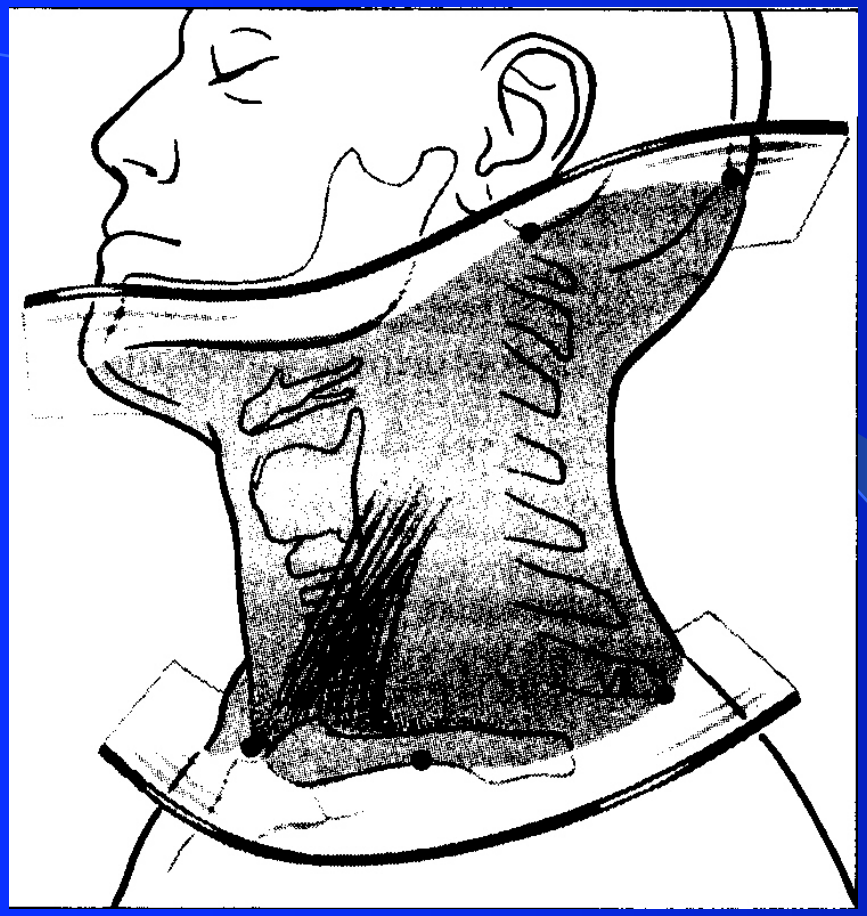
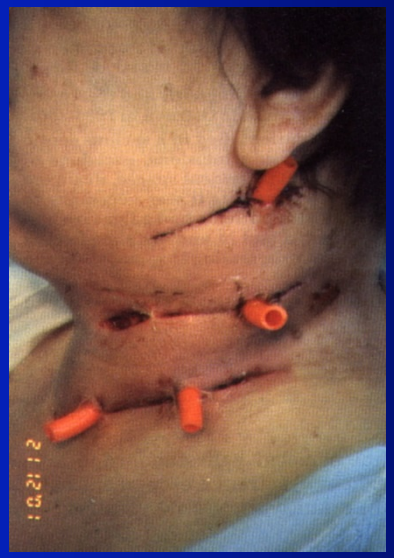
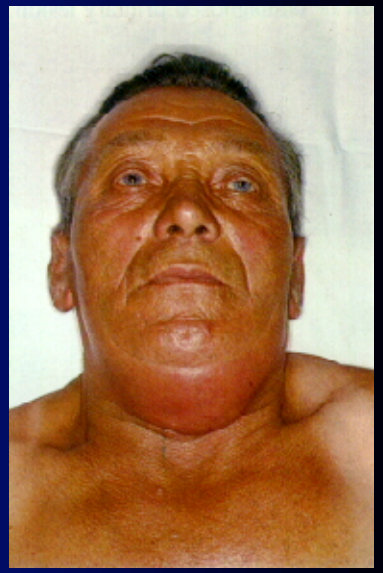
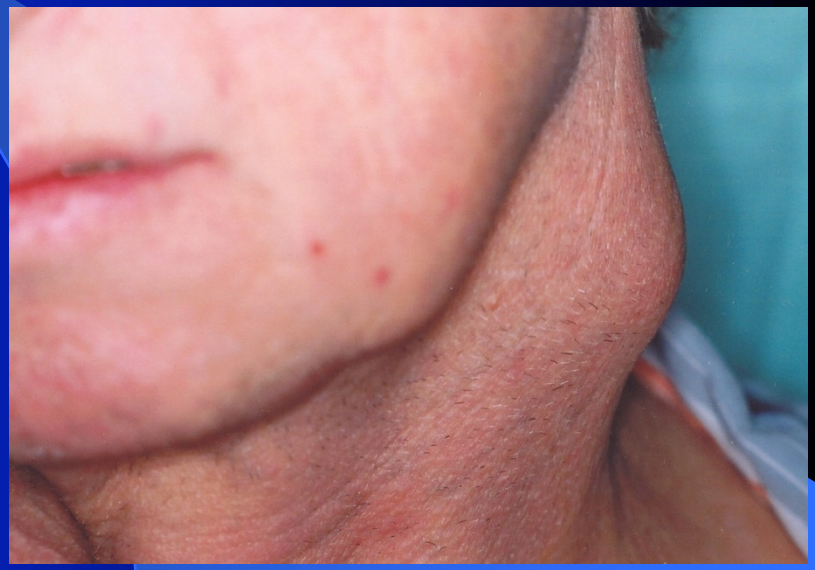
Neck

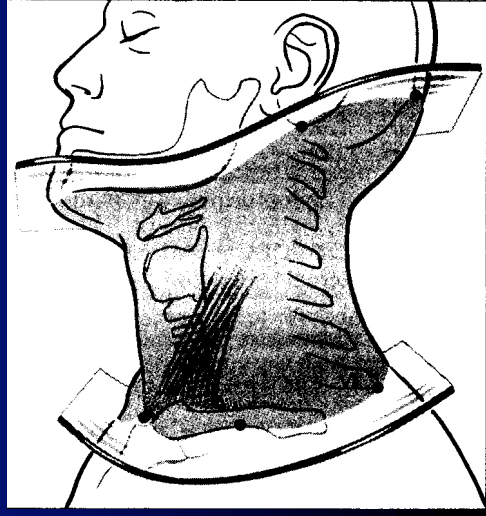








Neck - anatomy



Superior boundery – inferior edge of mandibula, mastoid process and protuberatina occipitalis ext.

Inferior boundery – plain formed by the suprasternal notch, clavicle and the spinous process of the seventh cervical vertebra.

Osteomuscular system is adapted to the upright human posture.

Visceral part of the neck contains upper aerodigestiv tract, the carotic sheath and its contents on each side and cervical lymphatic systém

There is on the neck cca 200 lymphnodes

Lymphnodes of the neck

Nodi cervicales superficiales

- **Along v. jug. ext. Tributari zone: parotis, retruaurik. krajinu, intraparotické uzliny, okcipitální uzliny.**

Nodi lymphatici cervicales profundi

- **They are in the carotid sheath.**

Superior group (subdigastric)

- **Lymph channels lead to this regional lymph nodes (group) from the tributary tissue area: soft palate, tonsills, radix linguae, supraglotis, sinus piriformis.**
- ***Nodus jugulodigastricus = Woodova uzlina= Küttnerova uzlina= Chassegnacova uzlina*** **je v**

Middle group

- **Tributary tissue area: supraglotis, glandula thyreoidea, sinus piriformis. Boundary to the crossing of m. omohyoideus and carotid sheath.**

Inferior group

- **Tributary tissue area: subglottis, trachea, cervikální jícen, glandula thyreoidea. „Great venous angle" = the left jugulosubclavian angle. In this area is Troisier-Wirchow lymph node. Ductus thoracicus (thoracic duct) receive afferents from the lower half of the body, the cranial area.**

Lymphatic chain at n. accessorius

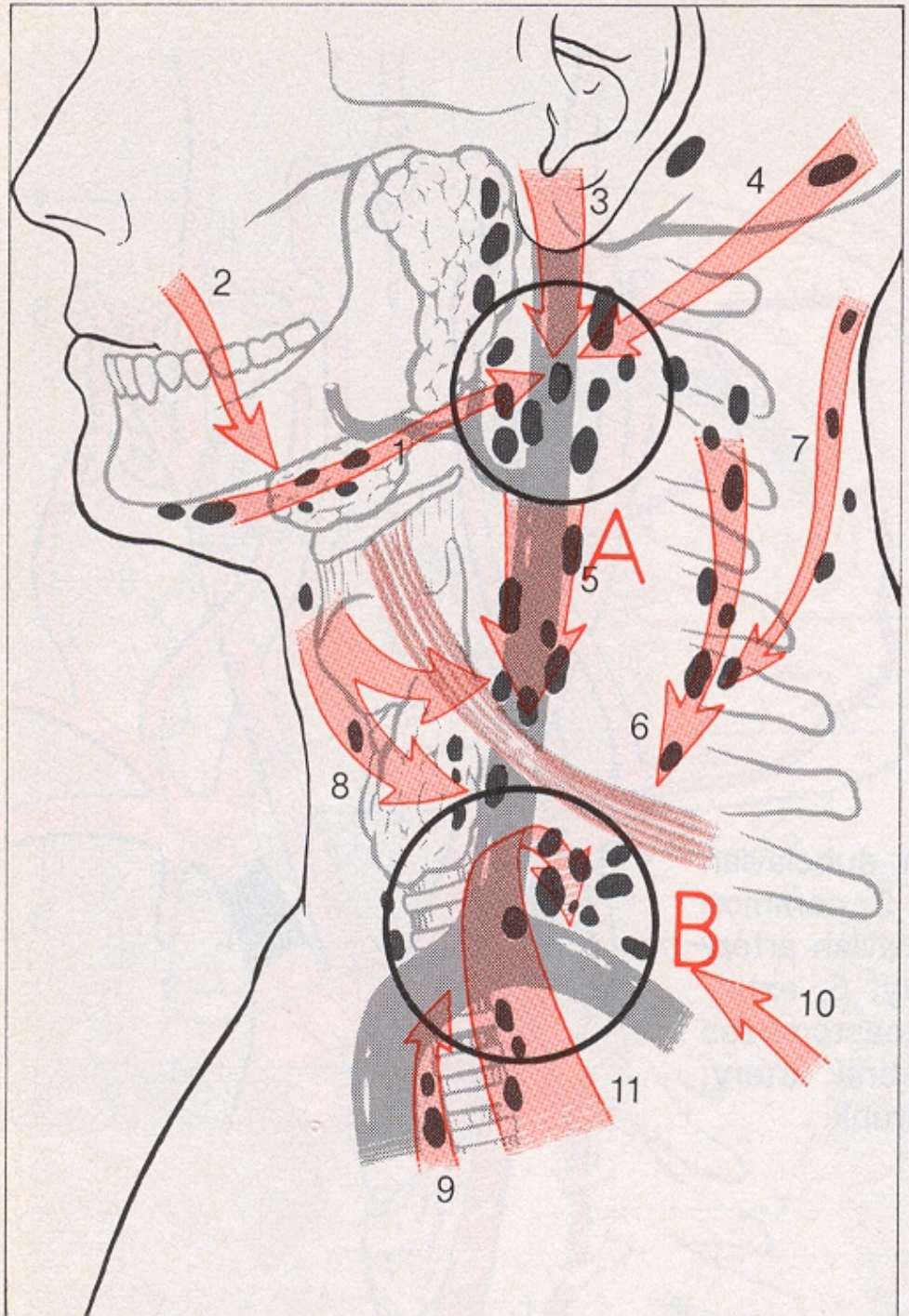
- **Tributary tissue area: nasopharynx, orofarynx, paranasal sinuses..**

Lymphatic chain along vasa transversa colli

- **nodi supraclaviculares - těsně nad klíční kostí.**

Special groups of lymphnodes

- **Nodi submentales, retropharyngei (největší z nich je Rouvierova uzlina), paratracheales, nodus praelaryngicus (Poirierova uzlina).**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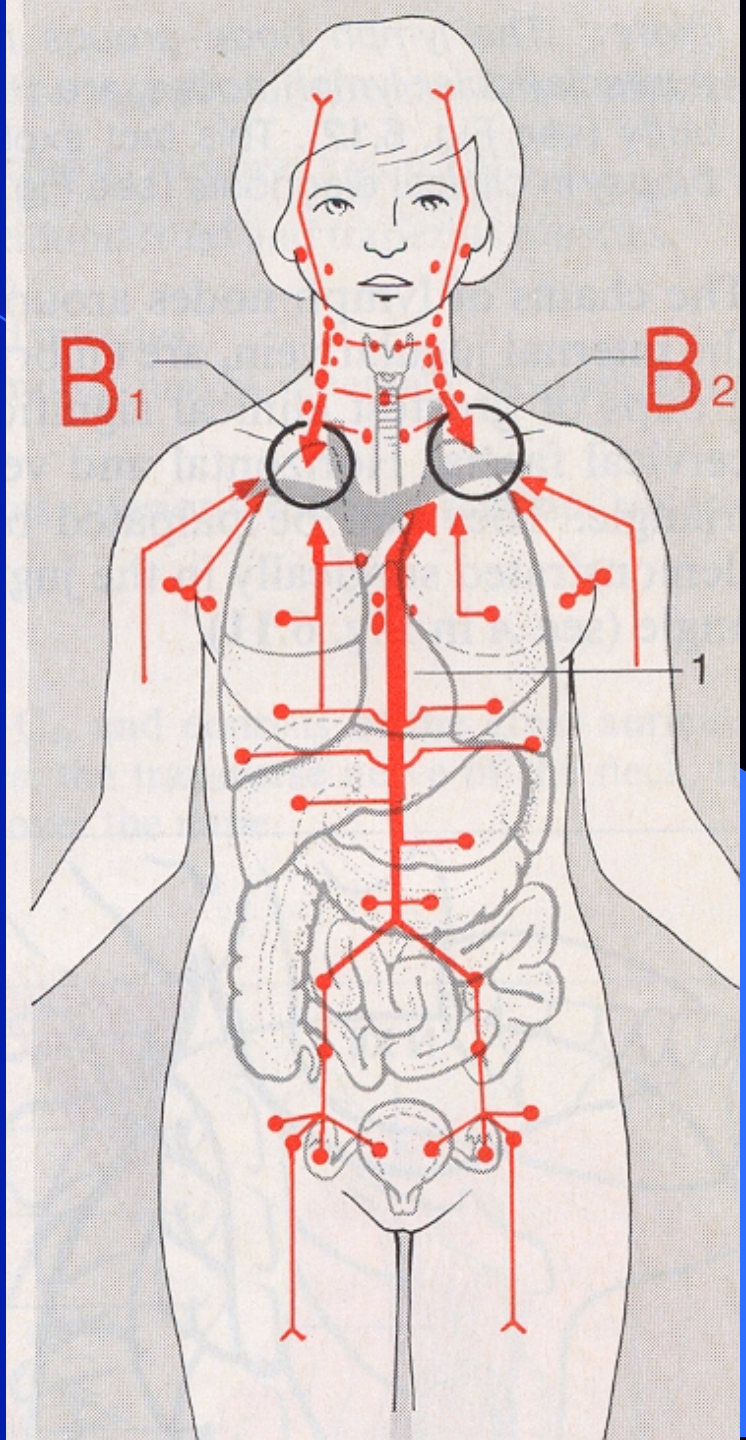
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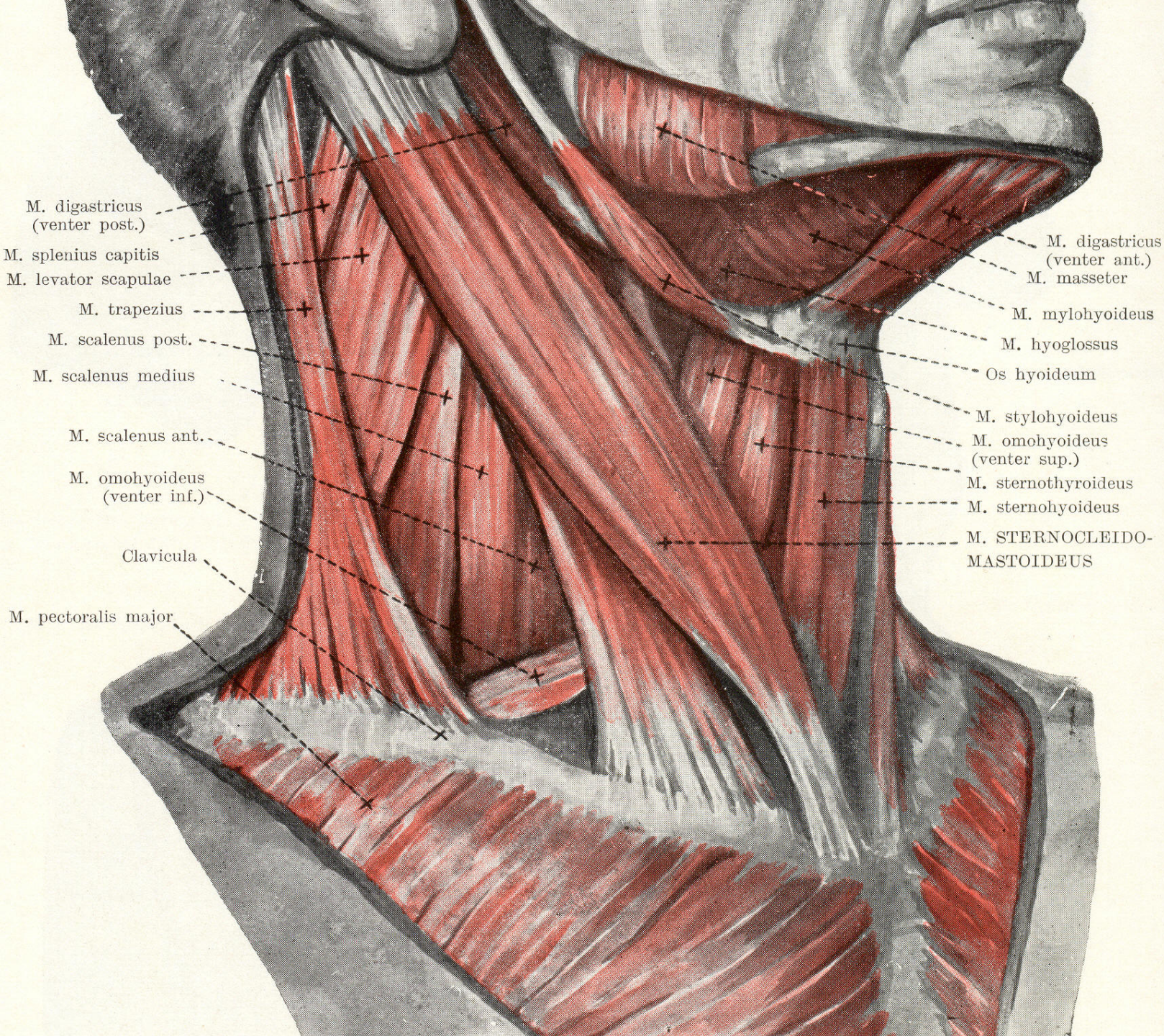
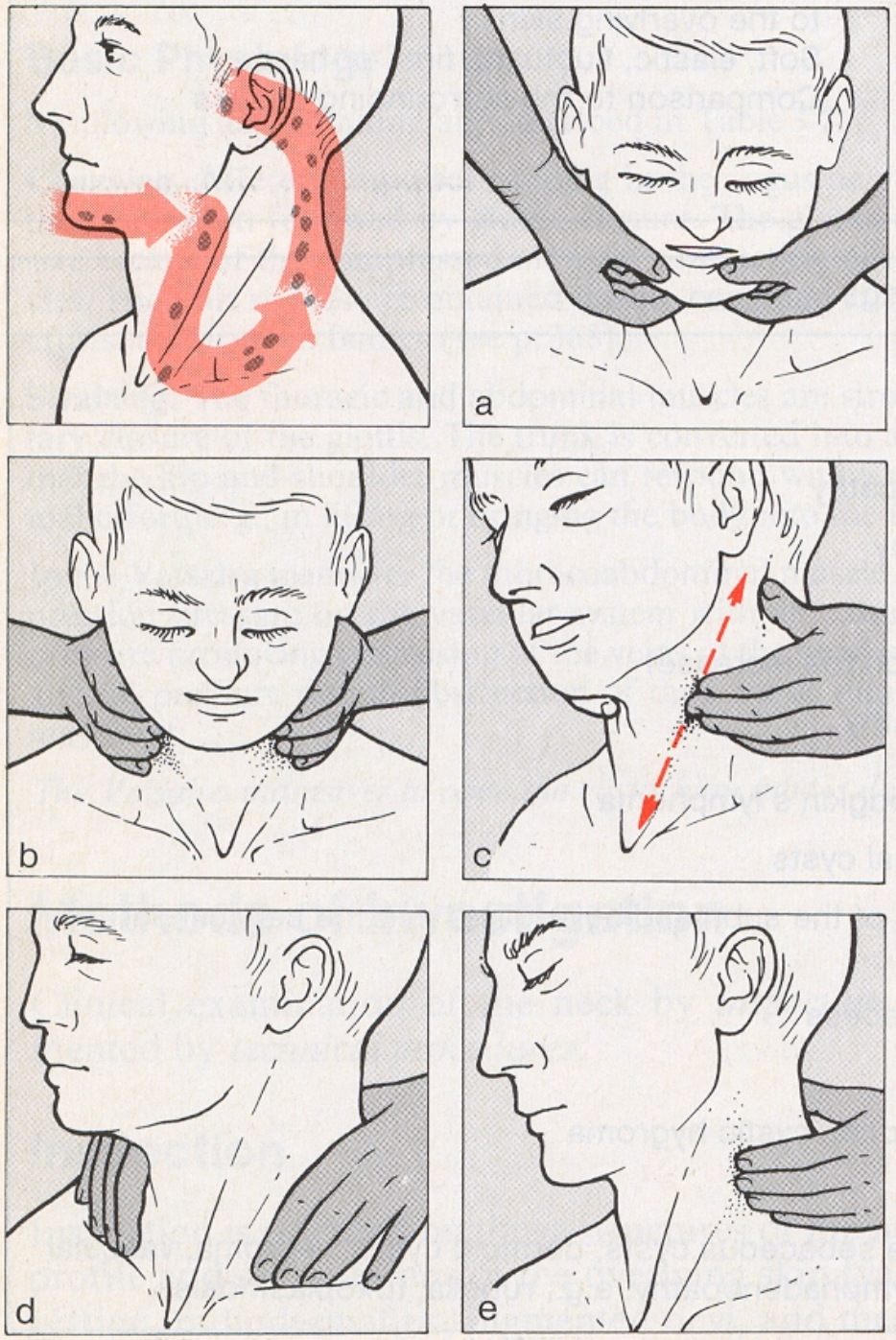

M. digastricus (venter post.)
M. splenius capitis
M. levator scapulae
M. trapezius
M. scalenus post.
M. scalenus medius
M. scalenus ant.
M. omohyoideus (venter inf.)
Clavicula
M. pectoralis major
M. digastricus (venter ant.)
M. masseter
M. mylohyoideus
M. hyoglossus
Os hyoideum
M. stylohyoideus
M. omohyoideus (venter sup.)
M. sternothyroideus
M. sternohyoideus
M. STERNOCLEIDO-MASTOIDEUS

Investigation

- aspection
- palpation
- ultrasound, Doppler technique - provide information abokut vascular lesions, distinguish between cyst and solid tumor
- computed tomography - allows greater differentiation : vascular lesion, tumors, cysts - including their position and extent
- biopsy
- cervical lymphography - is of little clinical value when compared with other methods of investigation.
- MRI
- scintigraphy

Summary of findings

- form and size in cm,
- site (lokalizaci), topographic description
- consistency - soft, elastic, fluctuant, firm or hard
- mobility - vertically or horizontally, fixed or adherent
- pulsation, skin - appearance of the skin, comparison to the surrounding tissues



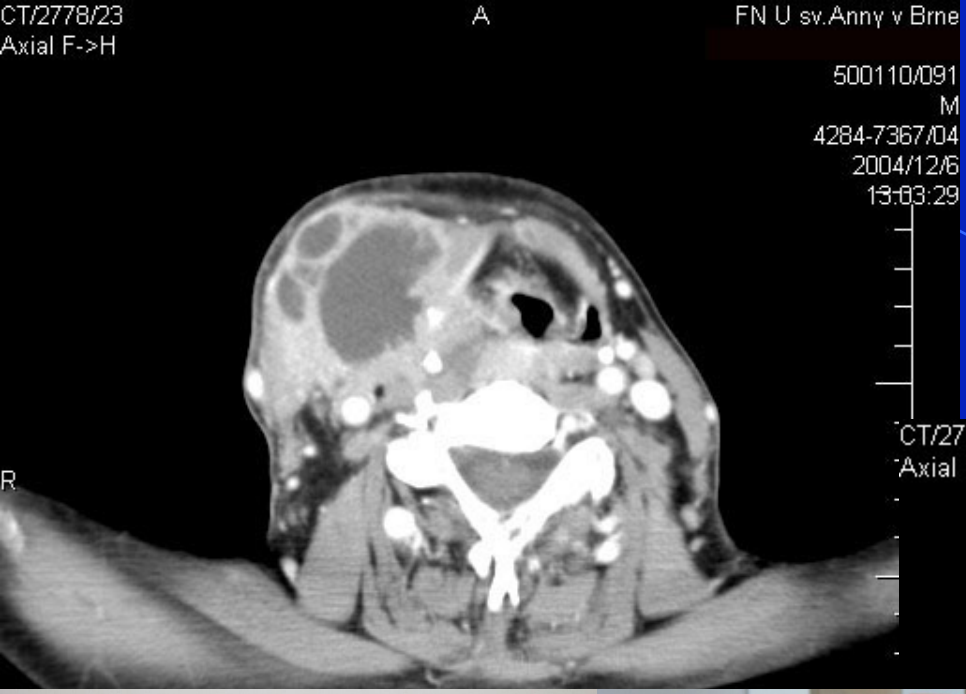
„Sentinell lymphnode"

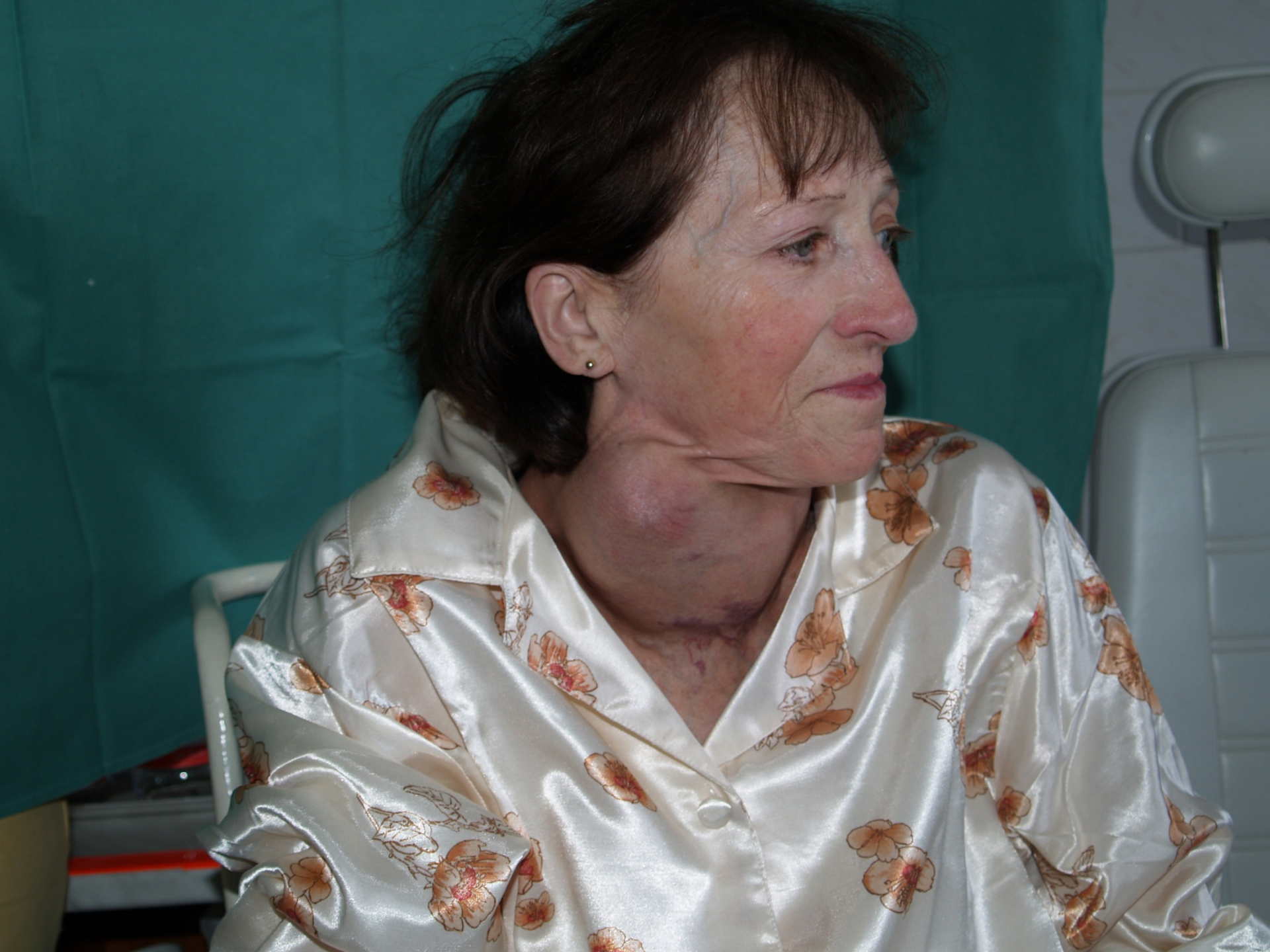
- First lymphnode to which the lympha is comming from primary tumor. If there are no metastasis, the probability of metastatic spread is low.
- Identification –
  - Through surgery - peritumoras application of lymphotrop agent (koloidní roztoky označené radioaktivním techneciem, barvivo).
  - Before surgery – lymfoscintigraphy 1 day before surg.

Reliability of investigational methods of external neck

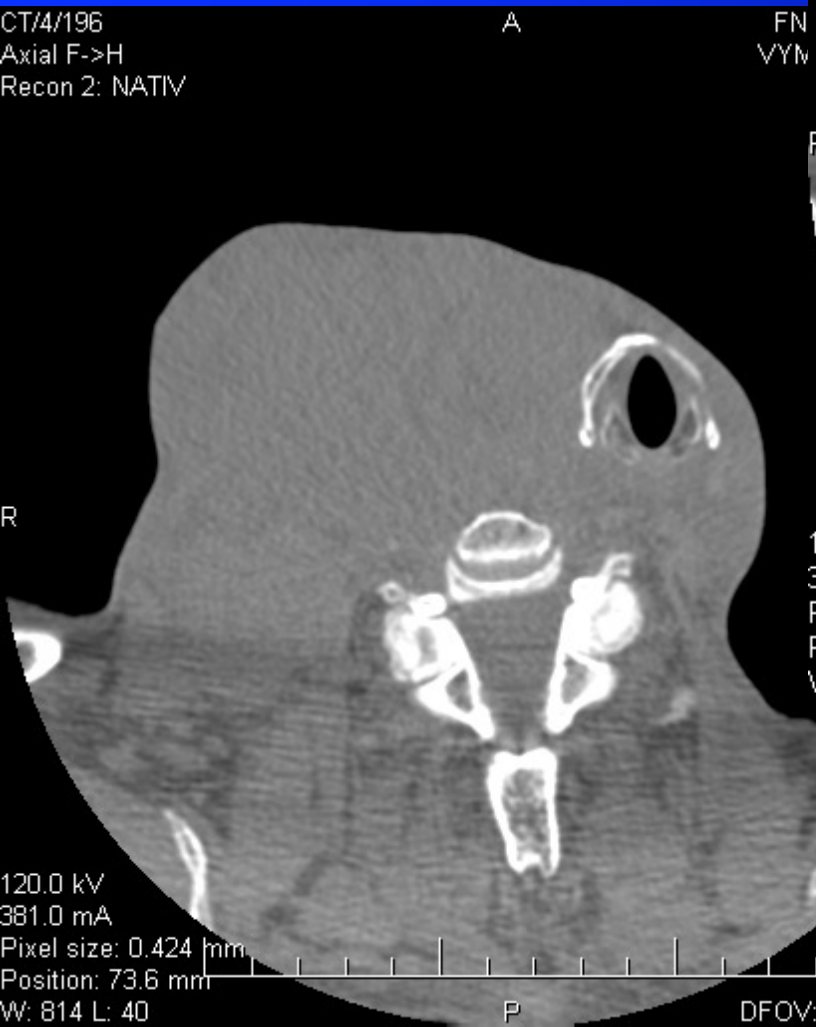
- *Palpation- až* 1/3 of cases fals negative or fals positive.
- UZ - sensitivity 94 %, specifity 91 %
- *FNAB fine needle aspiration cytology and biopsy* guided by ultrasound - 76 % senzitivity, 100 % specifity
- Reliability of *CT scan* for metastatic disease is given 72 % - 93 %
- *PET* high sensitivity, lower specifity than CT.
- Combination of evaluation methods shows presence of neck metastasis approx. v 70 % patients. About 30 % of patients without clinical symptoms are thretens with locoragional relaps from micrometasis in regional lymphnodes

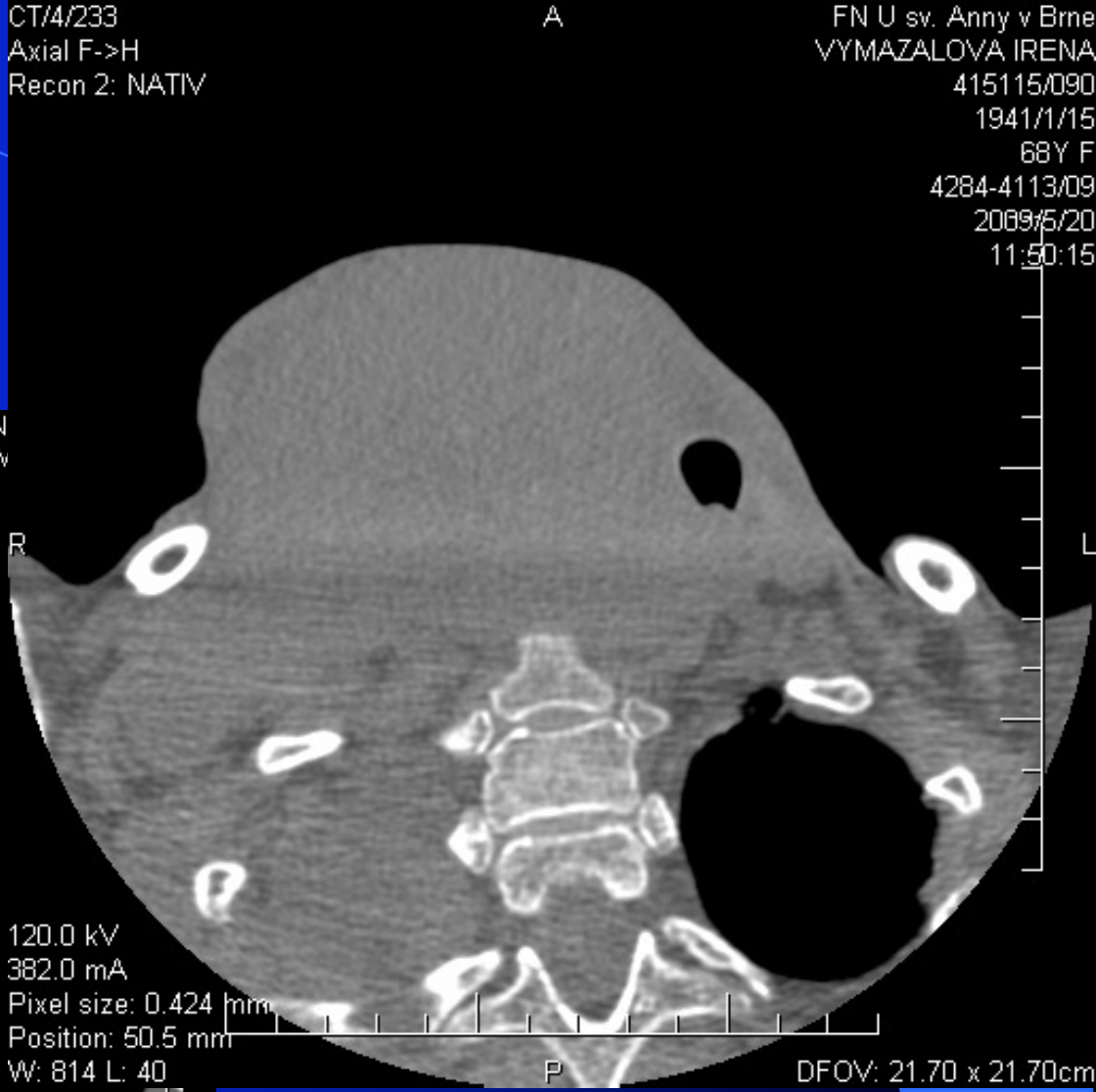
Metastasis of cancer into neck lymphnode

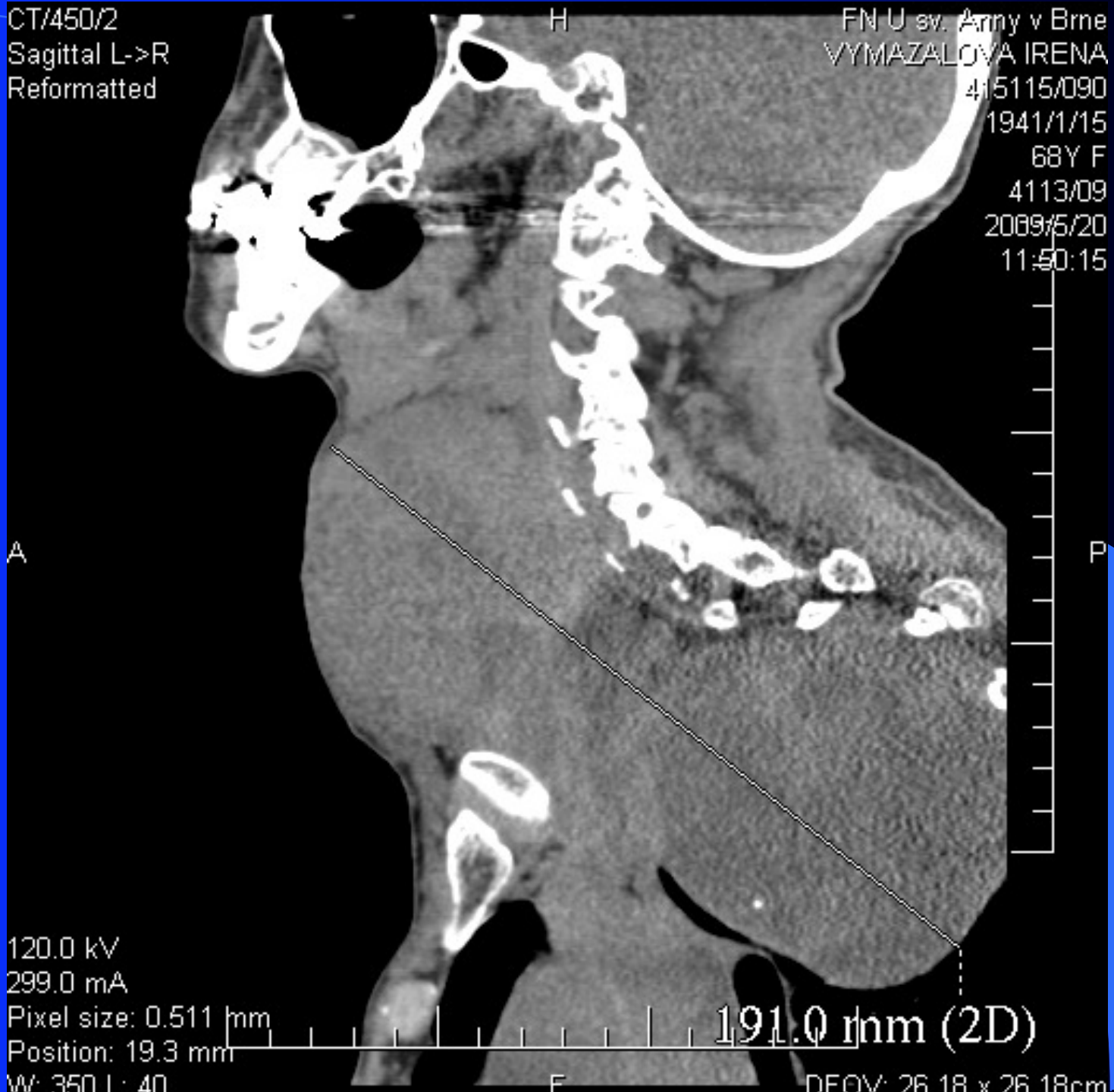




Ca gl. thyreoidea



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Differential diagnosis of tumors of the neck

Lymphnodes X Extra lymphnodes

- **Inflammatory Cervical Lymphadenopathy**
- **Tumors**
- **Congenital Anomalies**

Inflammatory Cervical Lymphadenopathy

acute - lymph nodes are painful

Chronic non specific lymphadenitis

shows on repeated infections in the region of pharynx in past. Persistent or recurrent lymph node swellings are not compatible with a diagnosis of nonspecific lymphadenitis.

Chronic specific lymphadenitis -

tuberkulóza, sarkoidóza.

Lymphadenitis retikulocullaris abscedens

Cat Scatch Fever the pustulous primary focus, which tends to ulcerate, occurs in the skin, . This is followed 1 to 5 weeks later by a regional lymphadenopathy. In one third of cases a fistula forms.Is caused by the cat scratch virus.

Tularemie.

Lymphadenitis with changes in blood account

mononucleosis infectiosa, rubeola, adenovirosis, hepatitis epidemica, viral pneumonia, listeriosis, toxoplasmosis, lymphadenitisafter hydantoin

Rare lymphadenitis

kolagenózy, lues, mykózy.

Tumors

Benign

hemangiomas, lymphangioma (Cystic Hygroma), chemodectoma, lipomas (Morbus Madelung- benign symetric lipomatosis of the neck)

Malignant lymph node tumors

Malignant lymphomas Hodgkin´s disease, Non - Hodgkin´s lymphoma. Treatment according to oncologist.- actino- and chemotherapy.

Primar neck cancer

Thyroid gland , tzv. „branchiocarcinoma" from lateral Branchial Fistulae and Cysts.

Lymph Node Metastases

treatment - surgery.

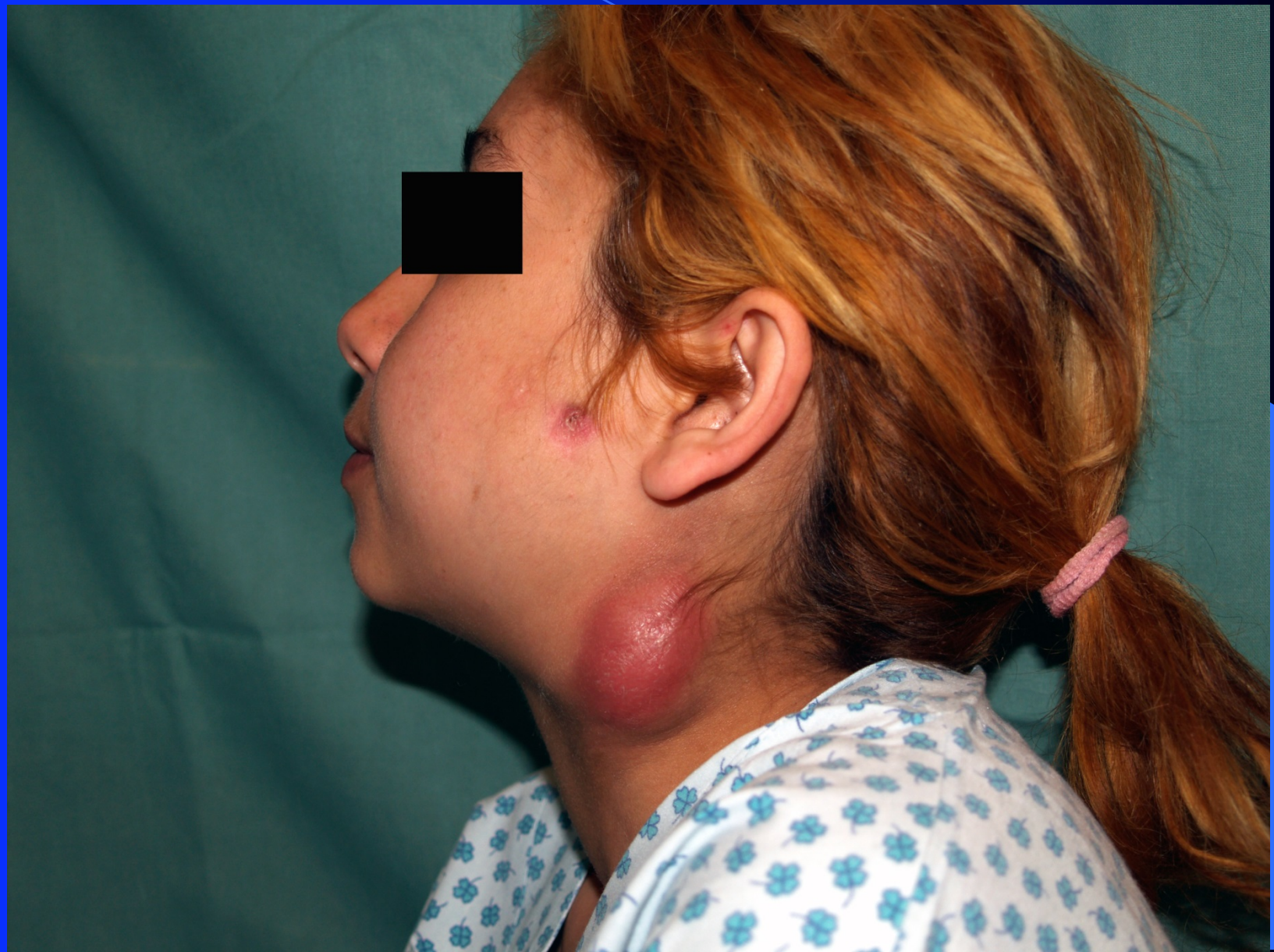
TNM classification:

N1 single homolateral less than < 3 cm;
N2 single homolateral > 3 cm < 6 cm
more homolateral lymph nodes< 6 cm
bilateral or contralateral < 6 cm
N3 > 6 cm

Congenital Anomalies

- lateral Branchial Fistulae and Cysts
- thyreoglossal Duct cysts and fistulae (medial)

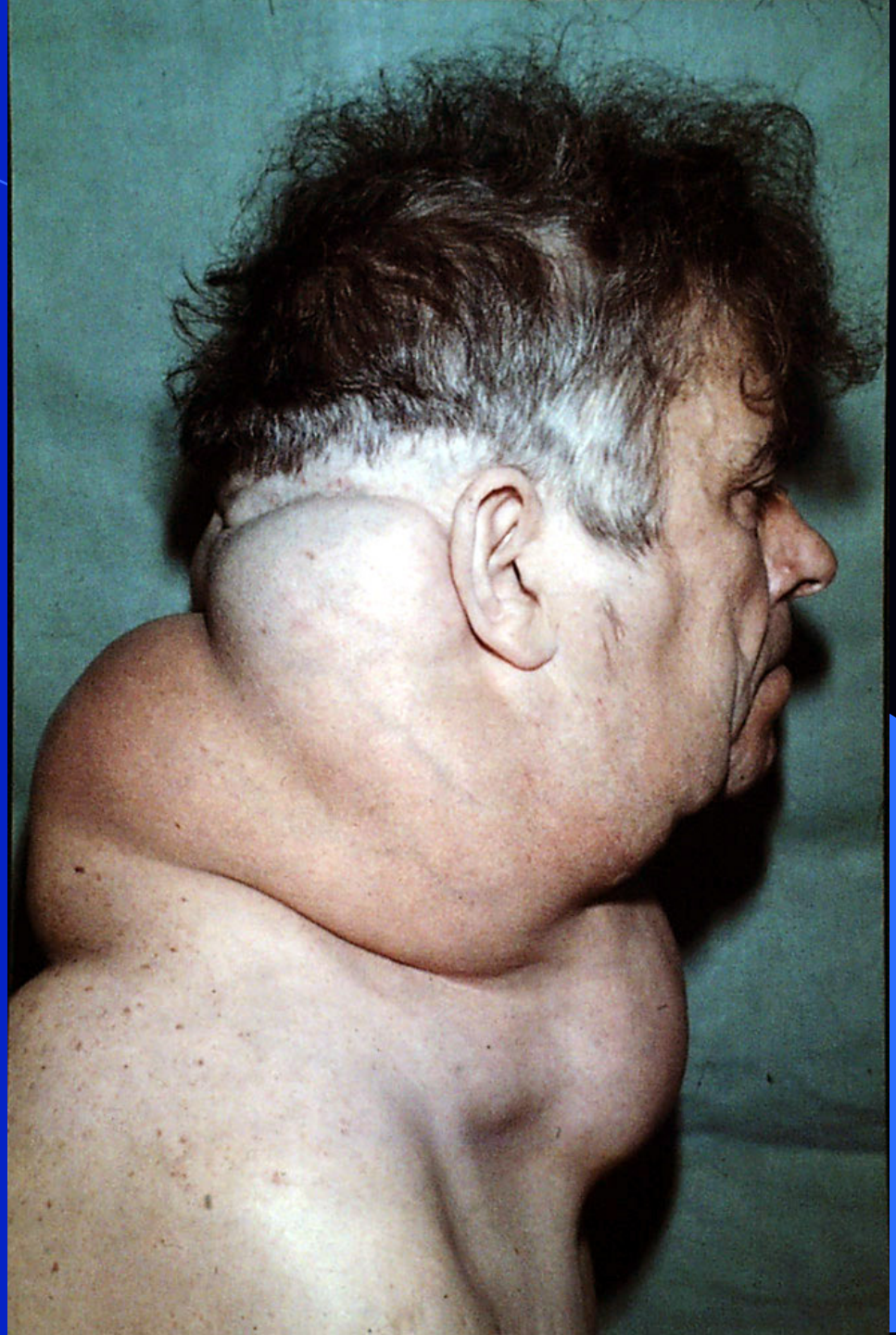
Inflammatory neck swelling - actinomycosis



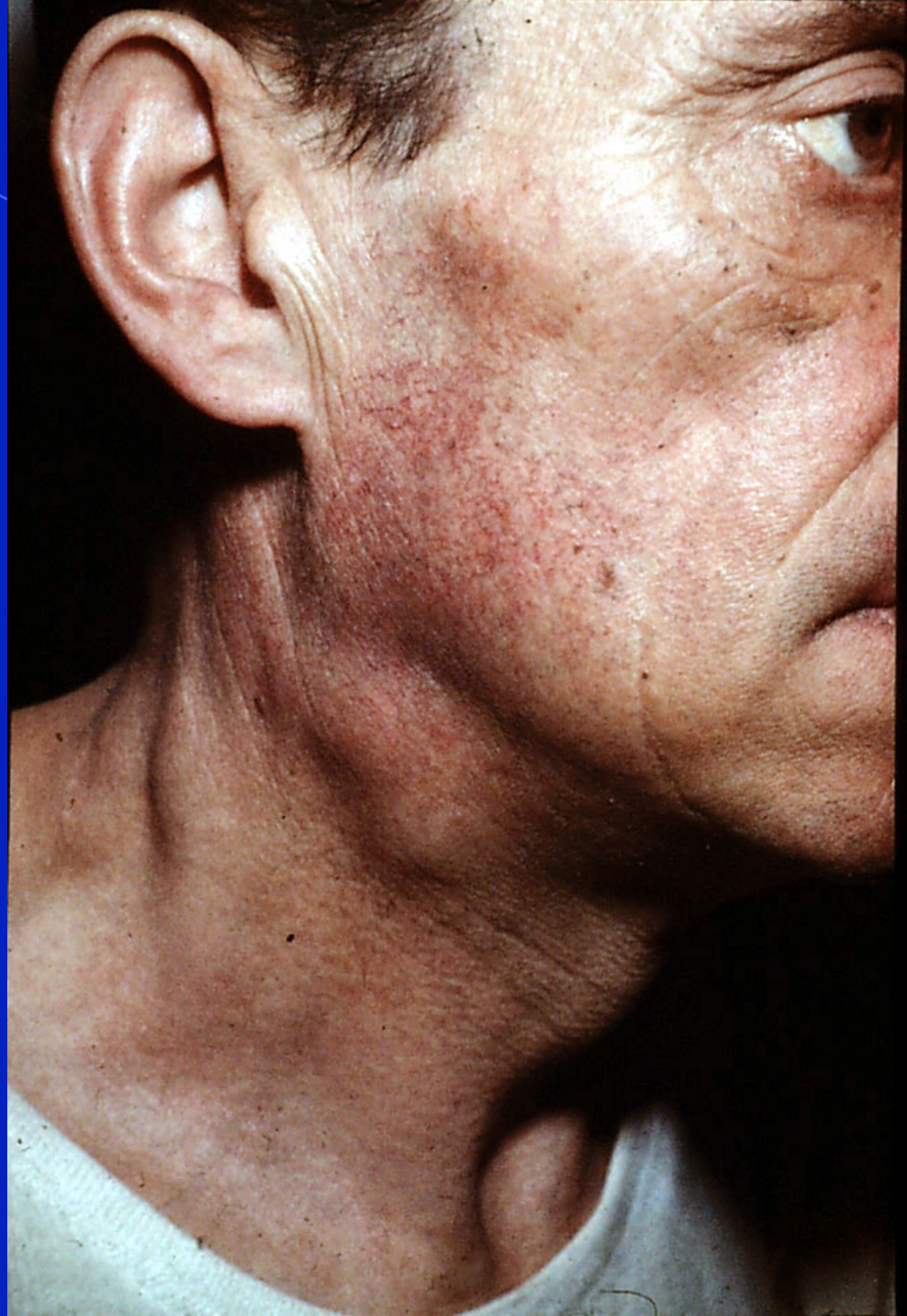
Morbus Madelung

benign synmetrical lipomatosis

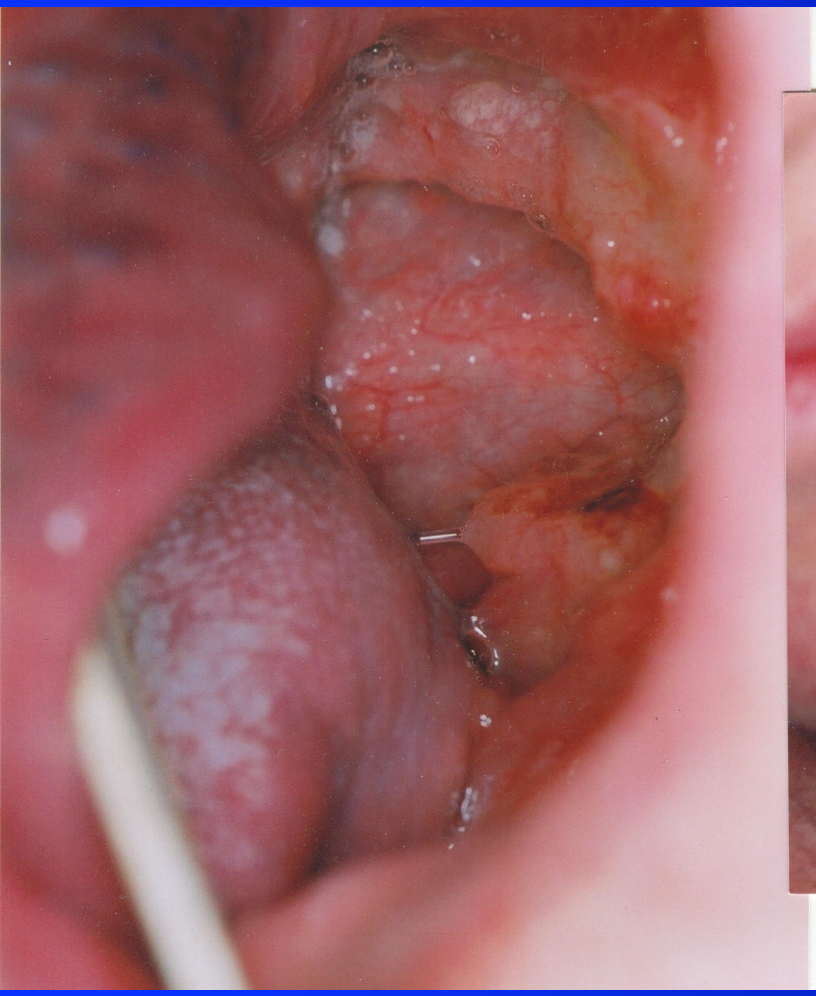
Morbus Madelung

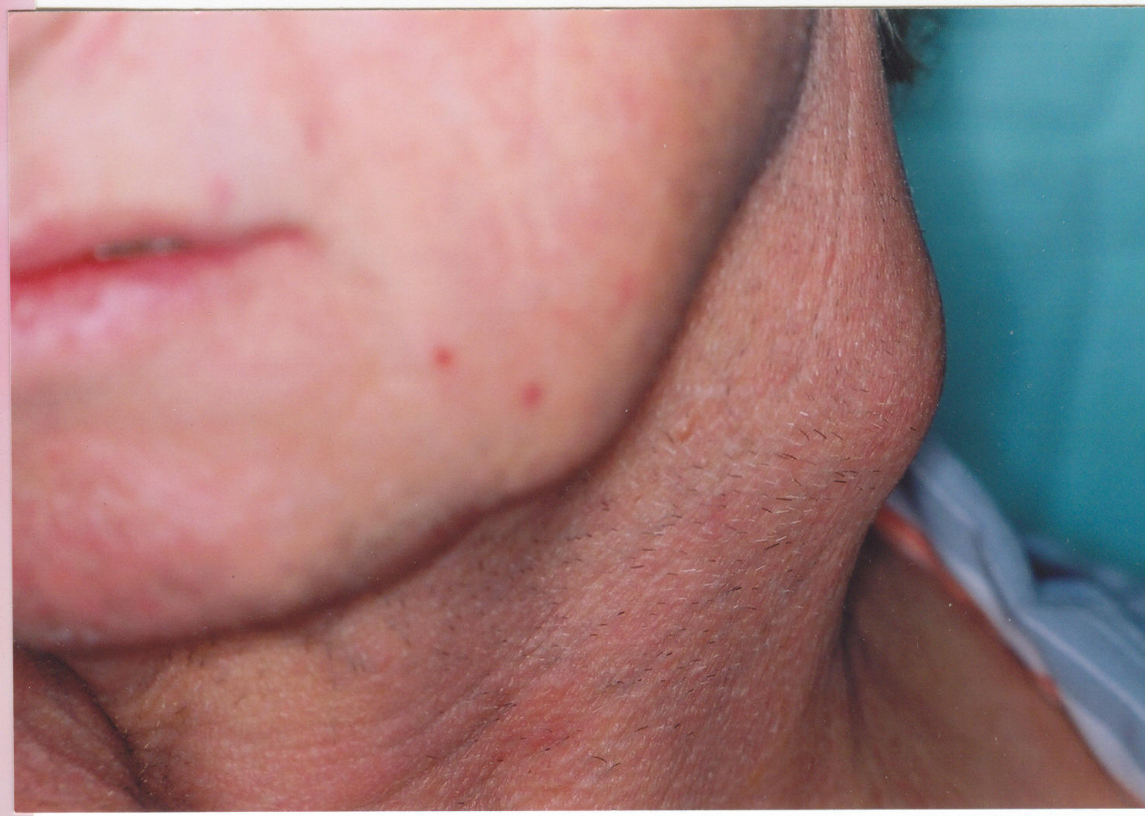


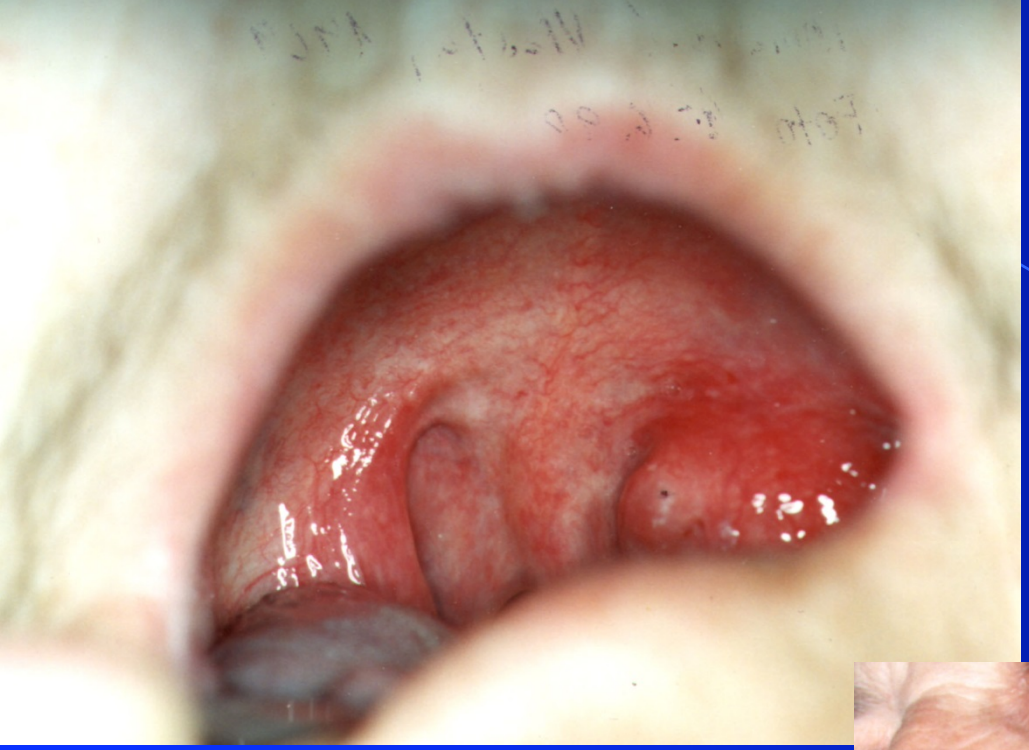
Metastasis of oropharyngeal cancer



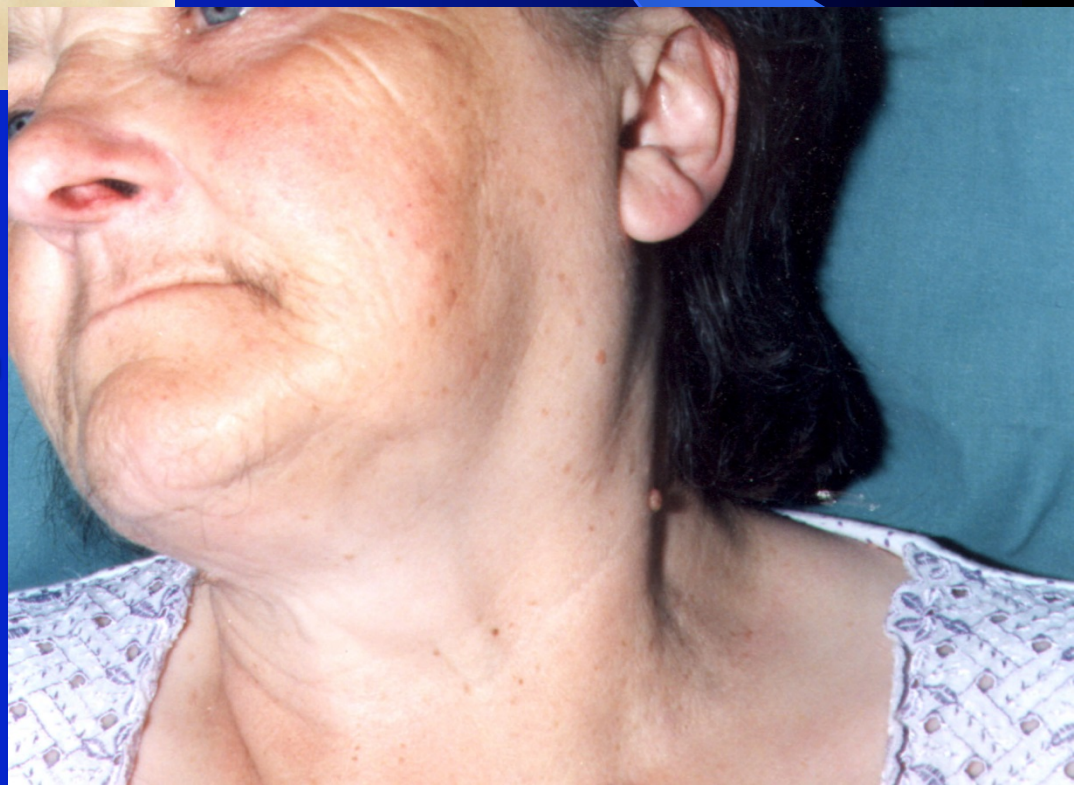
Cancer of oropharynx with metastasis neck left

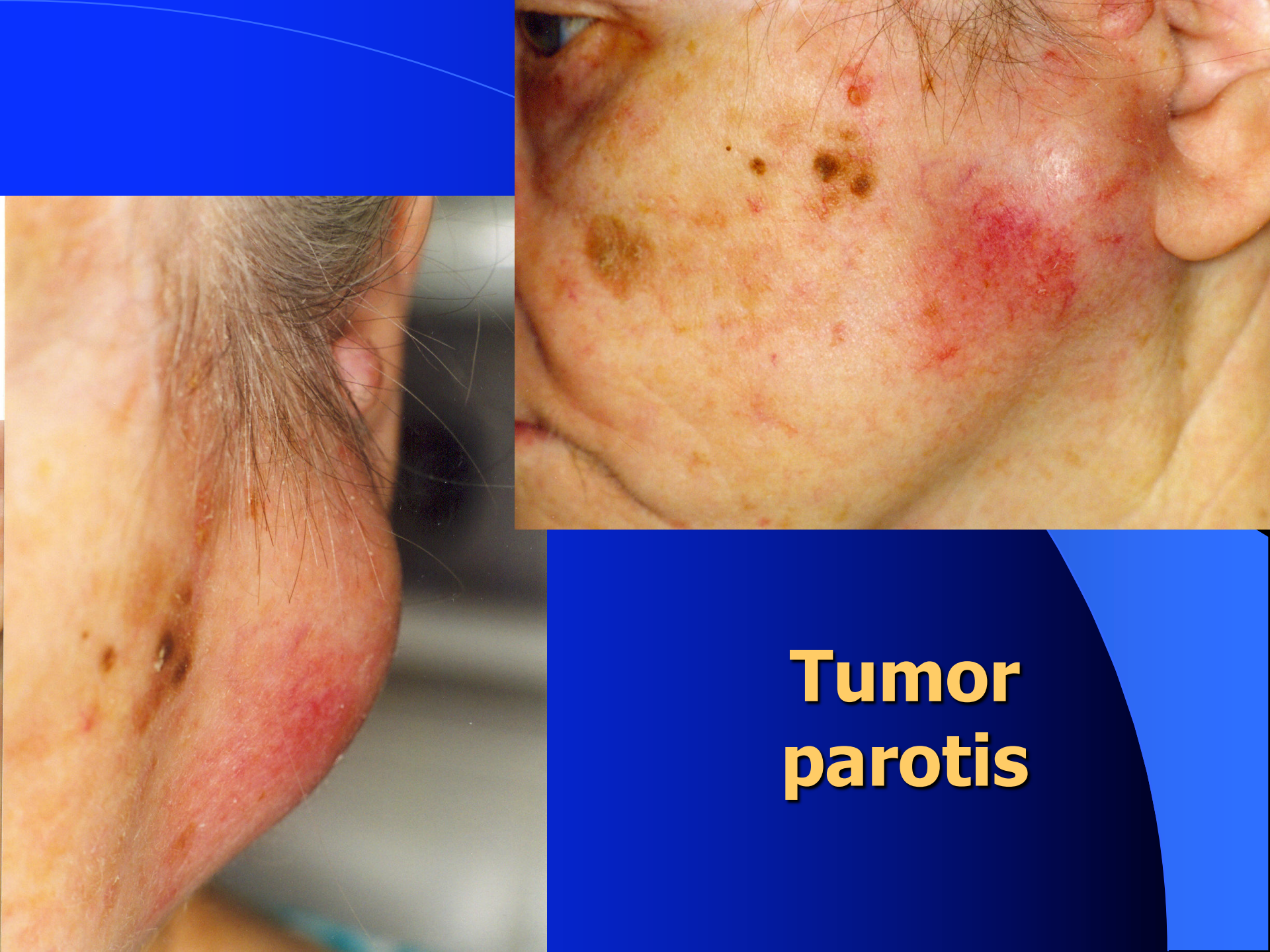






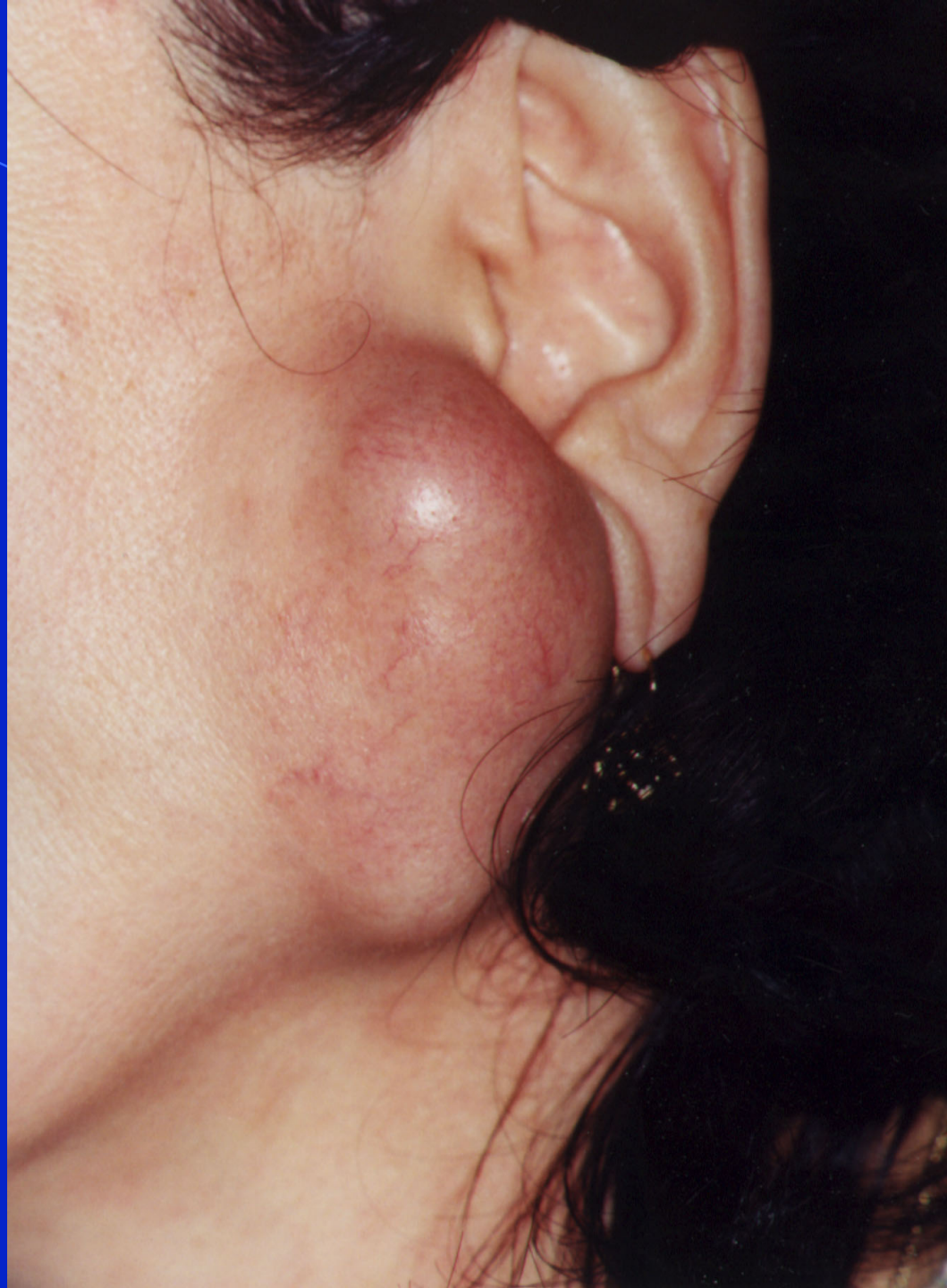
Glomus tumor left



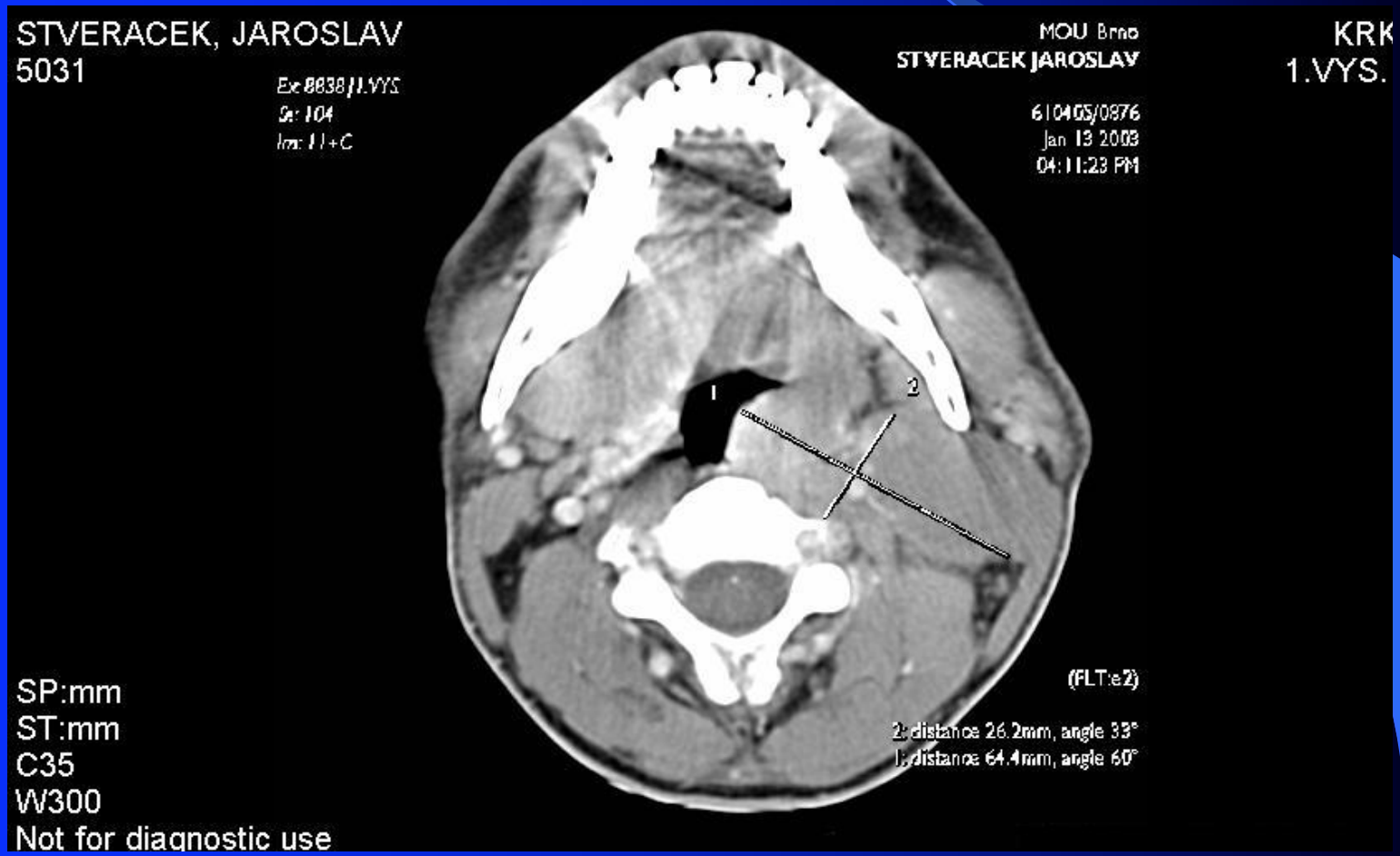


Tumor parotis

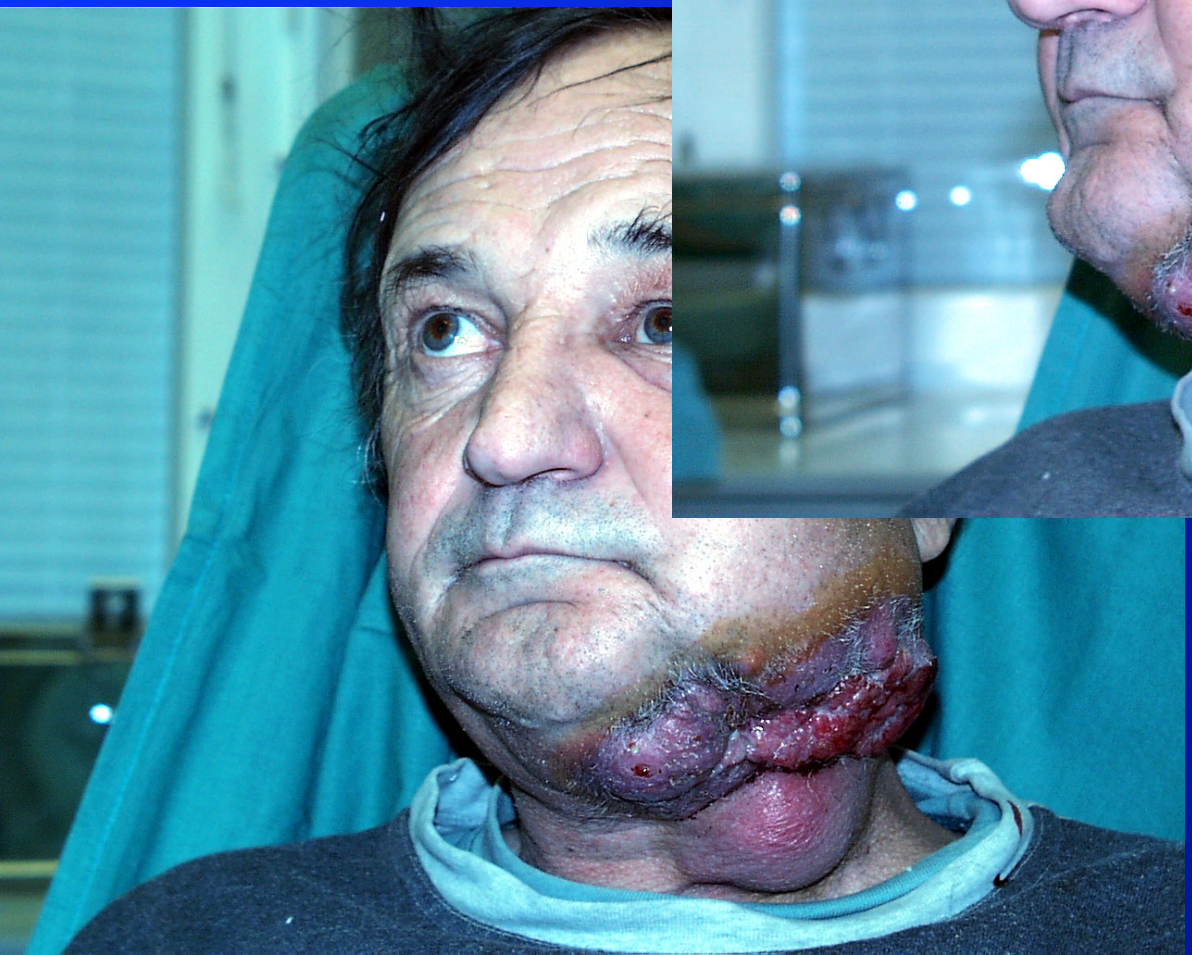
Mixtumor parotis

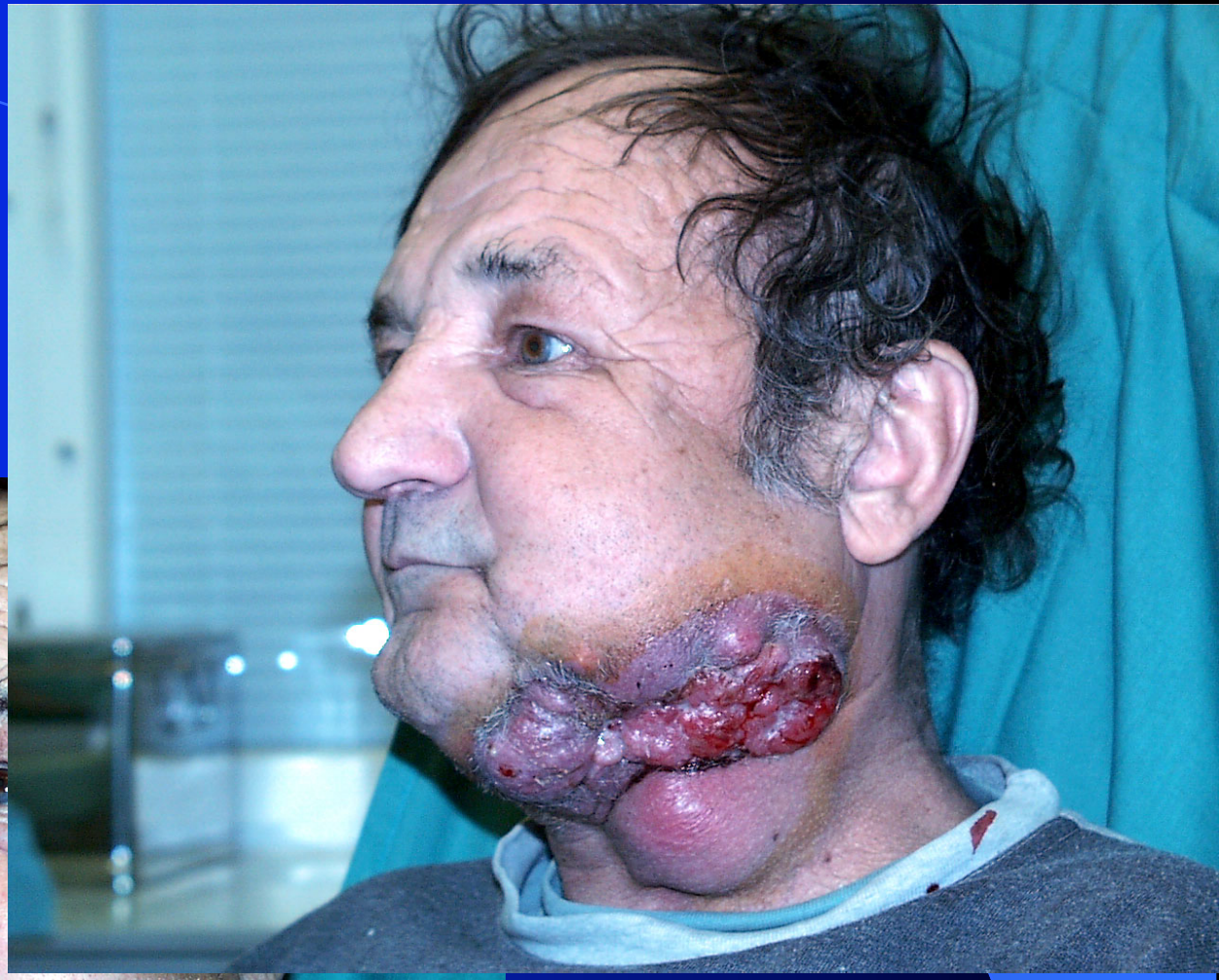


Tumor of parapharyngeal space



Pokročilý karcinom slinné žlázy





Pokročilý karcinom hrtanu s metastázami na krku – pacient před rokem odmítl léčbu

The methods of surgical treatment of lymph node metastases

Surgery from external approach
Combinated with
Radiotherapy

The methods of treatment

Prescalene node biopsy (Daniels operation)

The radical curative neck dissection (Resectio venae jugularis internae en bloc sec. Crile 1906) - the upper boundary of the operation is the base of the skull and the lower boundary lies at the level of the clavicle. The sternocledomastoid muscle, the internal jugular vein are removed.

The goal of neck dissection is complete removal of lymph nodes and vessels between the superficial and deep cervical fascia.

Functional deck dissection- the sternocleidomastoid muscle, the internal jugular vein, the accessory nereve are preserved.

An elective neck dissection is a neck dissection carried out in the absence of palpable lymph nodes for a primary tumor which experience has shown to have a high metastatic rate - oropharynx, hypopharynx, supraglottic larynx, tghe bgase of the tongue. The purpose of this operation is to deal with micrometastases. In treatment for metastasis there is used a combination with actinotherapy.

The Memorial Sloan Kettering Cancer Center classification

I submandibular and submental lymphnodes

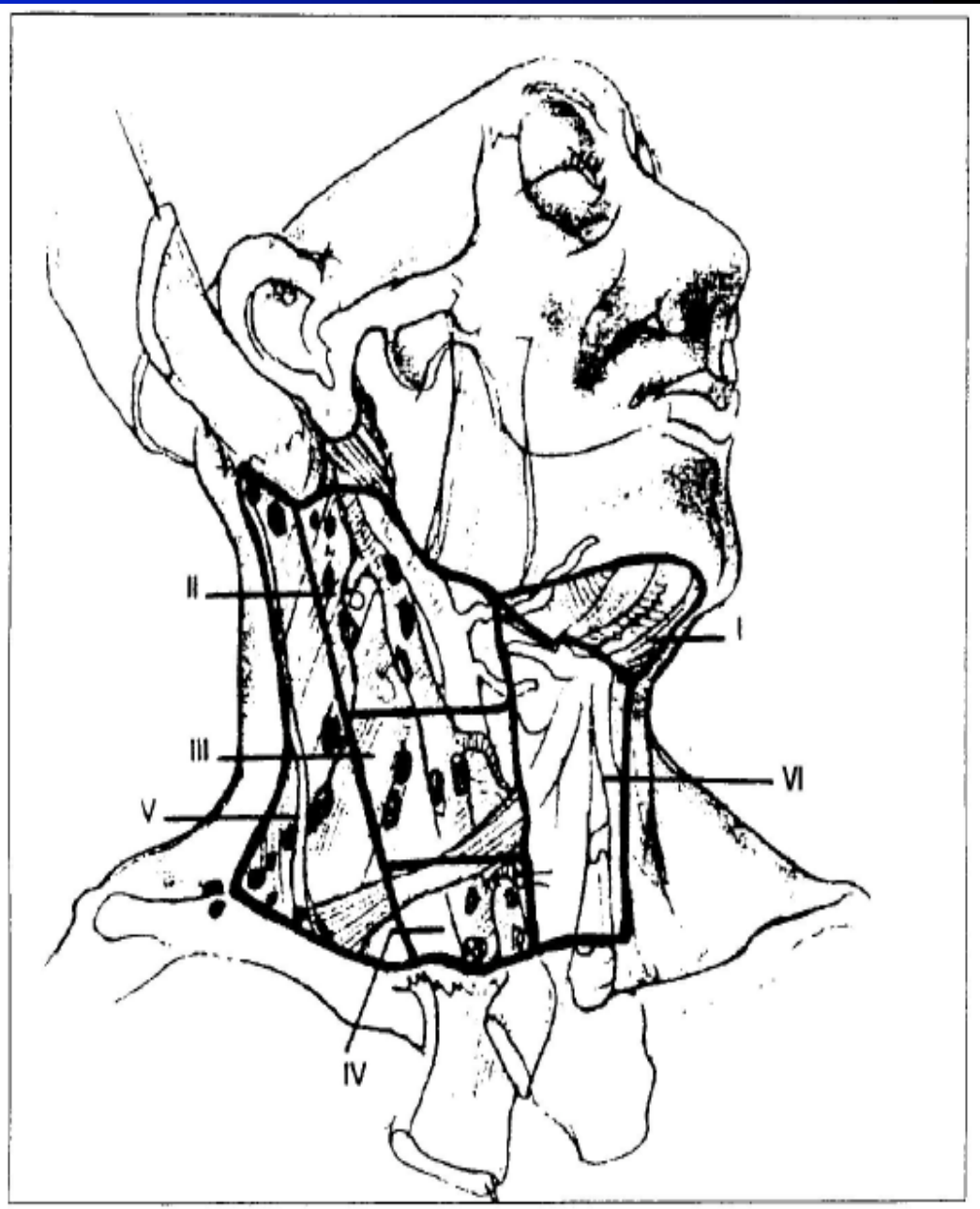
II upper jugular lymphnodes

III middle jugular lymphnodes

IV inferior jugular lymphnodes

V lymphnodes in posterior neck triangl

VI lymphnodes in anterior neck triangl



Typs of neck dissections
(classification according to Ferlito)

ND (neck dissection)
L (left, levý) nebo R (right, pravý) – side of neck dissection
removed region of lymphnodes signed as I to VII, in increasing grade.
removed nonlymphatic structures

Examples:

ND (R, I-V, SCM, IJV, CN XI) - Radical neck dissection

ND (L, I-V, SCM, IJV, CN XI, CN XII) - Expanded neck dissection with removement of n. hypoglossus

ND (I-V, SCM, IJV) - Modified radical neck dissection with preserved n. XI

abbreviations: ND – neck dissection, SCM – m. sternocleidomastoideus, IJV – v. jugularis interna,
CN XII – n. hypoglossus, CN XI, SAN – n. accesorius (spinal accesory nerve), ECA – a. carotis externa, ICA – a.carotis interna, CCA – a. carotis communis, CN VII – n. facialis,
CN X – n. vagus, SN – krční sympatikus, PN – n. phrenicus, SKN – kůže (skin),
PG – glandula parotis, SG – glandula submandinbularis, DCM – hluboké svaly krku (deep cervical muscles).

Modified radical neck dissection (I-V, at least 1 structure preserved)