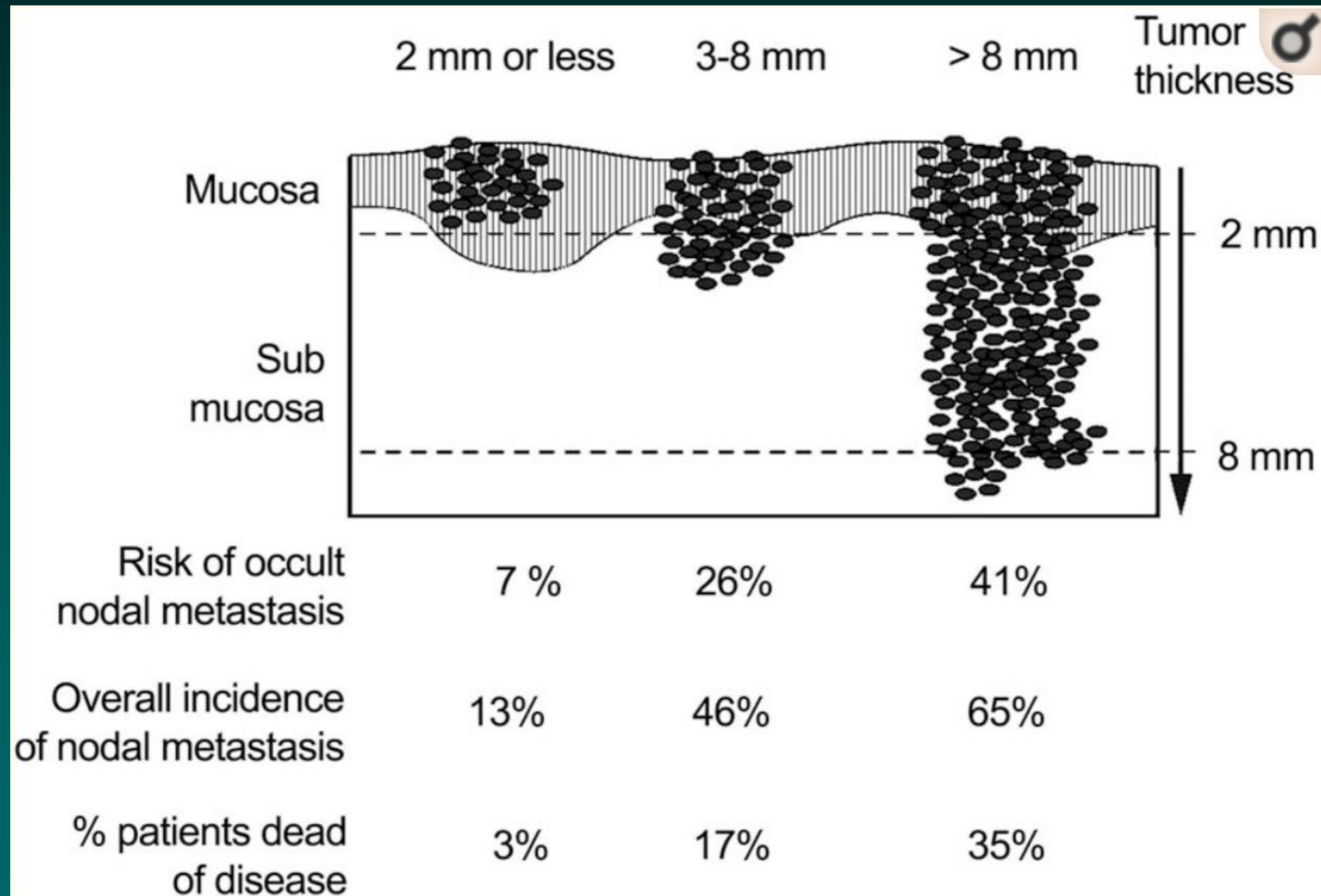
# Oral Cavity Cancer

## T-stage AJCC/UICC (7<sup>th</sup>-8<sup>th</sup>)










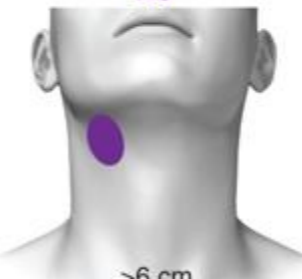
Change	7th Ed. (2010)	8th Ed. (2017)		
		Oral Cavity	HPV- Oropharynx	HPV+ Oropharynx
T-stage	<p><b>T0:</b> no primary</p> <p><b>T1:</b> size ≤2cm <b>T2:</b> size 2-4cm <b>T3:</b> size &gt;4cm</p> <p><b>T4:</b></p> <ul style="list-style-type: none"> <li>○ <b>T4a:</b> moderately advanced (extrinsic tongue muscle involvement constituted T4a)</li> <li>○ <b>T4b:</b> very advanced</li> </ul>	<ul style="list-style-type: none"> <li>• <b>T0</b> deleted</li> <li>• <b>T1:</b> size ≤2cm and DOI ≤5mm</li> <li>• <b>T2:</b> size ≤2cm and DOI 5-10mm or size 2-4cm and DOI ≤10mm</li> <li>• <b>T3:</b> size &gt;4cm or &gt;10mm DOI</li> <li>• <b>T4a</b> extrinsic tongue muscle infiltration now deleted</li> </ul>	<ul style="list-style-type: none"> <li>• <b>T0</b> deleted</li> </ul>	<ul style="list-style-type: none"> <li>• <b>T0</b> if proven p16+ disease without evidence of primary tumor</li> <li>• All locally advanced combined to <b>T4</b></li> </ul>
Stage grouping	<p><b>N0:</b> no LN involved</p> <p><b>N1:</b> single ipsi LN ≤3cm in size</p> <p><b>N2:</b></p> <ul style="list-style-type: none"> <li>○ <b>N2a:</b> single ipsi LN, 3-6cm in size</li> <li>○ <b>N2b:</b> multiple ipsi LNs, all ≤6cm in size</li> <li>○ <b>N2c:</b> any bi or ctr LNs, all ≤6cm in size</li> </ul> <p><b>N3:</b> any LN &gt;6cm in size</p>	<b>Clinical N-stage</b>		
		<ul style="list-style-type: none"> <li>• <b>N1-N2</b> is same as previous and <b>ENE(-)</b></li> <li>• <b>N3</b> now with subcategories:               <ul style="list-style-type: none"> <li>○ <b>N3a</b> is previous N3 (size &gt;6cm) and <b>ENE(-)</b></li> <li>○ <b>N3b</b> is any <b>ENE(+)</b>, either clinical or radiographic</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Previous N1, N2a combined to <b>N1</b> (&lt;6cm with or without ENE)</li> <li>• Previous N2b, N2c combined to <b>N2</b></li> </ul>	
		<b>Pathological N-stage</b>		
		<ul style="list-style-type: none"> <li>• Microscopically evident ENE(+) LNs results in upstaging</li> </ul>	<ul style="list-style-type: none"> <li>• <b>N1:</b> ≤4 LNs involved</li> <li>• <b>N2:</b> &gt;4 LNs involved</li> <li>• <b>N3</b> deleted</li> </ul>	
	Clinical or pathological TNM used for same grouping system	Same as previous		Separate clinical and pathological TNM groupings

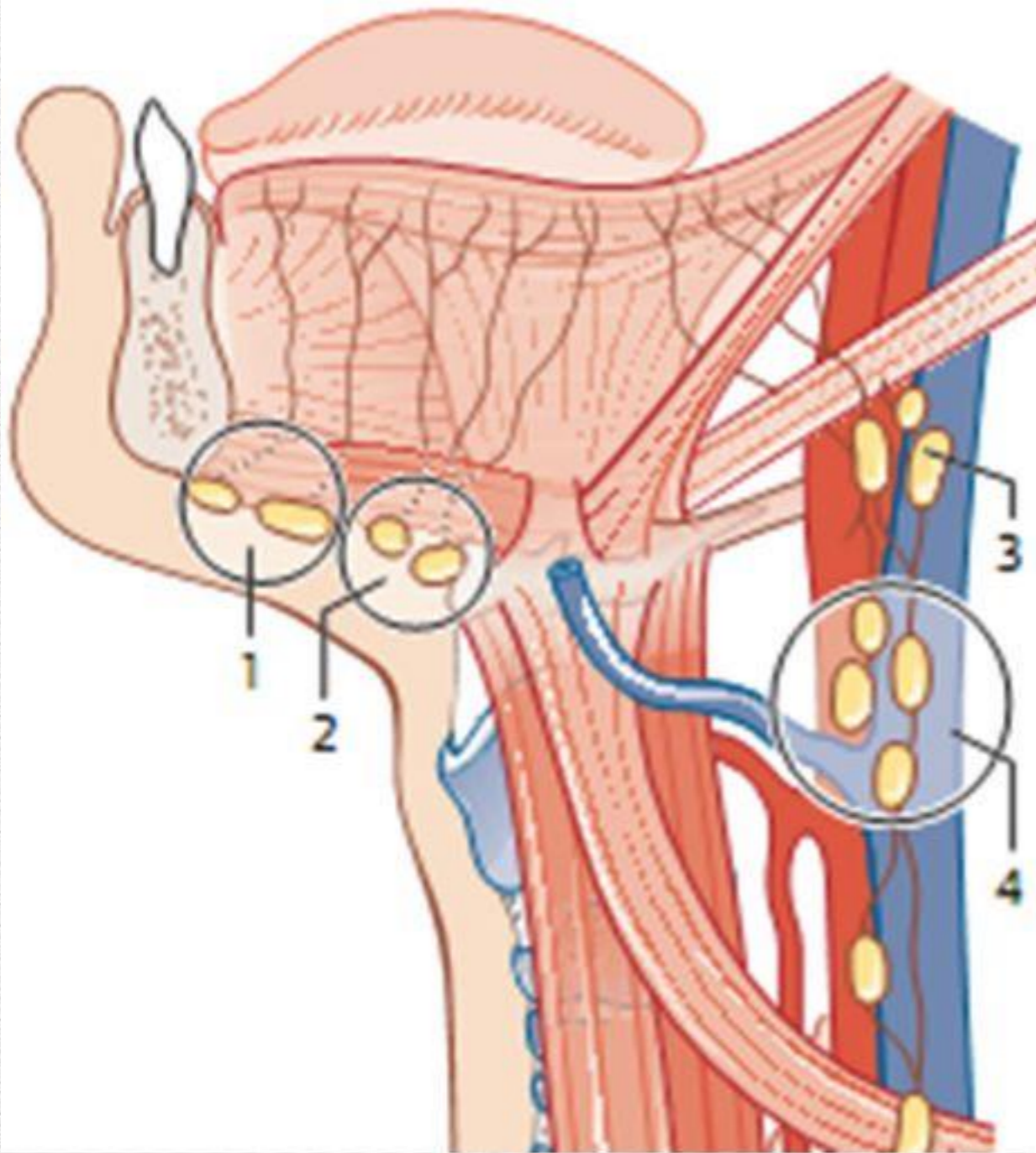


# Risk of Nodal metastases and death in relation to thickness of primary SCC Tongue

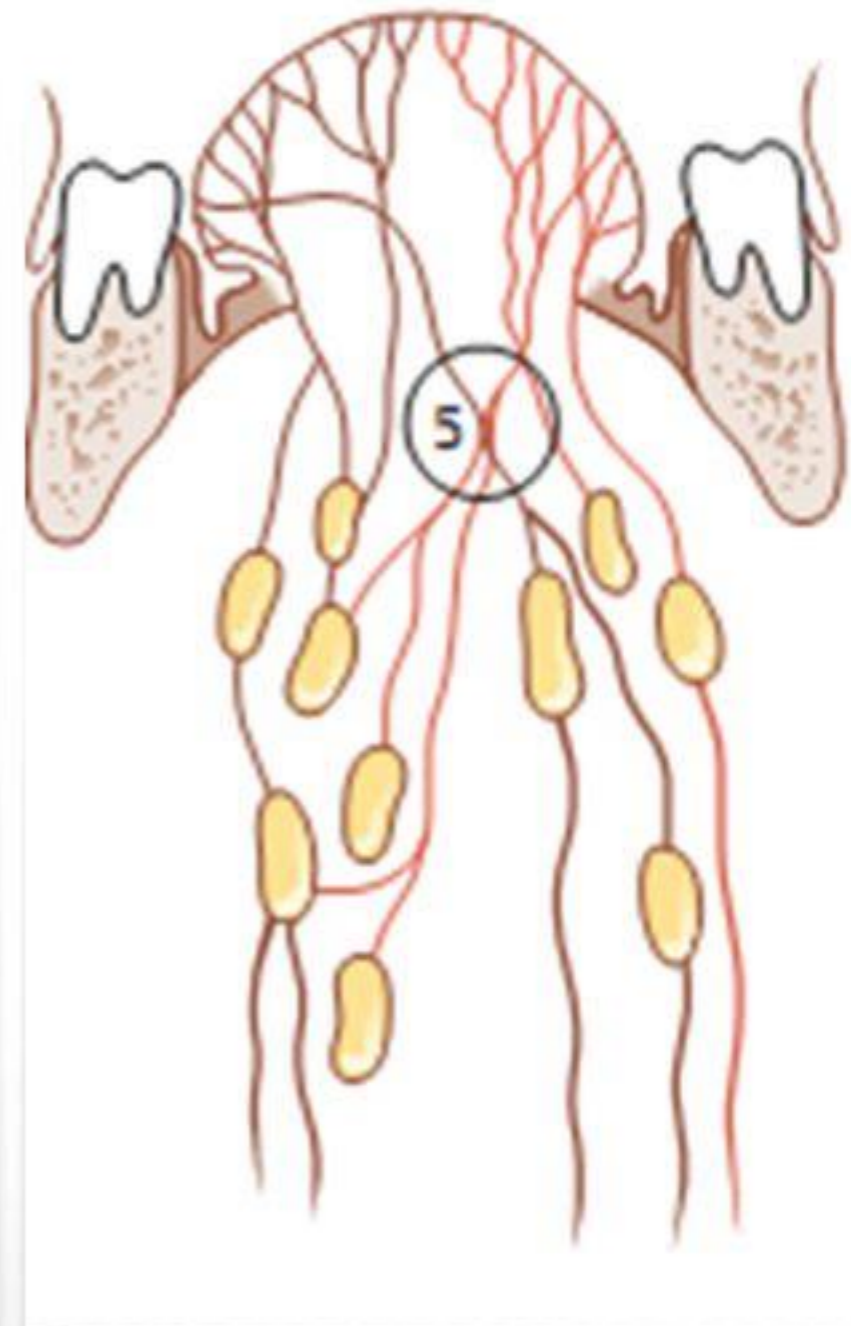




Definition of TNM			Stage groupings		
<b>Stage I</b> <b>T1</b> 	Tumor $\leq$ 2 cm in greatest dimension without extraparenchymal extension	<b>N0</b> 	N0- No regional lymph node metastasis	<b>T1</b>	N0 M0
<b>Stage II</b> <b>T2</b> 	Tumor $\geq$ 2 cm but not more than 4 cm in greatest dimension without extraparenchymal extension	<b>N0</b> 	N0- No regional lymph node metastasis	<b>T2</b>	N0 M0
<b>Stage III</b> <b>T3</b> 	Tumor $\geq$ 4 cm and/or tumor having extraparenchymal extension	<b>N1</b>  $\leq$ 3 cm	N1- Metastasis in a single ipsilateral lymph node, $\leq$ 3 cm in greatest dimension	<b>T3</b> <b>T1</b> <b>T2</b> <b>T3</b>	N0 M0 <b>N1</b> M0 <b>N1</b> M0 <b>N1</b> M0
<b>Stage IVA</b> <b>T4a</b> 	Tumor invades skin, mandible, ear canal, and/or fascial nerve	<b>N2</b>  $\leq$ 6 cm	N2a- Metastasis in a single ipsilateral lymph node, $>$ 3 cm but $\leq$ 6 cm N2b- Metastasis in a multiple ipsilateral lymph node, none $>$ 6 cm N2c- Metastasis in a bilateral or contralateral lymph nodes, none $>$ 6 cm	<b>T4a</b> <b>T4a</b> <b>T1</b> <b>T2</b> <b>T3</b> <b>T4a</b>	N0 M0 <b>N1</b> M0 <b>N2</b> M0 <b>N2</b> M0 <b>N2</b> M0 <b>N2</b> M0
<b>Stage IVB</b> <b>T4b</b> 	Tumor invades skull base and/or pterygoid plates and/or encases carotid artery	<b>N3</b>  $>$ 6 cm	N3- Metastasis in a lymph node $>$ 6 cm in greatest dimension	<b>T4b</b> <b>Any T</b>	<b>Any N</b> M0 <b>N3</b> M0
<b>Stage IVC</b>		<b>M1</b>		<b>Any T</b>	<b>Any N</b> <b>M1</b>



**Lymph drainage of the tongue.**  
**Groups of lymph nodes.**  
 1, Submental; 2, submandibular;  
 3, upper deep cervical, with lymph nodes at  
 the superior venous angle (4).



**Contralateral lymphatic drainage of the tongue.** 5, Crossing of the lymphatic drainage.

# Treatment

## Multidisciplinary team

- Surgery
- Radiotherapy
- Chemotherapy
- Rehabilitation

## Treatment decision

- Tumor factor
- Patient factor
- Physician factor

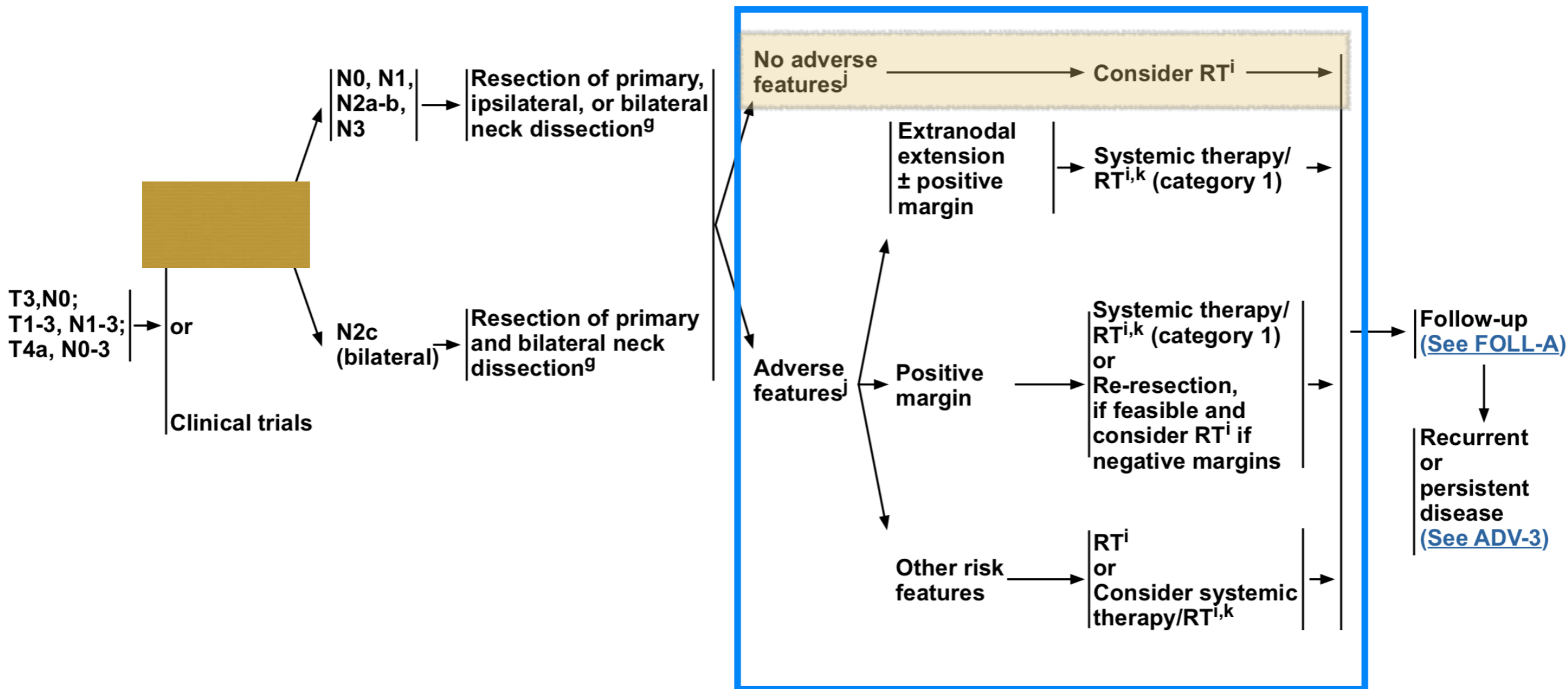
Buccal mucosa, floor of mouth, anterior tongue, alveolar ridge, retromolar trigone, hard palate

**CLINICAL STAGING**

**TREATMENT OF PRIMARY AND NECK**

**ADJUVANT TREATMENT**

**FOLLOW-UP**



<sup>g</sup>See Principles of Surgery (SURG-A).

<sup>i</sup>See Principles of Radiation Therapy (OR-A).

<sup>j</sup>Adverse risk features: extranodal extension, positive margins, pT3 or pT4 primary, pN2 or pN3 nodal disease, nodal disease in levels IV or V, perineural invasion, vascular invasion, lymphatic invasion (See Discussion).

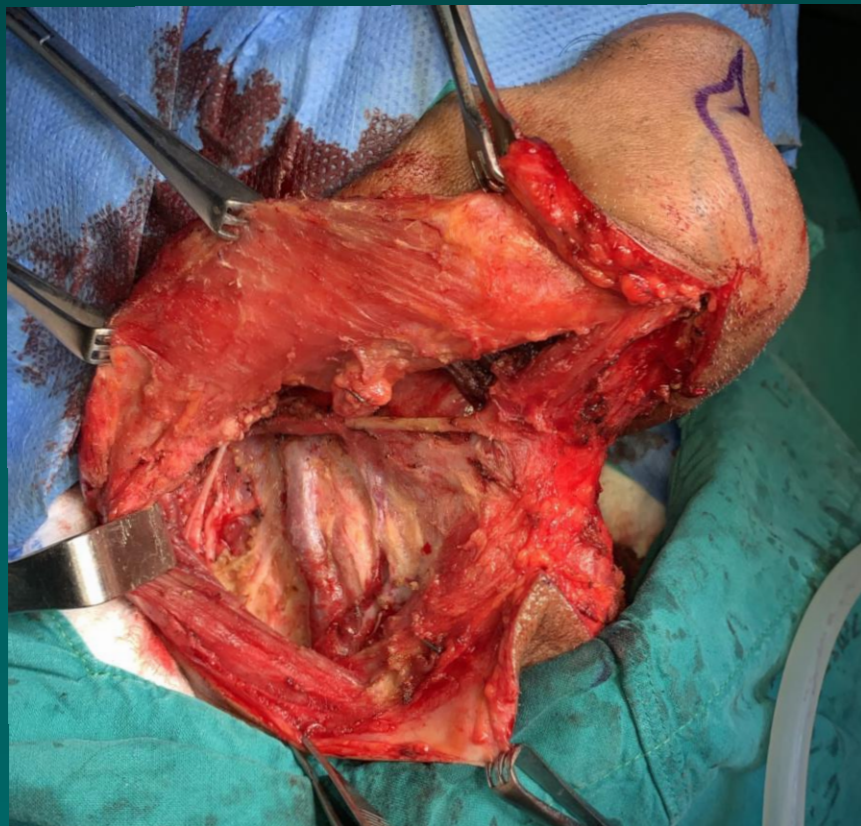
<sup>k</sup>See Principles of Systemic Therapy (CHEM-A).

**Note:** All recommendations are category 2A unless otherwise indicated.  
**Clinical Trials:** NCCN believes that the best management of any patient with cancer is in a clinical trial. Participation in clinical trials is especially encouraged.





# Bilateral Modified Neck Dissection





## Risk factors for locoregional recurrence

- high risk
  - positive resection margins
  - extranodal spread
  - multiple N+
- intermediate risk
  - T3 - T4
  - narrow resection margins
  - perineural spread
  - infiltration growth pattern
- no risk factors: locoregional control 90 %



# Postoperative radiotherapy Timing

- interval between surgery and start RT  
benefit if  $< 6$  wks
- total duration of RT  
benefit if accelerated (66 Gy in 5 wks)

*Improved locoregional control and survival.  
Complete treatment should be finished  
withing 12 weeks. (level 2 evidence)*



## Follow-up after oral cancer Rationale

- early detection of
  - locoregional recurrence
  - distant metastases
  - second primary
- treatment of complications (trismus, shoulder)
- rehabilitation (swallowing, speech)
- psychosocial support
- evaluation of therapy (quality control)



## Follow-up after oral cancer Treatment

- duration 5 years
- frequency 2 - 6 months
- annual X-ray thorax  
no contribution to improved survival
- hypothyroidism 15 - 45 %



# *Surgical Treatment*





# ORAL CAVITY CANCER

## CA.LIP



- 12 % of H&N cancer
- Lower Lip 88-98 %
- Upper Lip 2-7 %
- Commissure < 1 %





# V- excision of lower lip

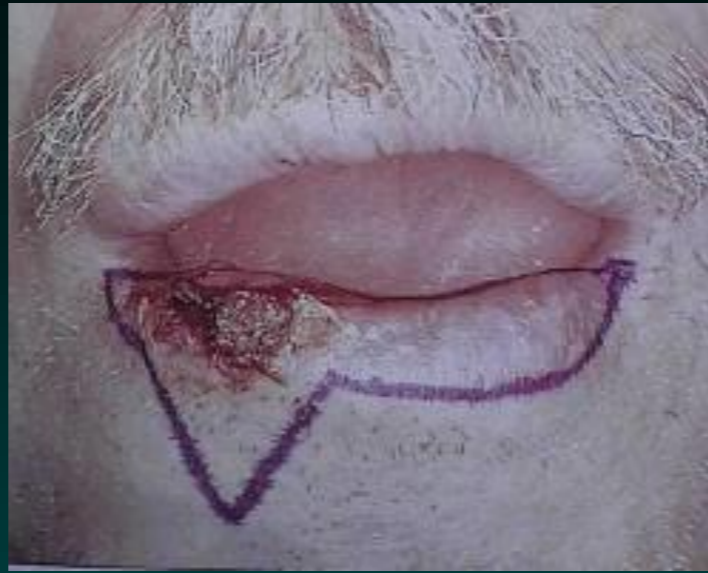






# *Lip shave*







# Estlander flap





# Abbe flap





# Karapandzic flap





# Bernard reconstruction of lower lip





# Nasolabial flap





# Nasolabial flap





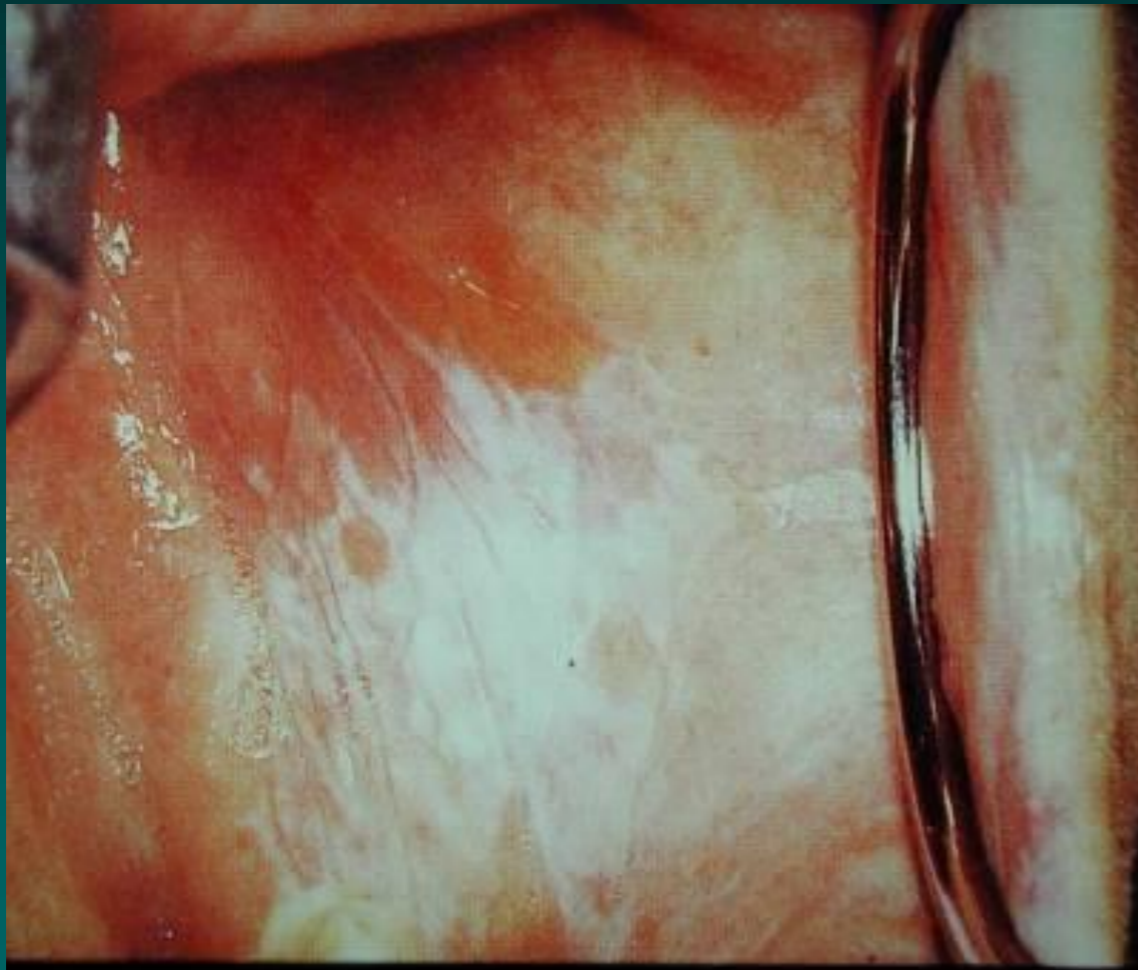


# Radial forearm free flap





# CA.BUCCAL MUCOSA





# CO<sub>2</sub> Laser





# CA.BUCCAL MUCOSA



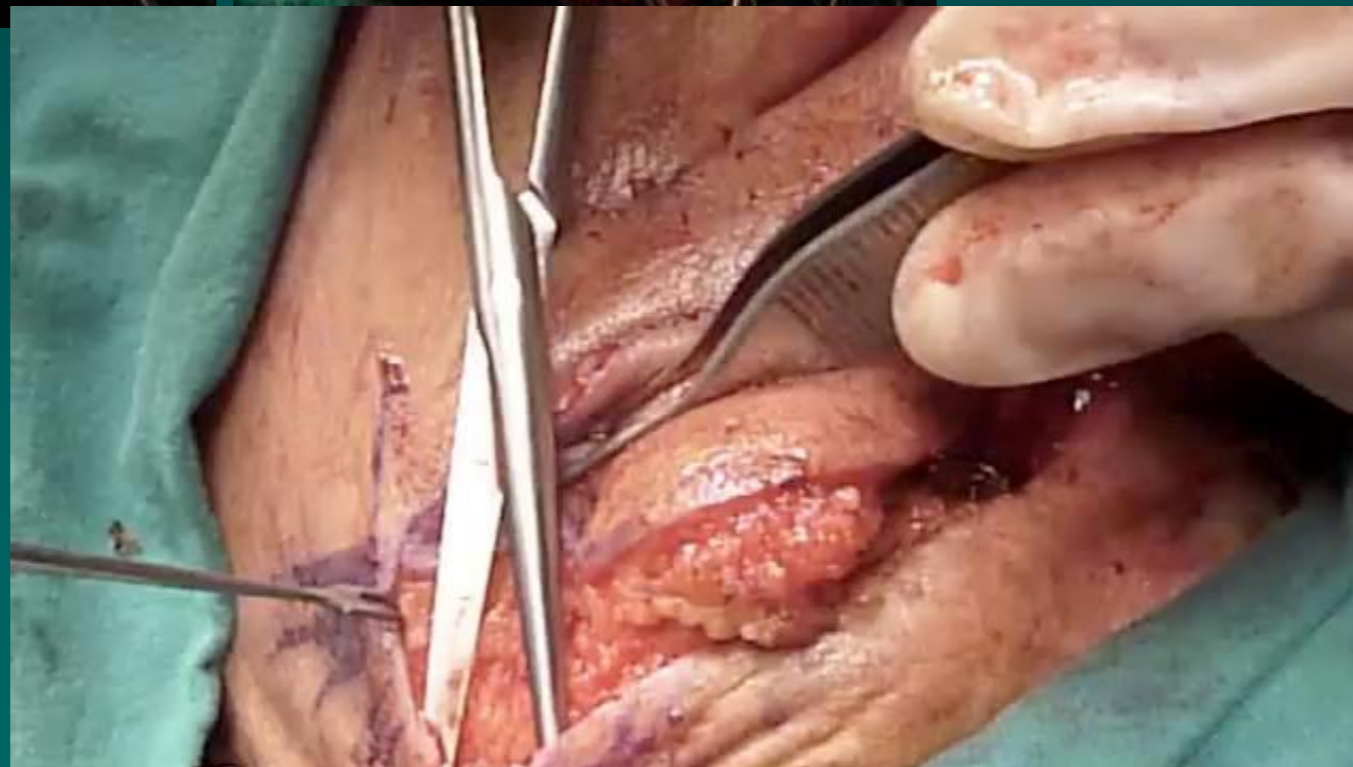


# Nasolabial flap ; ca.buccal



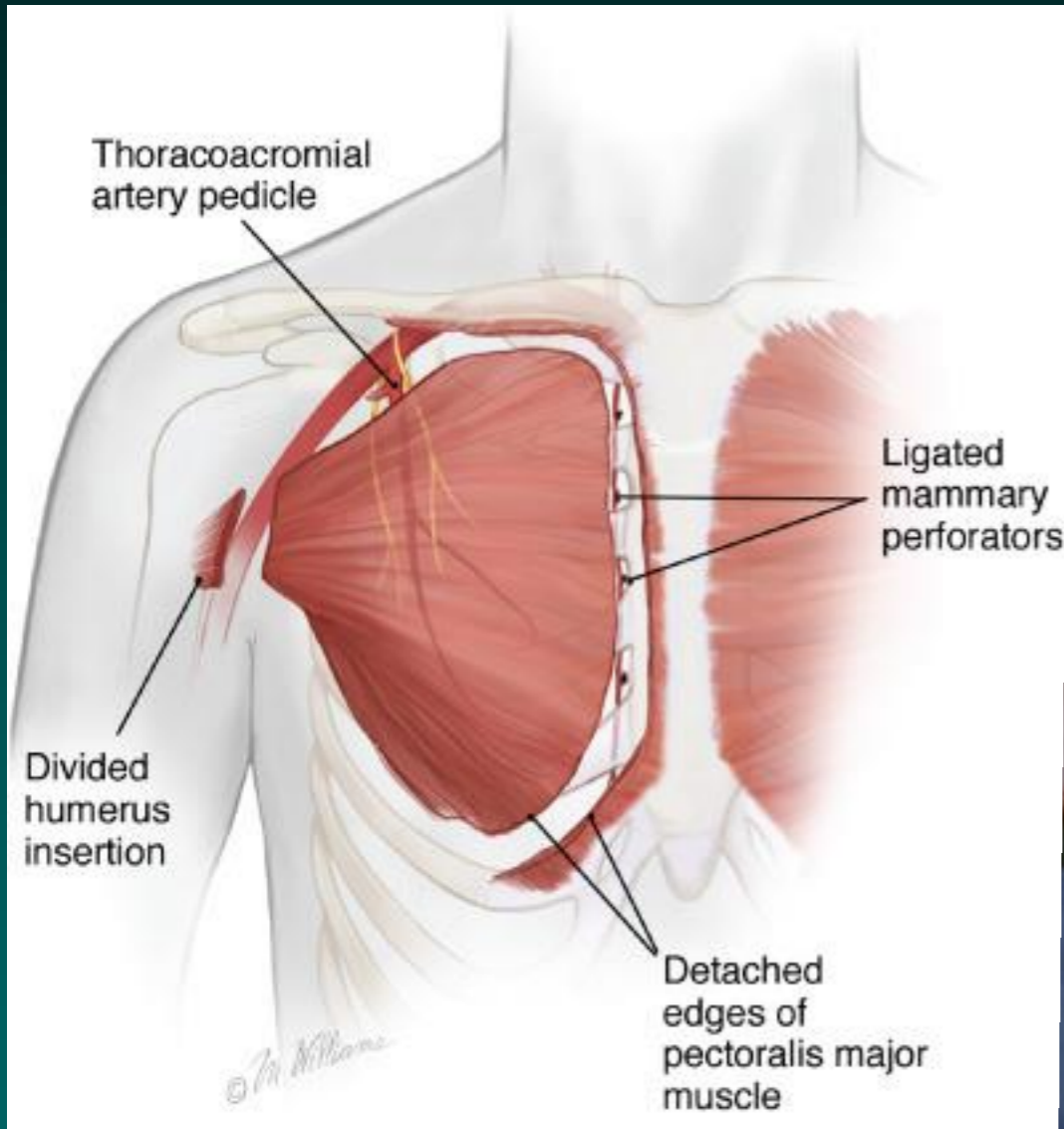


# Nasolabial flap ; ca.buccal



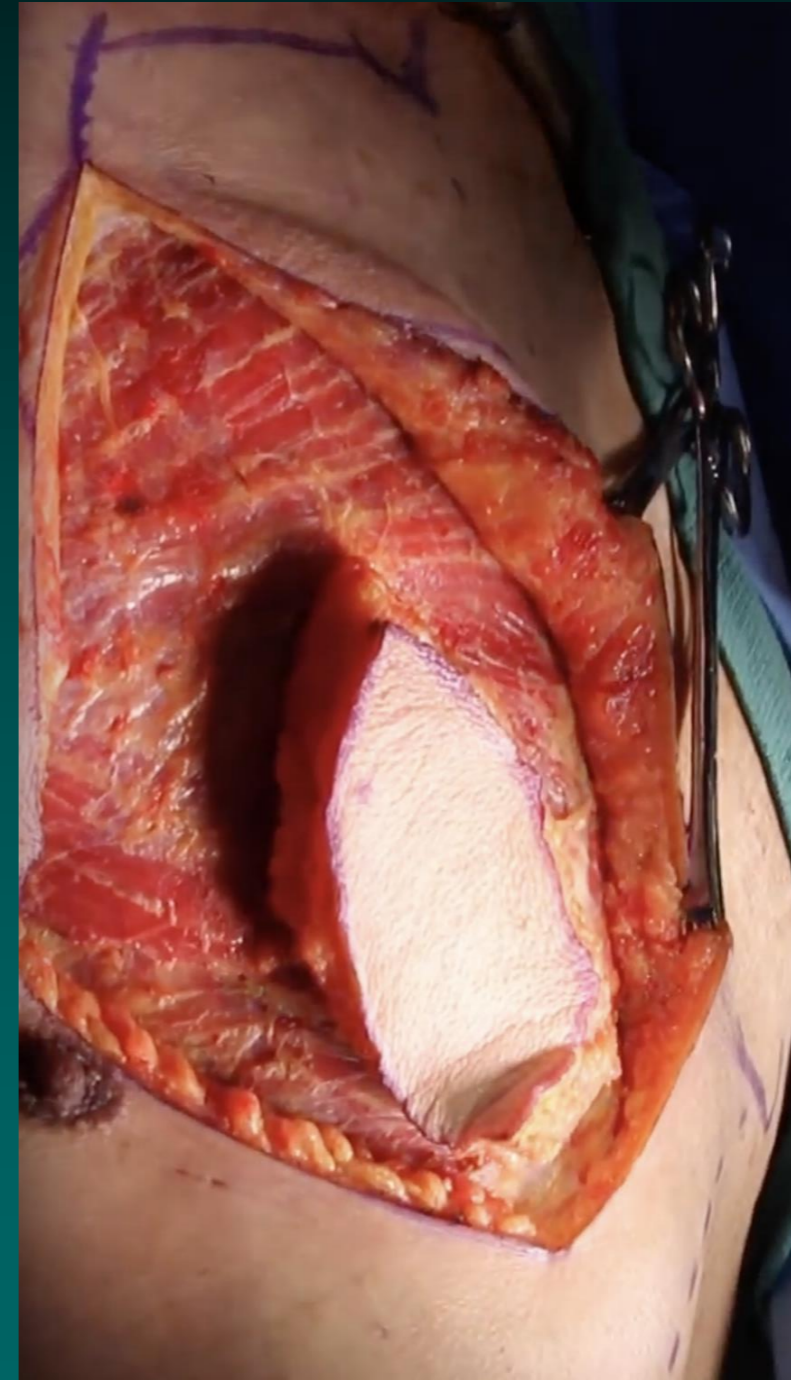
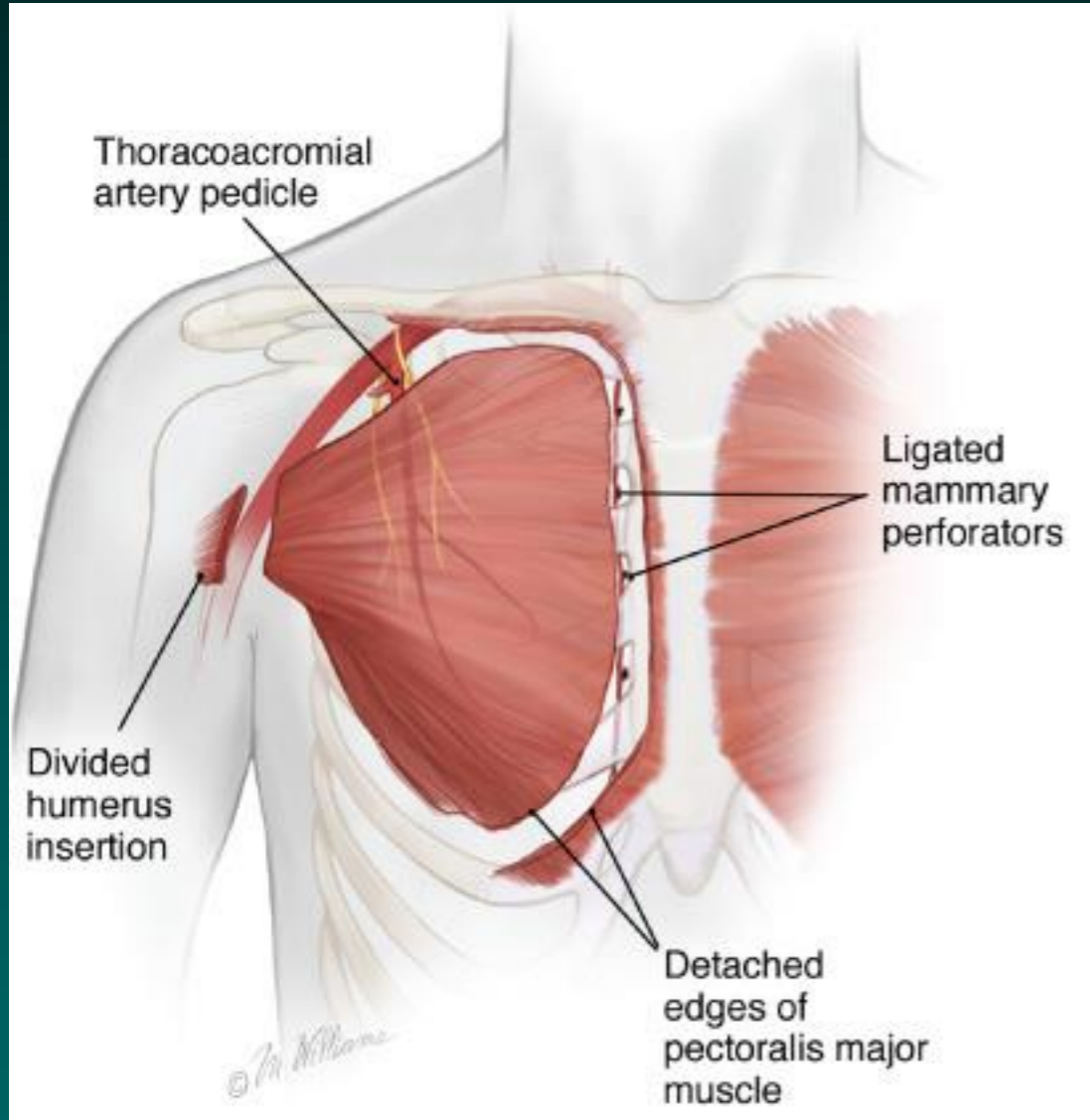


# *PMM for Buccal Mucosa Recon.*





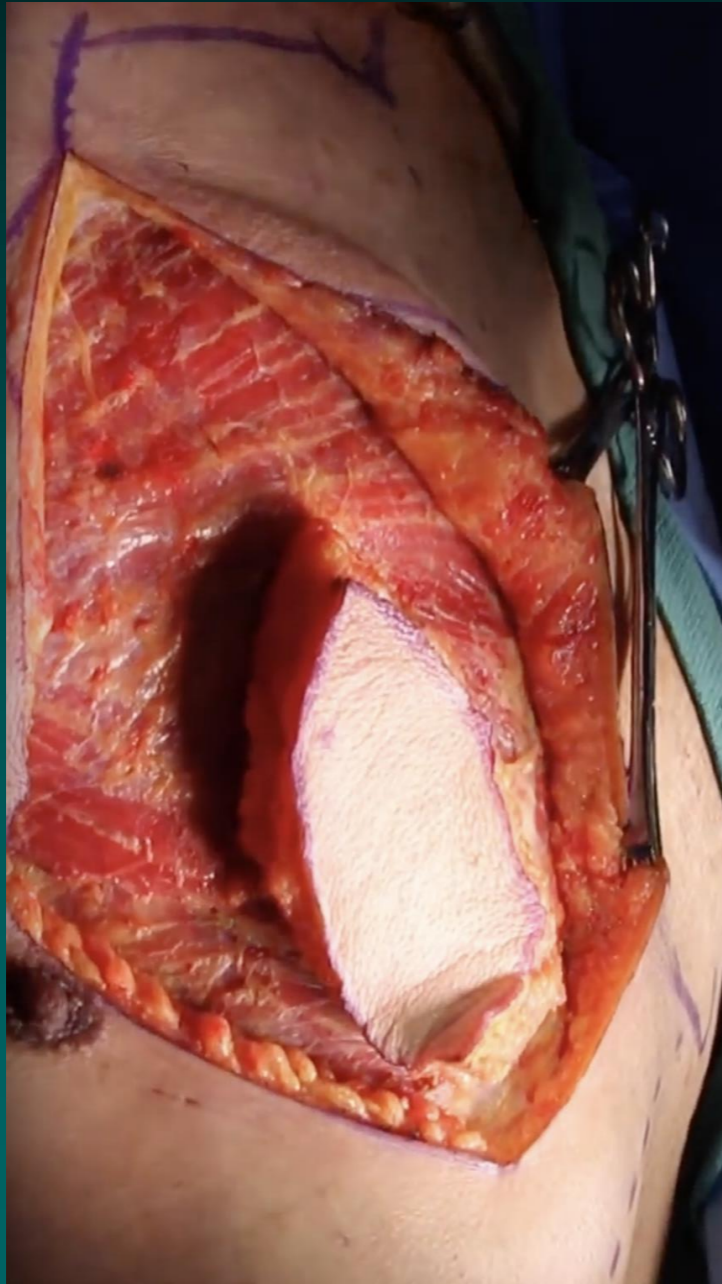
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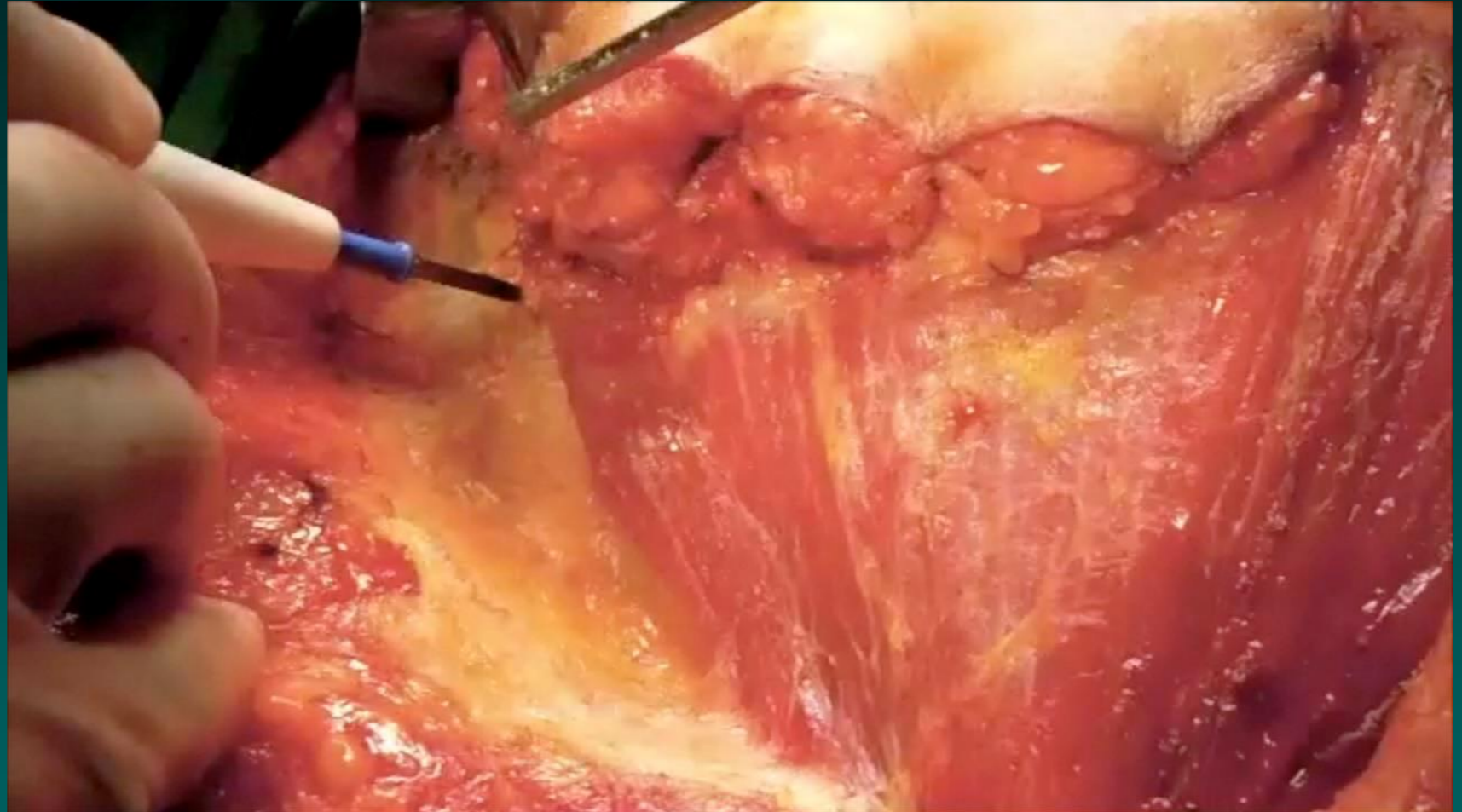
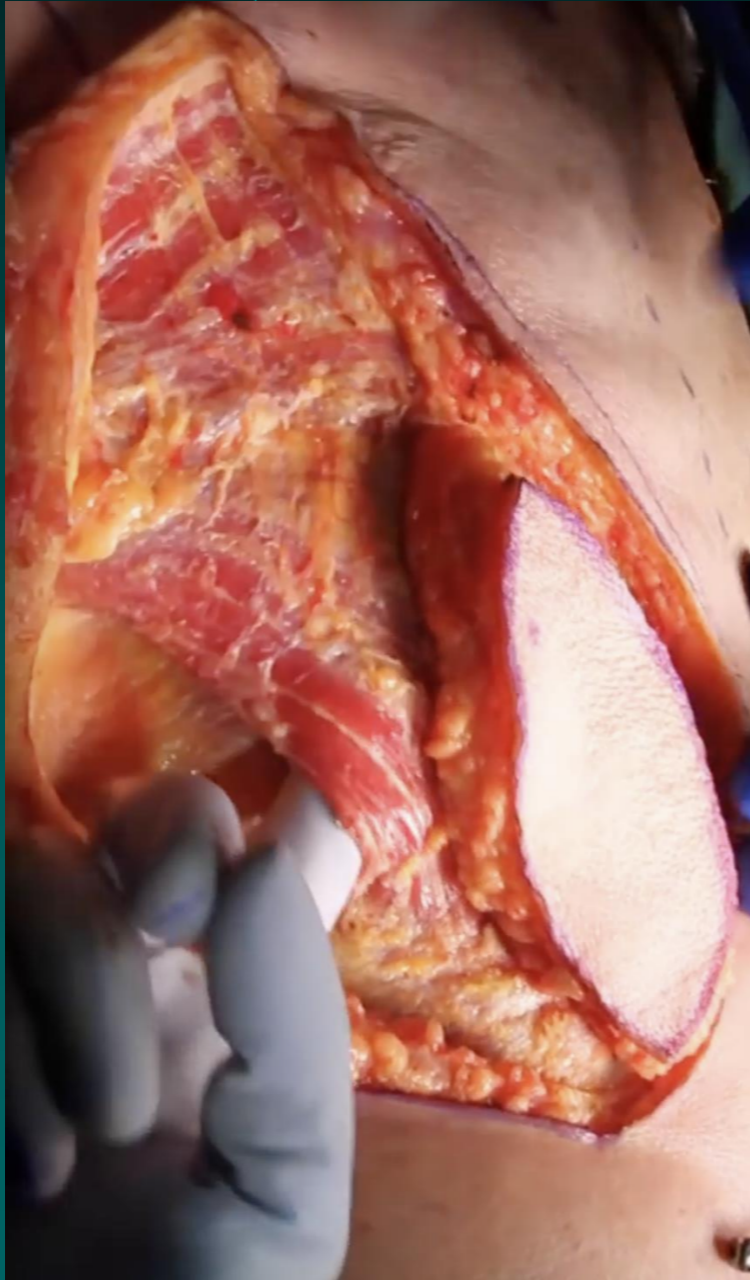


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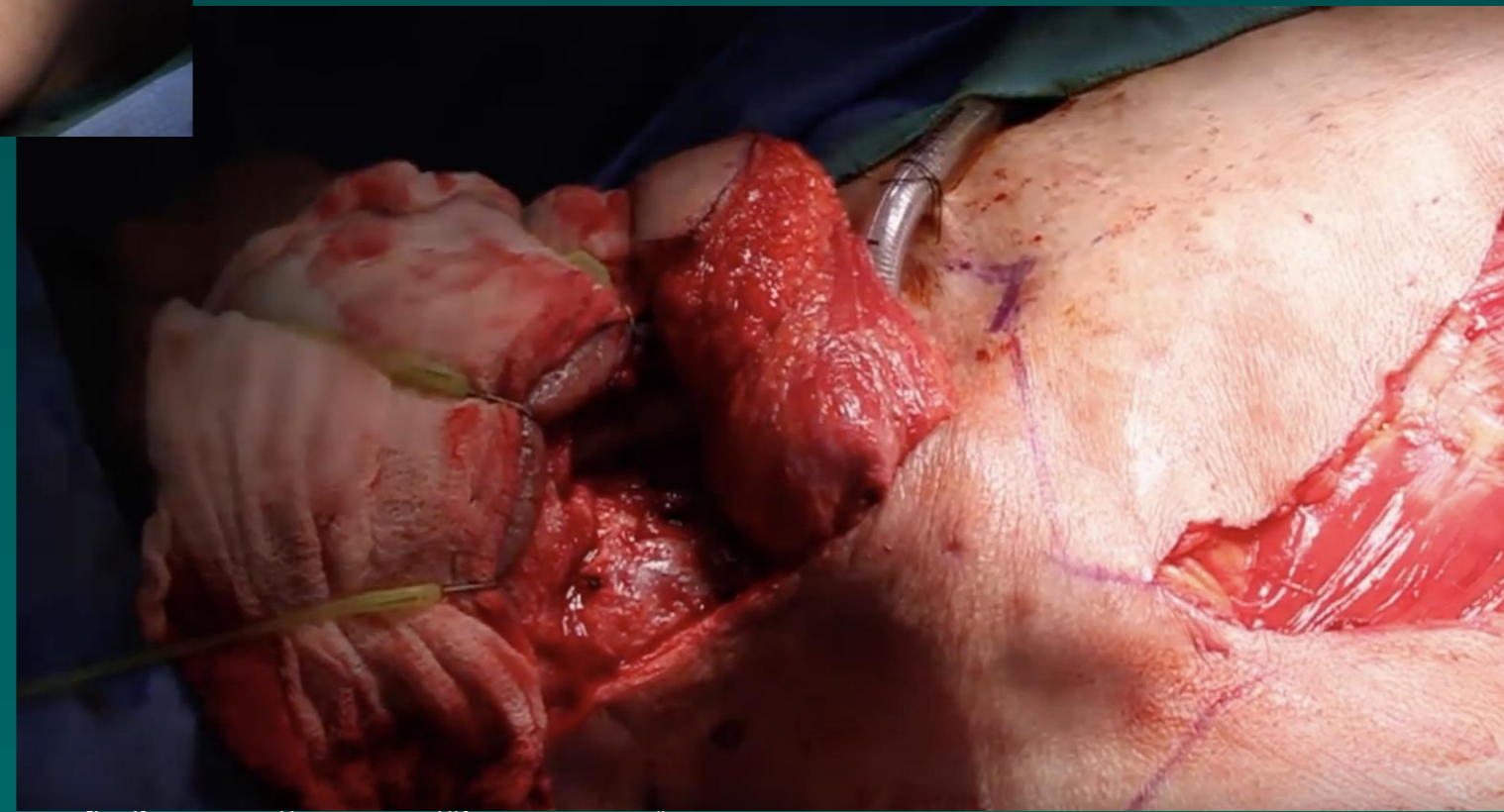
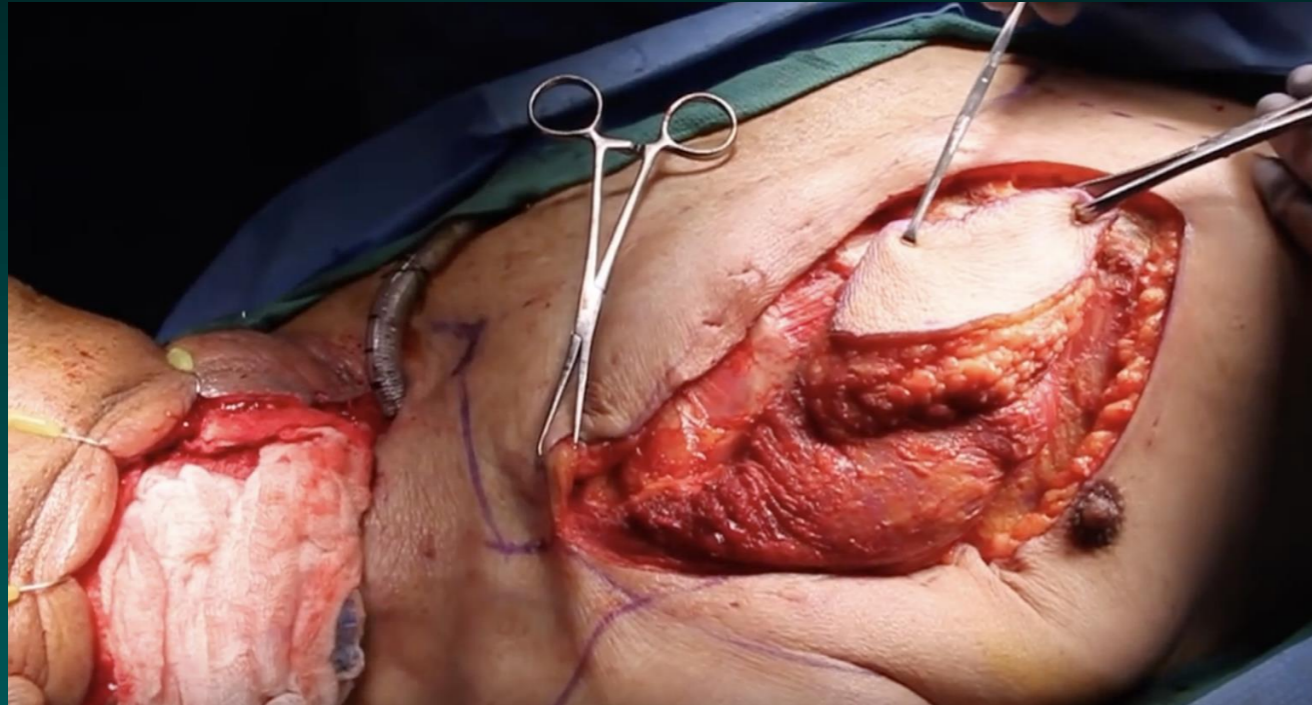


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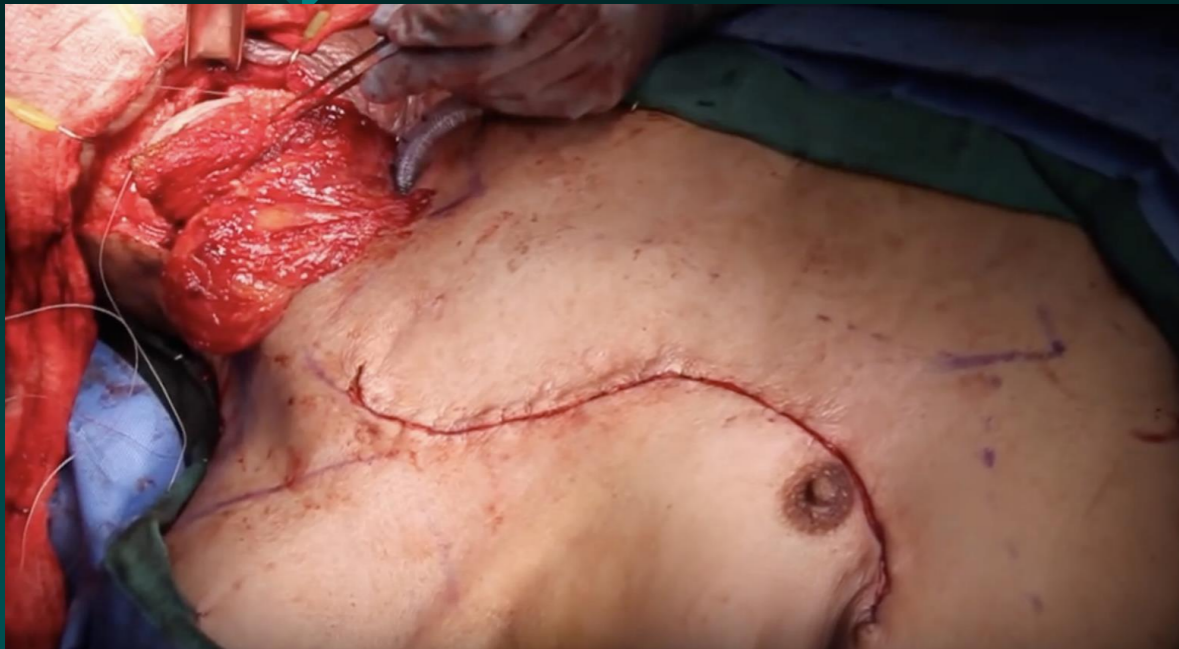


# *PMM for Buccal Mucosa Recon.*





# *PMM for Buccal Mucosa Recon.*





# *PMM*





# *PMM*





*PMM*





# CA.TONGUE



- 97 % squamous cell ca.
- 40 % node metastasis





# Surgical Approach for Advanced Oral tongue Cancer

1. Trans-oral approach
2. Pull-through approach
3. Mandibulotomy
4. Combined with mandibulectomy

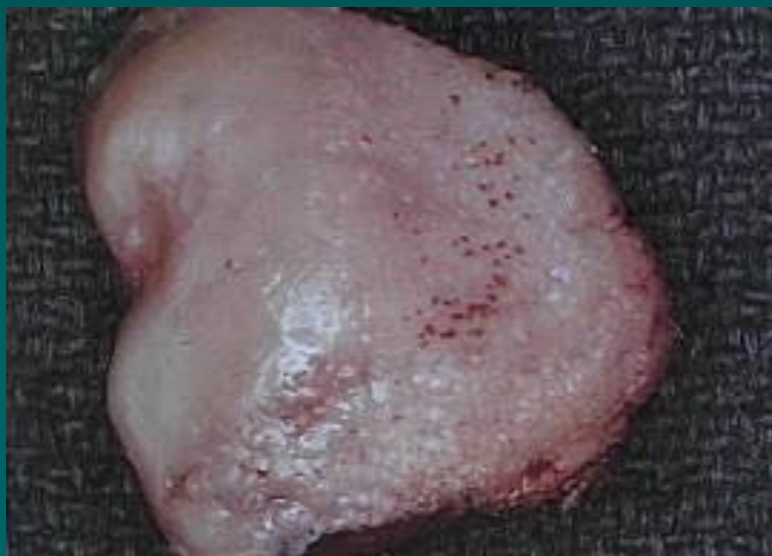
# Surgical Approach for Advanced Oral tongue Cancer

1. Trans-oral approach
2. Pull-through approach
3. Mandibulotomy
4. Combined with mandibulectomy





# Wide excision of tongue cancer





# Primary closure





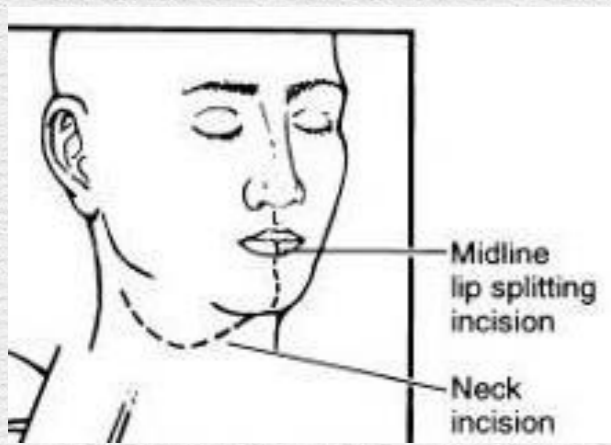
# Primary closure



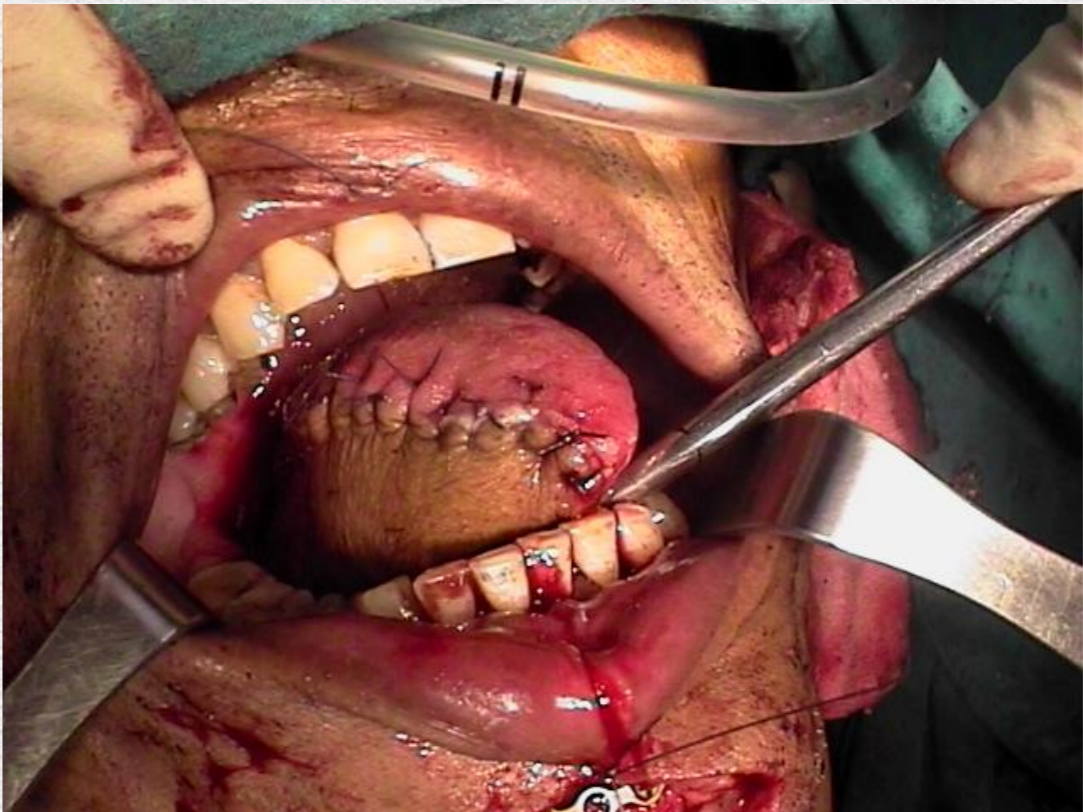
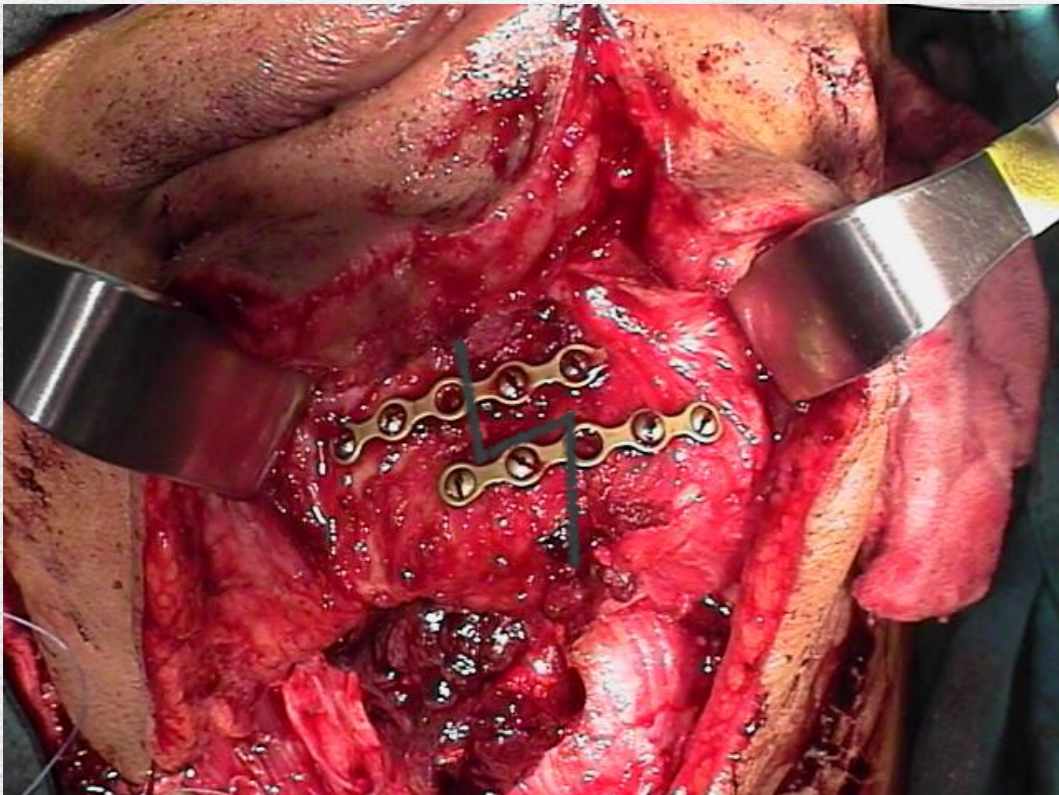
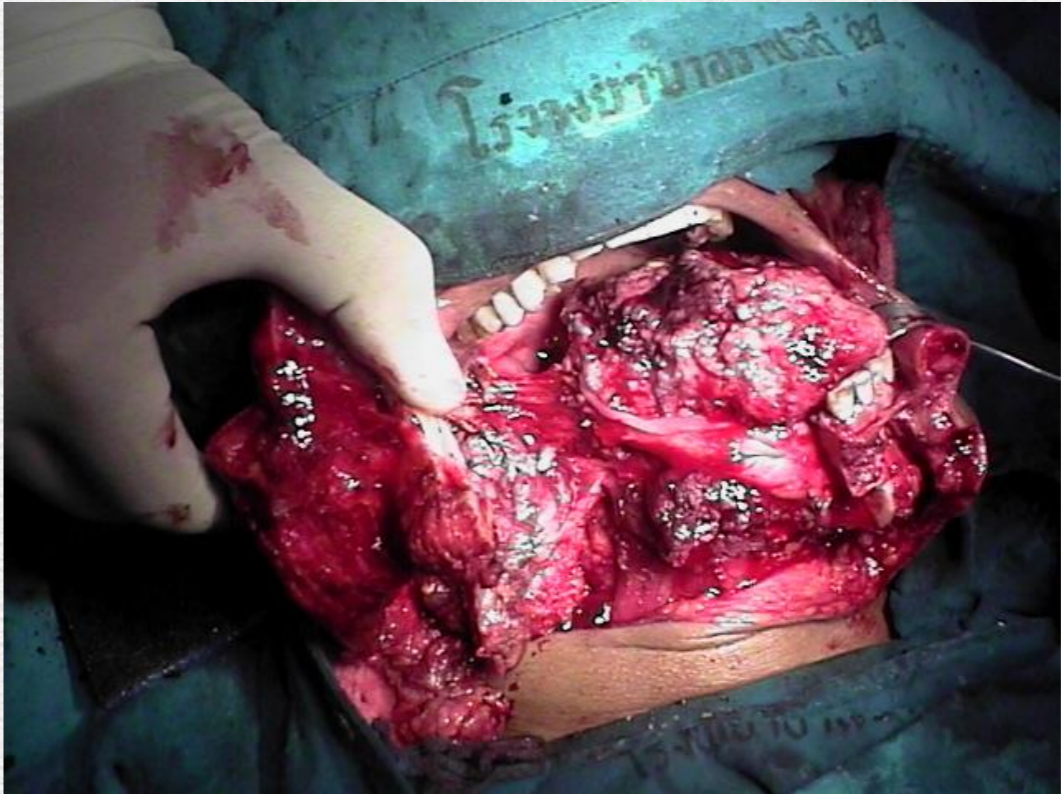
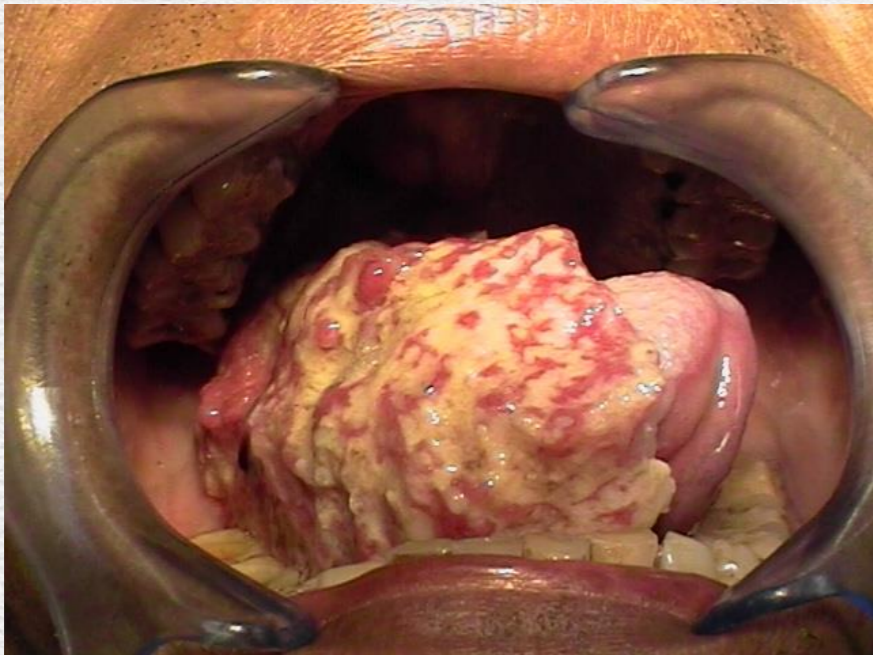
# Pull-Through Approach







# Mandibulotomy



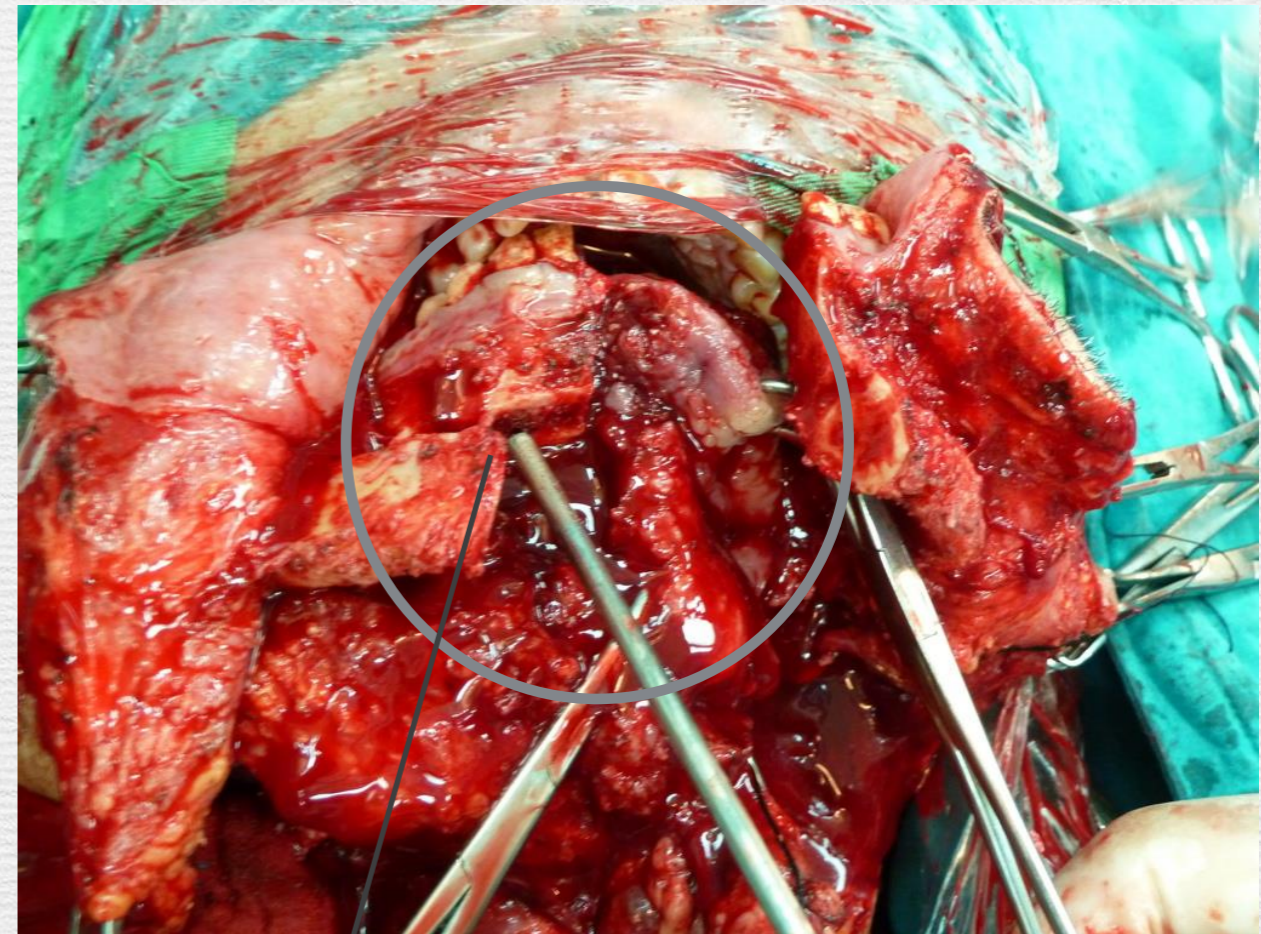
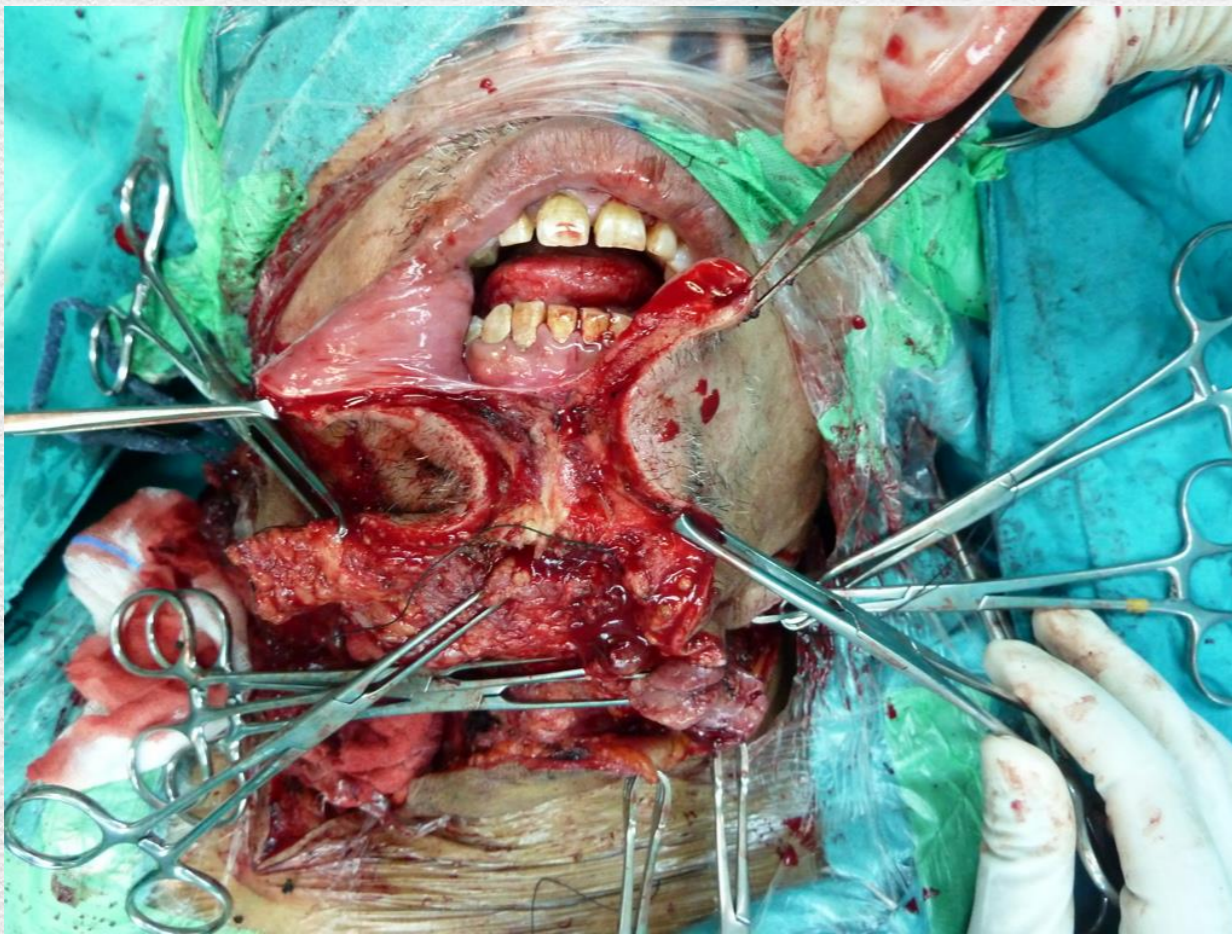




Tongue cancer invade floor of mouth and close to mandible

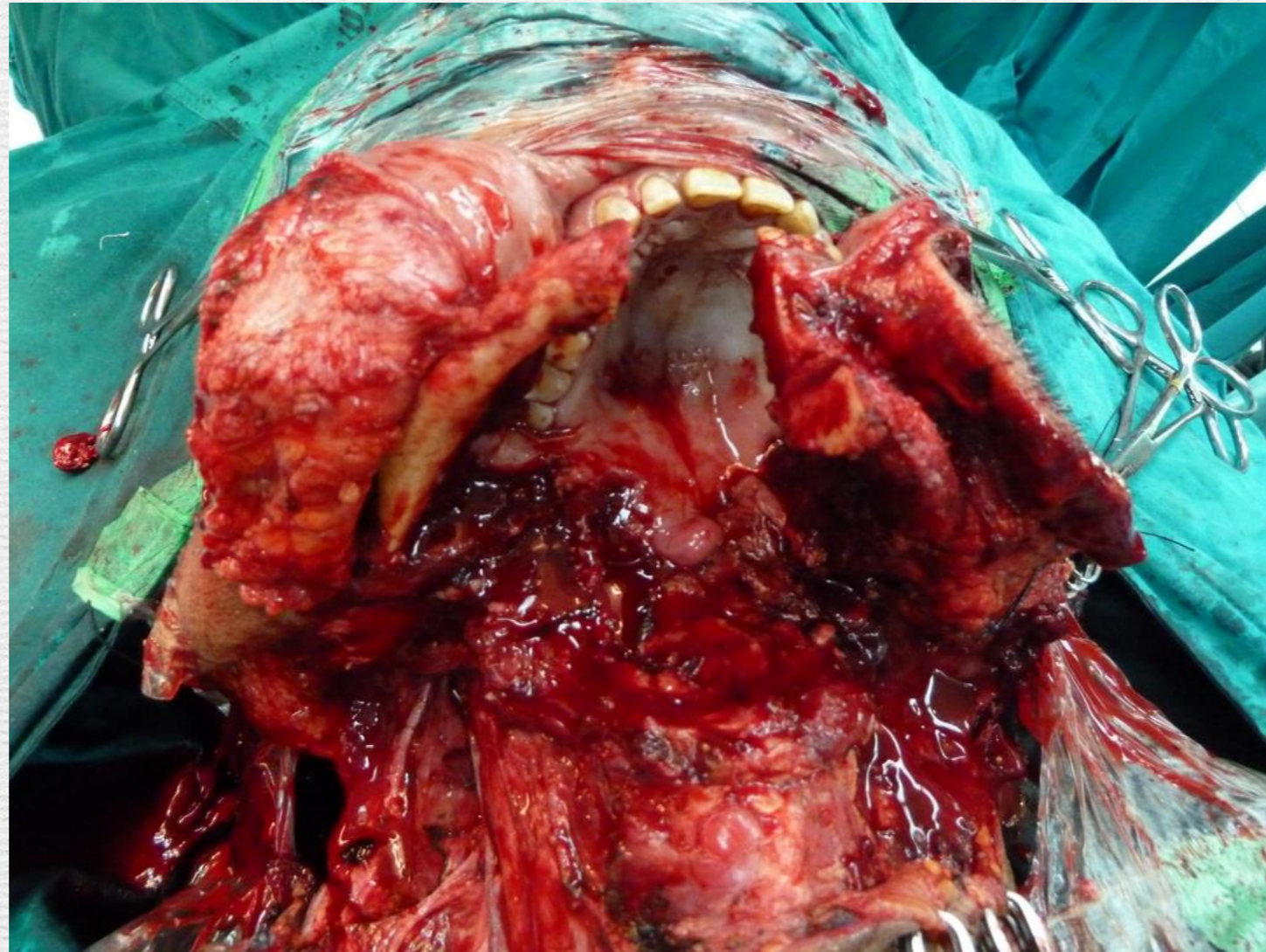


Tongue cancer invades floor of mouth and close to mandible



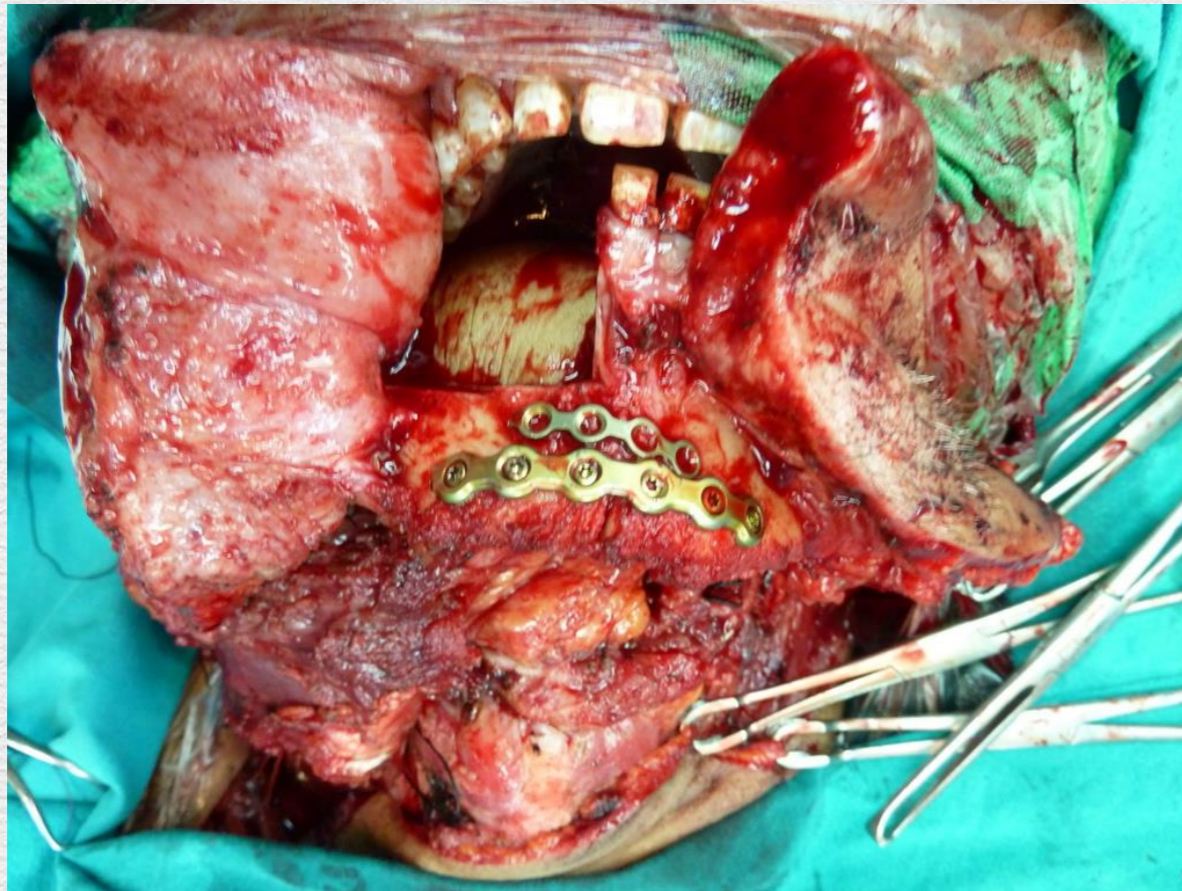
Mandibulotomy and Marginal Mandibulectomy

Tongue cancer invade floor of mouth and close to mandible

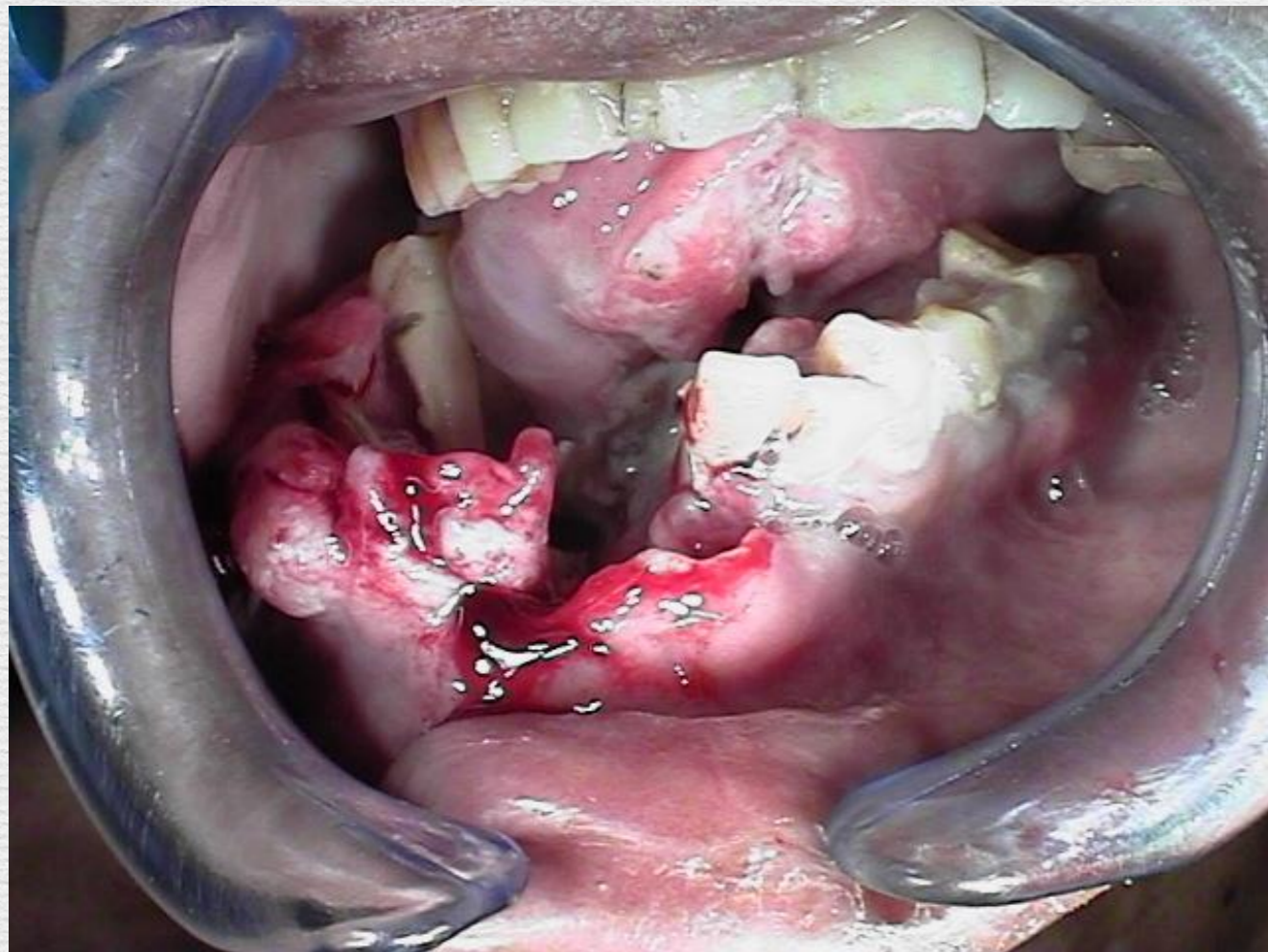


Mandibulotomy and Marginal Mandibulectomy

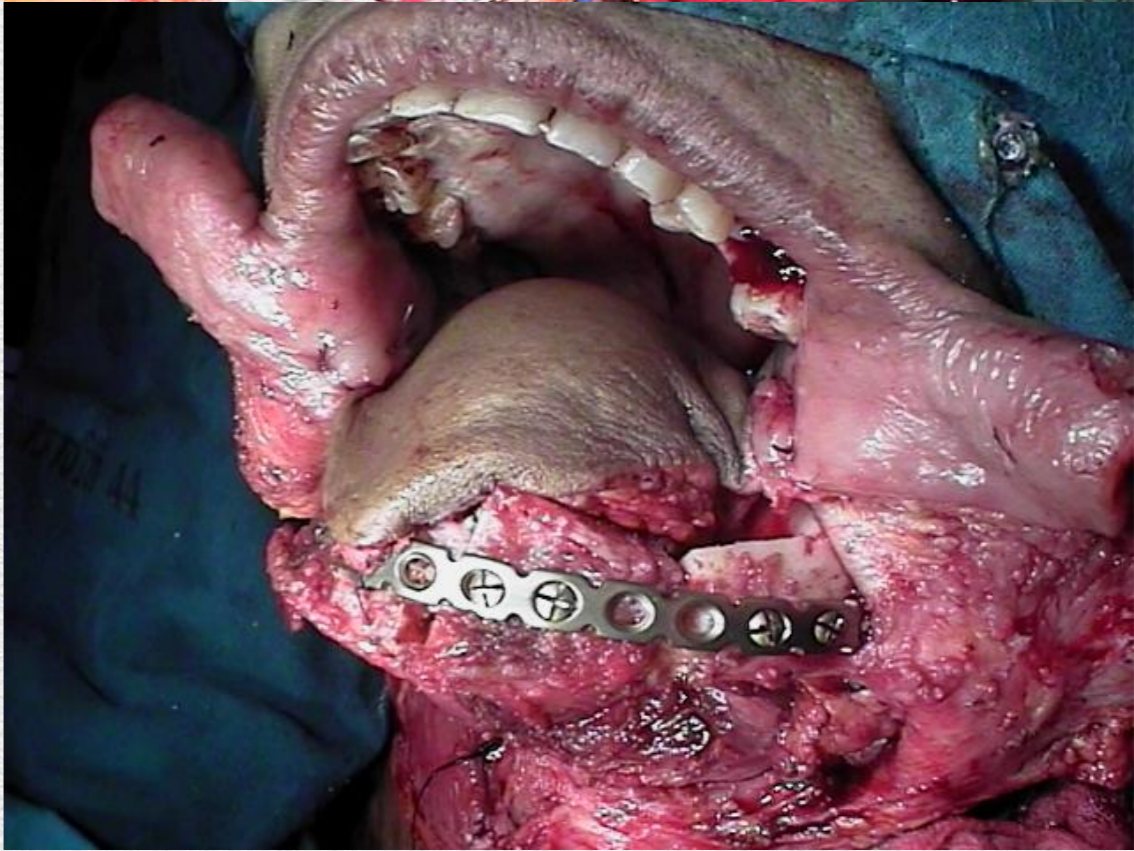
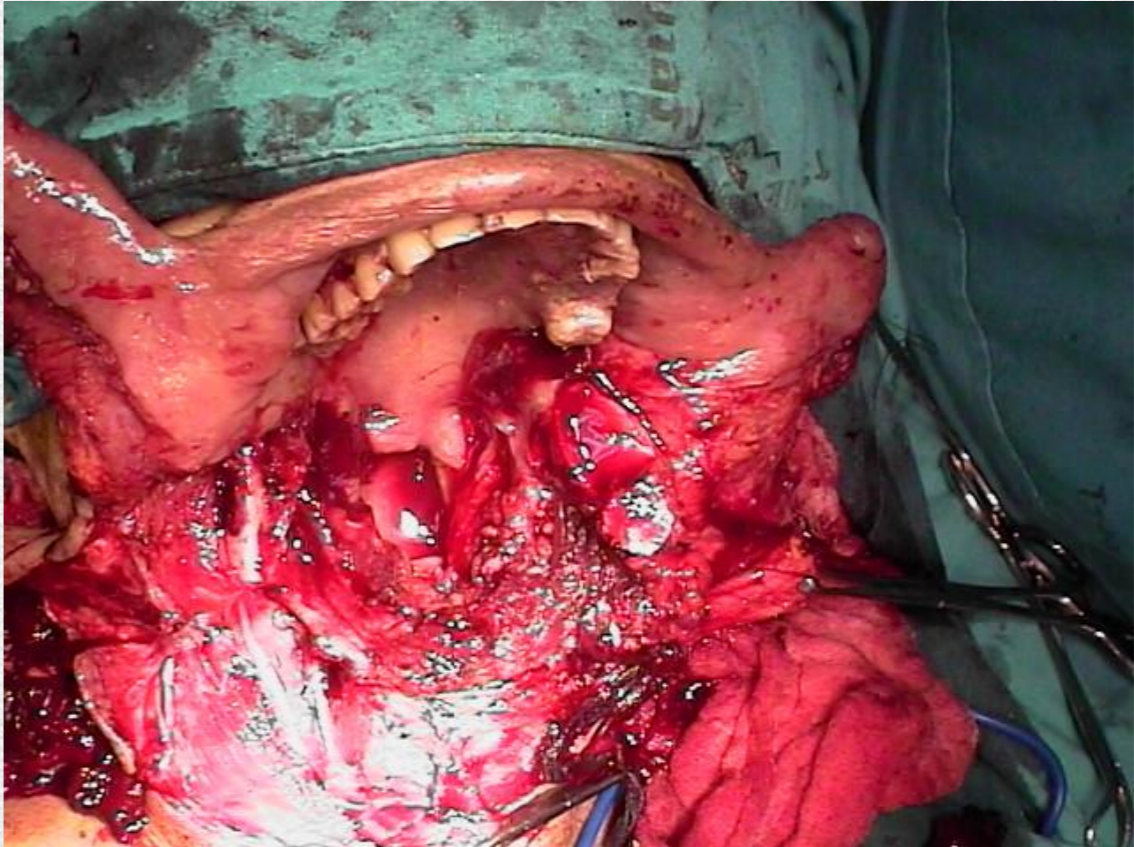
Tongue cancer invade floor of mouth and close to mandible

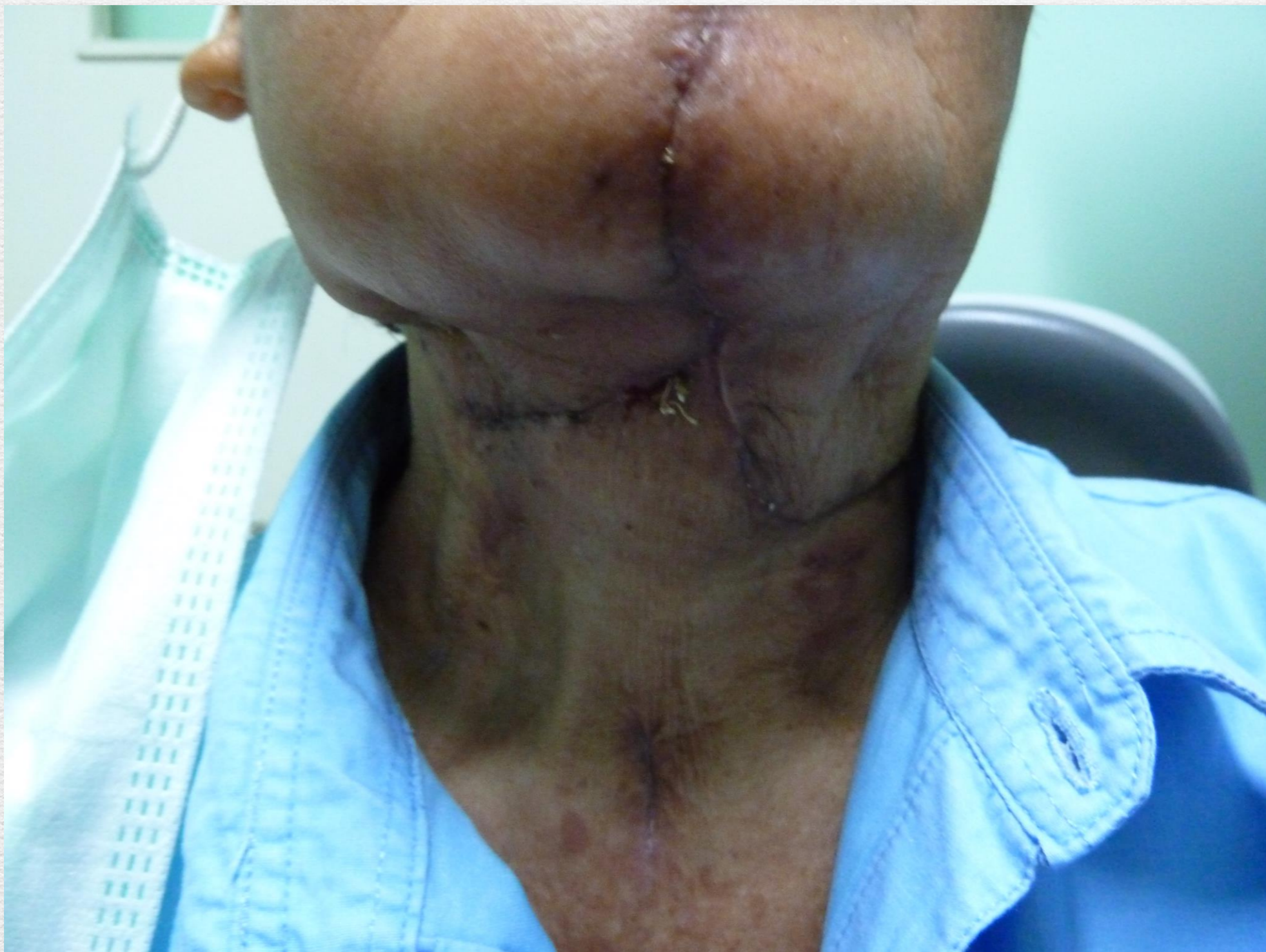


# Tongue cancer invade floor of mouth and mandible



# Combined with Mandibulotomy







# Tongue Reconstruction

## Successful functional reconstruction

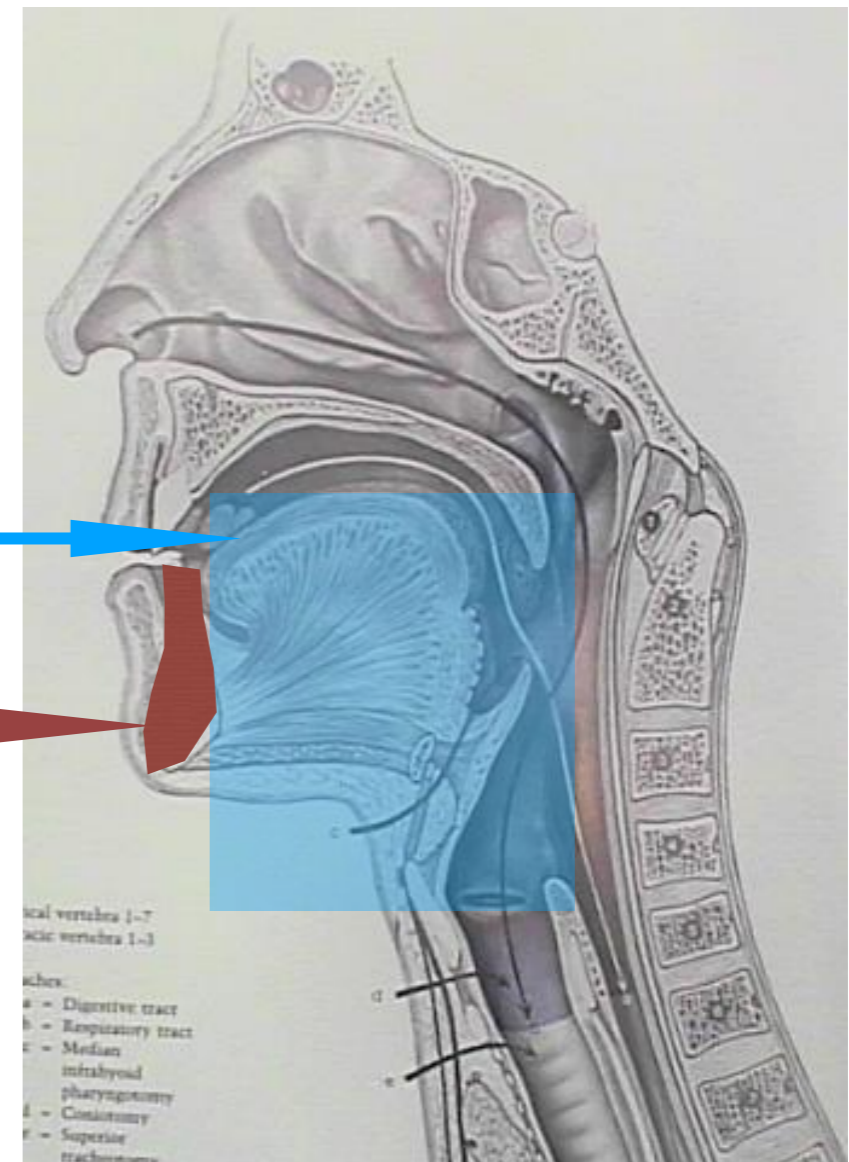
- Mastication
- Articulation
- Oral hygiene
- Deglutition
- Prevent aspiration

## Approach to tongue reconstruction is base on:

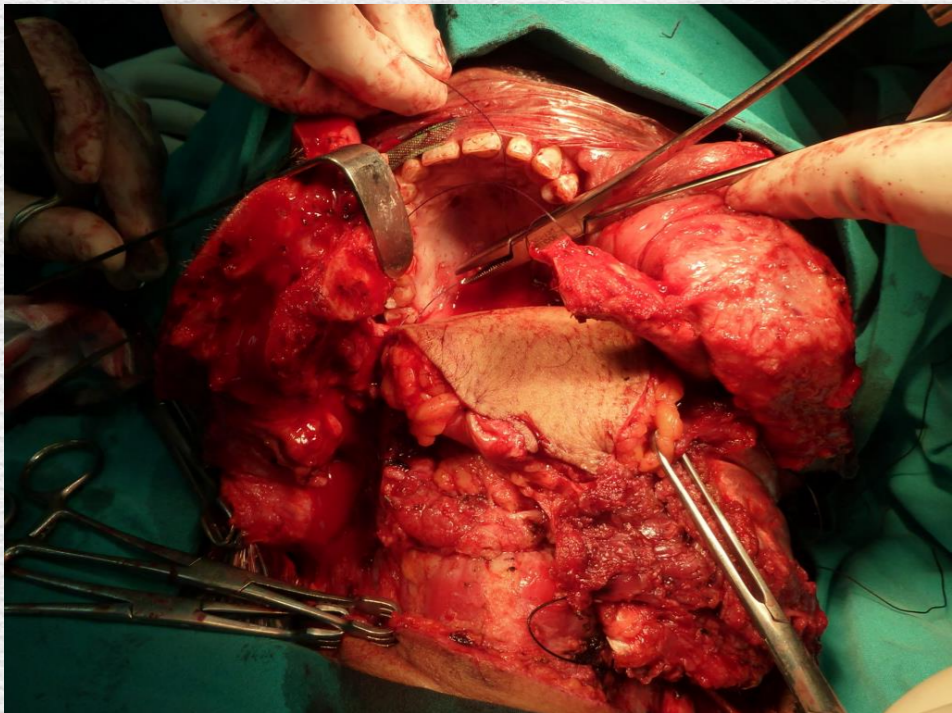
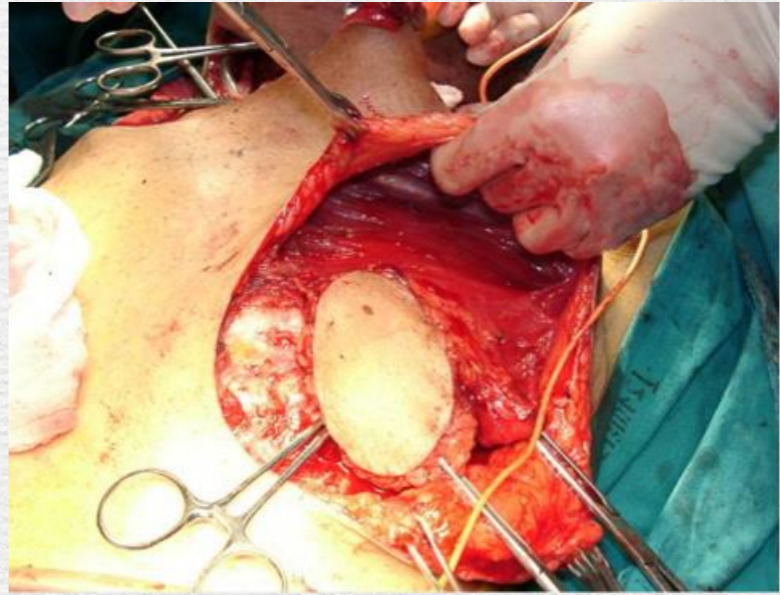
- extension of tumor
- Functional status of the residual tongue
- Associated with other tissue loss eg.;  
Floor of mouth, Mandibulectomy, Buccal mucosa excision.

Tongue and Soft Tissue Defects

Bone Defect

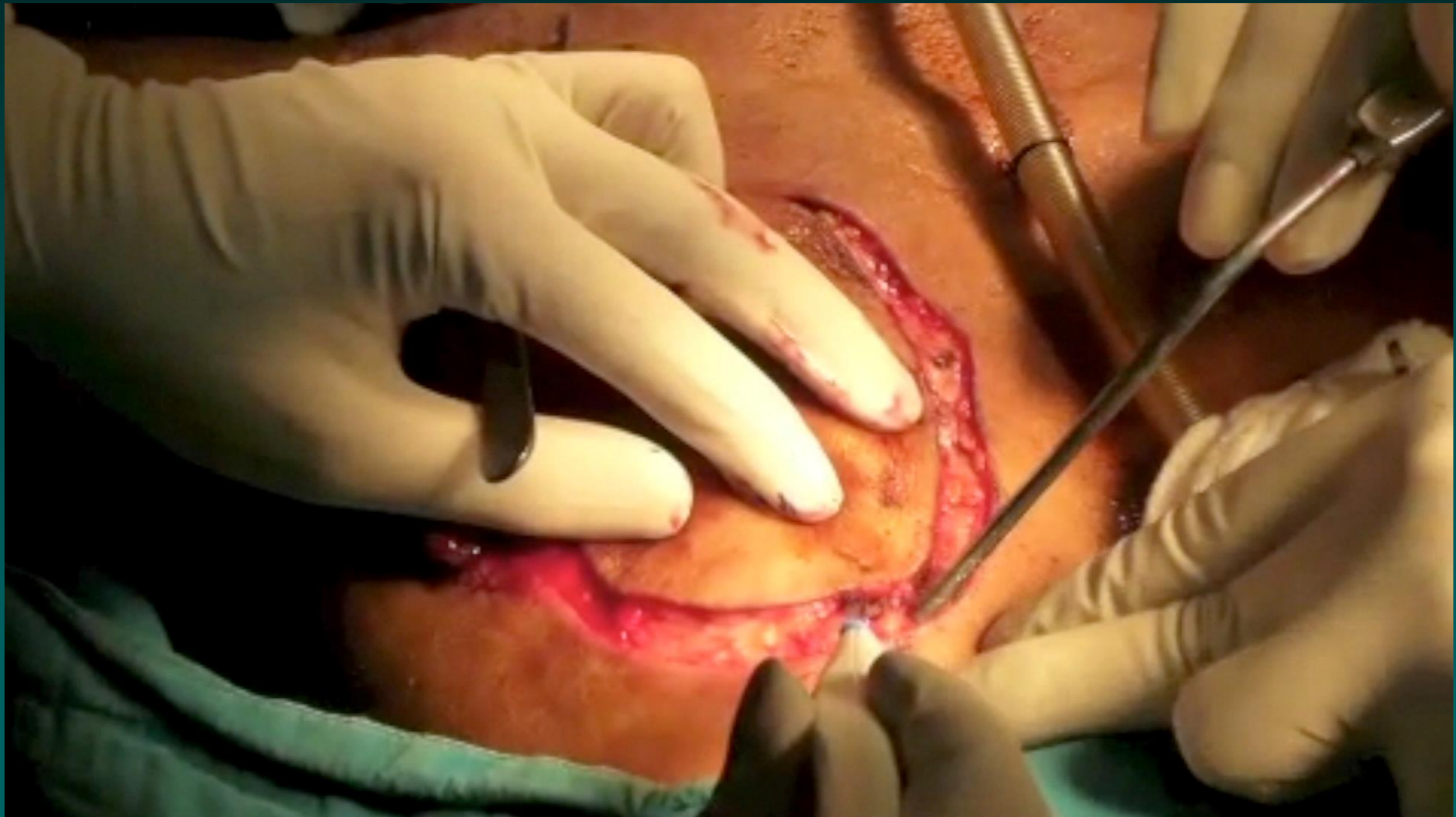


# PMM Flap



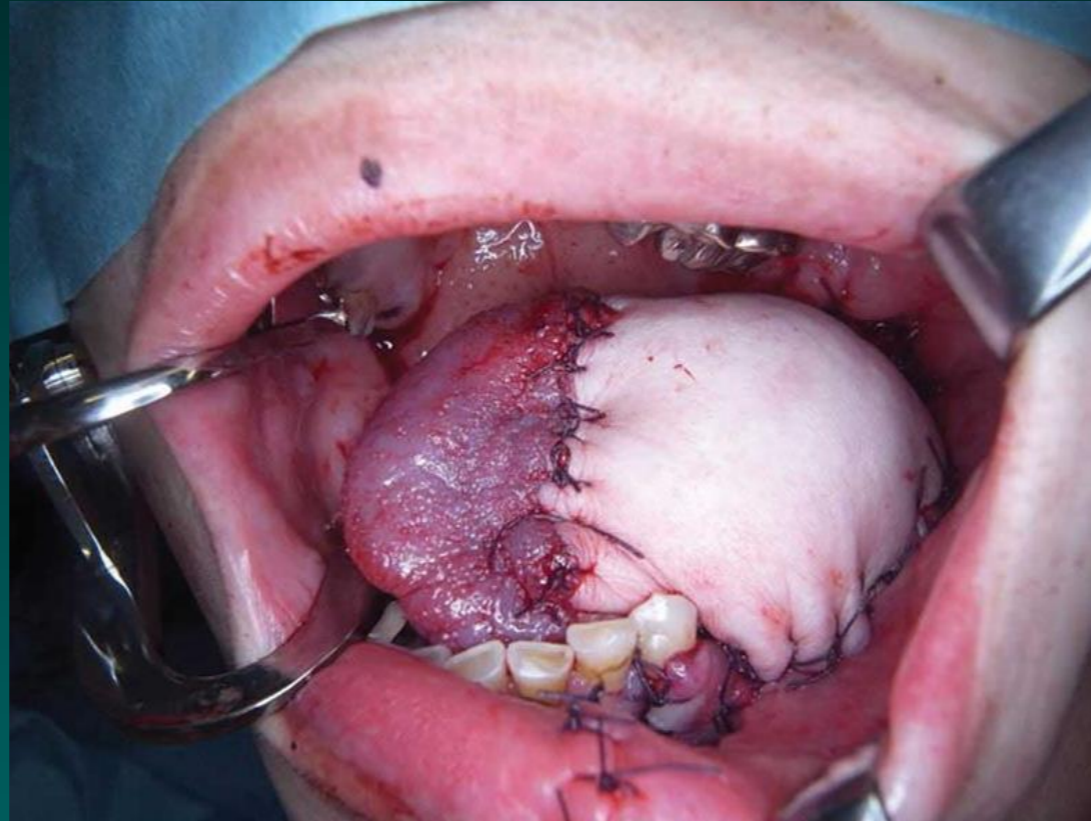
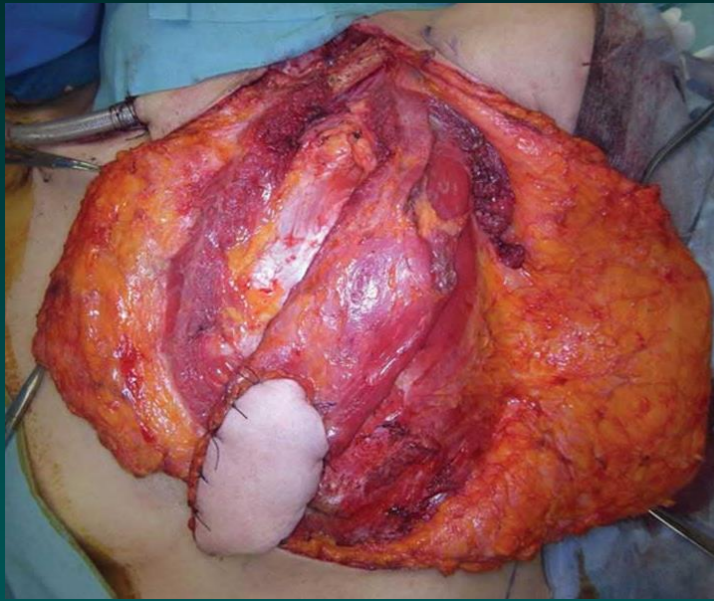


# *PMM for Buccal Mucosa Recon.*



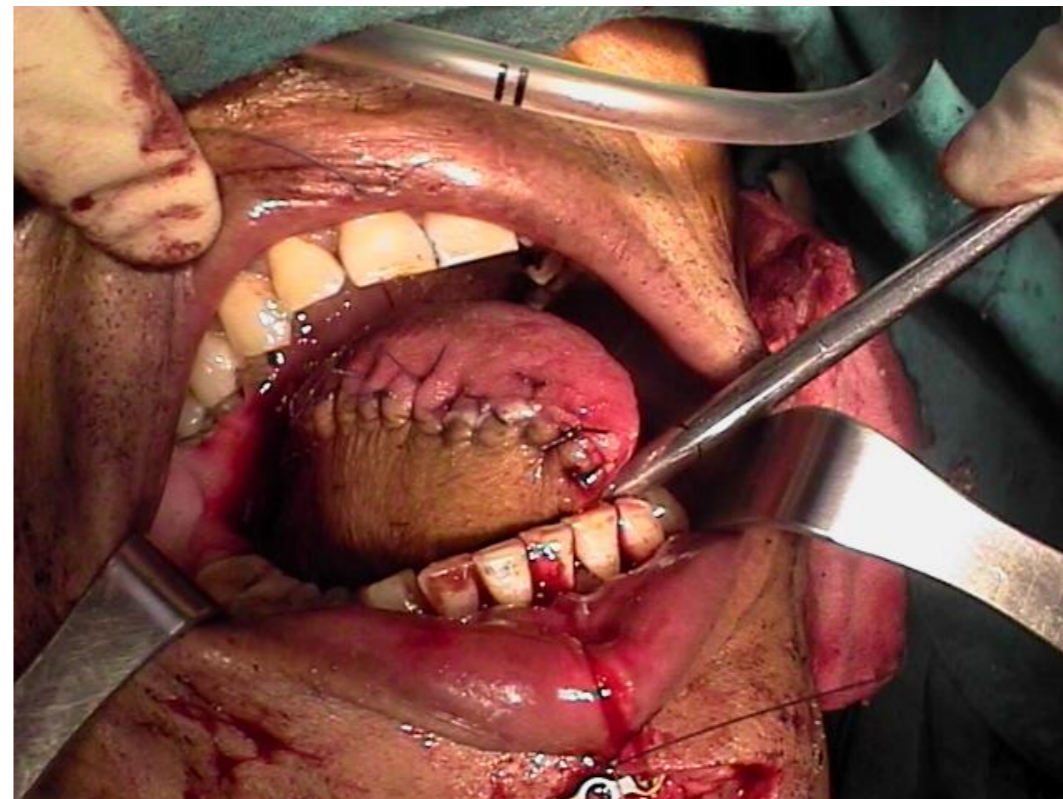
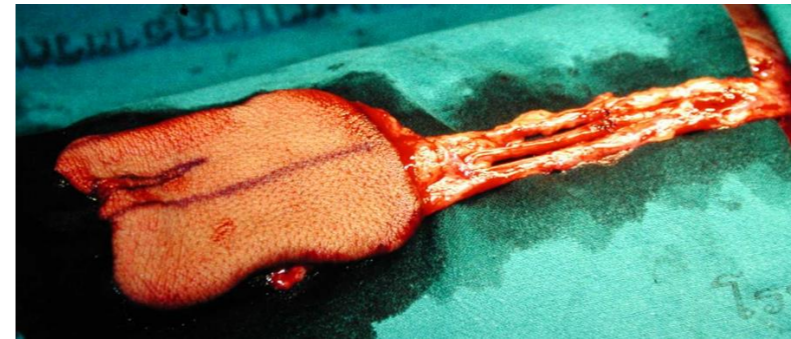
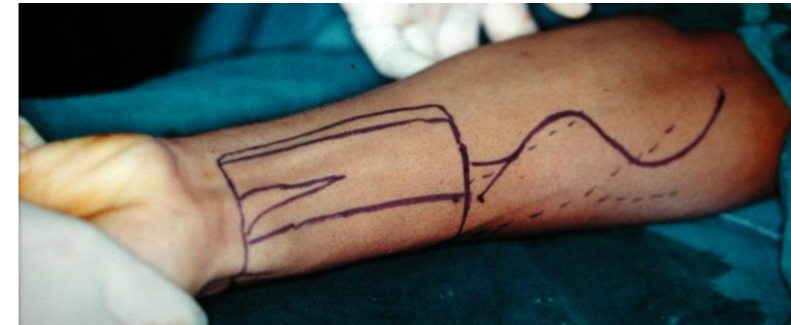
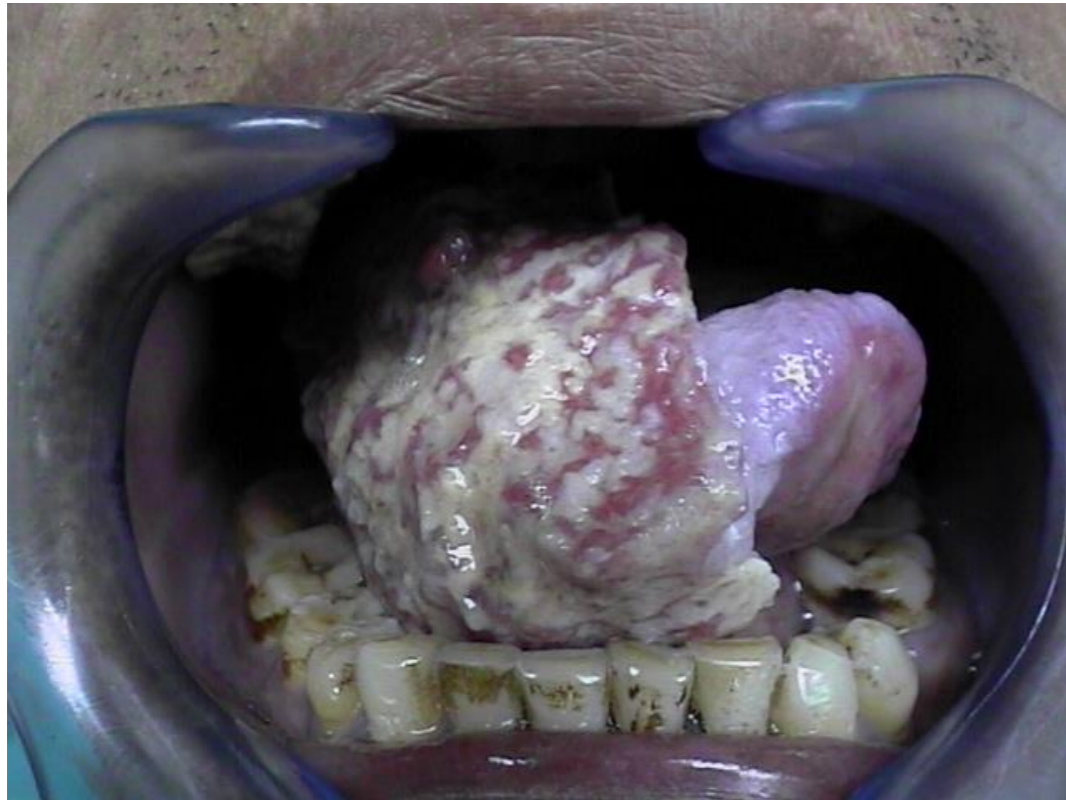


# *PMM for Buccal Mucosa Recon.*



# Tongue Reconstruction

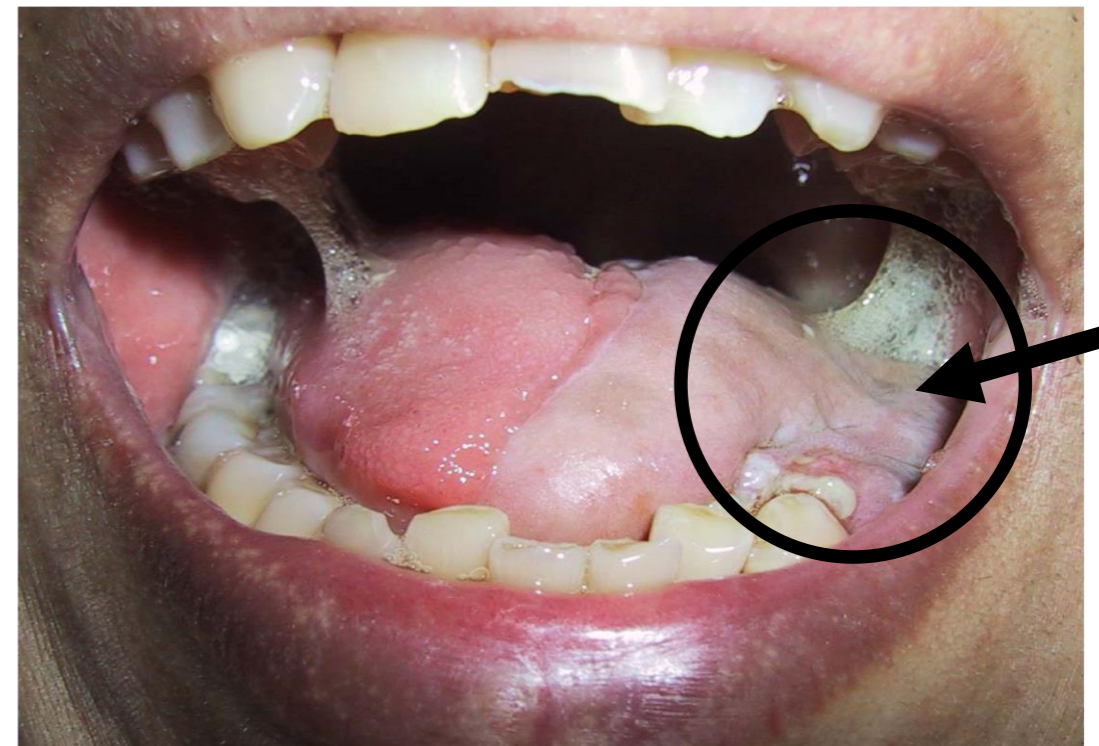
## Hemiglossectomy and Radial Forearm Free Flap





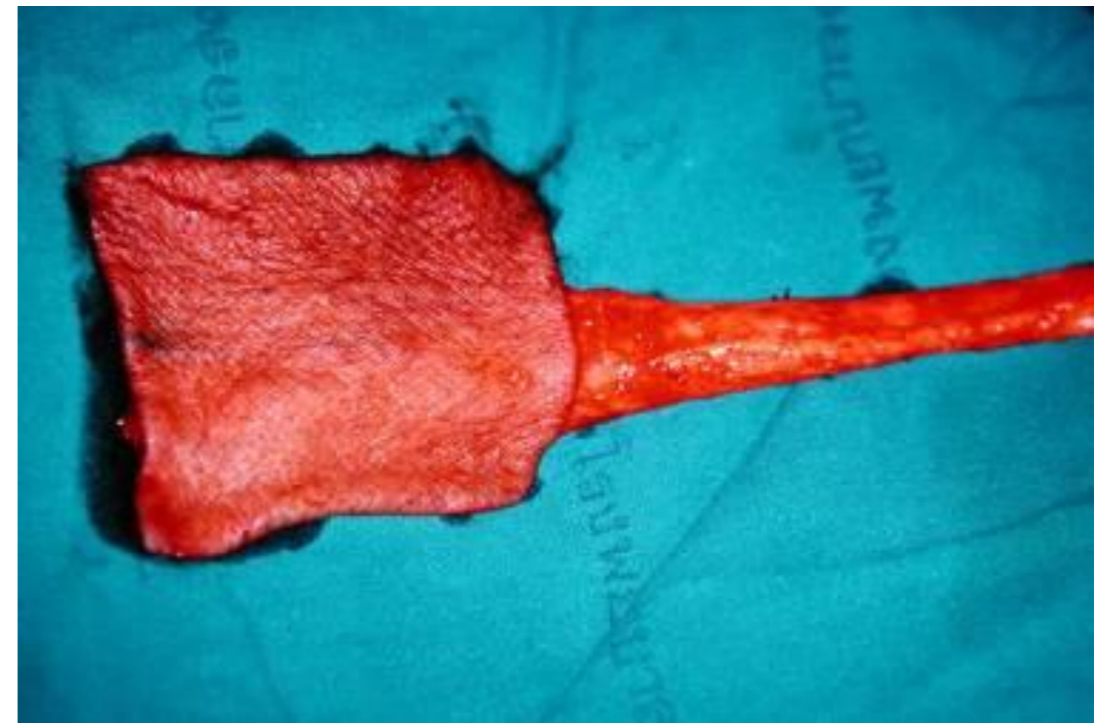
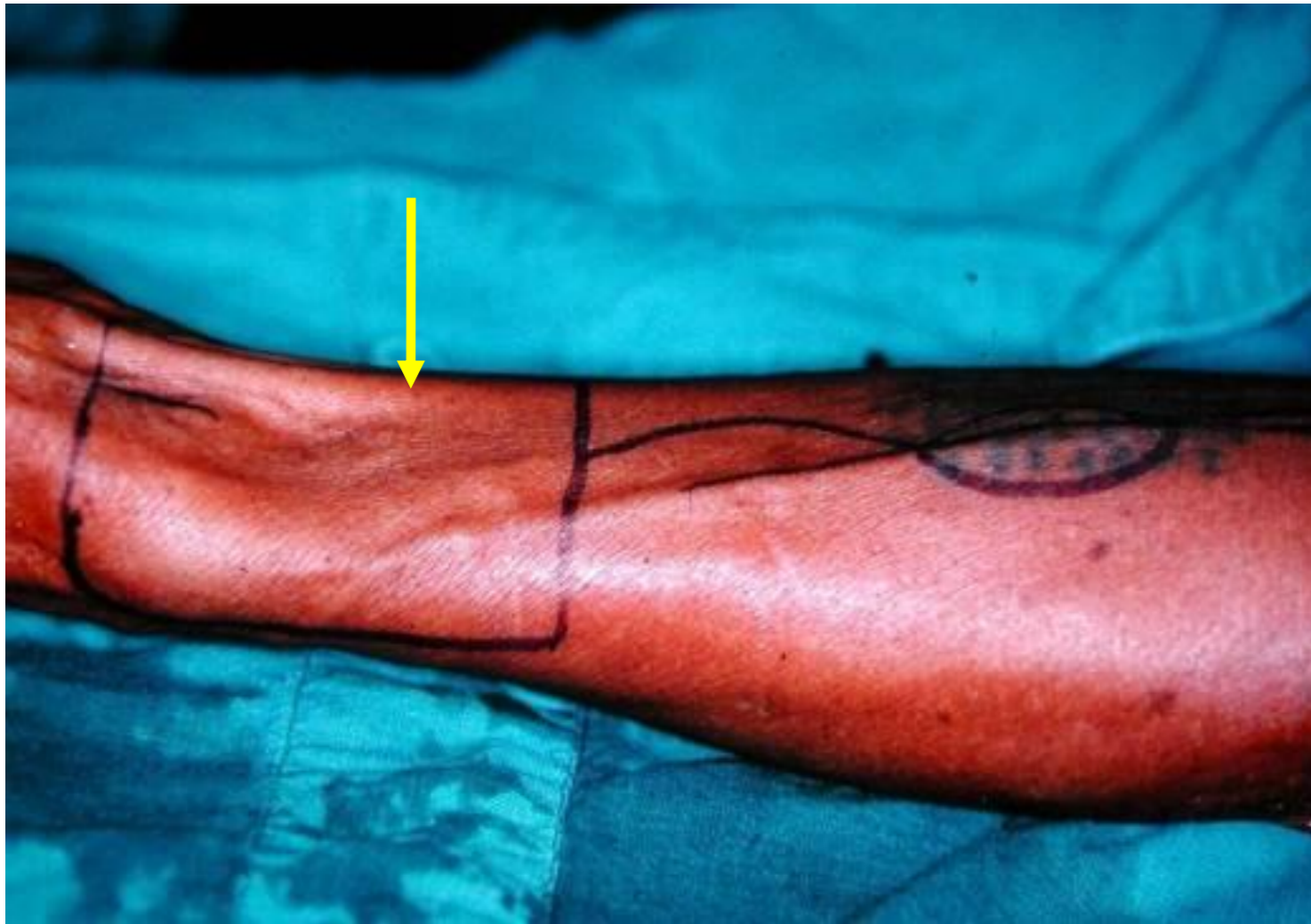
# Tongue Reconstruction

## Hemiglossectomy and Radial Forearm Free Flap





# RADIAL FOREARM FREE FLAP



# Tongue Reconstruction

## Hemiglossectomy and Radial Forearm Free Flap



# Tongue Reconstruction

## 2/3 glossectomy with ALT free flap

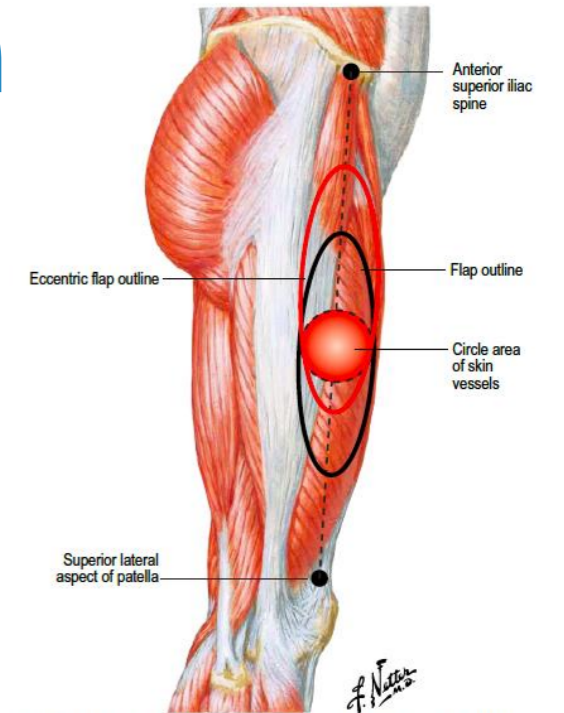
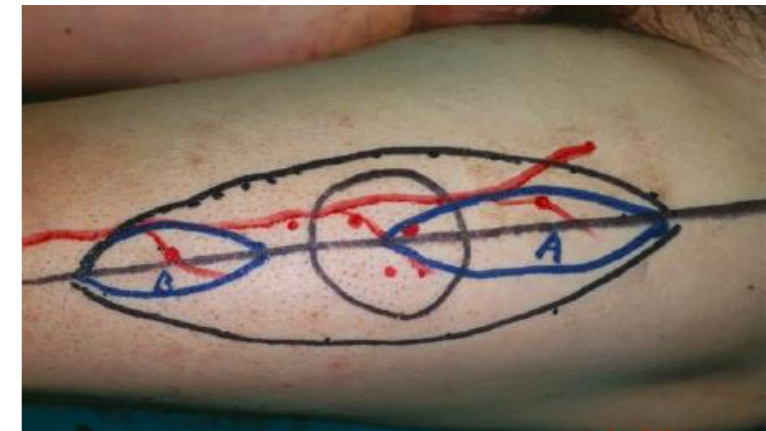


Figure 37.6 Flap markings. (Reprinted from Netter Anatomy Illustration Collection. © Elsevier Inc. All Rights Reserved.)



# Tongue Reconstruction

## Total Glossectomy and ALT Free Flap



# Tongue Reconstruction

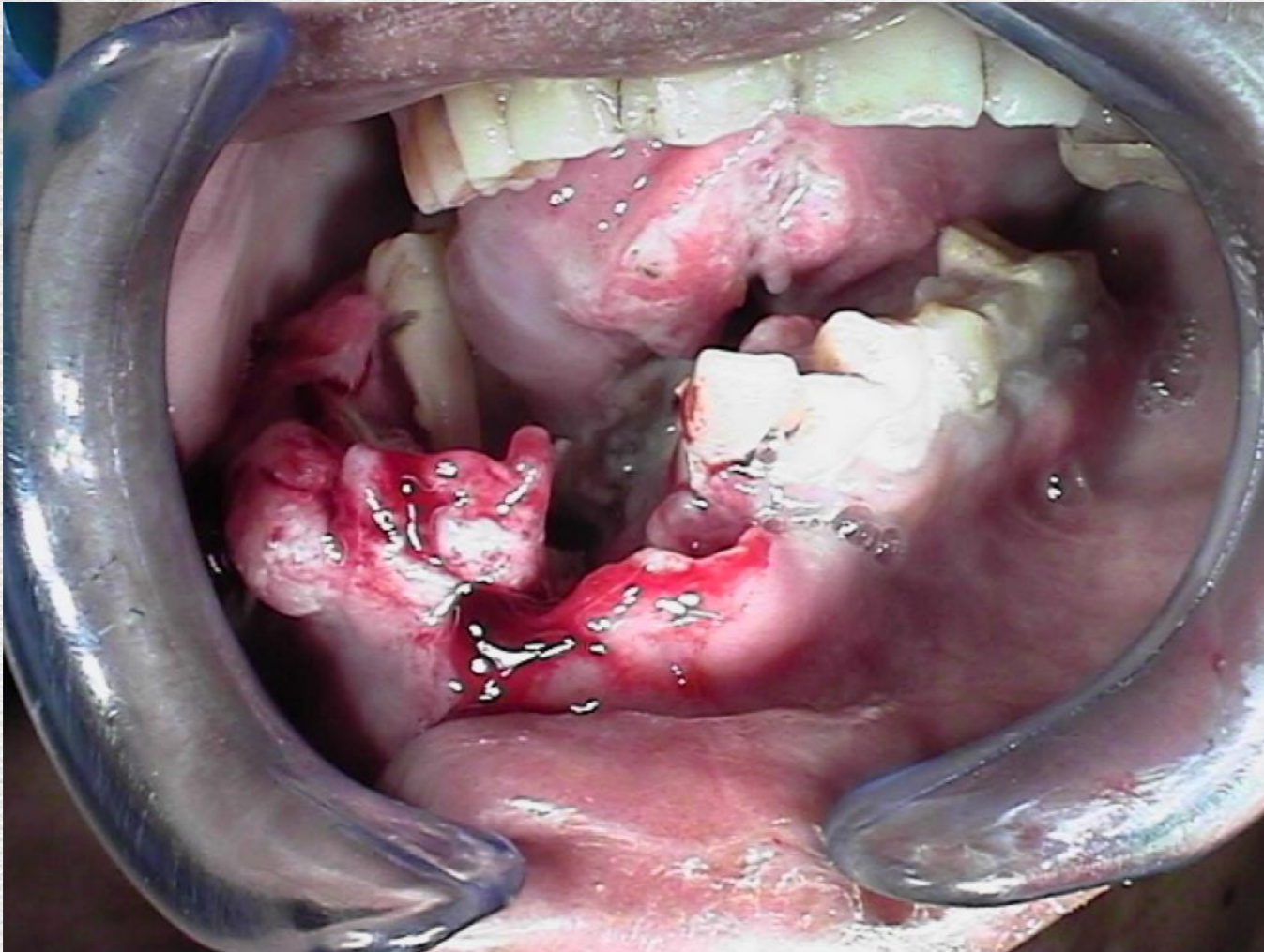
## Total Glossectomy and ALT Free Flap



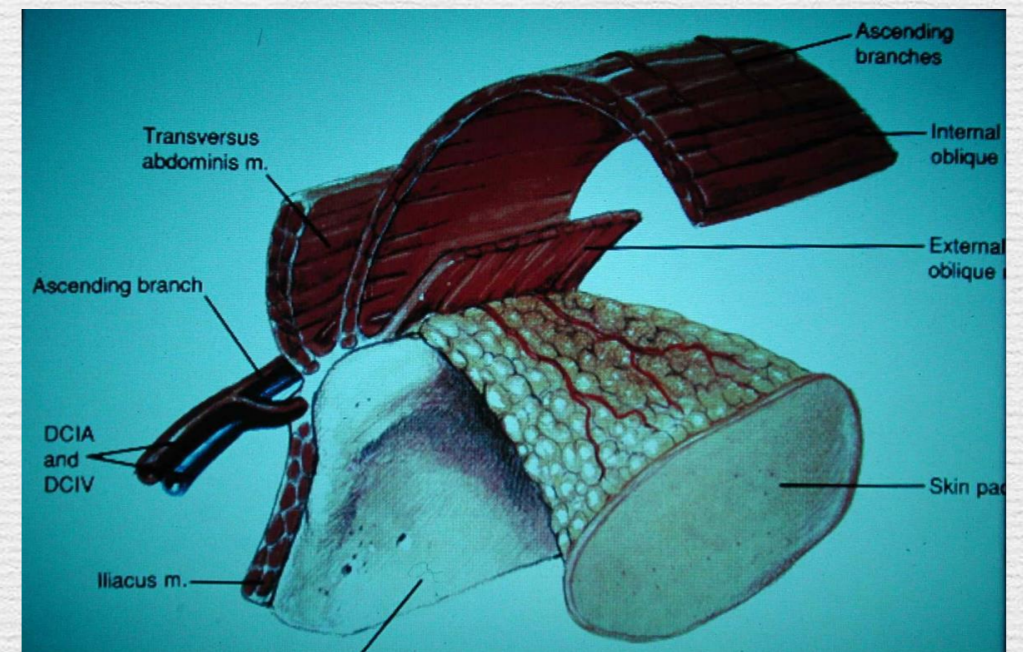
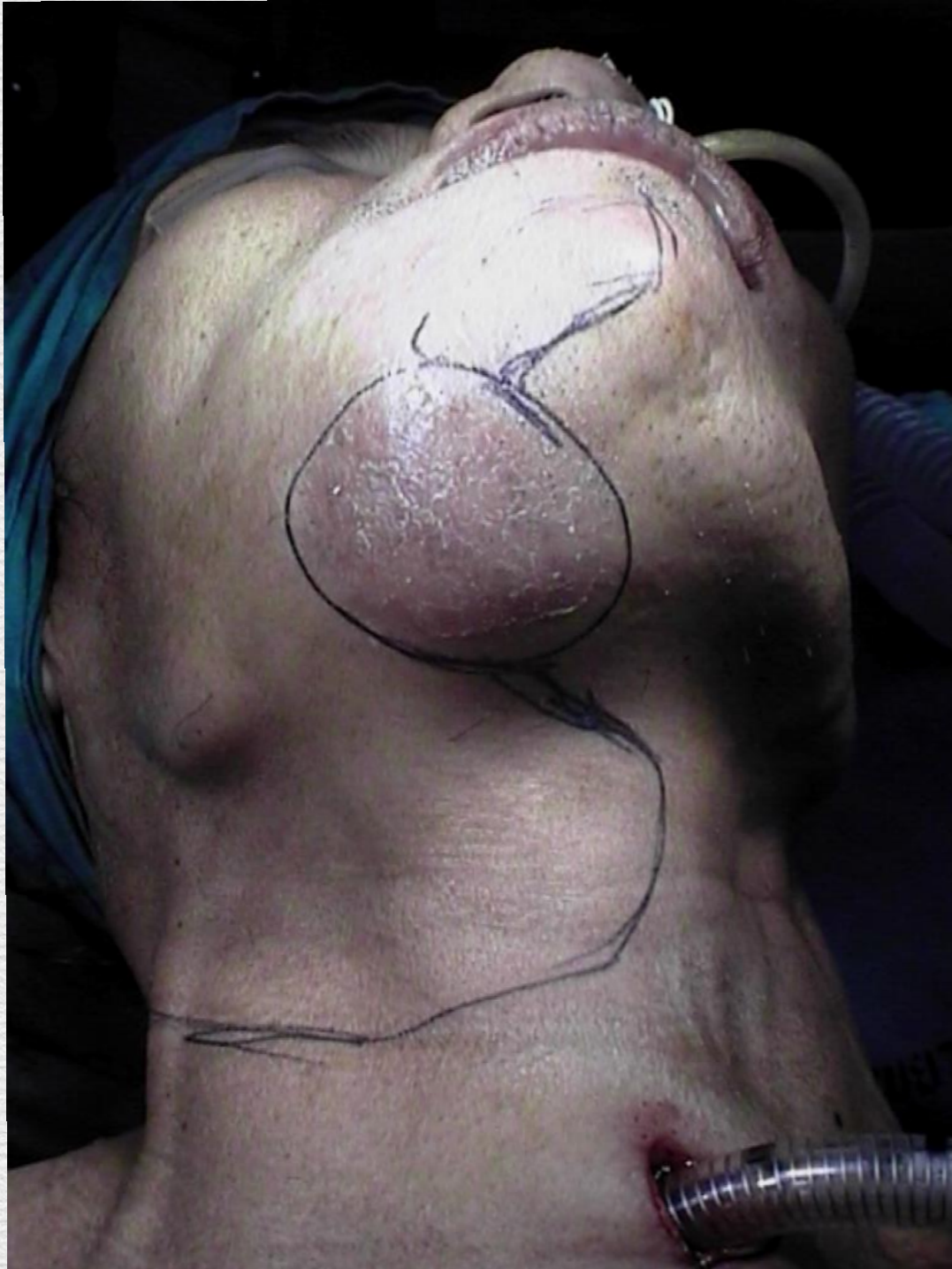
# Tongue Reconstruction



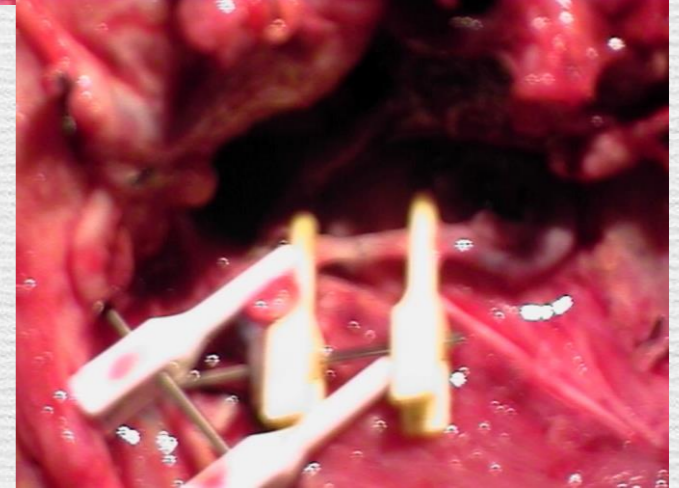
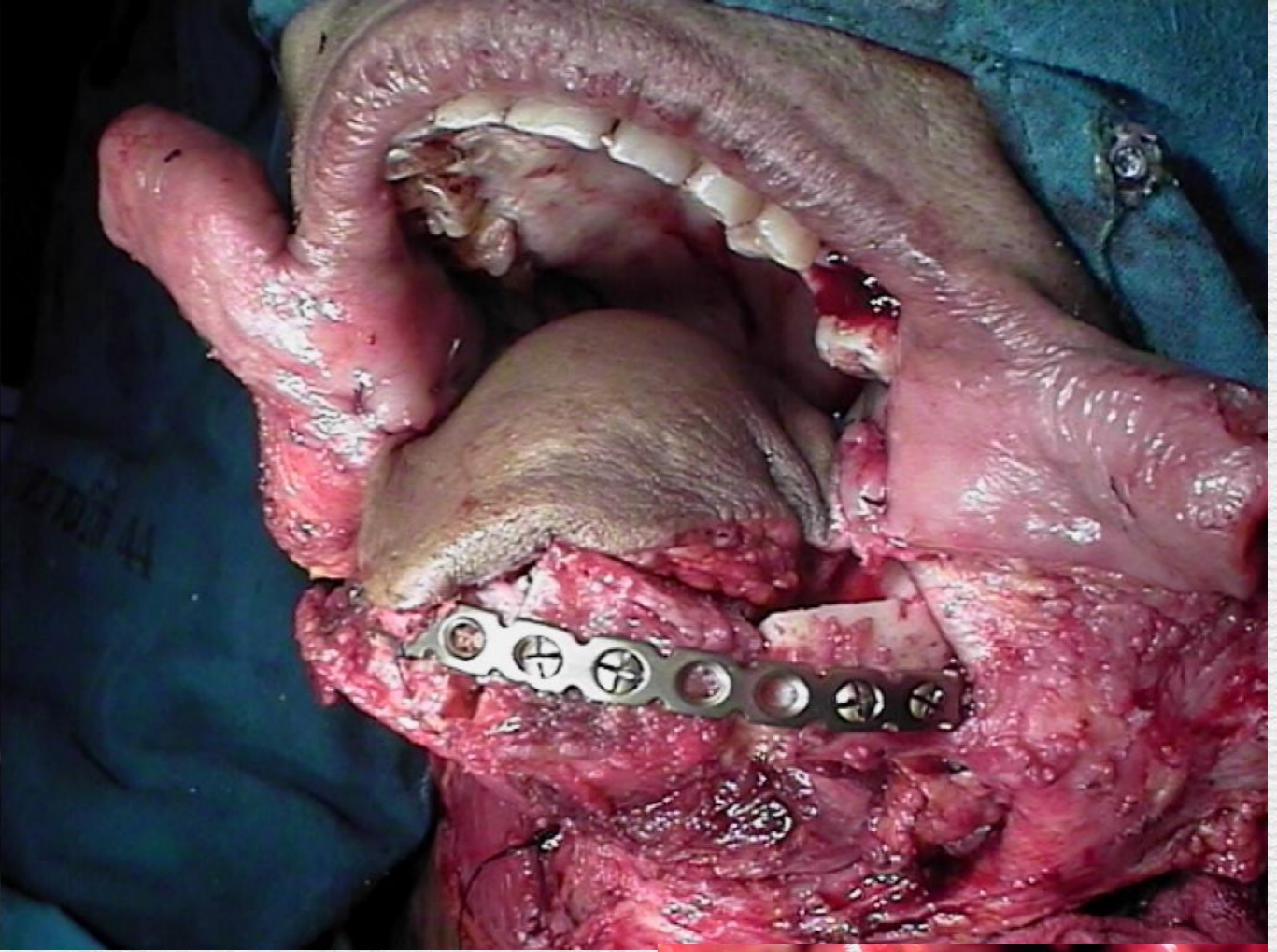
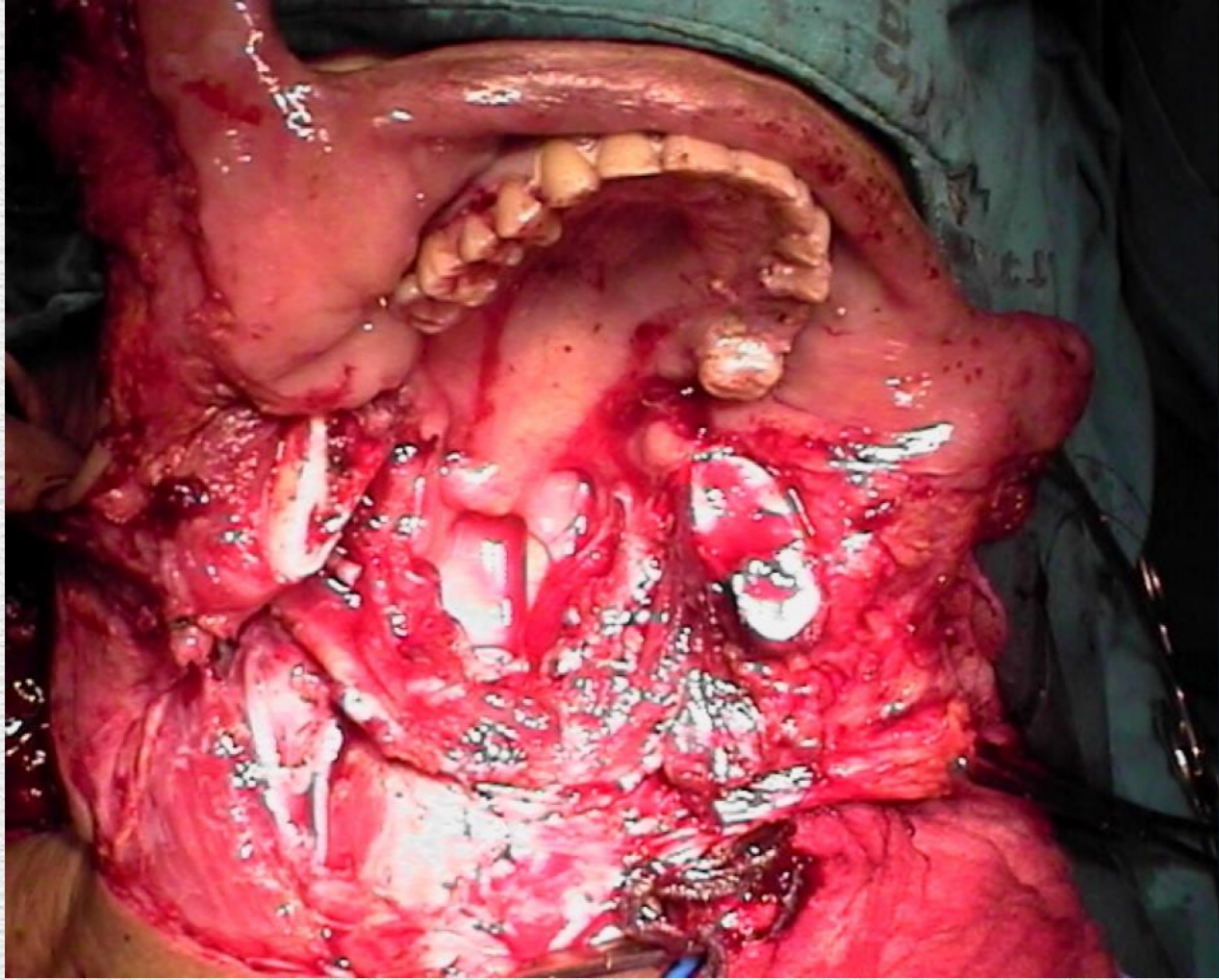
# CA Tongue invade Mandible



# Iliac Crest Free Flap











# Hard palate tumor





# CA.FLOOR OF MOUTH

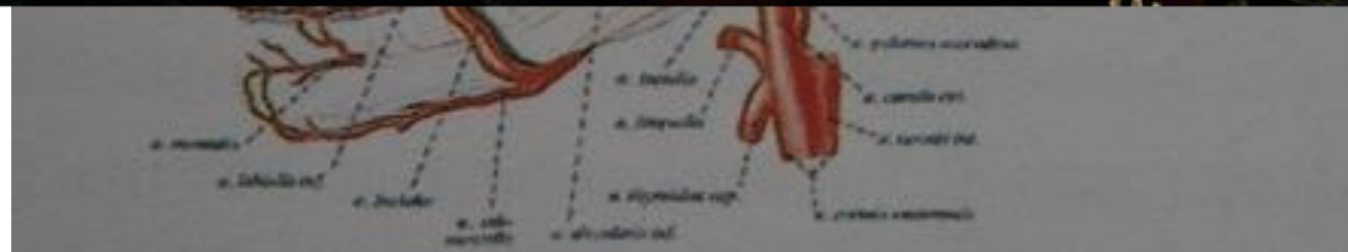
50 % node metastasis  
Mostly Squamous cell ca.



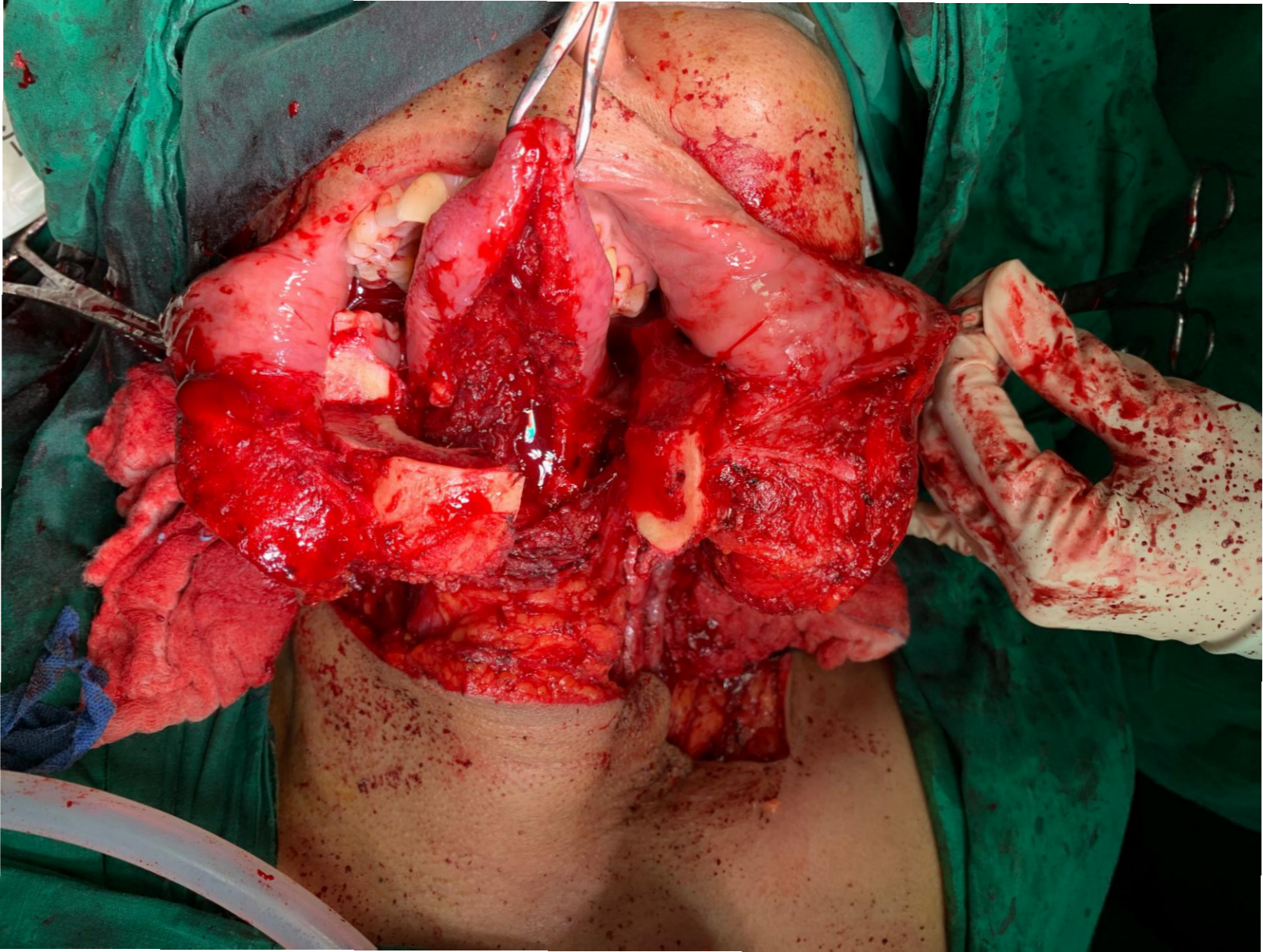
# Naso-Labial Flap



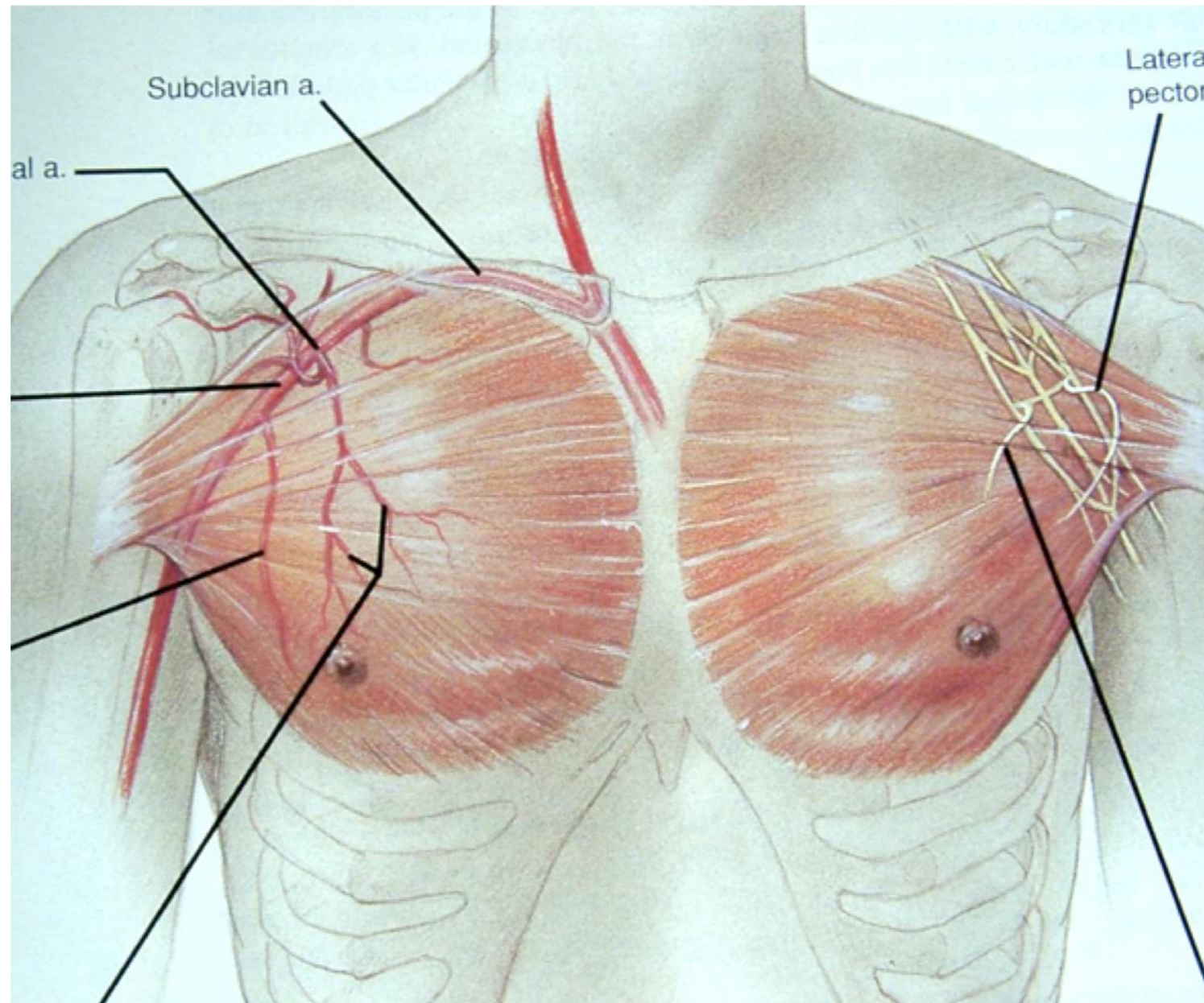
# Nasolabial flap



# Defect after Mandibulotomy and Excision of Floor of Mouth



# Pectoralis major myocutaneous flap





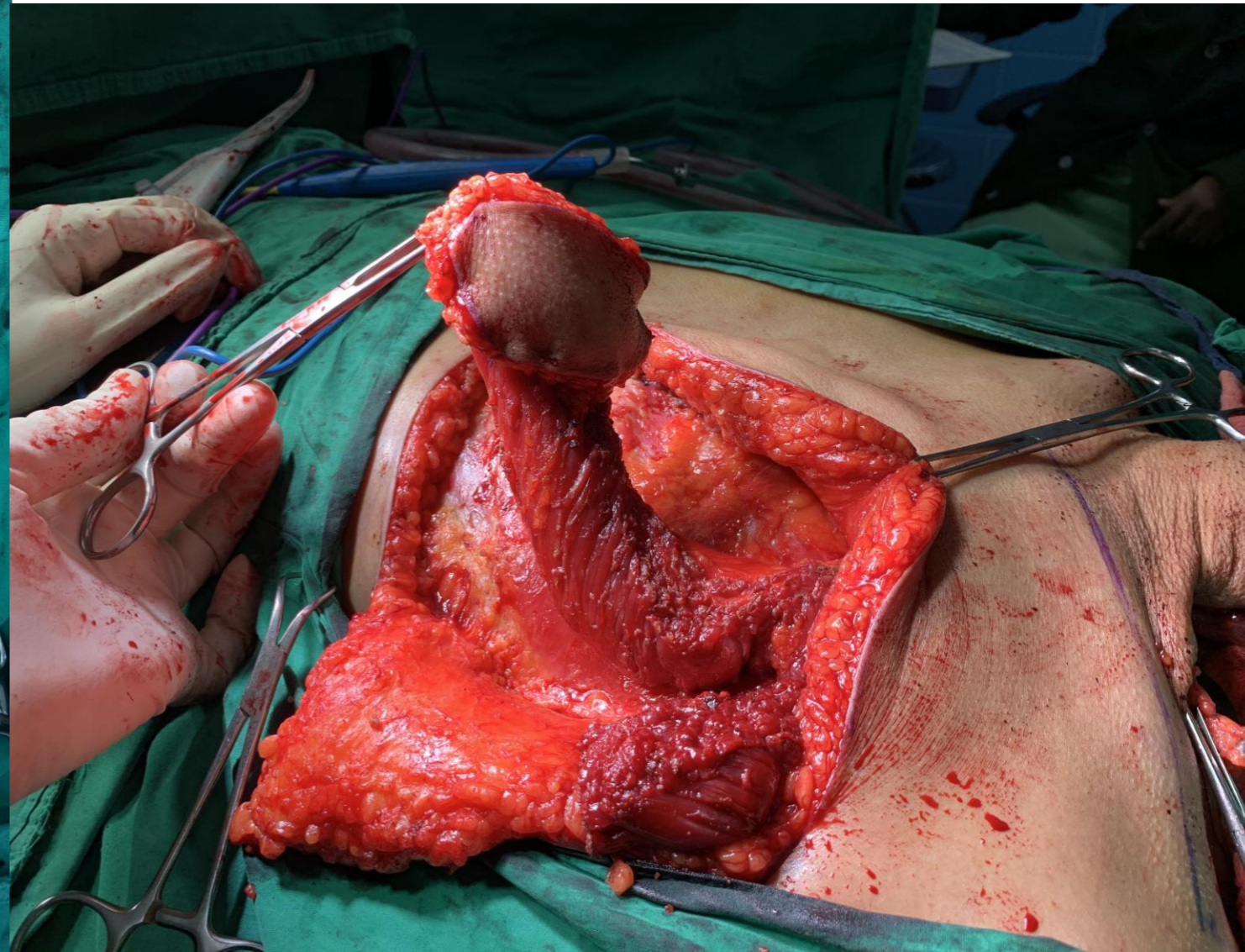
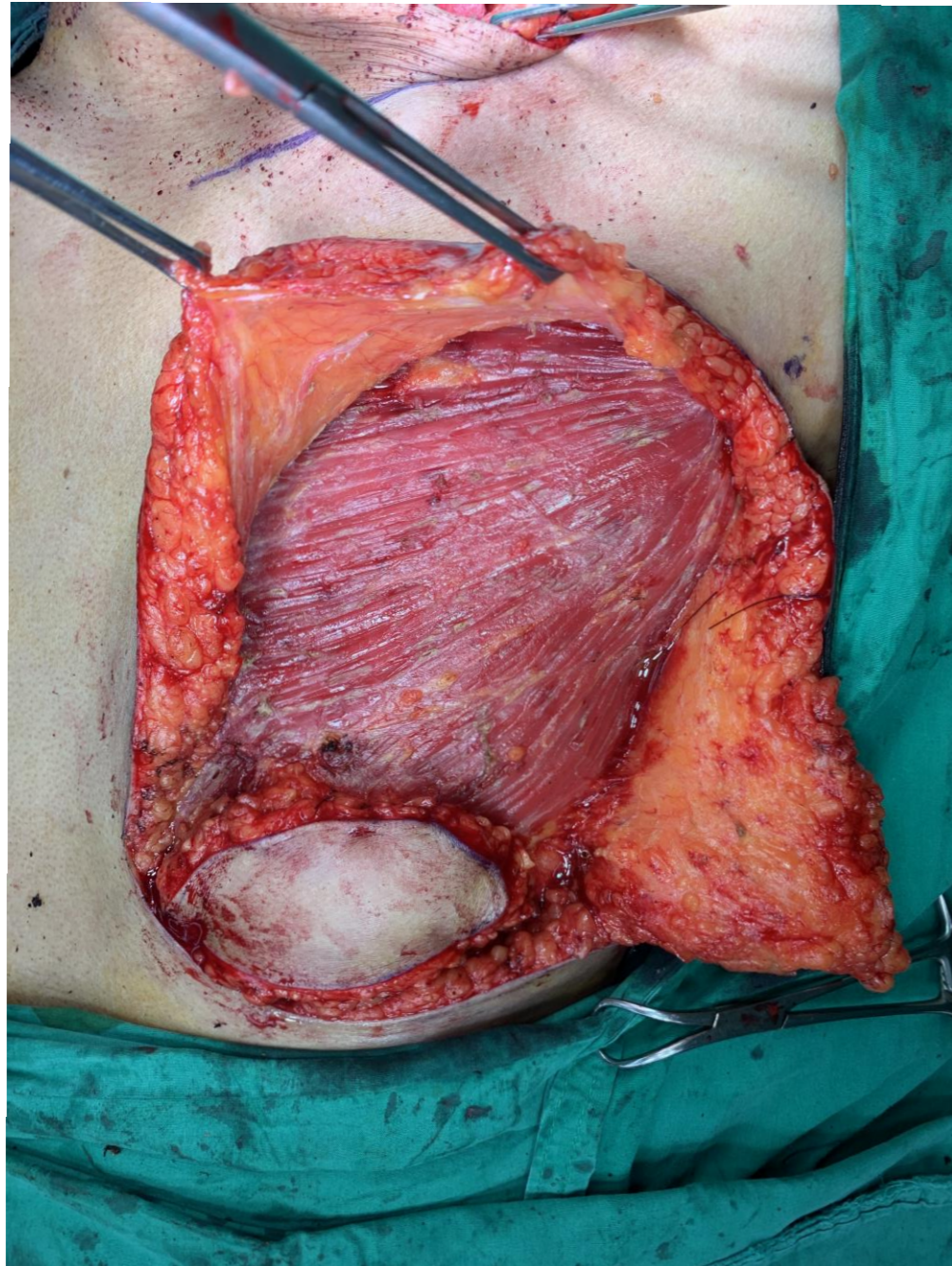
# Pectoralis Major Myocutaneous flap



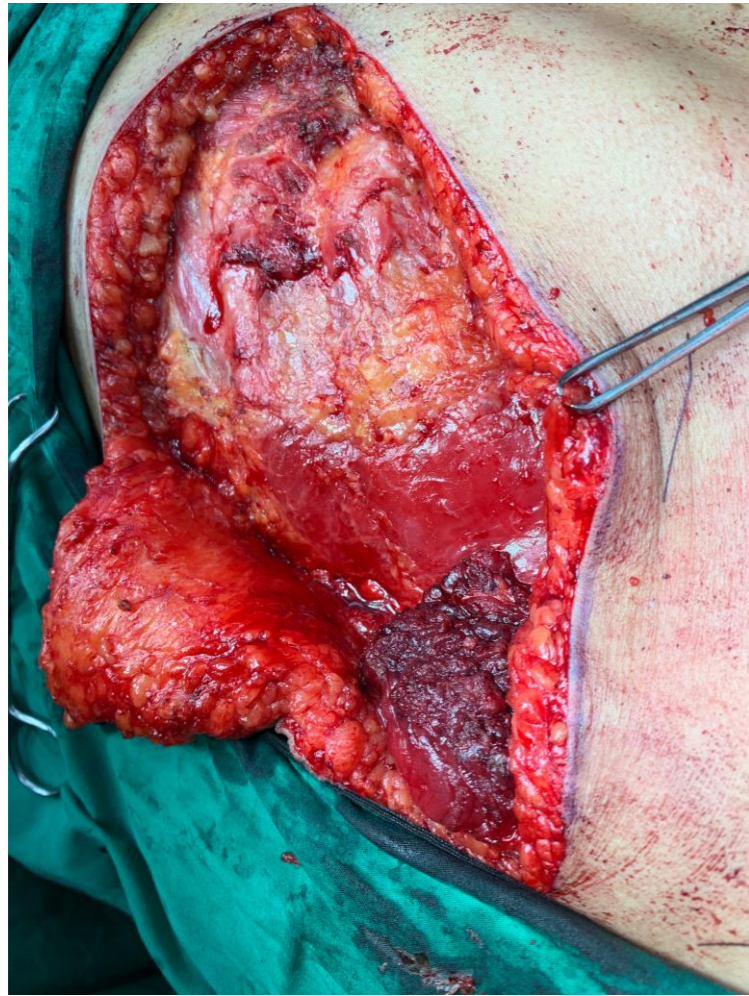
# Pectoralis Major Myocutaneous flap



# Pectoralis Major Myocutaneous flap



# Pectoralis Major Myocutaneous flap



# Pectoralis Major Myocutaneous flap





# Wide excision and skin graft



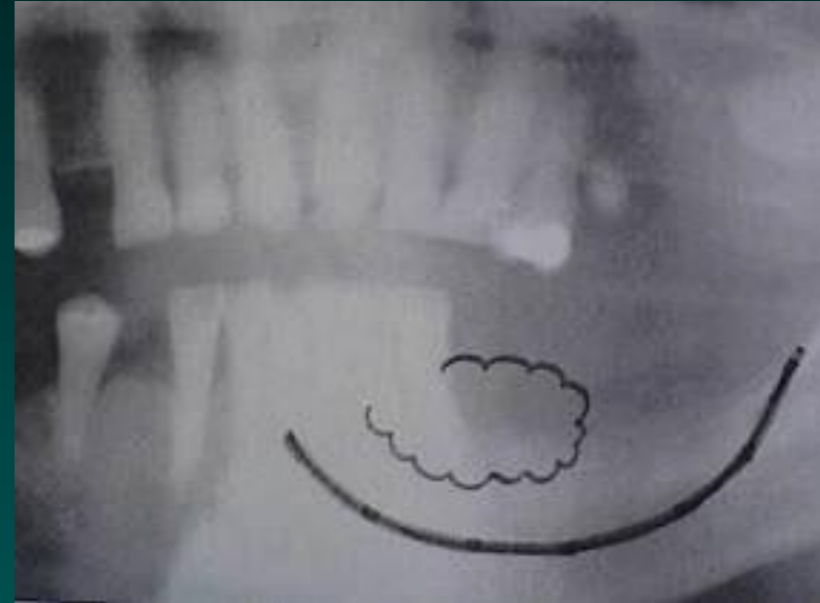


# Marginal mandibulectomy





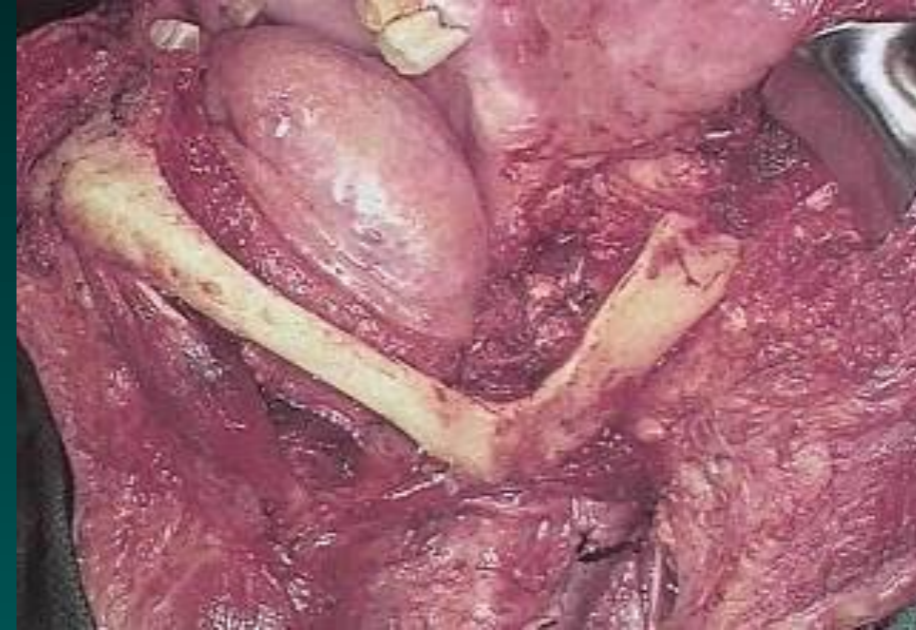
# Marginal mandibulectomy





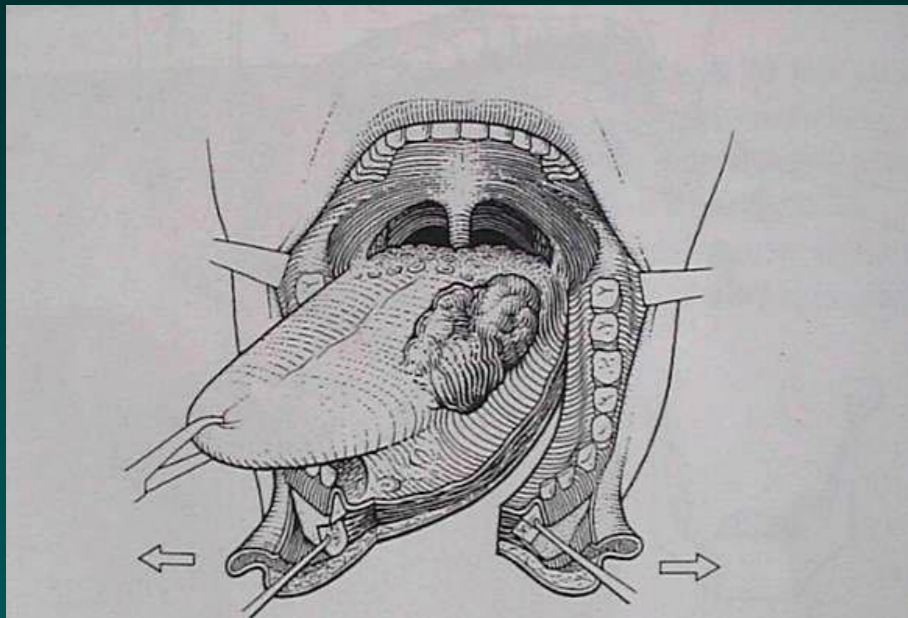


# Marginal mandibulectomy





# Mandibulotomy

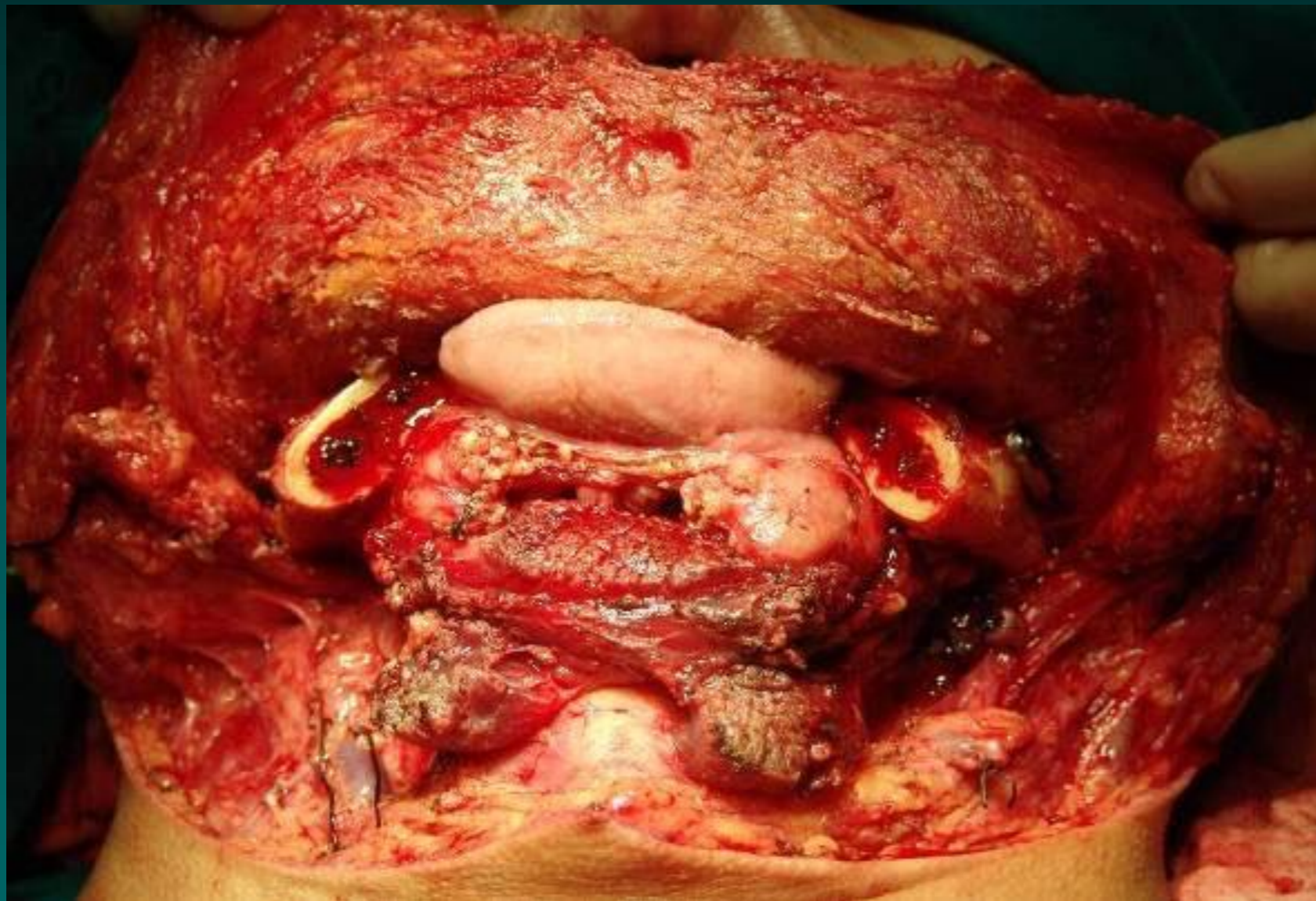




# Mandibulectomy



# Mandibulectomy



*Anterior defect*





# Mandibulectomy

*Lateral defect*



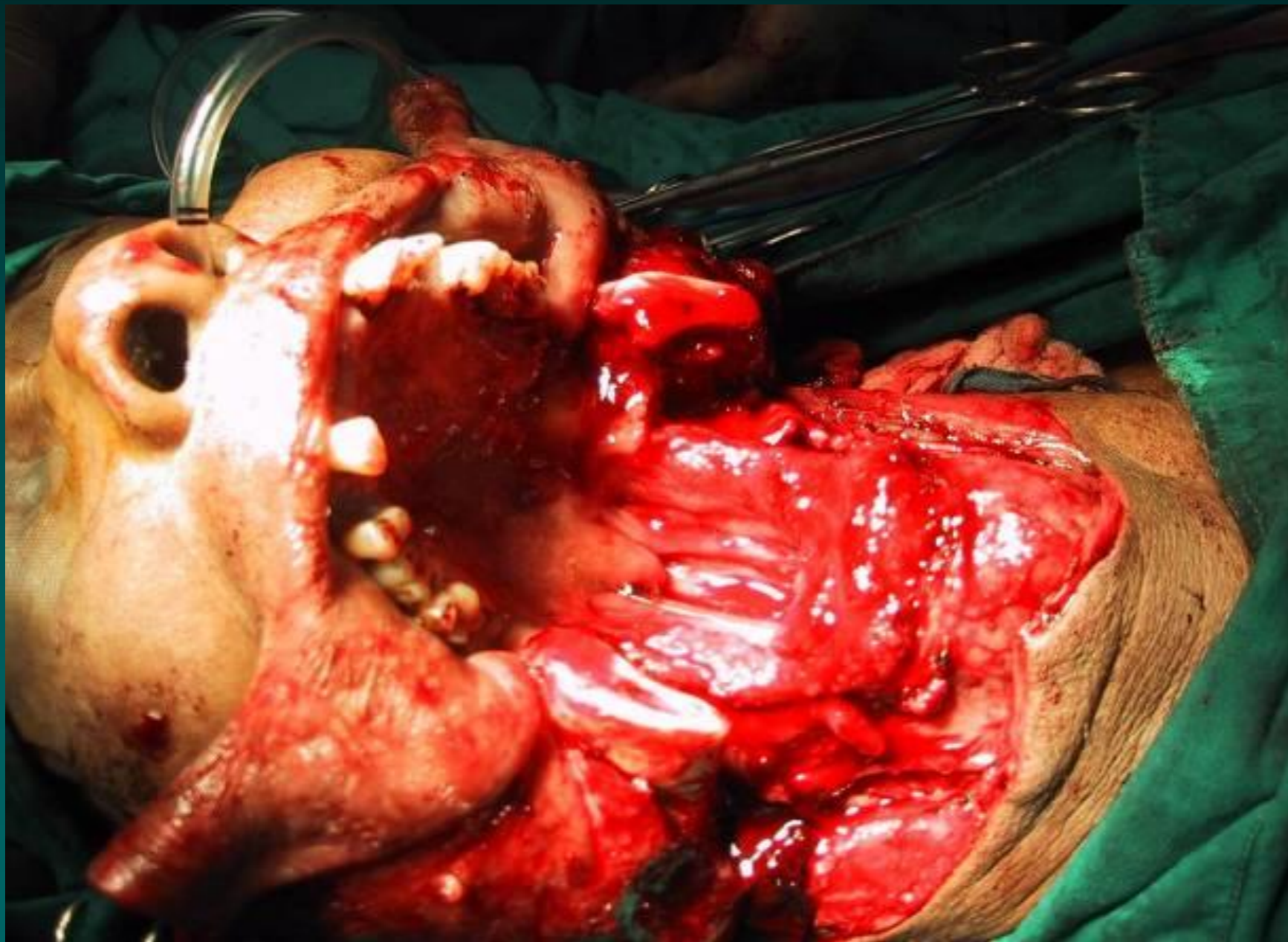


# Hemi-mandibulectomy





# Mandibulectomy with total glossectomy



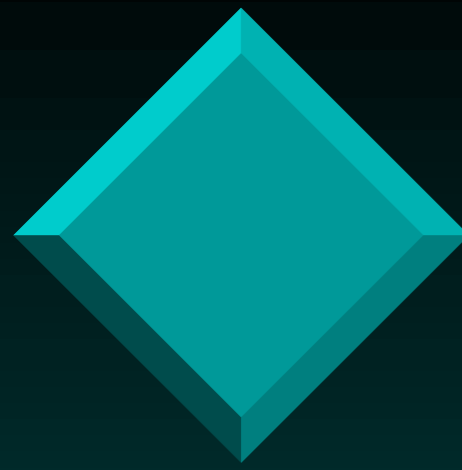


# Mandibular defect

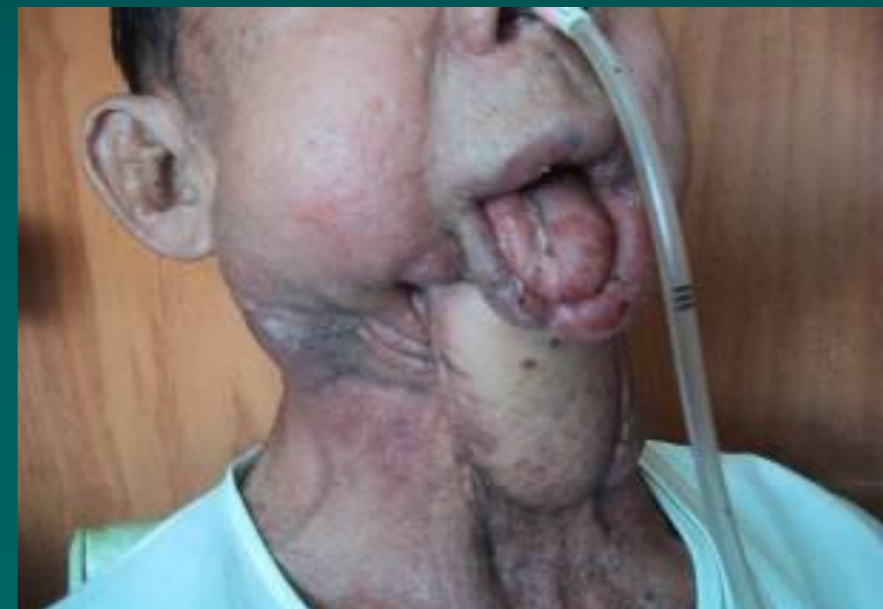


Primary closure without  
Mandibular reconstruction

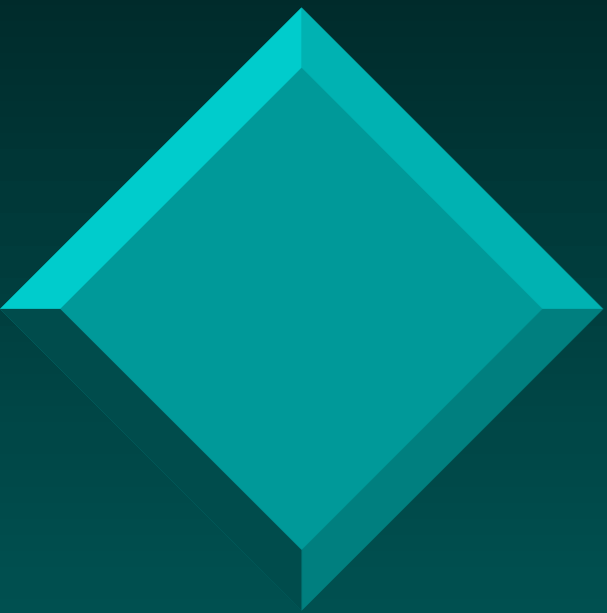




# Mandibular defect



- Deformity
- Loss of oral competence
- Loss of normal swallowing
- Loss of normal speech
- Airway obstruction

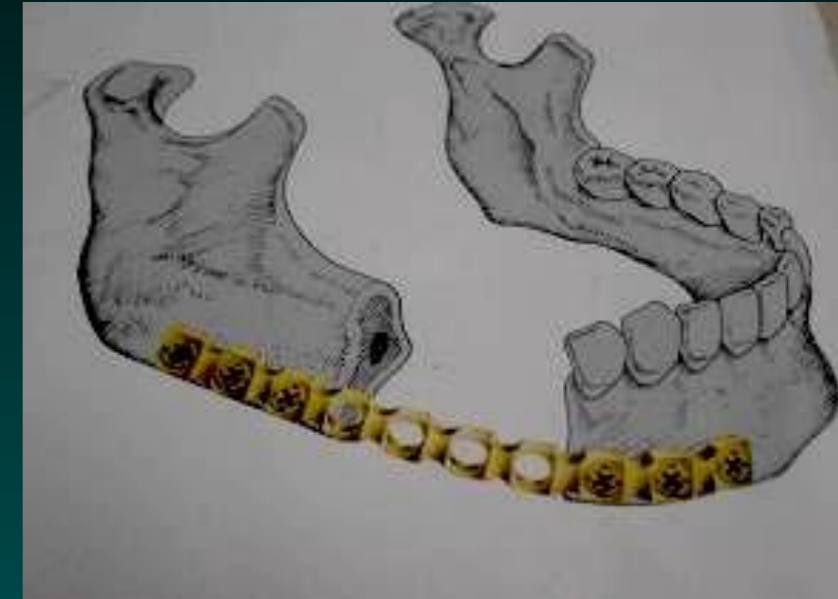


# MANDIBULAR RECONSTRUCTION



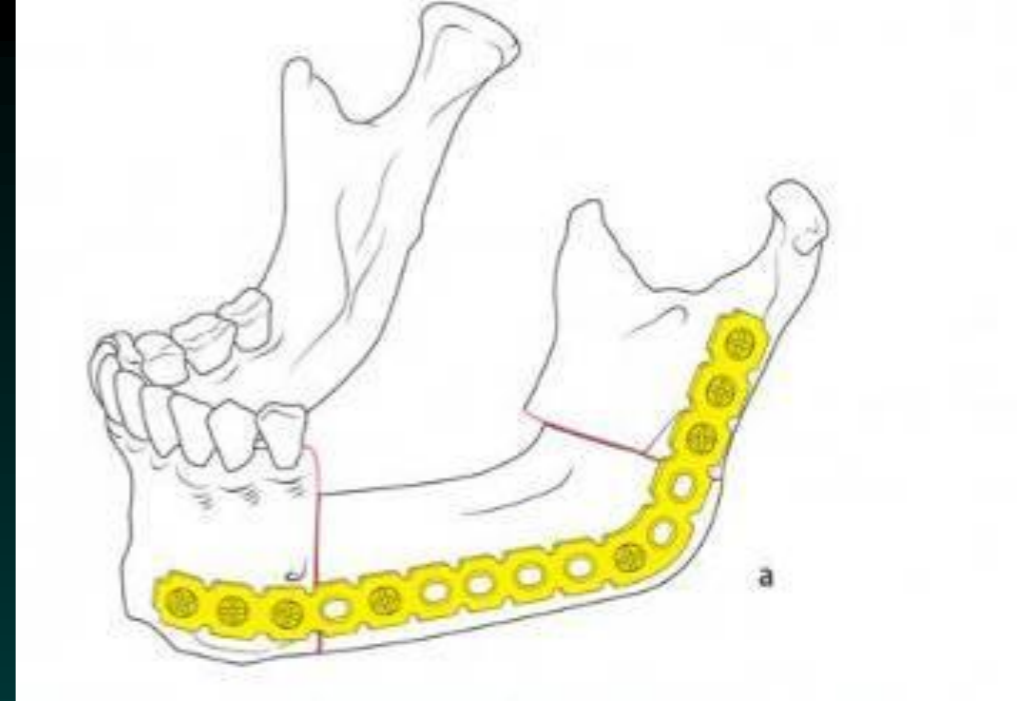
# Reconstruction plate

\*\* Reconstruction plate useful for patients with lateral mandibular defect who have no desire for dental restoration.





# Bone graft



Common used in benign lesion and tumors which do not need radiotherapy, eg.,

- Amyloblastoma*
- Sarcoma*
- Trauma etc.*





# Chondrosarcoma





# Chondrosarcoma





# Contra-indication of Bone Graft

- Inadequate soft tissue bed
- Poor blood supply
- Planned post-op radiation

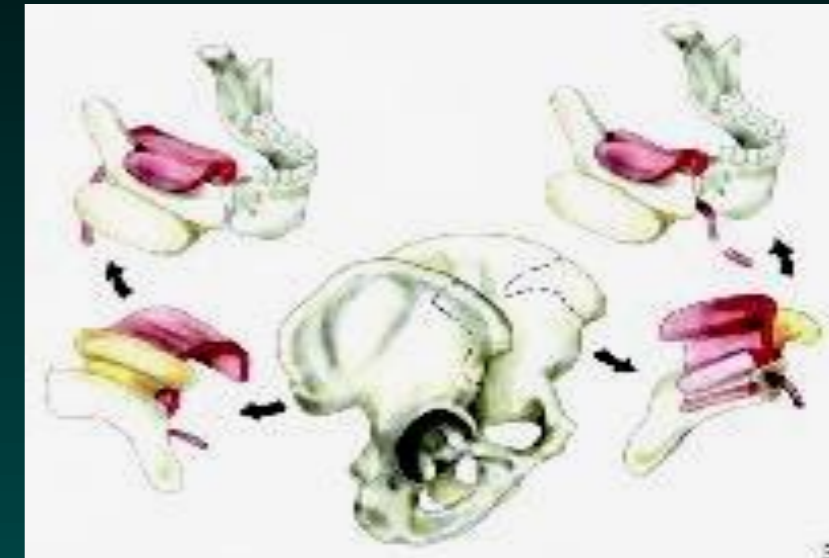
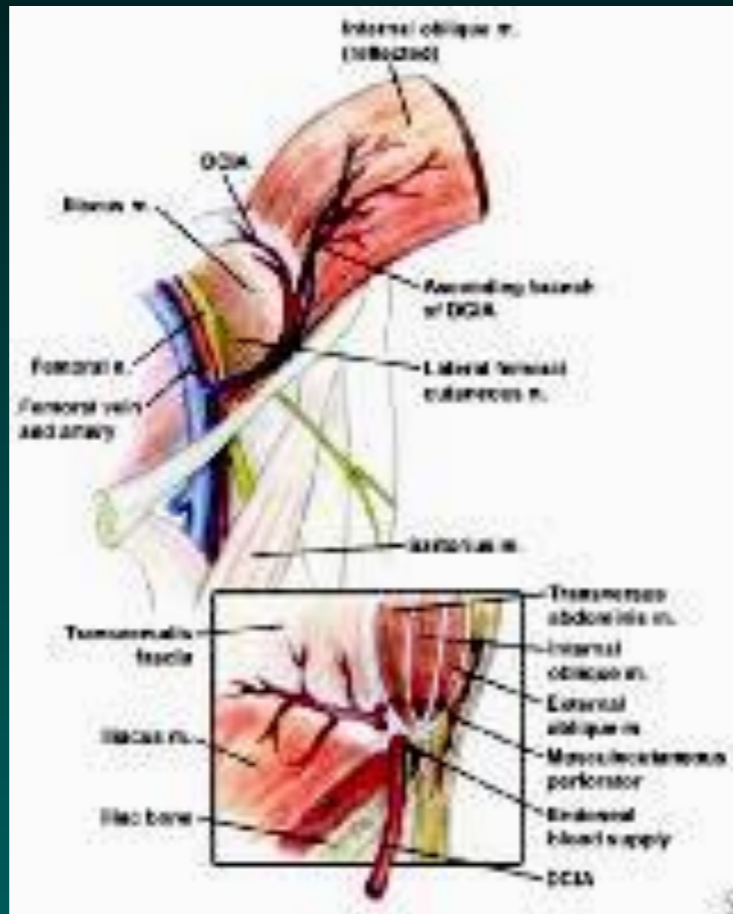




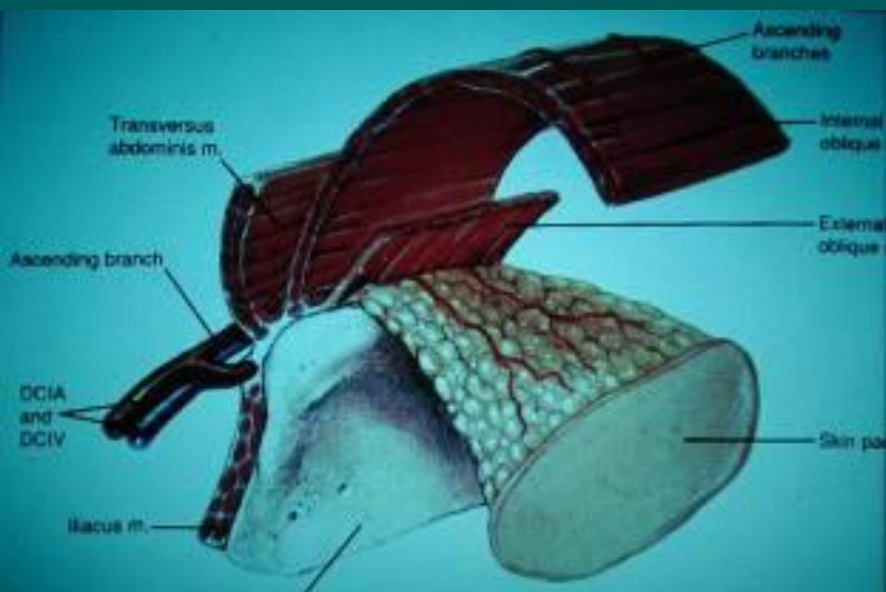
Iliac crest free flap



# Iliac crest free flap

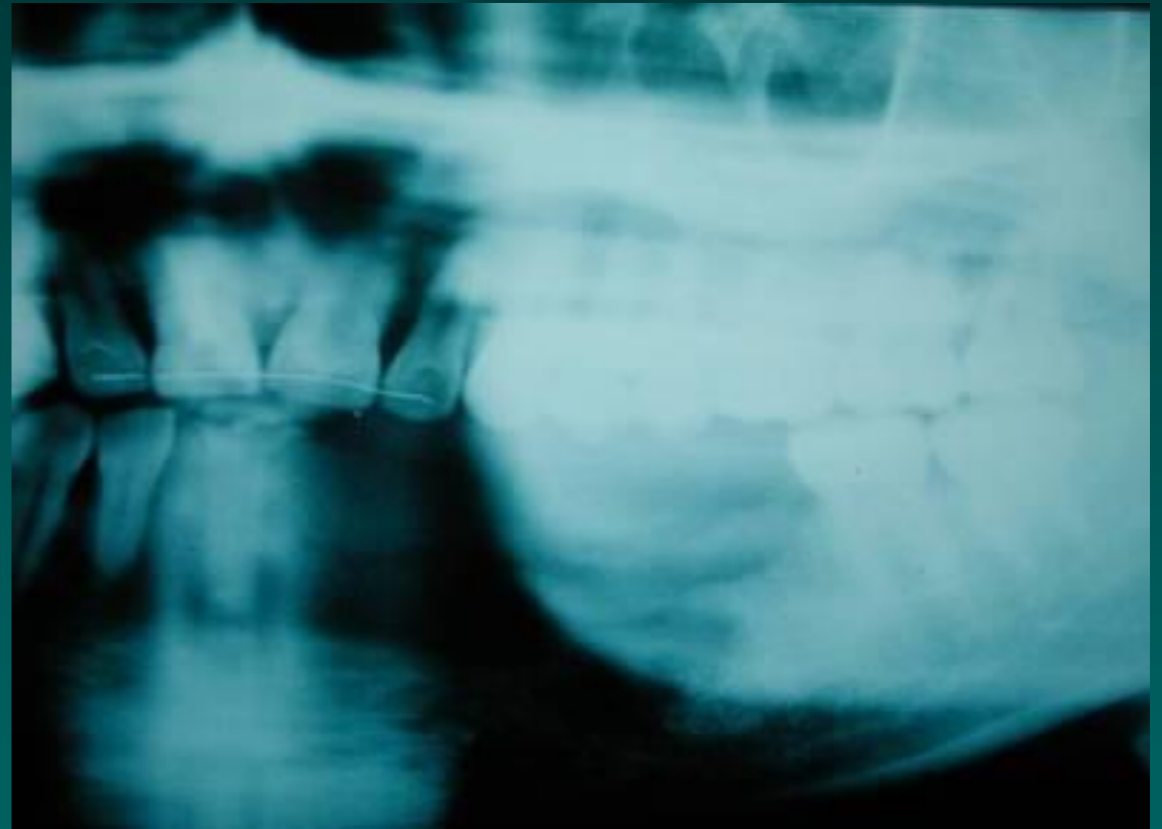


- Deep circumflex iliac a,v.
- Bone availability 6-16cm.
- Bone quality-Excellent
- Bone shape-Excellent
- Skin paddle size 10x20cm
- Osseointegratability-Excellent
- Pedicle length 5-7cm.
- Vessel diameter 2-3 mm.
- Two team approach
- No sensate flap
- Morbidity; hernia, gait disturbance, hip deformity and pain



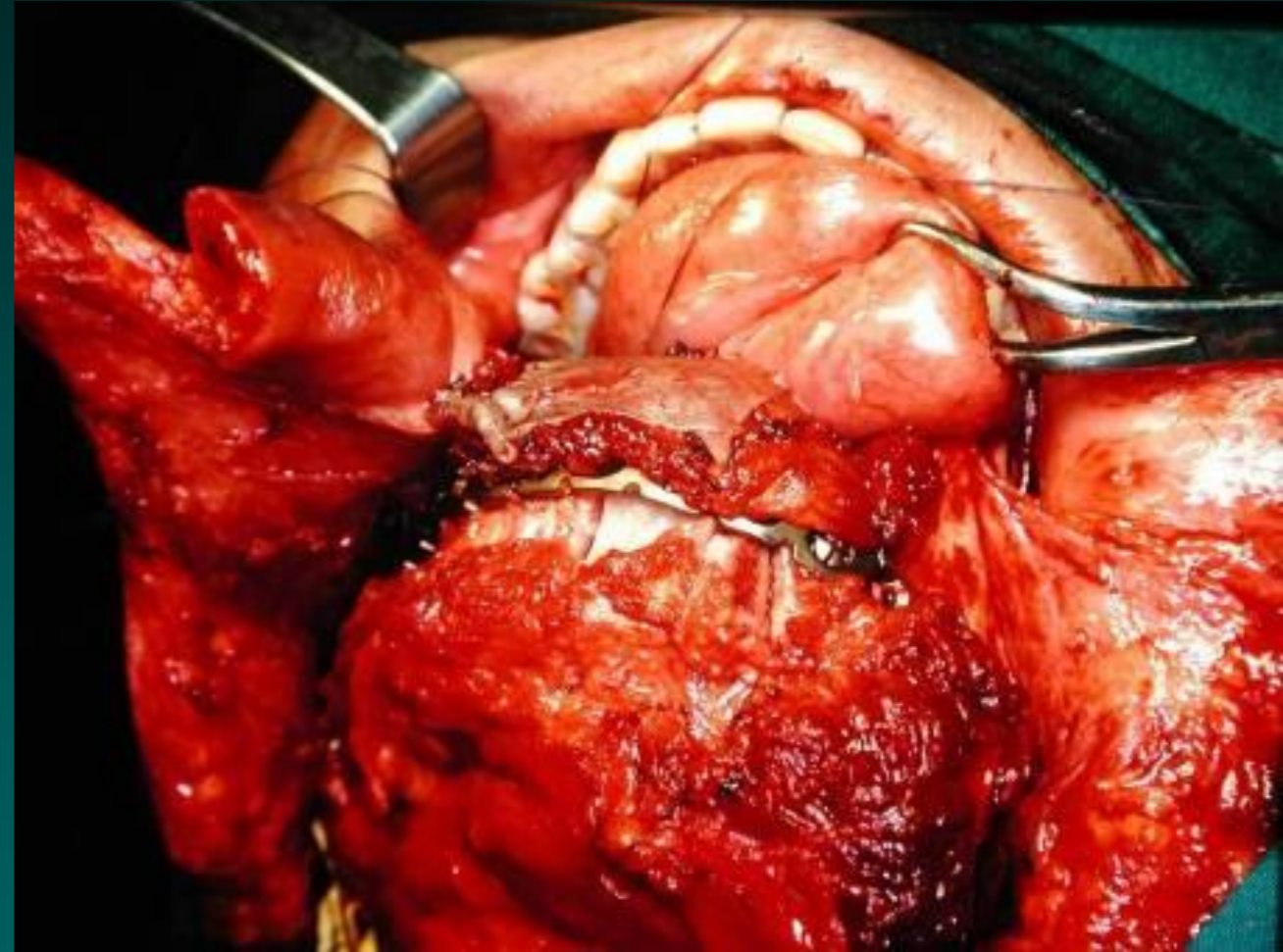
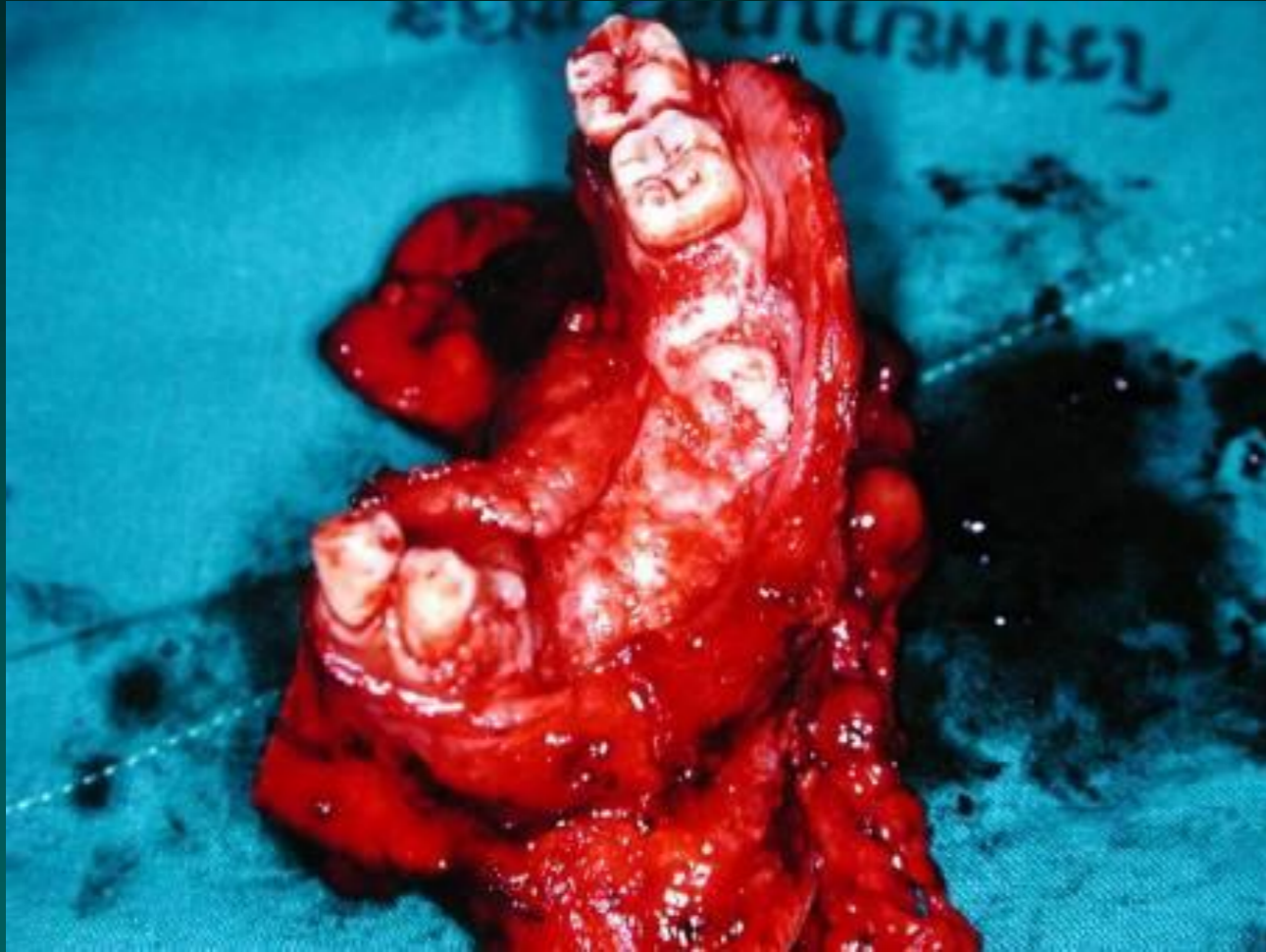


# Iliac crest free flap





# Iliac crest free flap





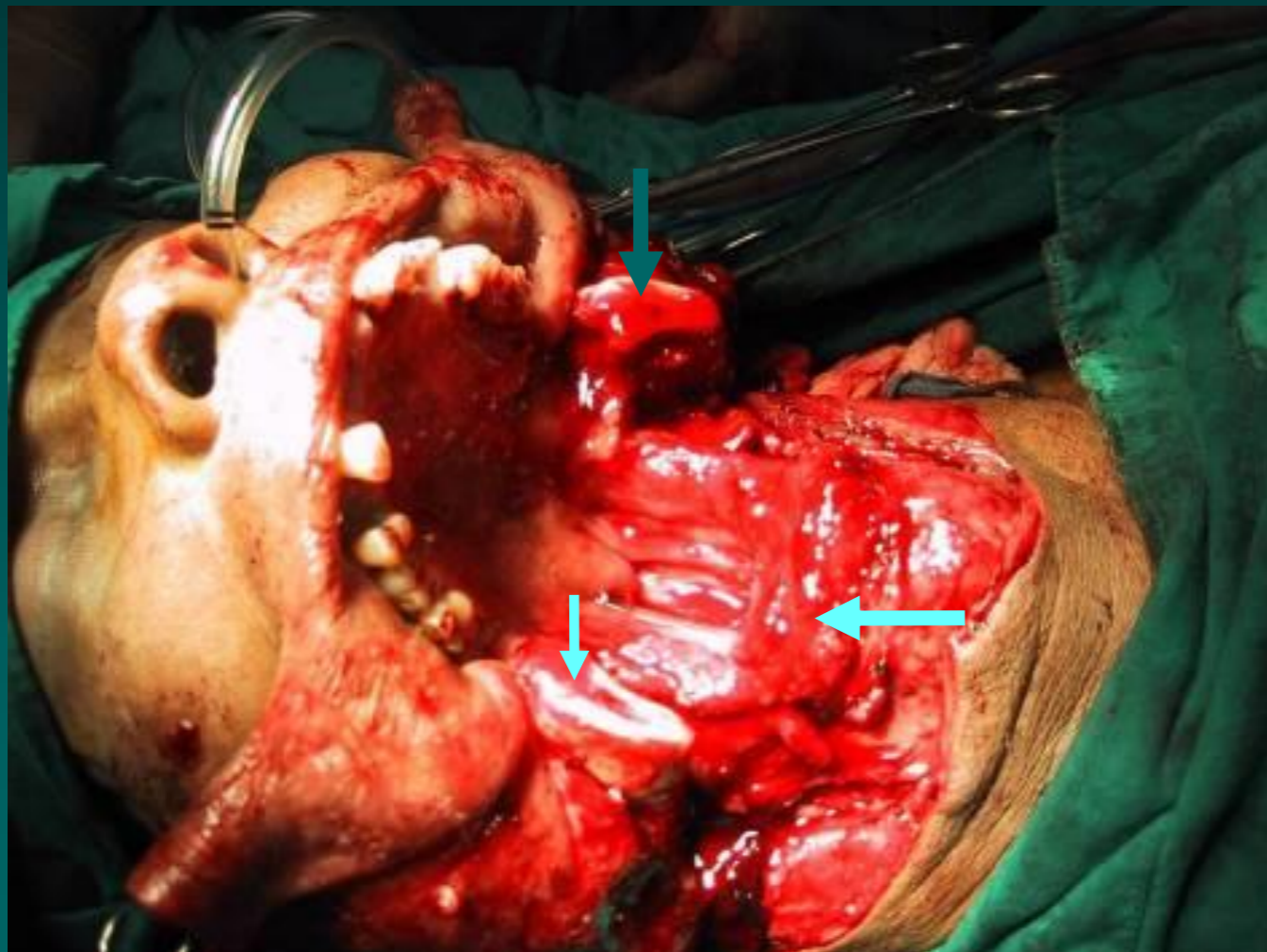
# Iliac crest free flap





# Iliac crest free flap

*After total glossectomy and seg.ma*



Ca.floor of mouth

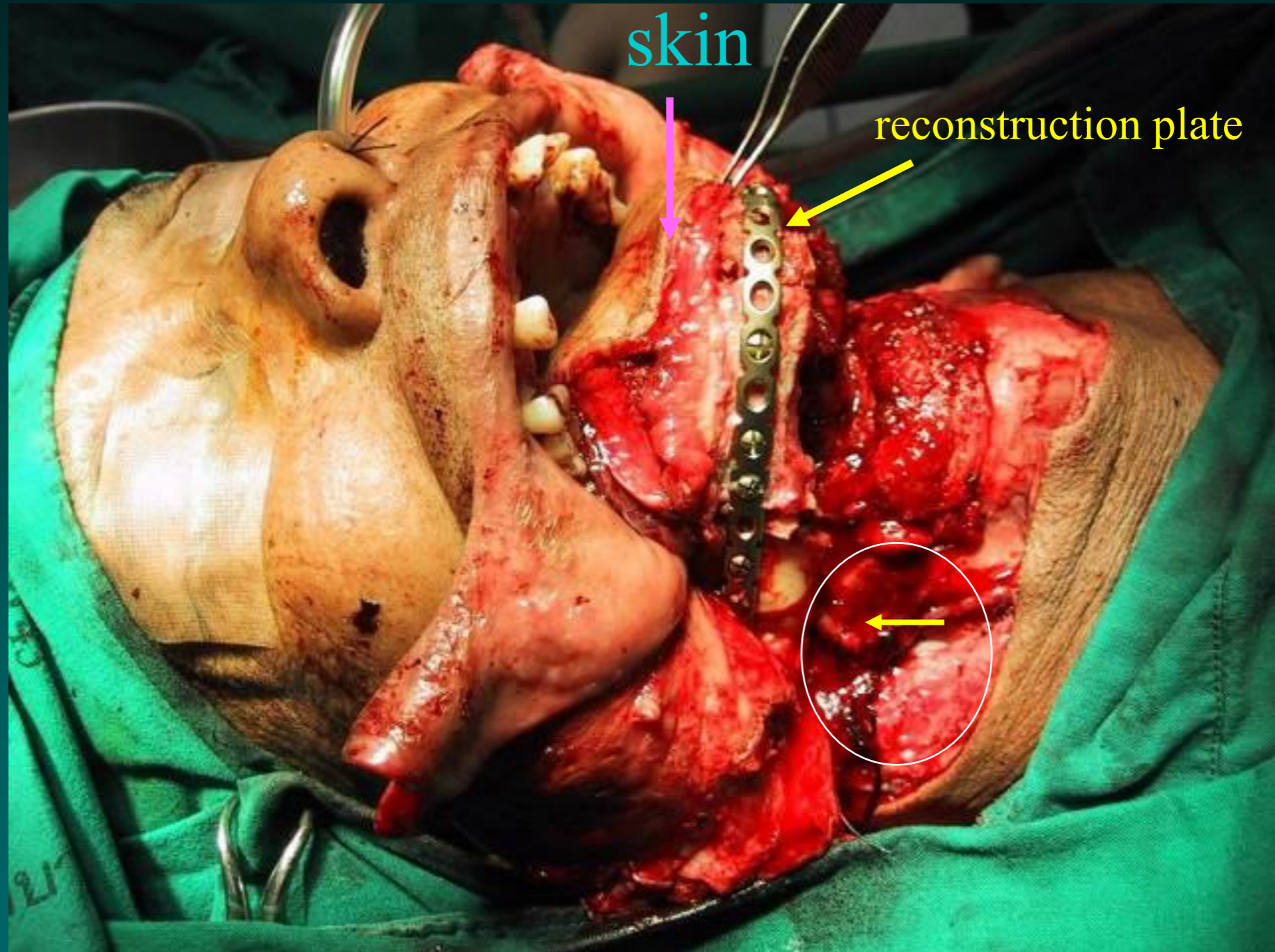


# Iliac crest free flap





# Iliac crest free flap





# Iliac crest free flap

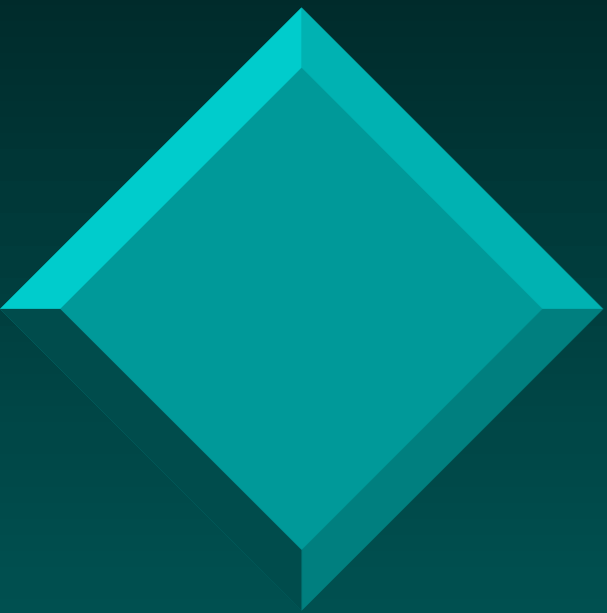






# Iliac crest free flap





Fibular free flap



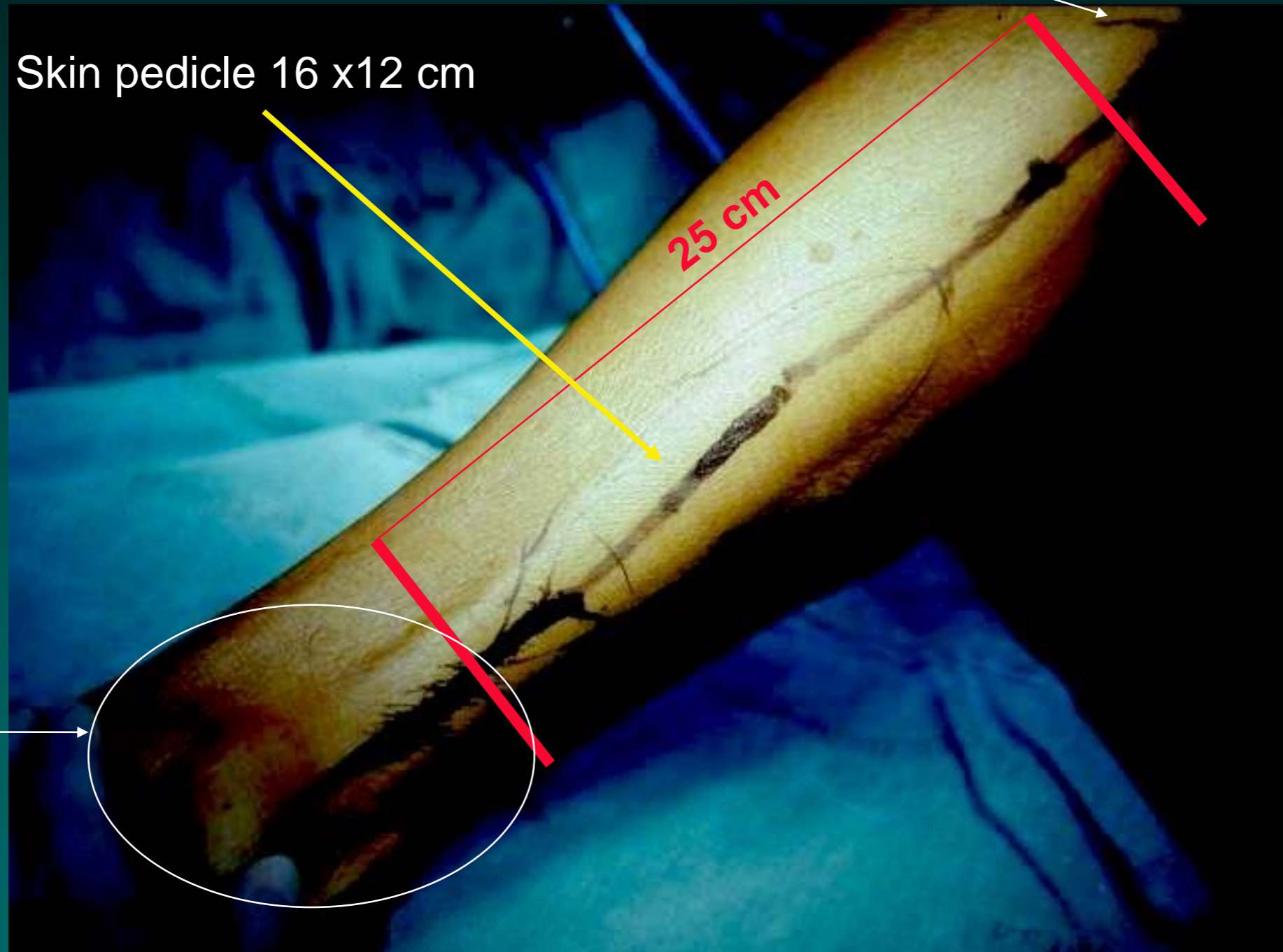
# FIBULAR FREE FLAP

Common peroneal nerve

Skin pedicle 16 x12 cm

25 cm

To retain ankle joint stability ,fibular must preserve 7-10 cm



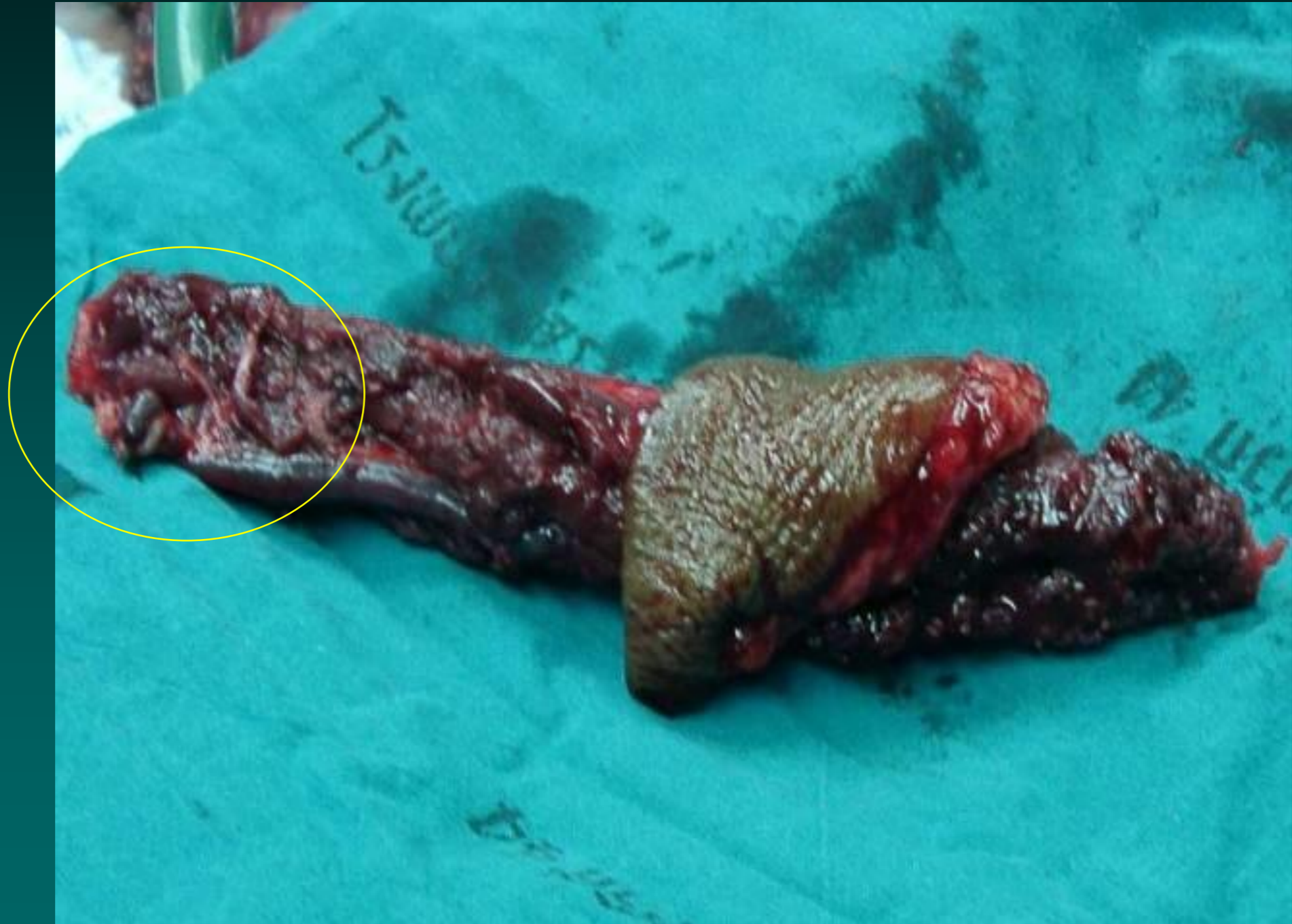
# FIBULAR FREE FLAP



# FIBULAR FREE FLAP



# FIBULAR FREE FLAP



# FIBULAR FREE FLAP

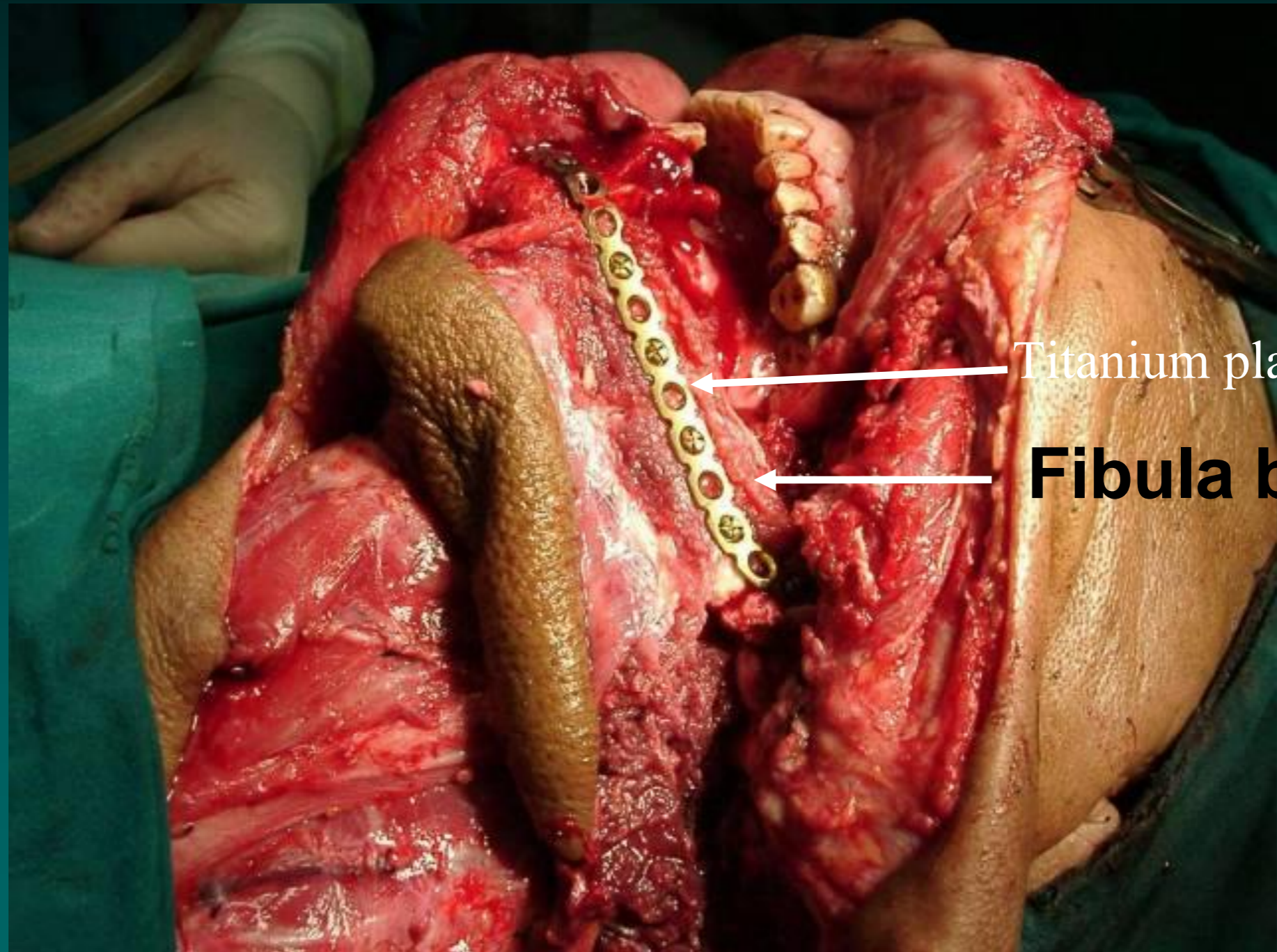


# FIBULAR FREE FLAP





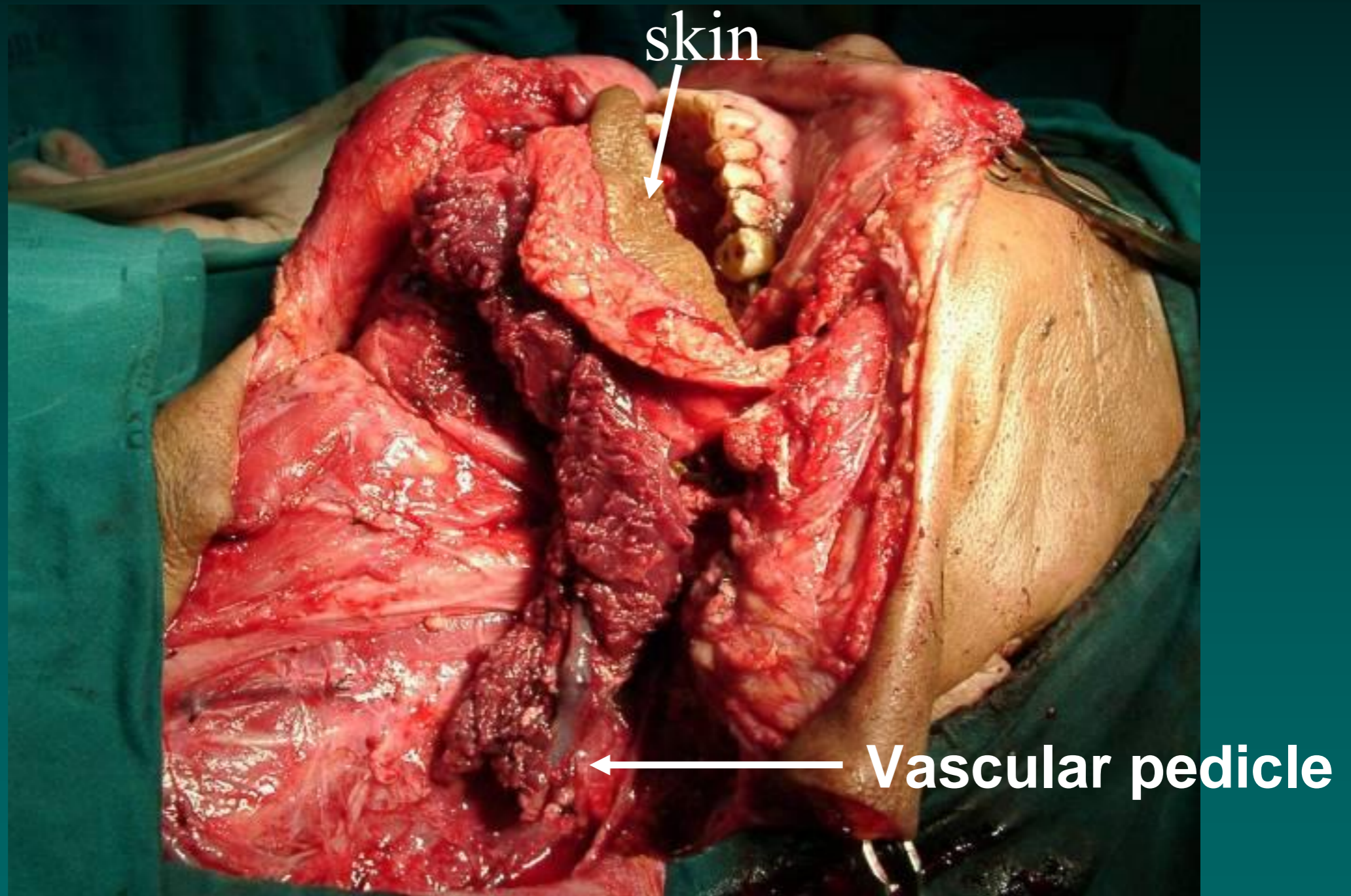
# FIBULAR FREE FLAP



Titanium plate

**Fibula bone**

# FIBULAR FREE FLAP





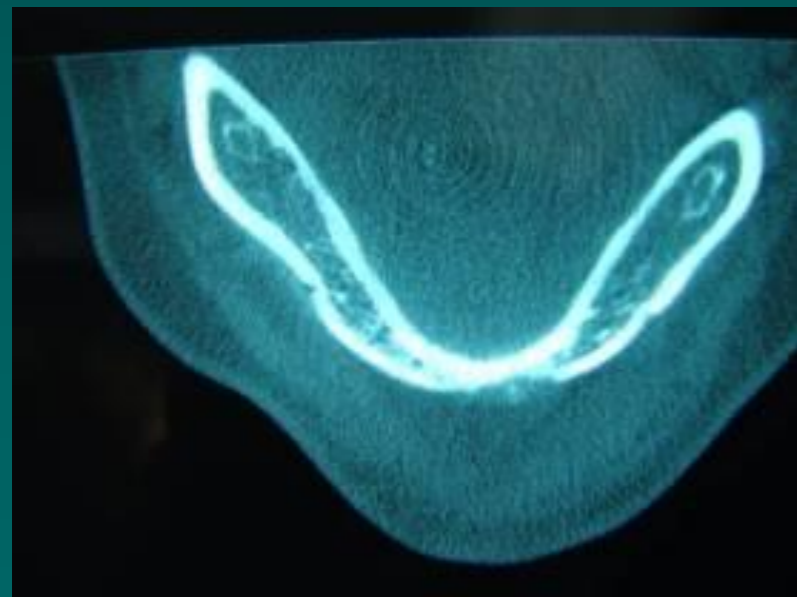
# FIBULAR FREE FLAP

6 months after operation



skin

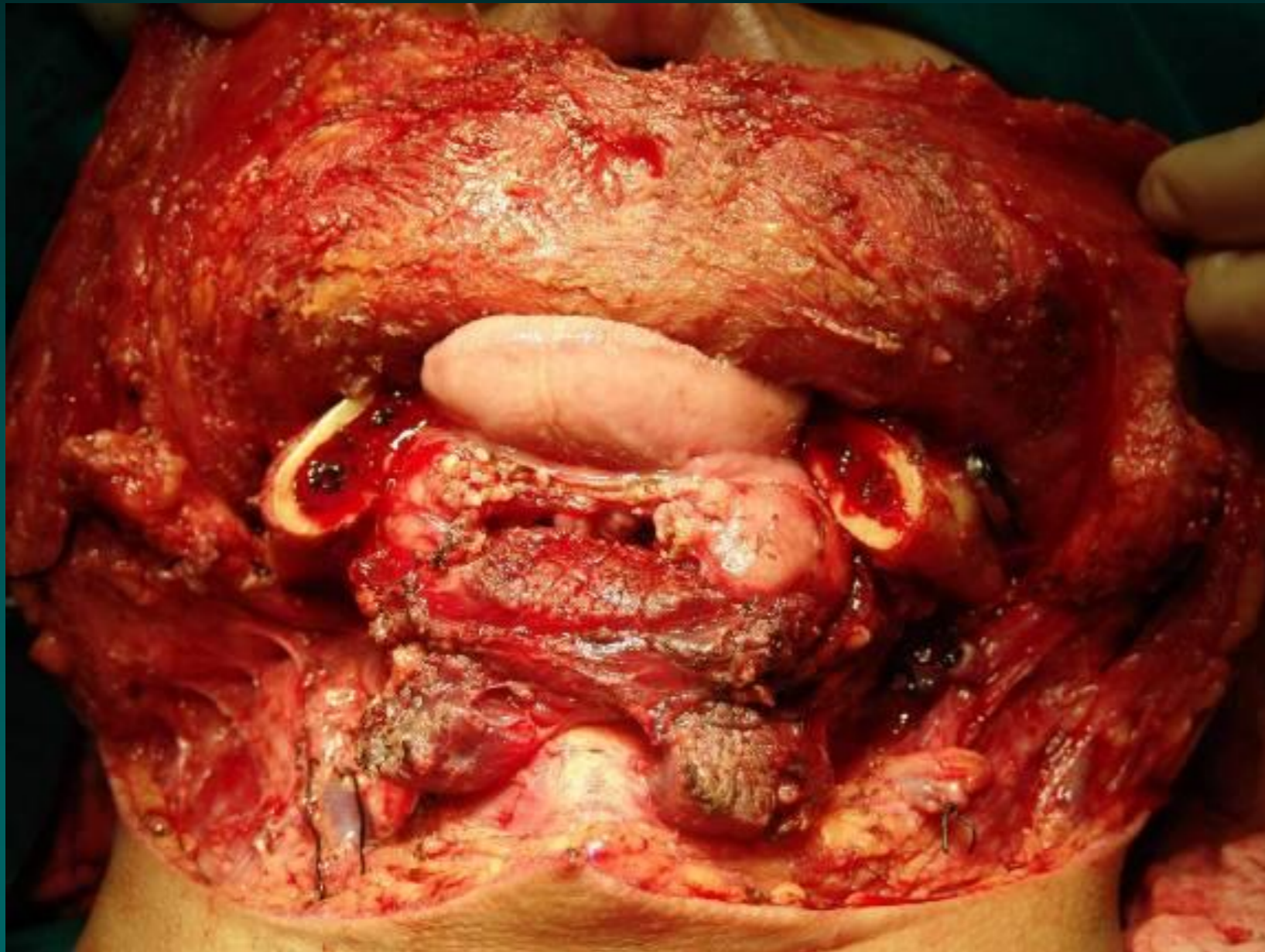
# FIBULAR FREE FLAP



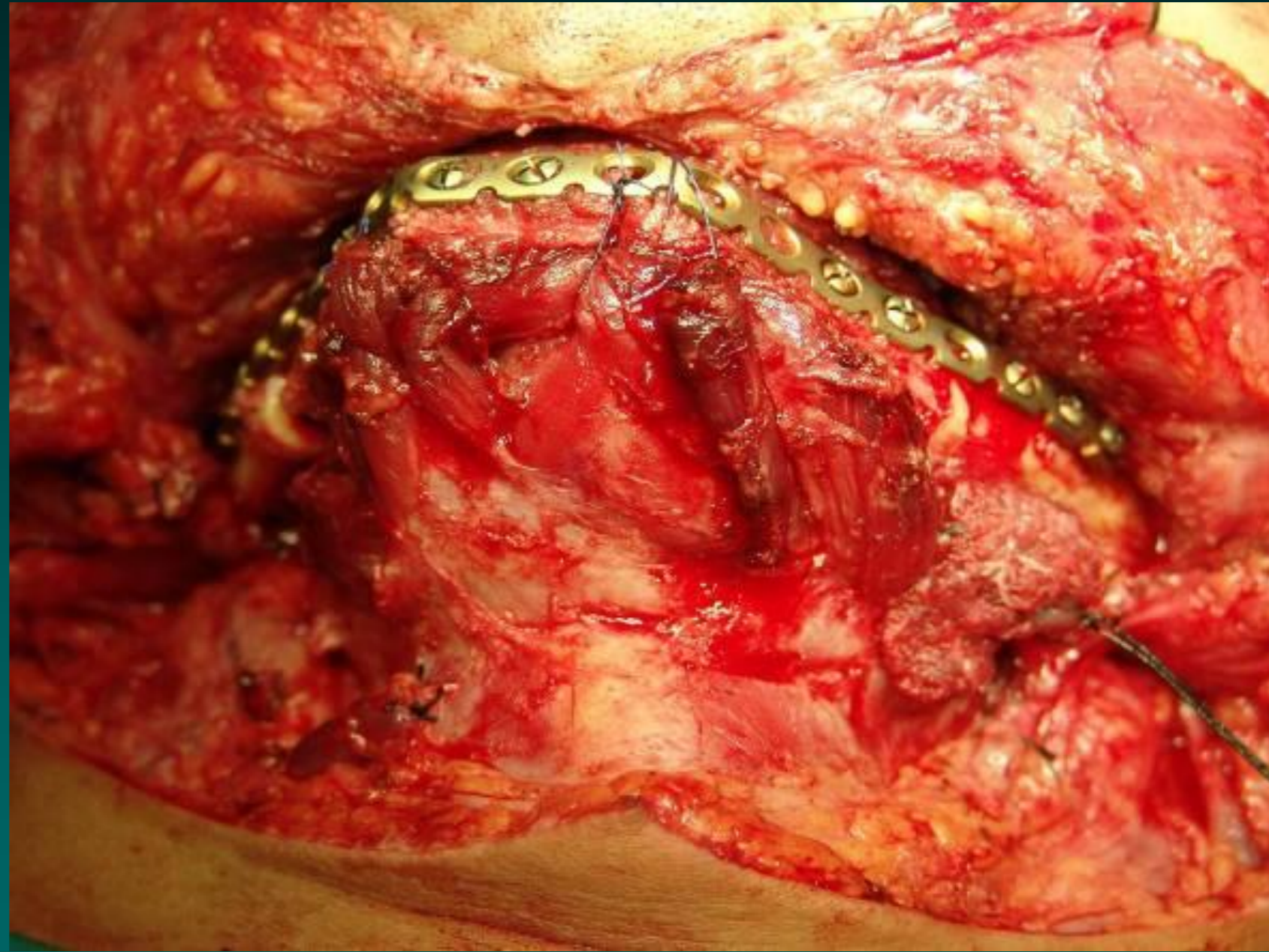
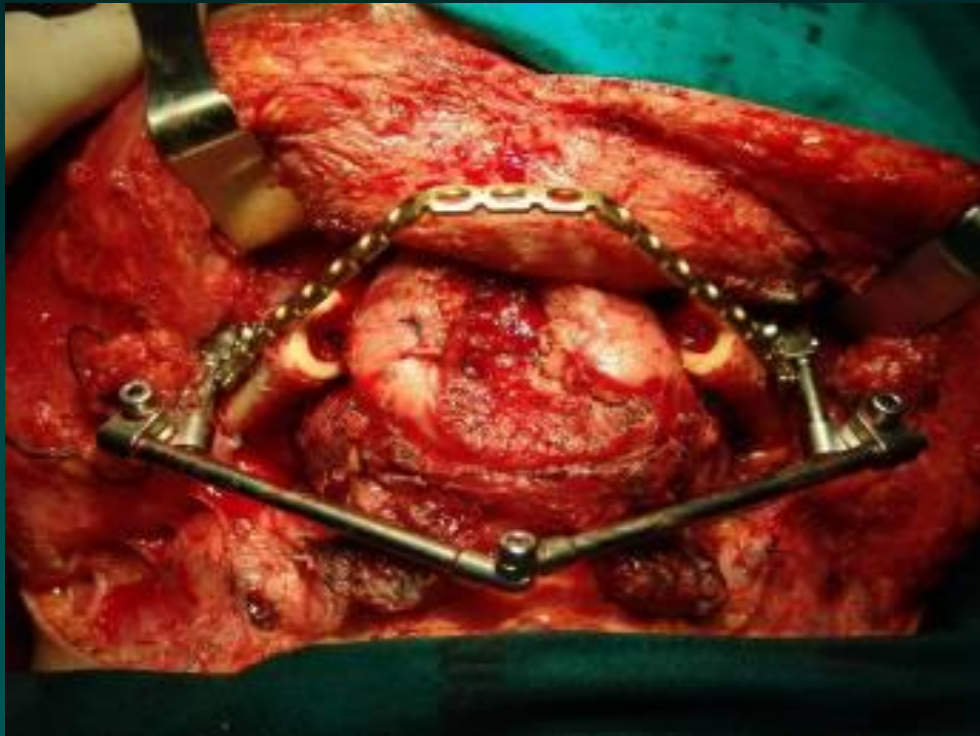
*Chondrosarcoma*



# FIBULAR FREE FLAP



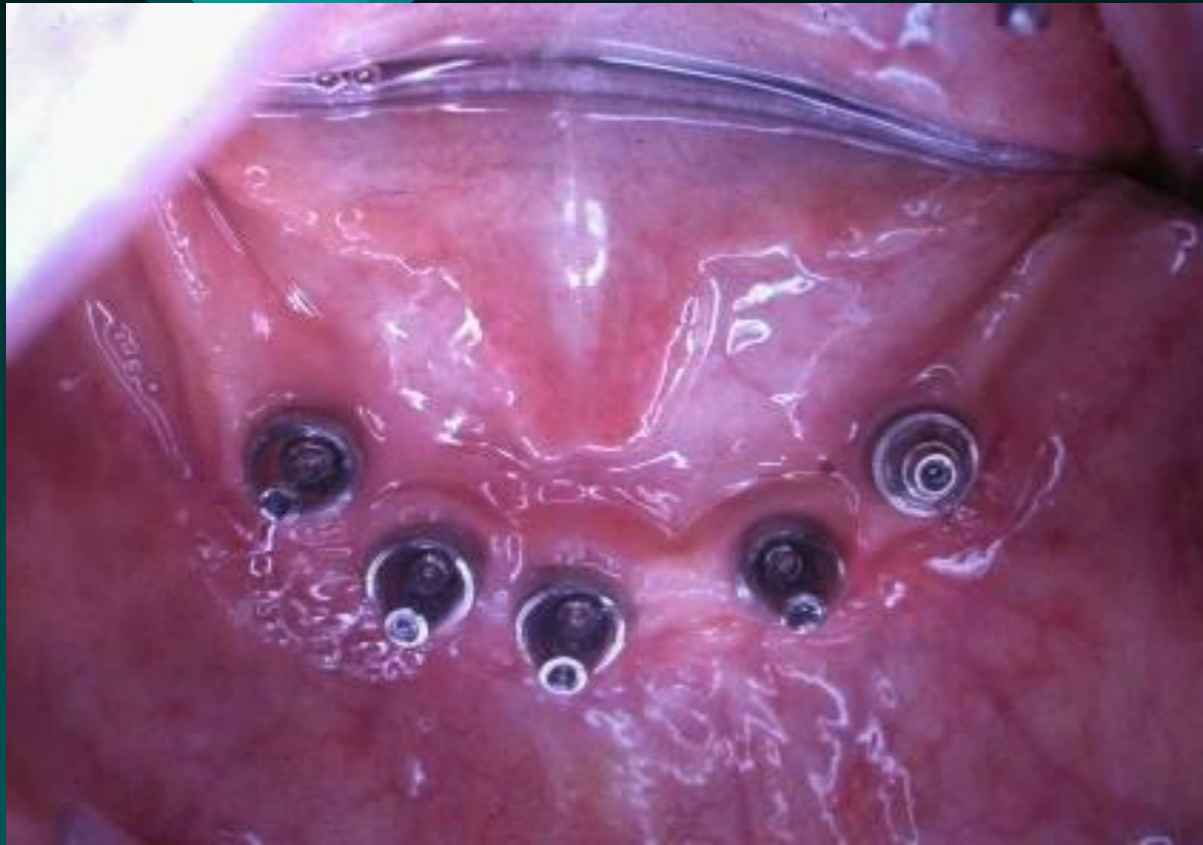
# FIBULAR FREE FLAP



# FIBULAR FREE FLAP



# *Osseointegrated implant*





# *Osseointegrated implant*





**Thank  
you**

ศูนย์การแพทย์เฉพาะทางด้านโรค สอ นาสิก ร.พ.ราชวิถี, กรมการ  
แพทย์