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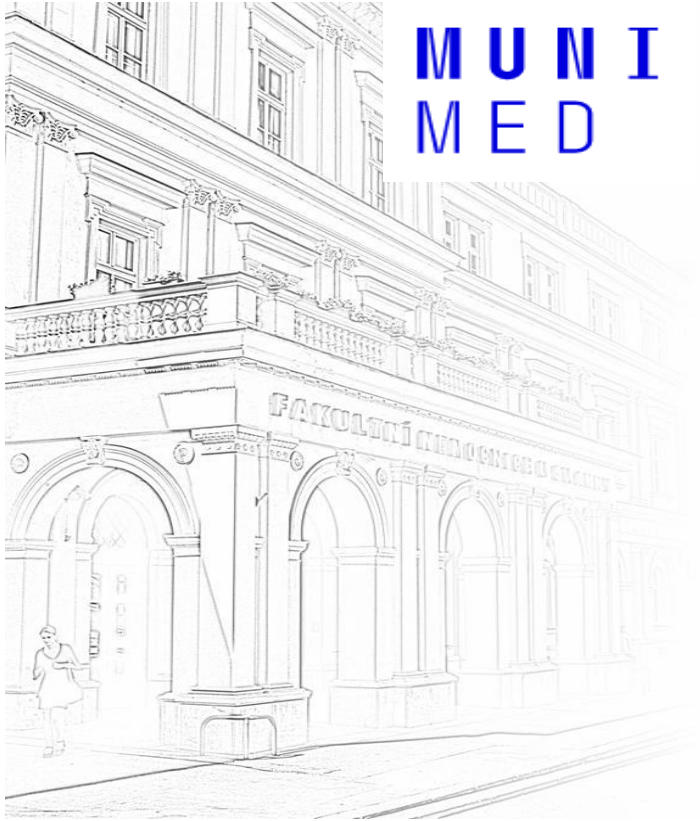

MUNI MED

Oral cavity and Pharynx

KOCHHK FNUSA

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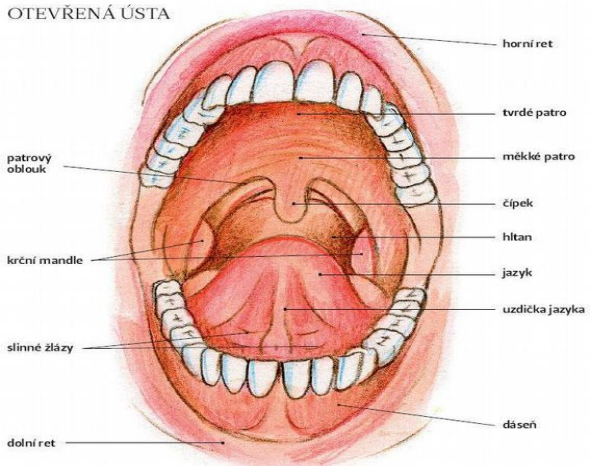
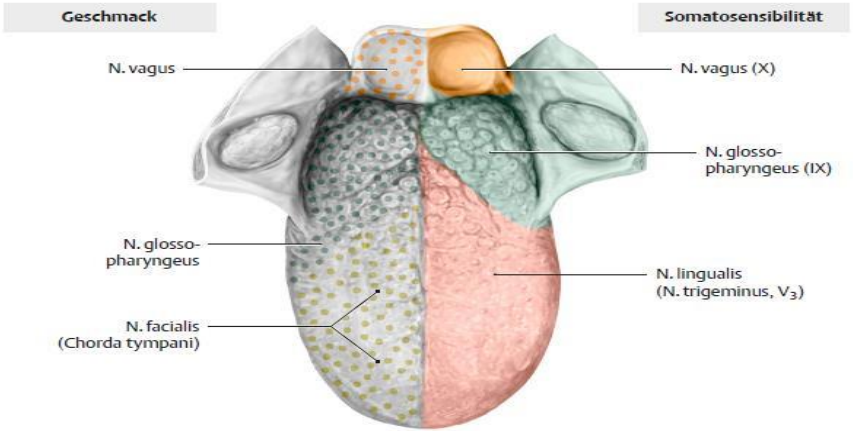
Anatomy - oral cavity

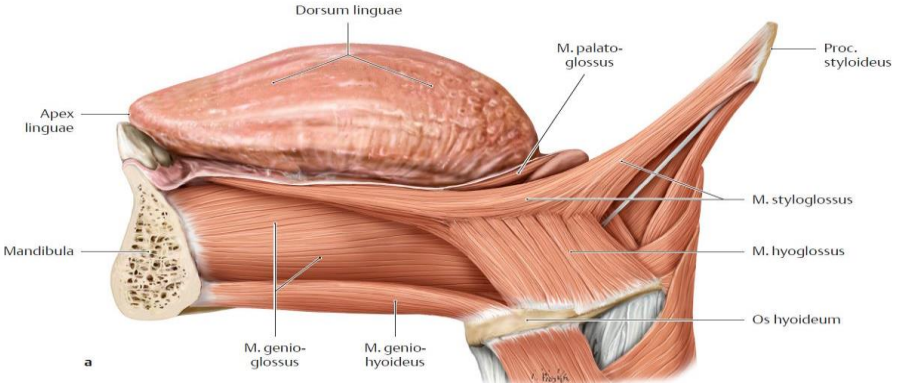


- Lips (m.orbicularis oris)
- Cheek (m.buccinator, d.Stenoni)
- Processus alveolaris maxillae et mandibulae, teeth (adult 32, child 20)
- Hard palate
- Base of the oral cavity (m.geniohyoideus, m.myohyoideus) – gl.sublingualis, ductus Warthoni (gl.submandibularis)

Anatomy - oral cavity

Tongue – intraglossal and extraglossal („deep“) muscles (m.styloglossus, m.palatoglossus, m.genioglossus, m.hyoglossus)





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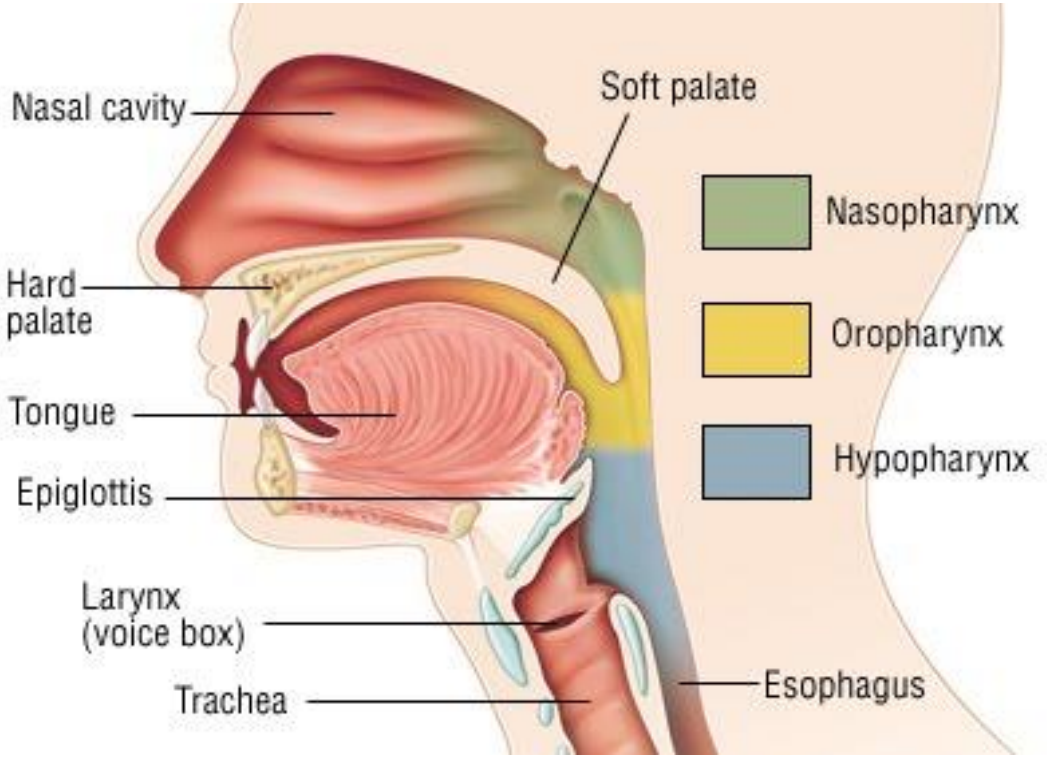
Anatomy - pharynx

Muscular-fibrous tube, -
from skull base to C6
(cricopharyngeal sphincter)

- Tunica Adventitia
- Tunica Muscularis
- Tunica Mucosa
- lymphatic subepithelial tissue



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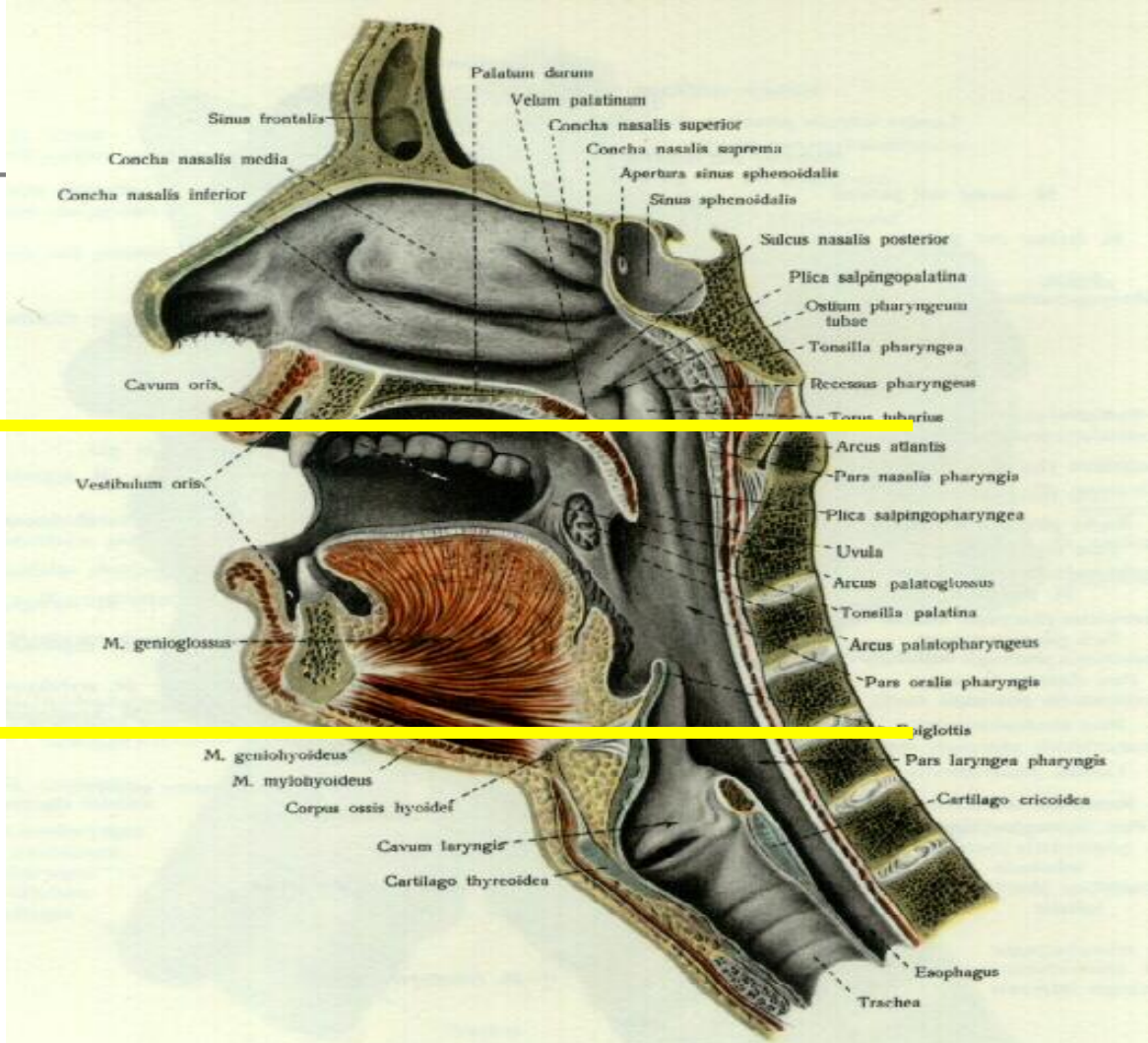
Epipharynx

plane interlaced with soft palate

Oropharynx

plane interlaced with hyoid

Hypopharynx



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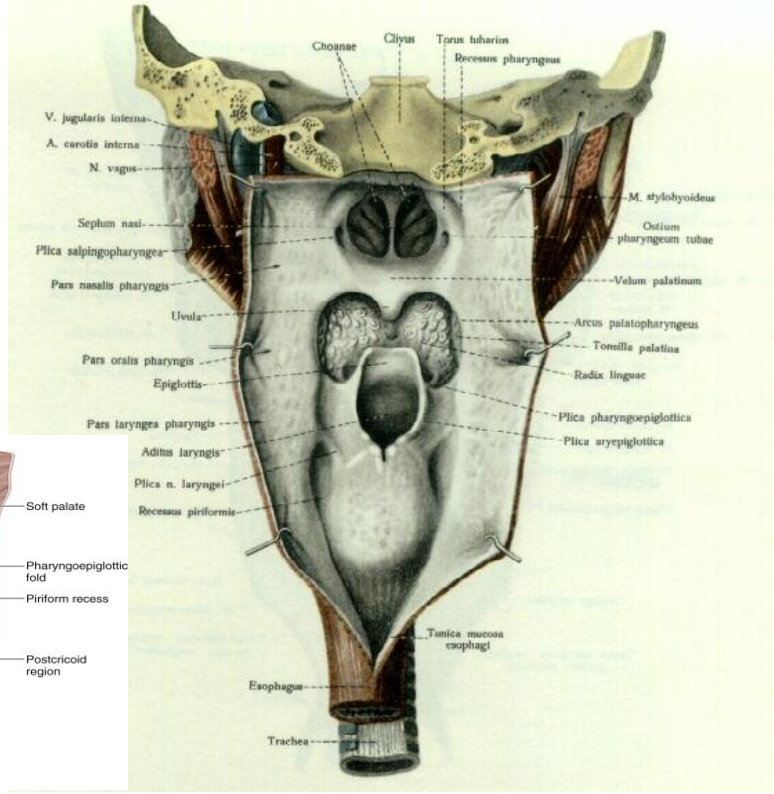
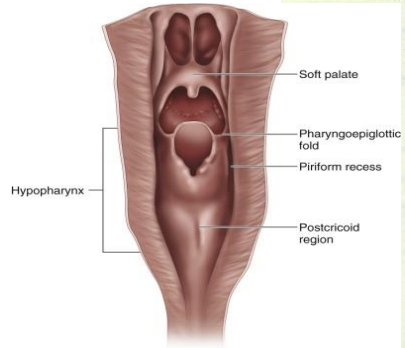
Pars laryngea (hypofarynx)

– from superior edge of hyoid bone (vallecula glossoepiglottica) to inferior edge of cricoid cartilage (C6)

- piriform recess – bordered medially by aryepiglotic fold, laterally internal space of thyroid cartilage, posteriorly posterior wall of hypopharynx

- anteriorly - postcricoid region





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Waldayer´s lymphoepithelial ring (system of the Pharynx)

Lies at the opening of the upper aerodigestive tracts. Lymphatic tissue surrounds the upper aerodigestive tract in vertical and horizontal planes. Tonsila:

- pharyngea (epipharynx)
- tubariae (epipharyngeal opening of tuba Eustachii)
- palatinae
- lingualis (tongue)
- lymphatic tissue on lateral pharyngeal walls
- lymphatic tissue on posterior pharyngeal walls
- lymphatic tissue in ventriculus laryngis

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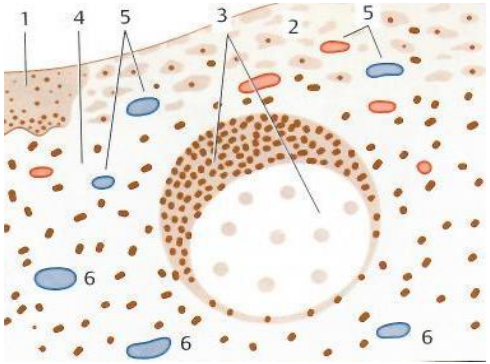
Immune-specific function of Waldeyer´s Ring

Lymphoepithelial tissue, reticulohistiocytic system.

Lymphoepithelial organ – tonsils (lymphatic follicles, interfollicular tissue, lymphatic vessels, vains).

- The tonsils ensure controlled and protected contact of the organism with environment, **immunologic surveillance**
- The tonsils produce lymphocytes
- The tonsils expose B- and T-lymphocytes to current antigens
- The tonsils produce specific antibodies after the production of the appropriate plasma cells.
- All types of immunoglobulins occur in tonsillar tissue.



1. Continuus squamous epithelium
2. Reticular epithelium
3. Secondary nodes
4. Basic lymphoid tissue
5.,6. Arterioles and venules

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Main symptoms indicating disease of the mouth and pharynx I:

Pain on eating, chewing, or swallowing

Frequent cause: inflammations, tumors, foreign bodies

Dysphagia (difficult swalloving)

Inflammations (glossitis, abscess, angionerutic edema, edema of introitus laryngis)

Neurogenic etiology (disorder of n. vagus a glossopharyngeus, amyotrophic lateral sclerosis, bulbar amd pseudobulbar paralysis, sclerosis multiplex, diabetic and alcoholic neuropathy)

Mechanical obstruction (foreign body, diverticulosis, stricture, tumor)

Miscelanea (epithelitis post actinotherapiam, xerostomy, fractures of mandibula and maxilla, disorder of chewing muscles)

Burning of the tongue

toxic stomatitis, various diseases of GIT, xerostomia, syndrome Plummer-Vinson, Diabetes mellitus, food allergy, mucoviscidosis, psychogenic glossodynia

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Main symptoms indicating disease of the mouth and pharynx II: - superfitialis laesions of the tongue

Red tongue (anemia, scarlet fever, hepatic cirrhosis, hypertension, allergy, Sjögren´s syndrome)

Gray smooth tongue (st.p. radiotherapiam, vitamin A deficiency, lichen planus)

Black hairy tongue (antibiotics, mycosis

Fissured tongue (lingua plicata, Melkersson-Rosenthal syndrome)

Coated tongue (mycosis, non-specific inflammation, reduced food intake, fever, malhygiene of oral cavity)

Brownish plaques (uremia in renal insufficiency)

Presence of blood in saliva, sputum

Bleeding in paradentosis, injury, foreign bodies, varices in base of the tongue, tumors.

Differential diagnosis: epistaxis, hemoptysis (coughing of blood from lower airways, hematemesis (bleeding from swallowing ways)

Foetor ex cavo oris (Oral Fetor)

teeth, gingiva- caries dentium, parodontosis, stomatitis, exulcerated tumors

Pharynx - inflammation (acute, chronic, specific), foreign bodies, tumors

Airway – atrophic rhinitis, ozaena, purulent rhinosinusitis, bronchiectasis

Digestive tract – esophageal diverticulum, disorder of stomach etc.

Metabolic cause- diabetes mellitus (acetone), renal insufficiency (urine), liver coma (sweet aromatic smell)

Trismus

Inflammation of the teeth or mandible, temporomandibular joint, oropharynx (peritonsillar abscess) injury, muscle spasm from neurologic origin, tumors of oropharynx and around the temporomandibular joint, congenital ankylosis of temporomandibular joint

Disorder of salivary secretion

xerostomia - dehydration, st.p.RT, Sjögren´s syndrome, sialoadenosis, sialorrhea - psychogenic factors, gravidity; …

Disorder of speech

dysarthria - bulbar and pseudobulbar palsy, …etc.

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Methods of investigation

- Inspection - indirect, direct endoscopy
- Palpation
- Investigation of innervation
  - ✓ **tongue** motoric innervation (n. hypoglossus – lying tongue - the tip to the sound side, tongue out – to the disease side
  - ✓ Sensitive
  - ✓ Sensorics (anterior 2/3 n. V., posterior 1/3 n. IX), elektrogustometry

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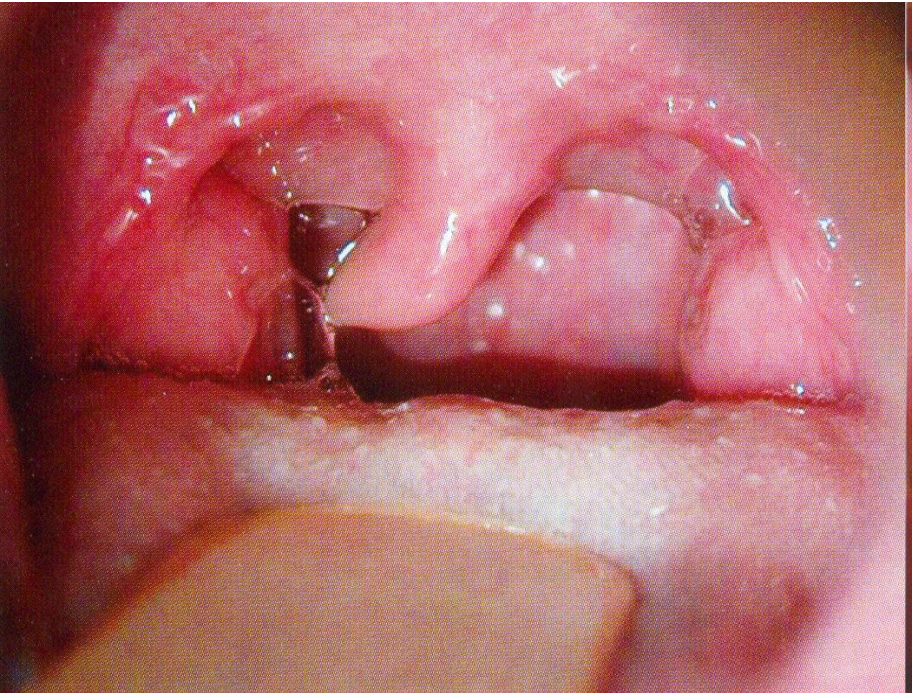
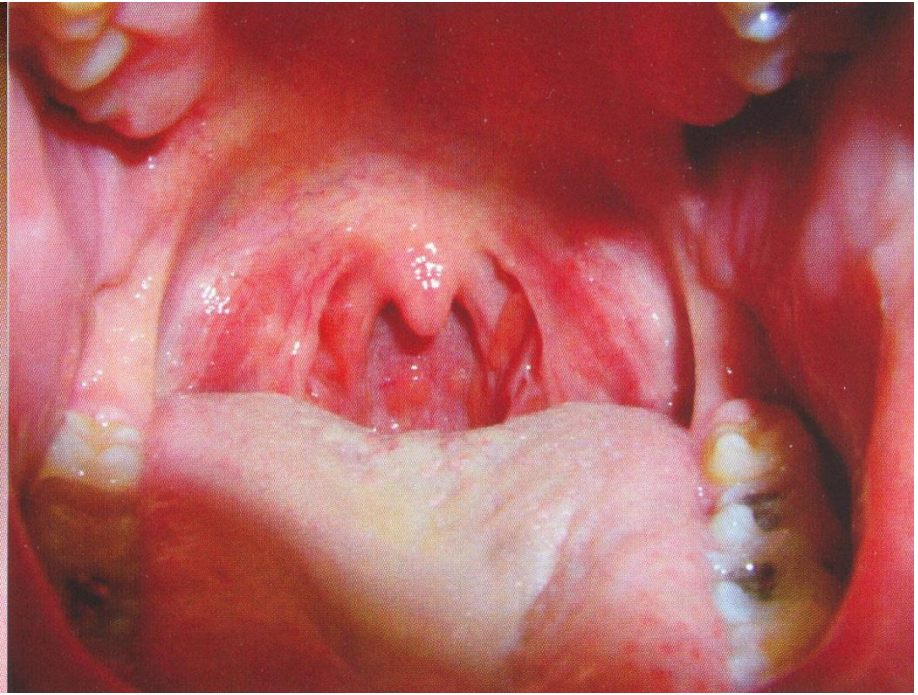
Oropharynx – normal finding

at rest

retching





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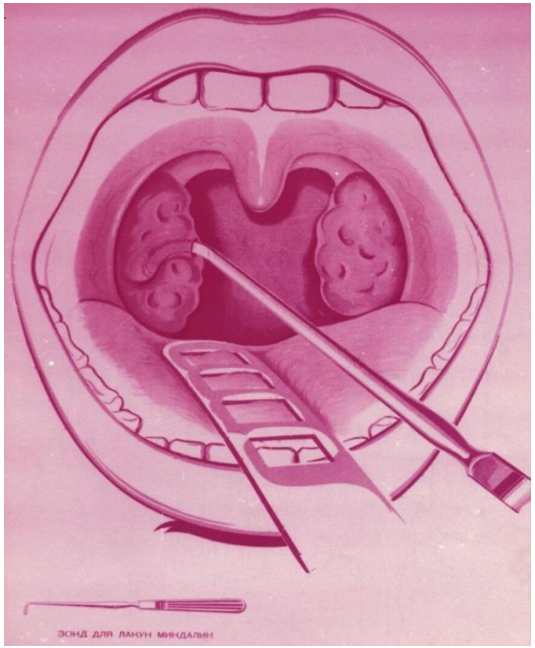
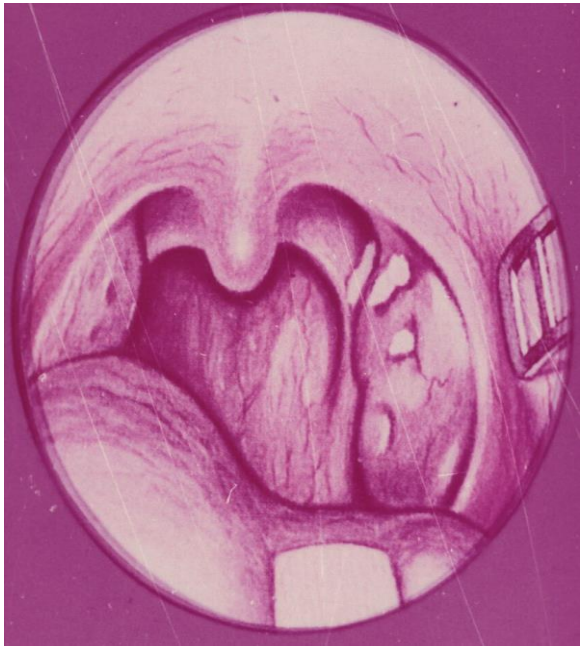
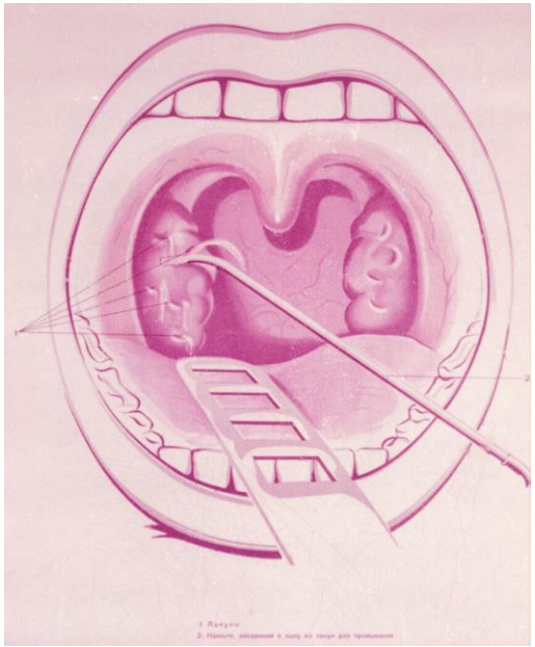
Tonsillar pin

the crypts usually contain cell debris, bacteria, lymphocytes - that smell extremely foul when released and can cause bad breath.







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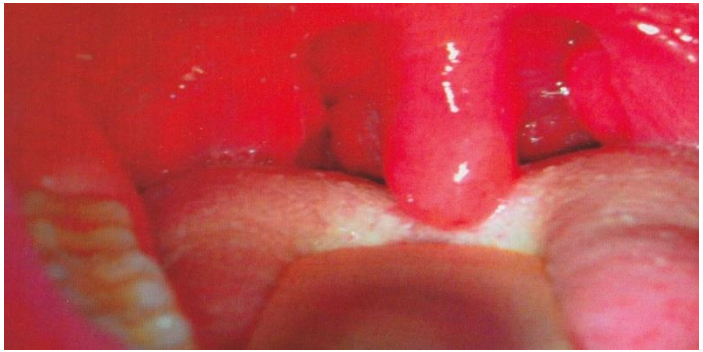
Inflammation of pharynx

- division according to **site** of disorder

- **Tonsillitis** inflammation of lymphoepithelial tissue of pharynx.
- **Pharyngitis** inflammation of mucosa membrane of pharynx.
- **Tonsillo-pharyngitis** inflammation of mucosa membrane of pharynx and also lymphoepithelial tissue.

According to **course**

- acute
- chronic



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Types of tonsillitis according to various criterion

- Anatomic (site)
- Microbiologic
- Pathogenetic
- Pathology- anatomy

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Site of disorder – acute tonsillitis

- angina palatina
- angina retronasalis
- angina pharyngis lateralis
- angina lingualis

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Microbiology

- bacterial infection : Streptococcus pyogenes 90% of bacterial origin, Haemophillus influenzae, Staphylococcus aureus, Mycoplasma pneumoniae
- viral – adenoviruses, parainfluenza, enteroviry, coxsackie, etc.
- fungal – rarely in immunocompromised patients (imunosupression, HIV, tumors)

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Distinguishing between viral and bacterial infections

- Cultures; CRP
- Rapid strep test
- "strep score" - diagnostic scoring scheme for streptococcal infections: if achieved an overall score of 5-6, a diagnosis of streptococcal infection is likely, and up to 80% can be beta hemol can be cultured. In 80-80% of cases streptococcal infection can be detected. The administration of antibiotics is indicated.

Age (5-15 year)	**1 point**
Season (november – may)	**1 point**
Temperature (above 38 degree)	**1 point**
Lymphnode enlargement	**1 point**
Inflammation of pharynx	**1 point**
Without symptoms of infection of upper airways	**1 point**

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Pathogenetic view

Acute tonsillitis

- suppurative
- symptomatic – local symptom of general disease with bacteriemia or viremia

Secondary tonsillitis

- in immunodefficiency (agranulocytosis, leukemia etc.)

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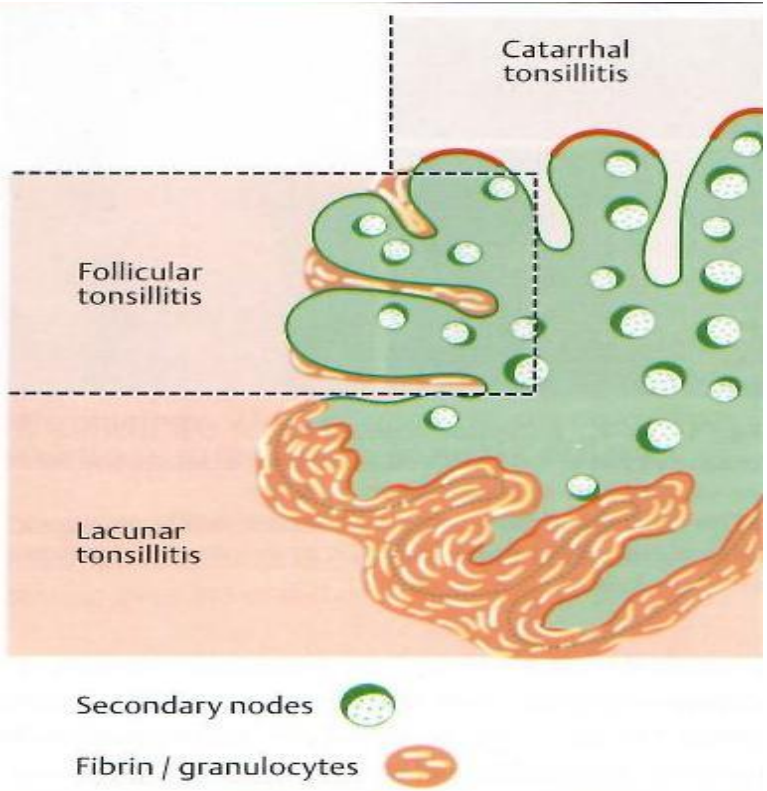
Pathologic - anatomy view

Acute tonsillitis

According the grades of severity and pathomorphology

- catarrhal
- follicular
- lacunar
- vesiculous
- pseudomembranous
- phlegmonous and gangrenous



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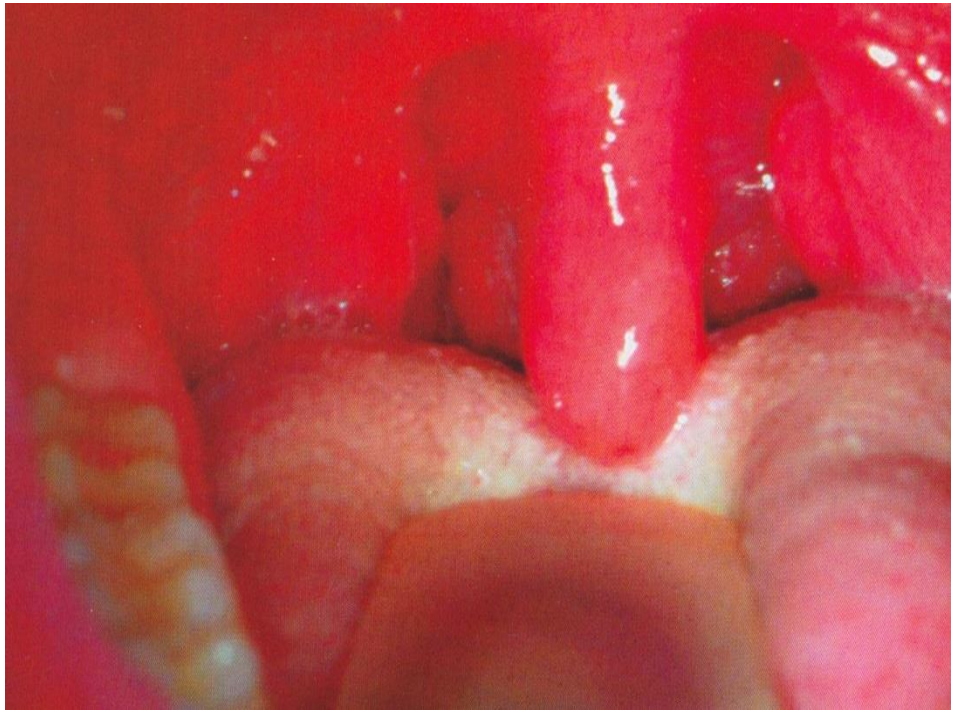
Tonsillitis ac. catarrhal

Bilateral odynophagy

redness, swelling of tonsills, febris



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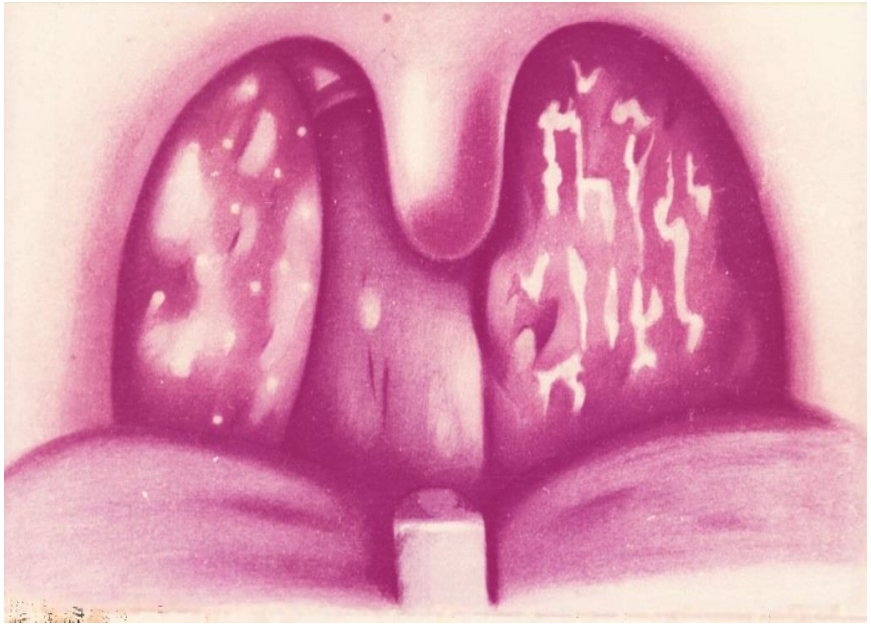
Tonsillitis ac. follicular

- Bilateral odynophagia,
  - increasing in swallowing,
  - irradiated into ears
- Micro-abscessus in follicles
  - visible through mucosa membrane on the tonsillar surface



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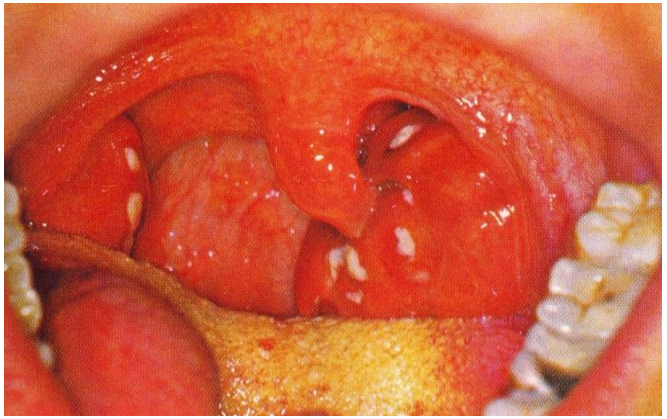
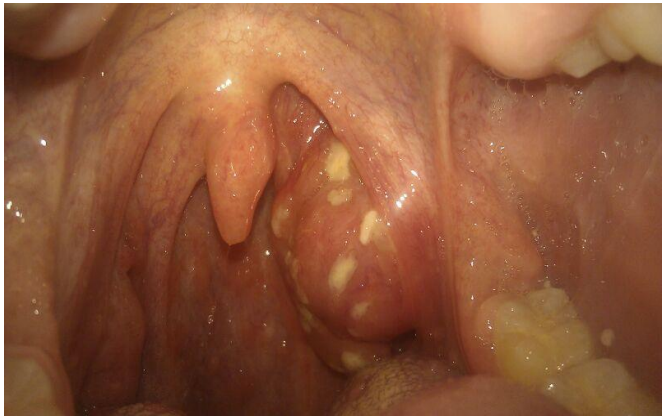
Tonsillitis ac. lacunar

Bilateral odynophagia, increasing in swallowing, irradiated into ears

infiltrated, reddened, enlarged tonsils with plagues in opening of tonsillar crypts, sometime confluent (*angina confluens*), not spreading to tonsillar pillars, fever





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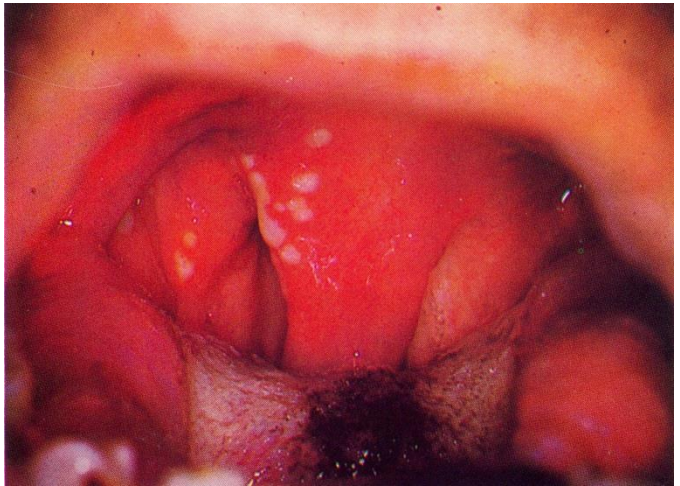
Herpangina (angina vesiculosa) - Coxsackie virus

Marked **generalized symptoms**, such as high fever, headache, pains in the neck, loss of appetite, stomatitis, vomiting

Vesicles form initially, particularly on the anterior faucial pillar, than small

flat **ulceration** covered in milky white plaques



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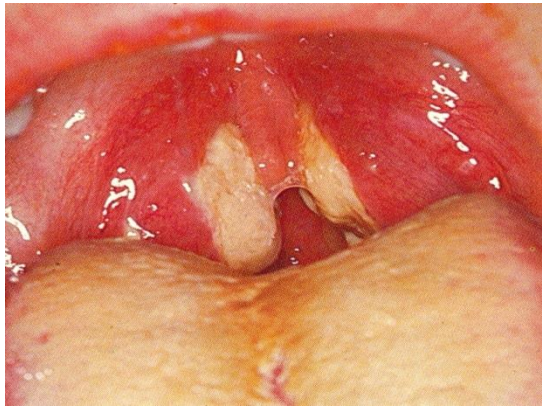
Pseudomembranous tonsillitis (mononucleosis infectiosa)

Epstein-Barr virus's

Bilateral odynophagia, headache

fever 38-39, marked lymphadenopathy, tonsil is swollen, covered with a fibrinous exudate or membrane, hepatosplenomegaly, marked feeling of being unwell, leukocytosis, mononuclear cells and atypical lymphocytes

Higher transaminases (ALT, AST), positive antibody against EB virus (positive Paul-Bunnel reaction), PCR detection of virus.



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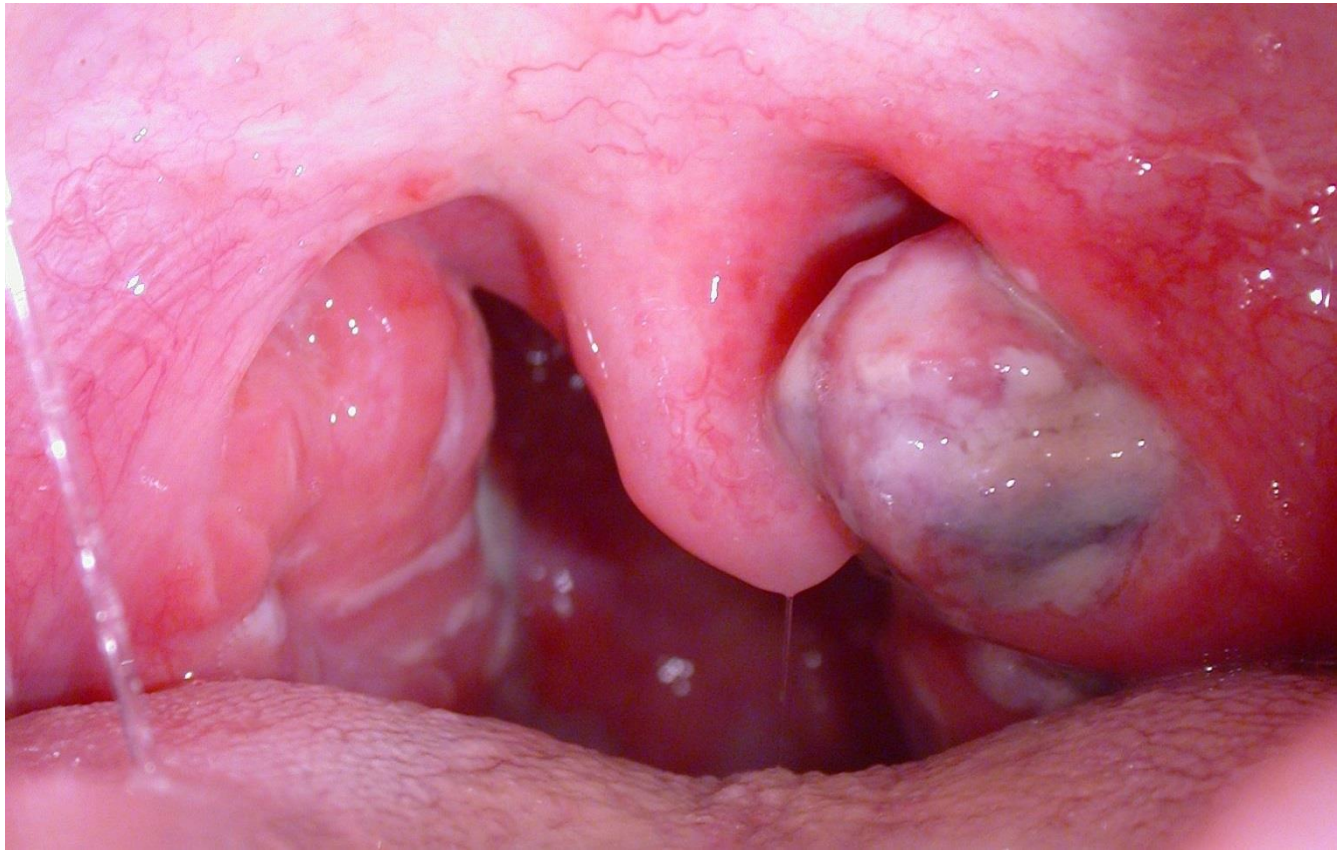
Pseudomembranous tonsillitis



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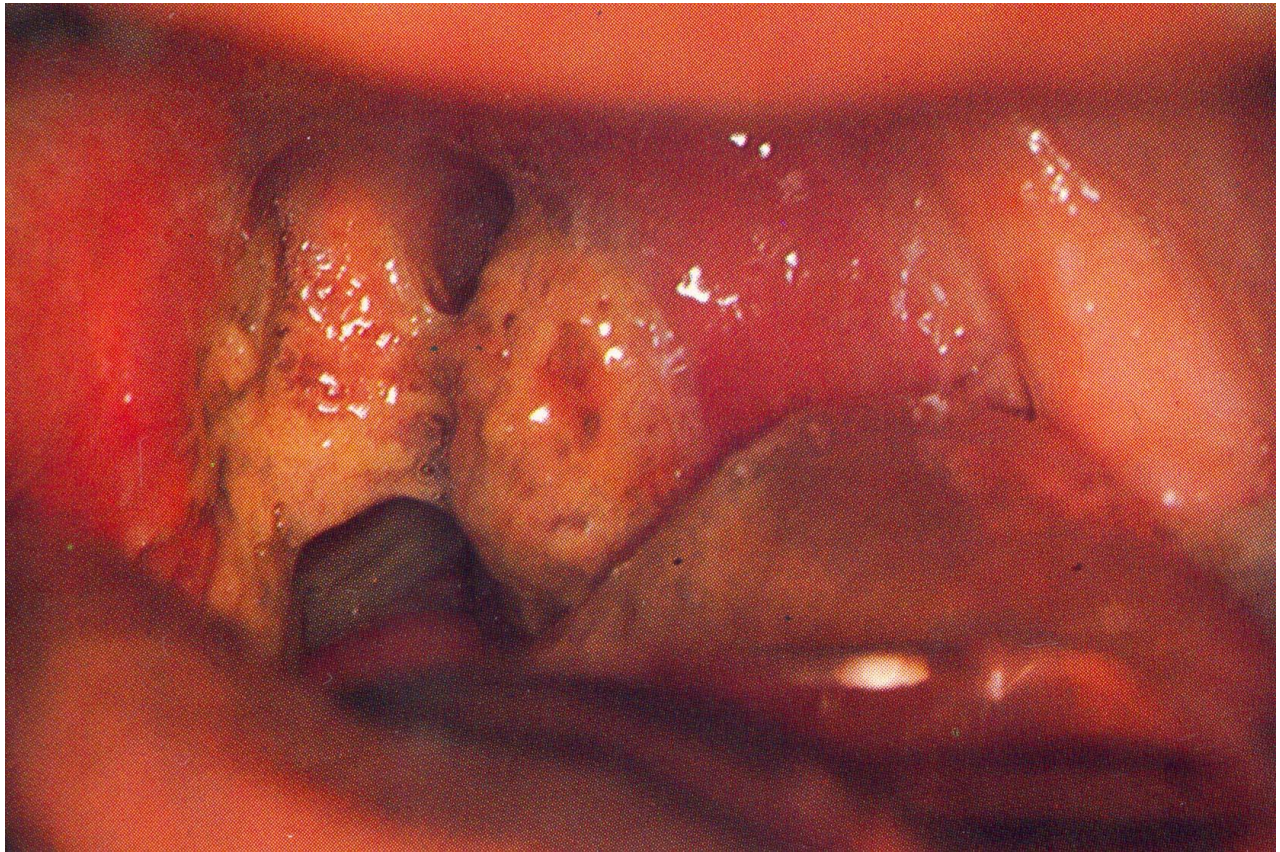
Pseudomembranous tonsillitis



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Tonsillitis ac. retronasal

Pain experienced in depth behind the nose, blocked nose, running nose

Closed mumbling, hearing disorder (bad function of Eustachian tube), pus in posterior wall of oropharynx

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Tonsillitis ac. of the tongue base

odynophagy increasing with movement of tongue

in laryngeal mirror- the finding as in tonsillitis ac. lacunaris

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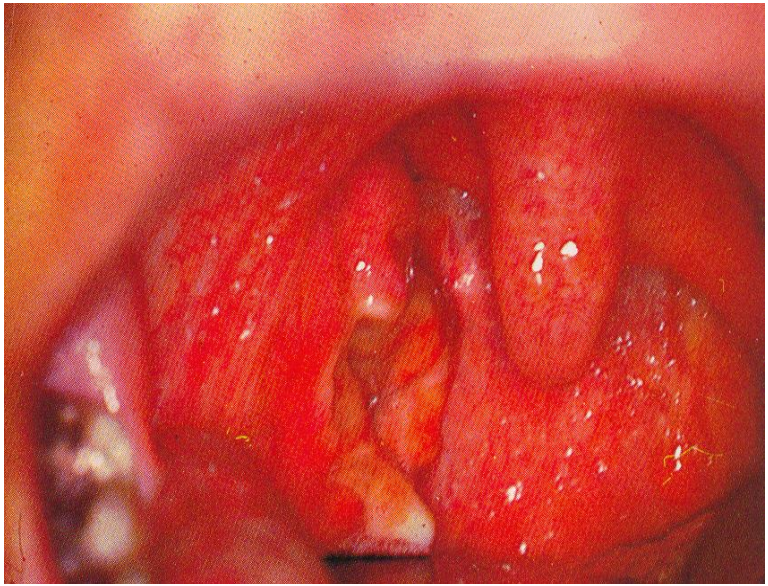
Plaut-Vincent angina (ulceromembranous pharyngitis)

feeling of foreign body, scratching, no general symptoms

in superior pole of one tonsil ulceration with fibrin coatings, halitosis (foetor ex ore), bad teeth. Bacteriology: Bacillus fusiformis and Spirocheta buccalis,



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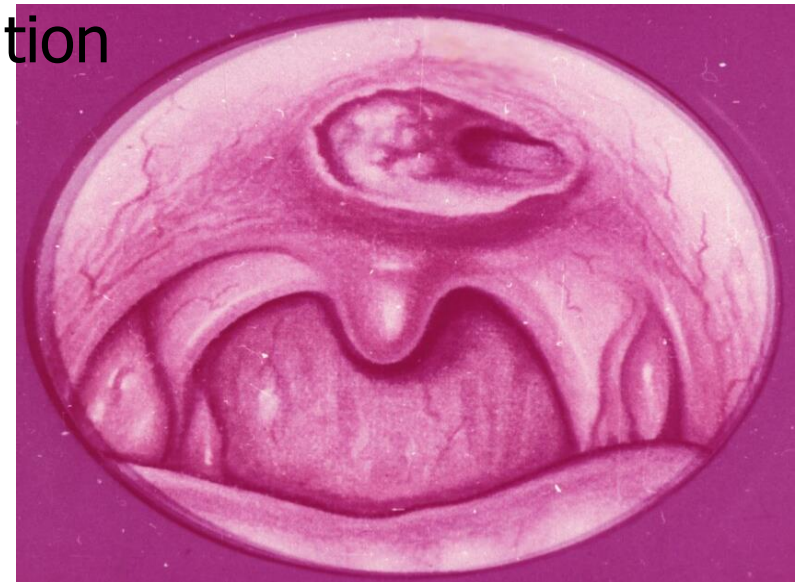
Syphilis, Lues

primary ulcer gray coated
syphilitic angina mucous plaques or hazy, smoke-colored mucosal lesions
gummose stage swelling with ulceration

typical bacteriology, serology and histology evaluation



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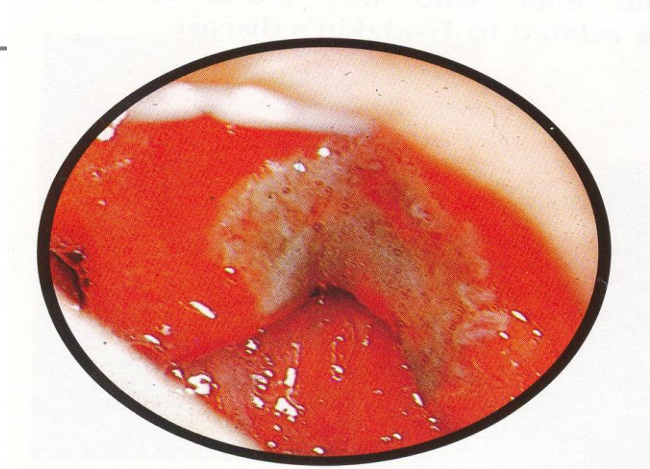
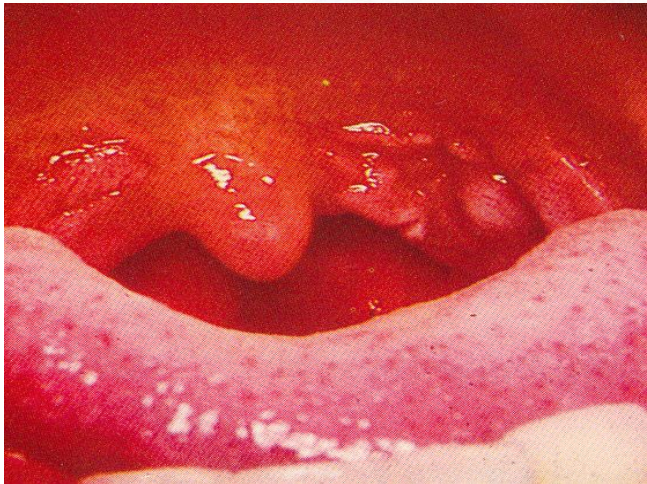
Lues

primary ulcer on soft palate in 21 old male



syphilitic angina mucous plaques



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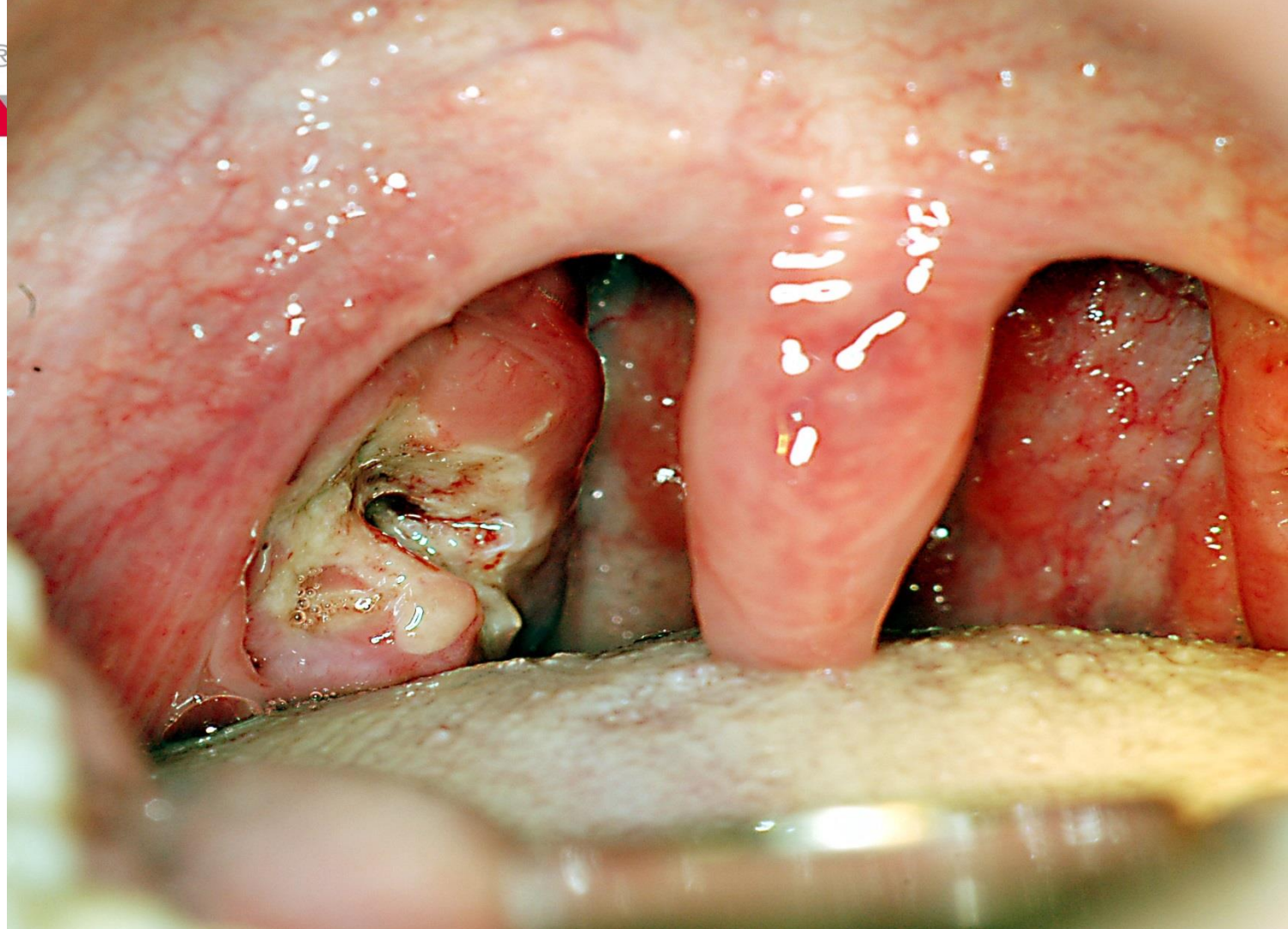
Syphilis II. st.

oropharynx

male

29 let

cook in public catering



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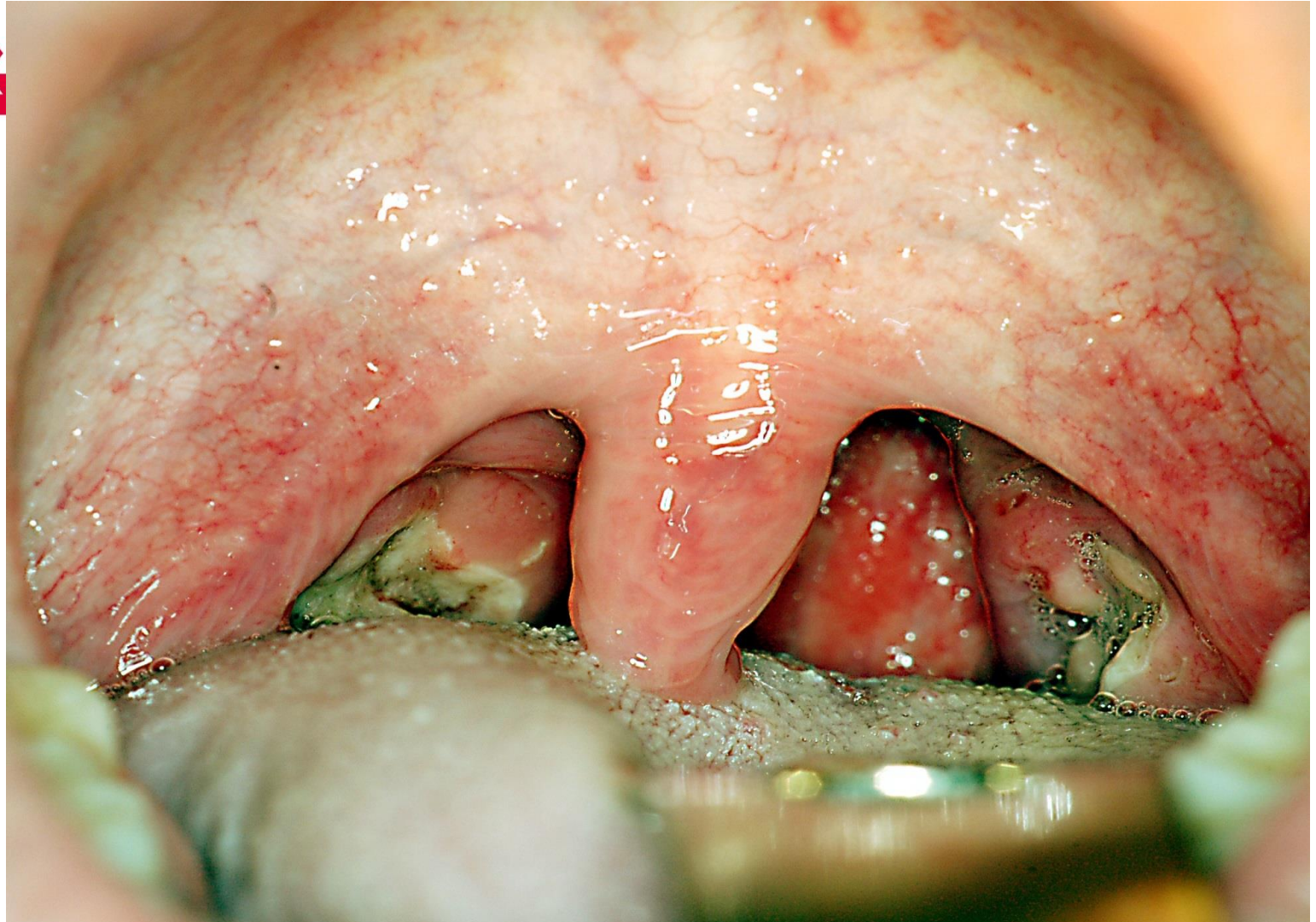

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Serious complications of inflammatory disease of tonsills

„Internal“

- **Febris rheumatica**, sterile consequences of streptococcic infection, autoimmunity
- **Sepsis** tonsillogenes (angina septica, sepsis post anginam, trombophlebitis v. jug. int.)

„Surgical“

- Abscessus et phlegmona peritonsillaris
- Abscessus et phlegmona parapharyngealis
- „Deep inflammation of neck soft tissues“, Phlegmona colli

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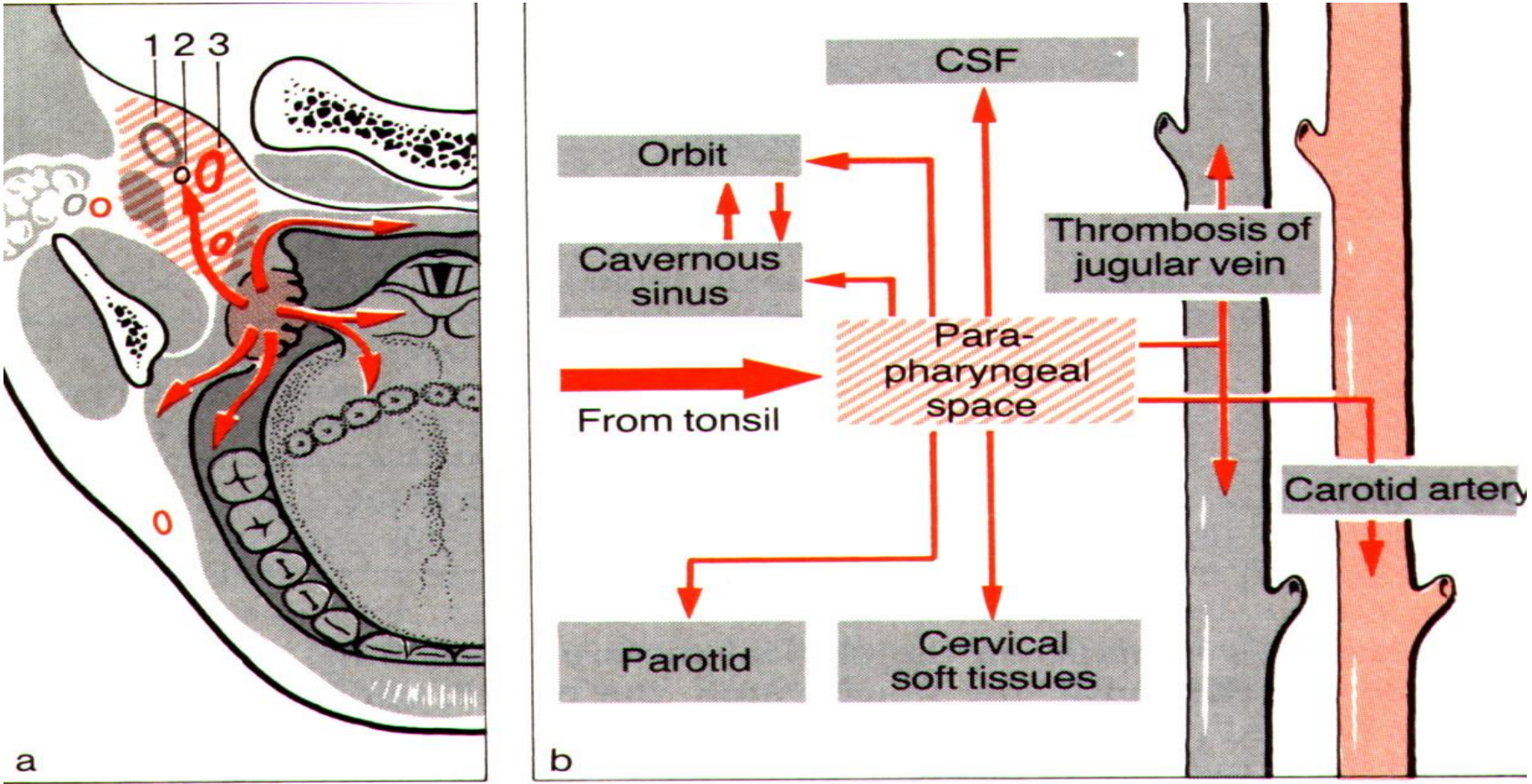
Complications during and after tonsillitis



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Phlegmona et abscessus peritonsillaris

Localization: supratonsillar, retrotonsillar, infratonsillar, lateral

Symptoms:

- Increasing difficulty in swallowing occurs after a symptom free interval of a few days after tonsillitis
- Fever not too high
- Sever pain on diseased side, spreading to the ear, patient refuses to eat,

Differential diagnosis: tonsilogenic sepsis, dentitio diffitilis tertii mollaris inferioris

Treatment: absces drainage - puncture, incision, dilatation, antibiotics

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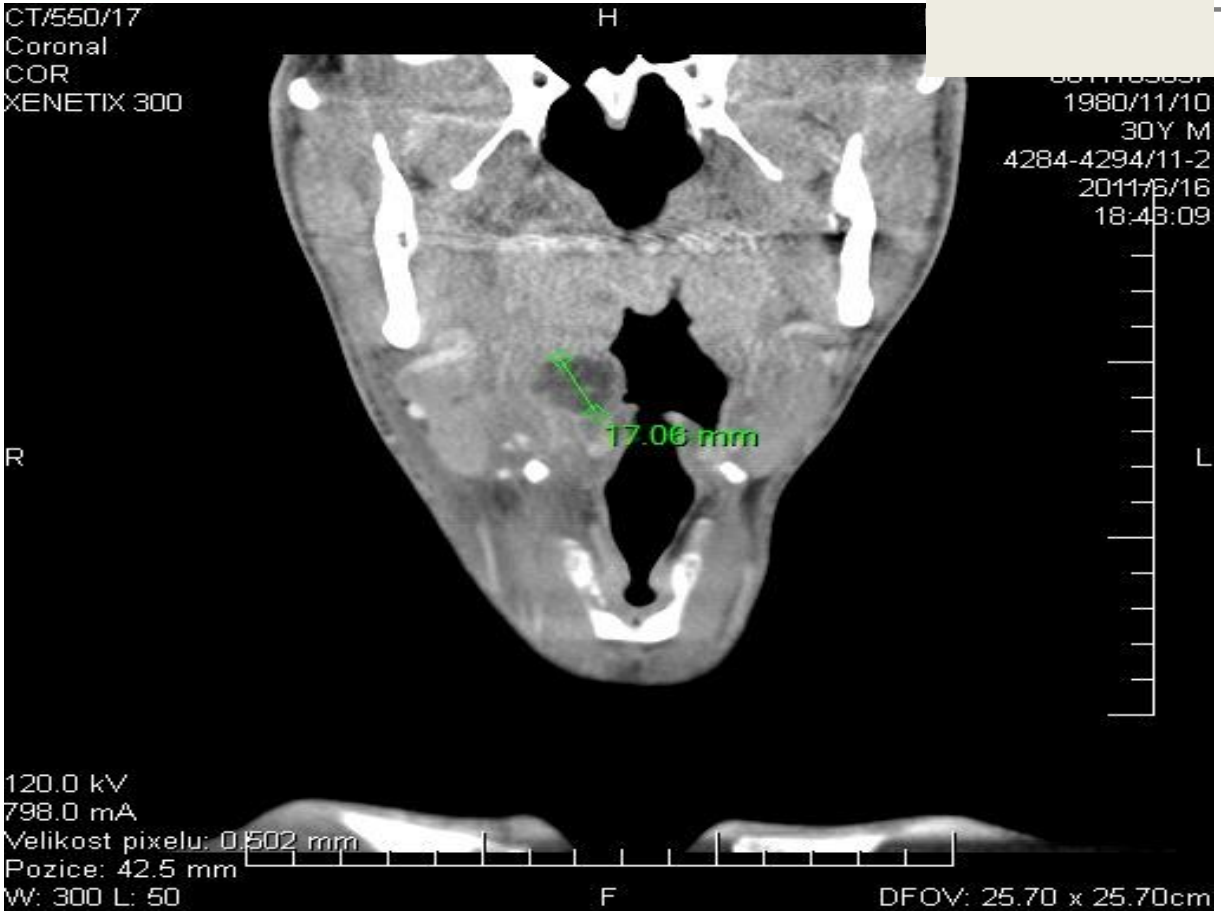
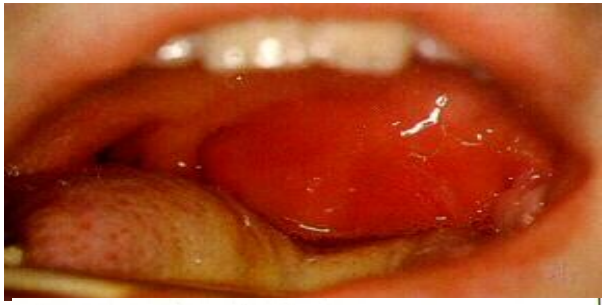
Abscessus infratonsillaris



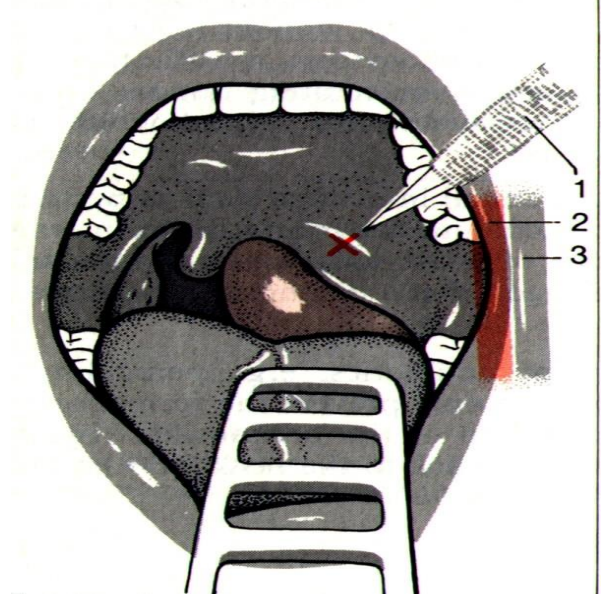
Peritonsillar phlegmona and abscess



Clinical picture of swelling, redness and protrusion of the tonsil, faucial pillar, the palate and the uvula, marked tenderness of the tonsillar area, trismus

Typical side for incision:

X midpoint between the uvula and the last molar



2) Arteria carotis interna

3) Vena jugullaris int.

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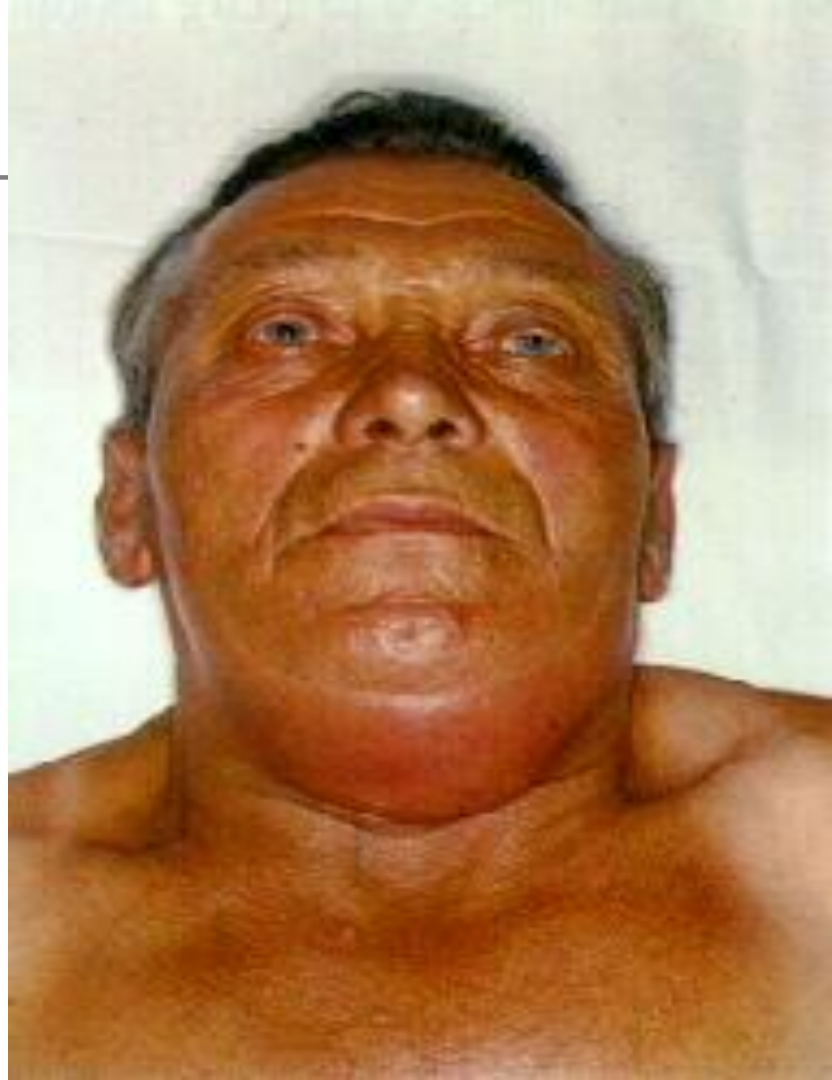
Phlegmon base of the oral cavity „Angina Ludowici“

tongue pain, odynophagy, fever with shivering fit, symptoms of sepsis

elevation of base of oral cavity, tongue not moving, infiltration in submandibular region



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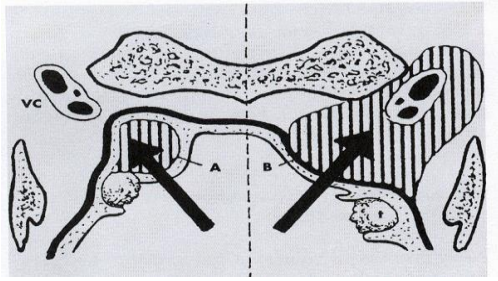
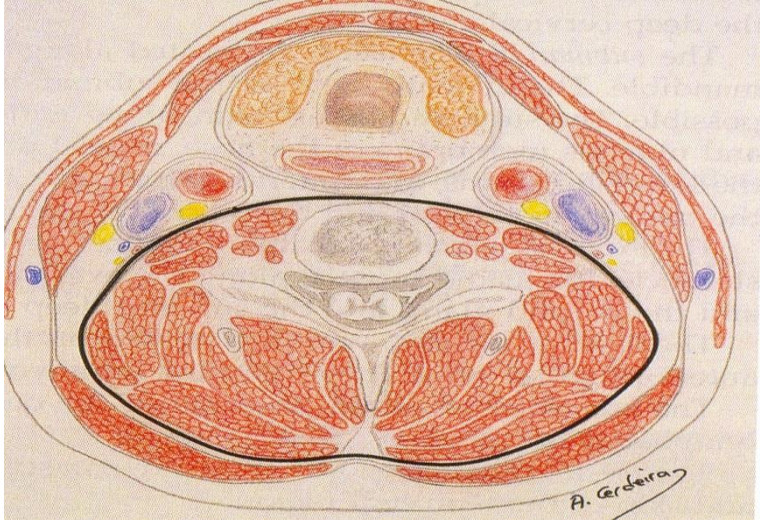
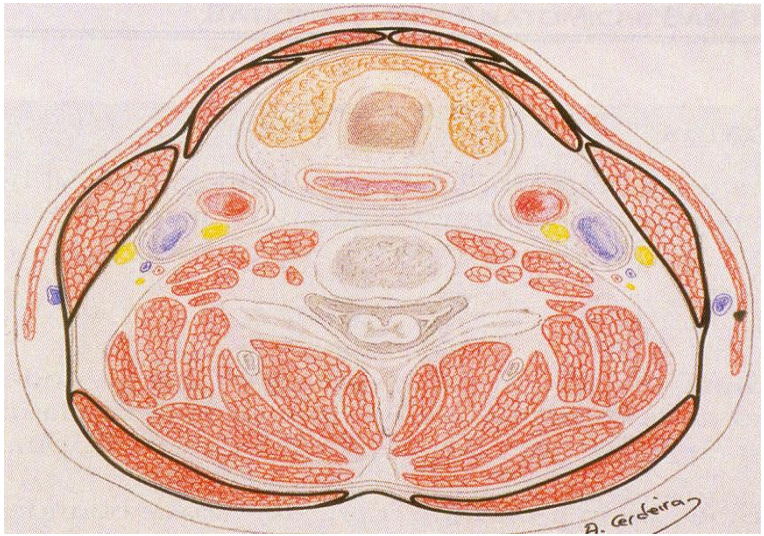
Phlegmon and abscess parapharyngeal

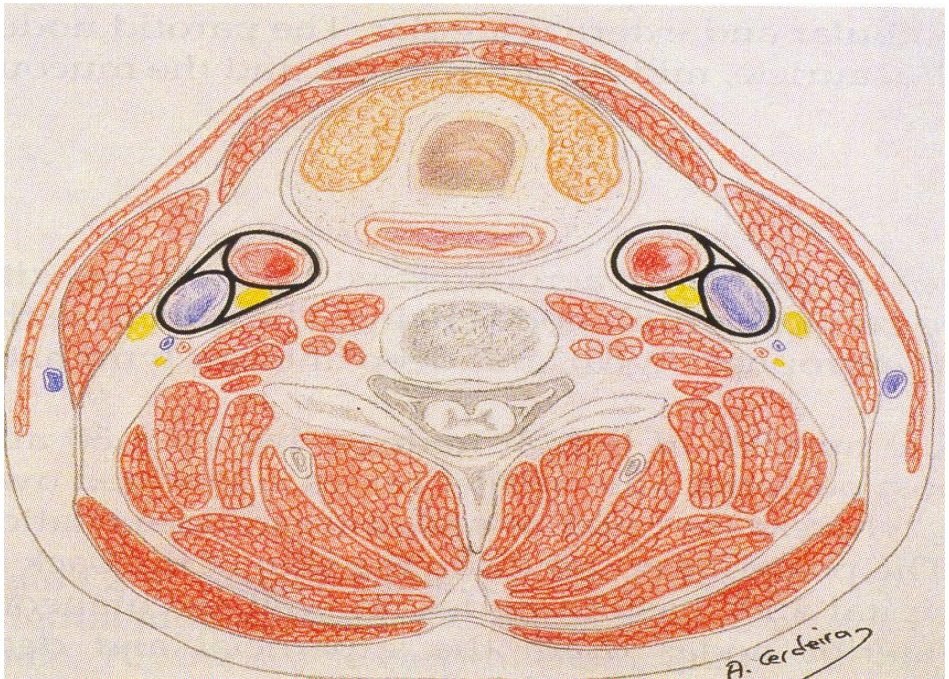
- Spreading infection from tonsils into the parapharyngeal space, borderline – the wall of pharynx
- **Symptoms**: Fever, pain, trismus, torticollis, swelling of external neck, swallowing of hypopharynx
- **Risk** of infection spreading into the mediastinum
- **Treatment**: incision, drainage of infection focuses, antibiotics – broad spectrum in sufficient dosage, external approach

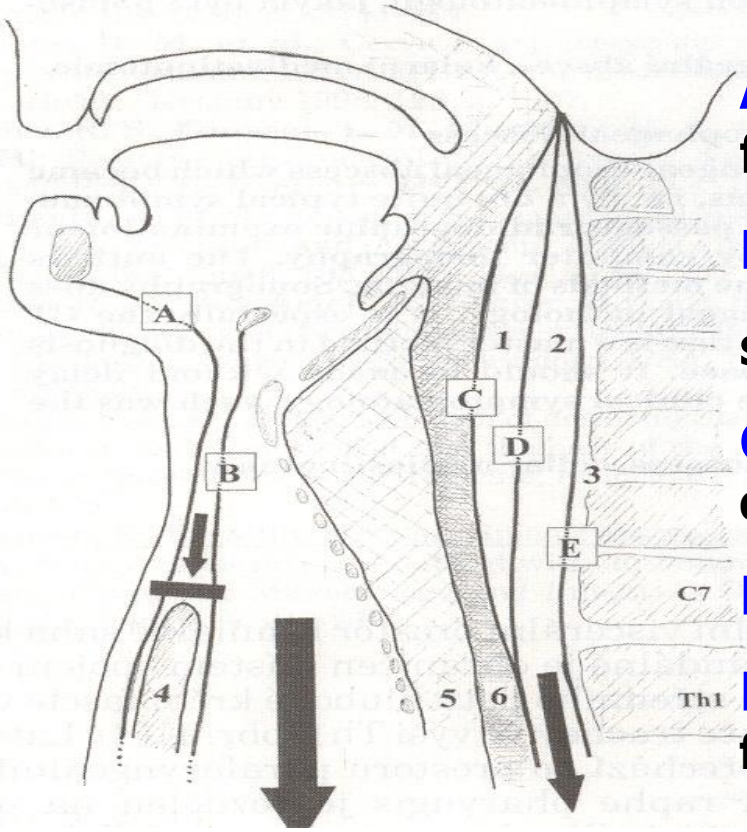


Carotic sheath between deep and superficial cervical fascia









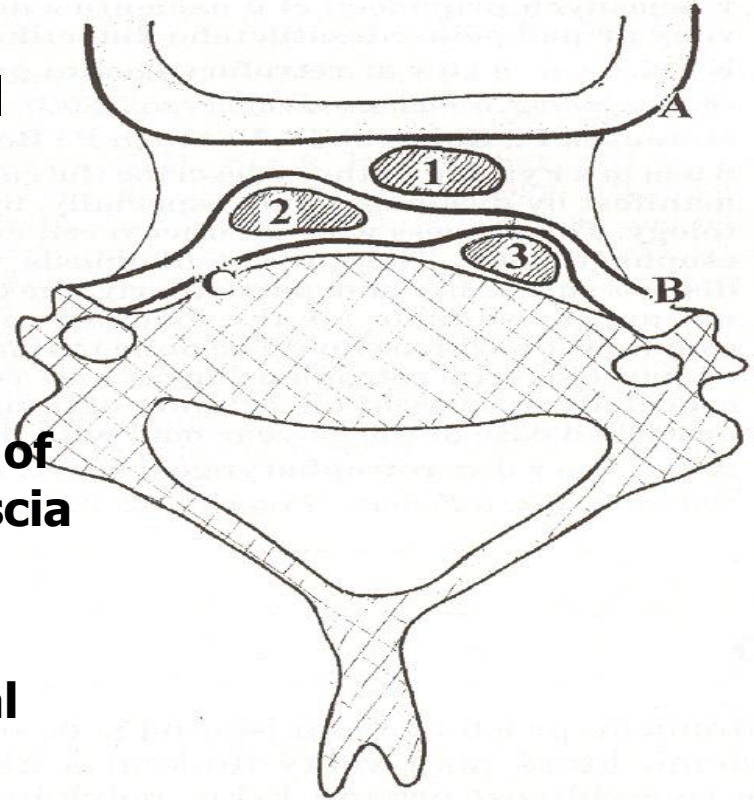
A superficial fascia

B carotic sheath

C middle leaf of deep neck fascia

D alar fascia

E prevertebral fascia



Neck fascial spaces

1.abscess in retropharyngeal space, 2. in „dangerous space, 3. in prevertebral space.

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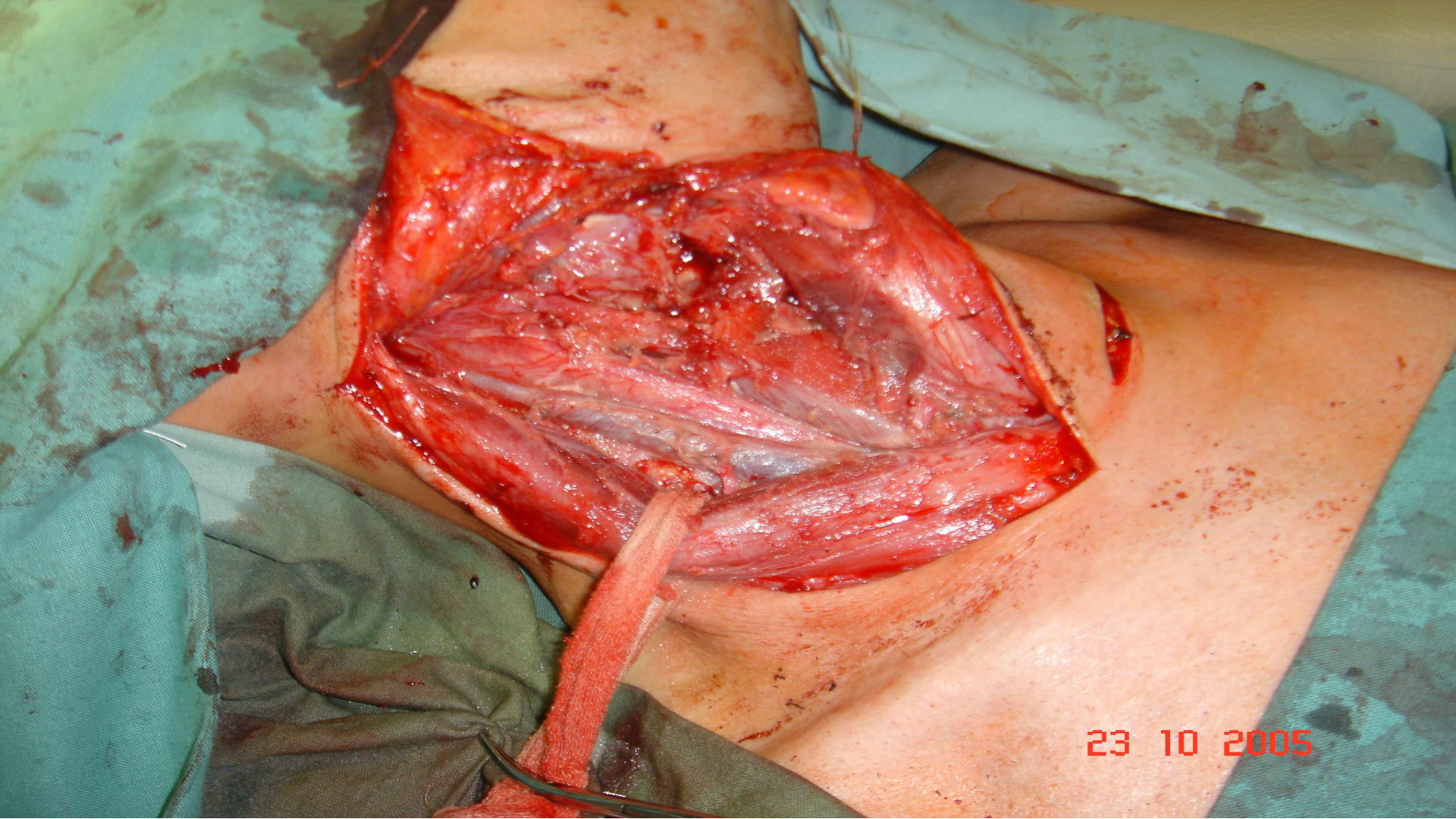
Phlegmona colli, Mediastinitis

- Source: **odontogeneses origin** (80 %), infection of paratonsillar and retromolar region (20 %), injury of oral cavity base, pharynx or cervical esophagus. Cofactor - **reduced immunity** (diabetes mellitus, alcohol abuse)!
- Visceral spaces of the neck have **no distal boundary** with mediastinum.
- **Clinical picture** – fever, usually septic, dysphagia, pain in the neck, back (intrascapular), retrosternal pain
- Inflammatory infiltration of the neck without boundary, fluctuation, special palpation feeling; by spread into the mediastinum – dysphagia and even dyspnoe
- **Treatment** – surgical opening of space surrounding great neck vessels, collateral mediastinotomy, treatment of primary source, general treatment aimed against sepsis, thrombosis, kidney failure etc.
- Bad prognosis, high mortality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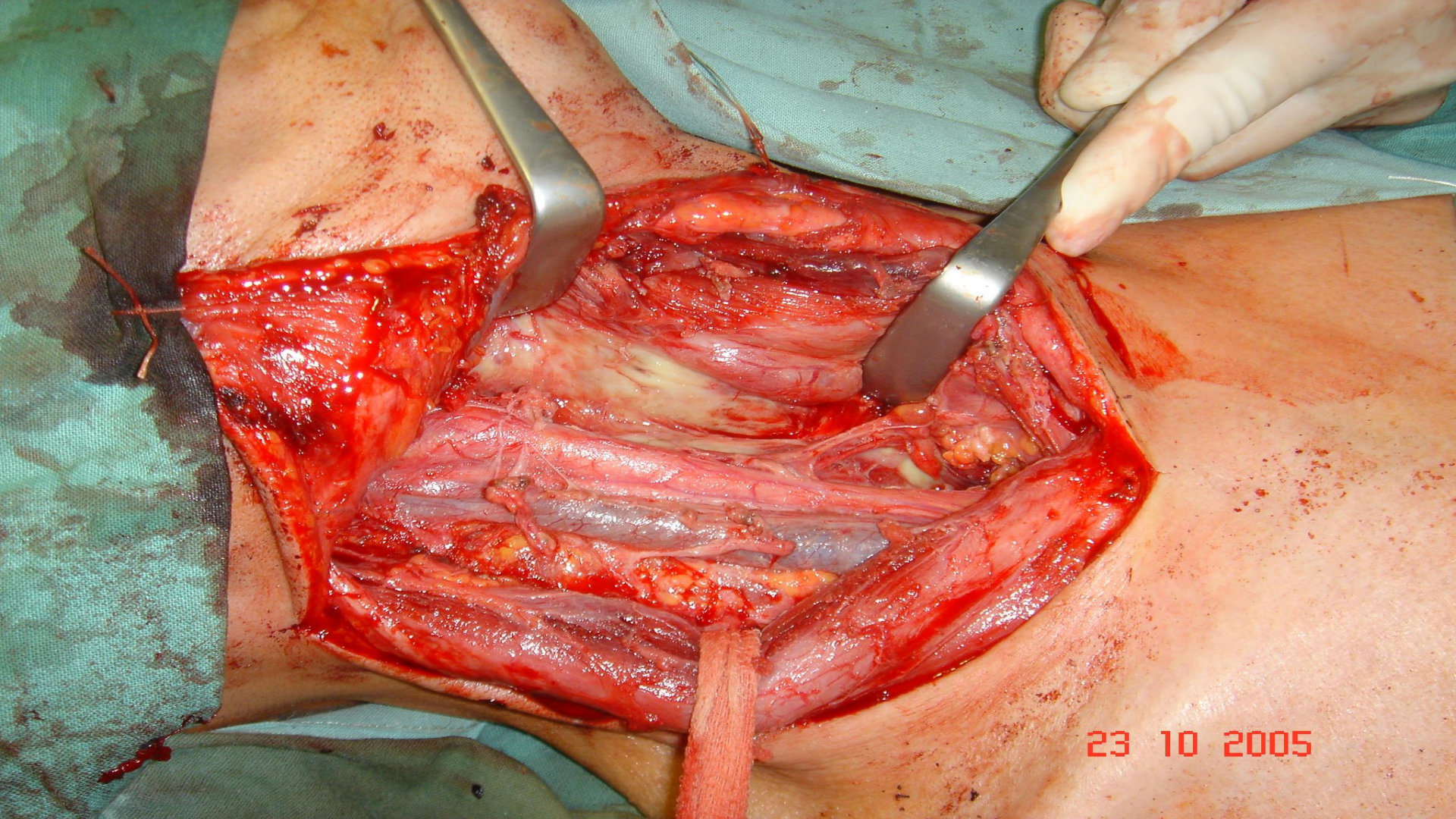
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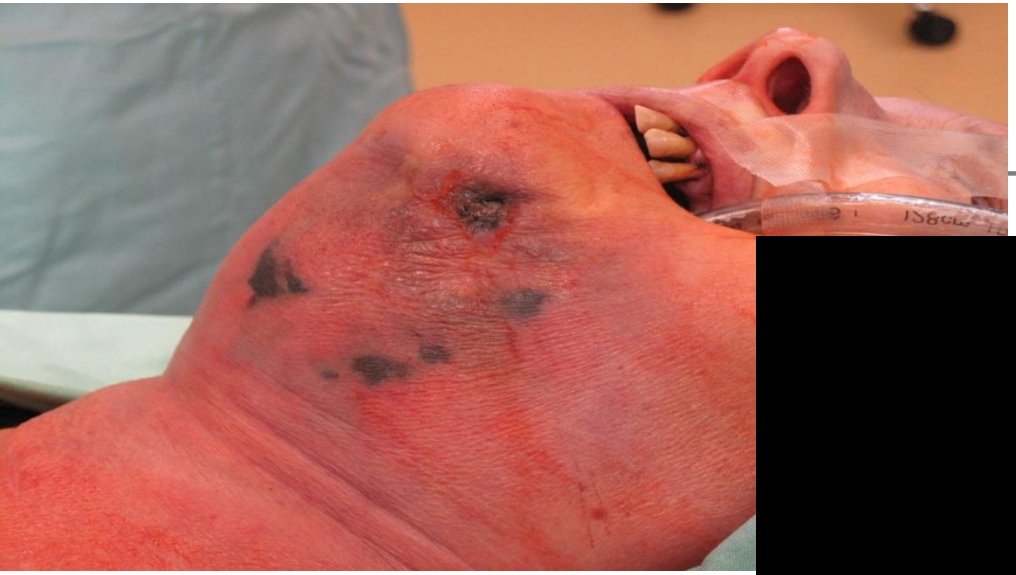
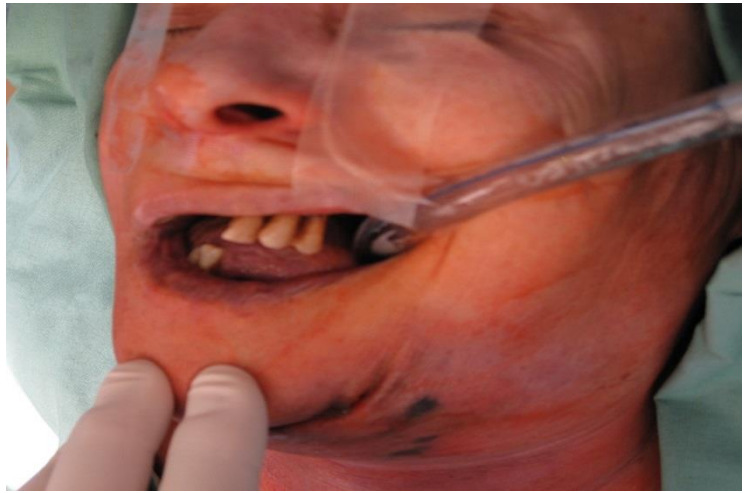
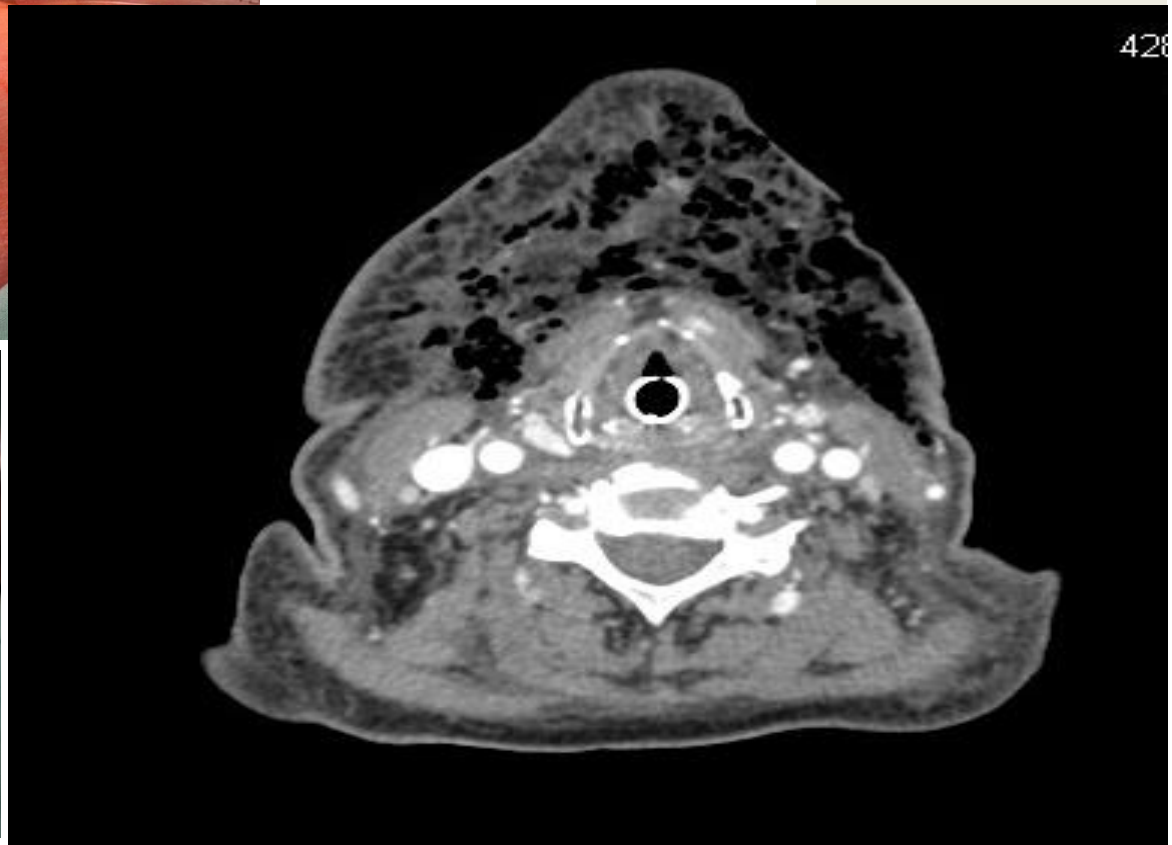
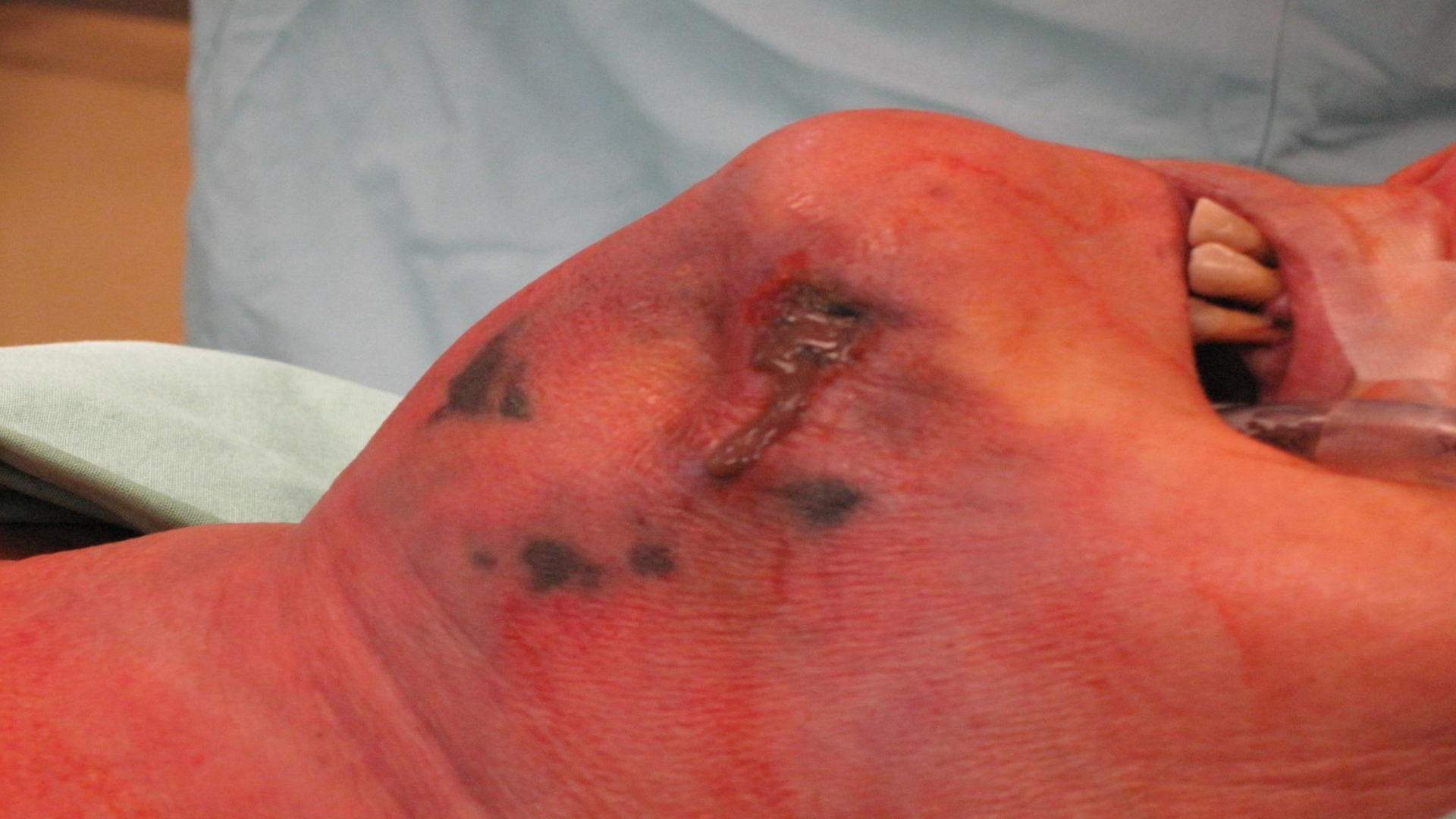
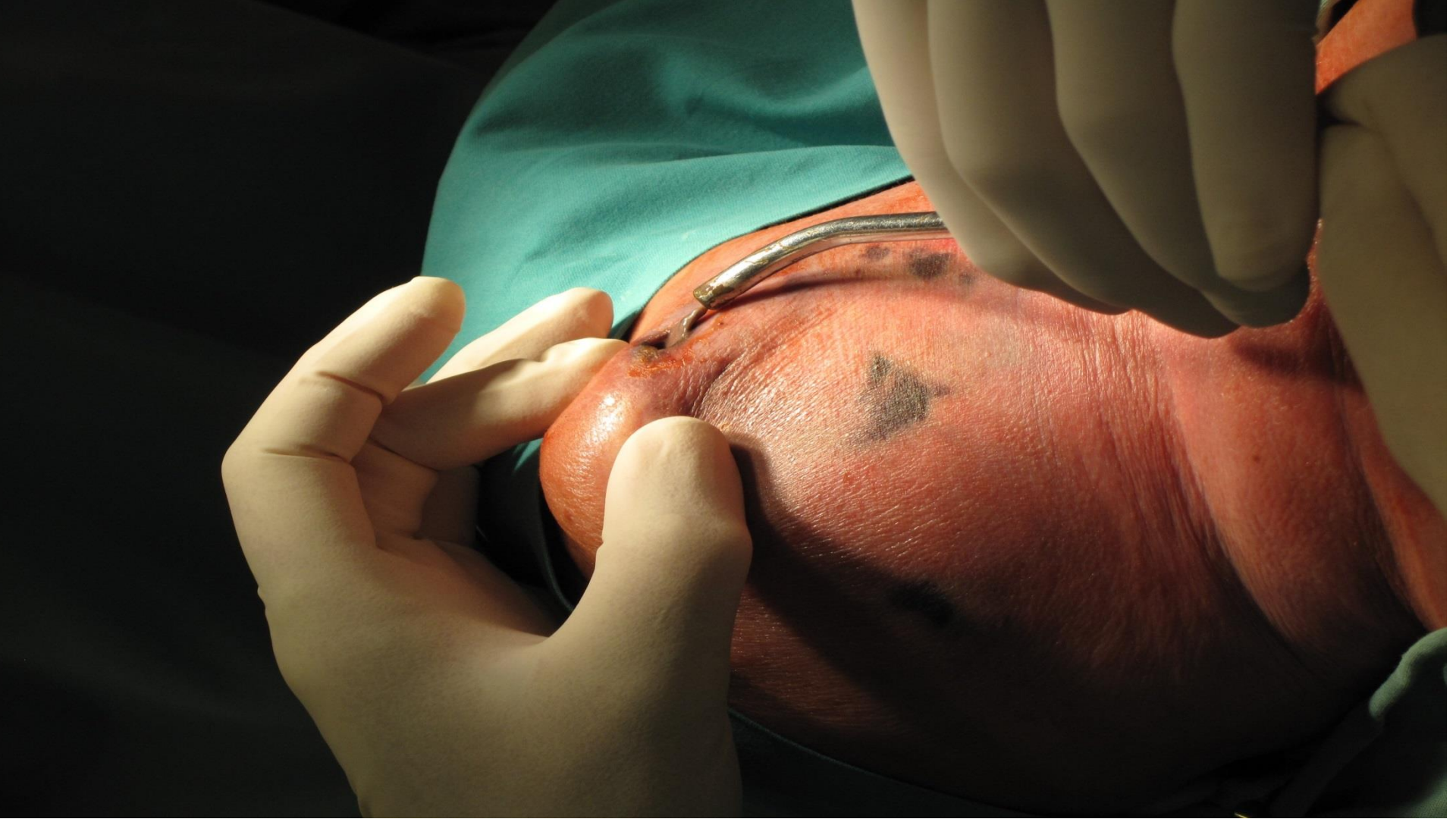
Fasciitis necrotisans, 60 year female

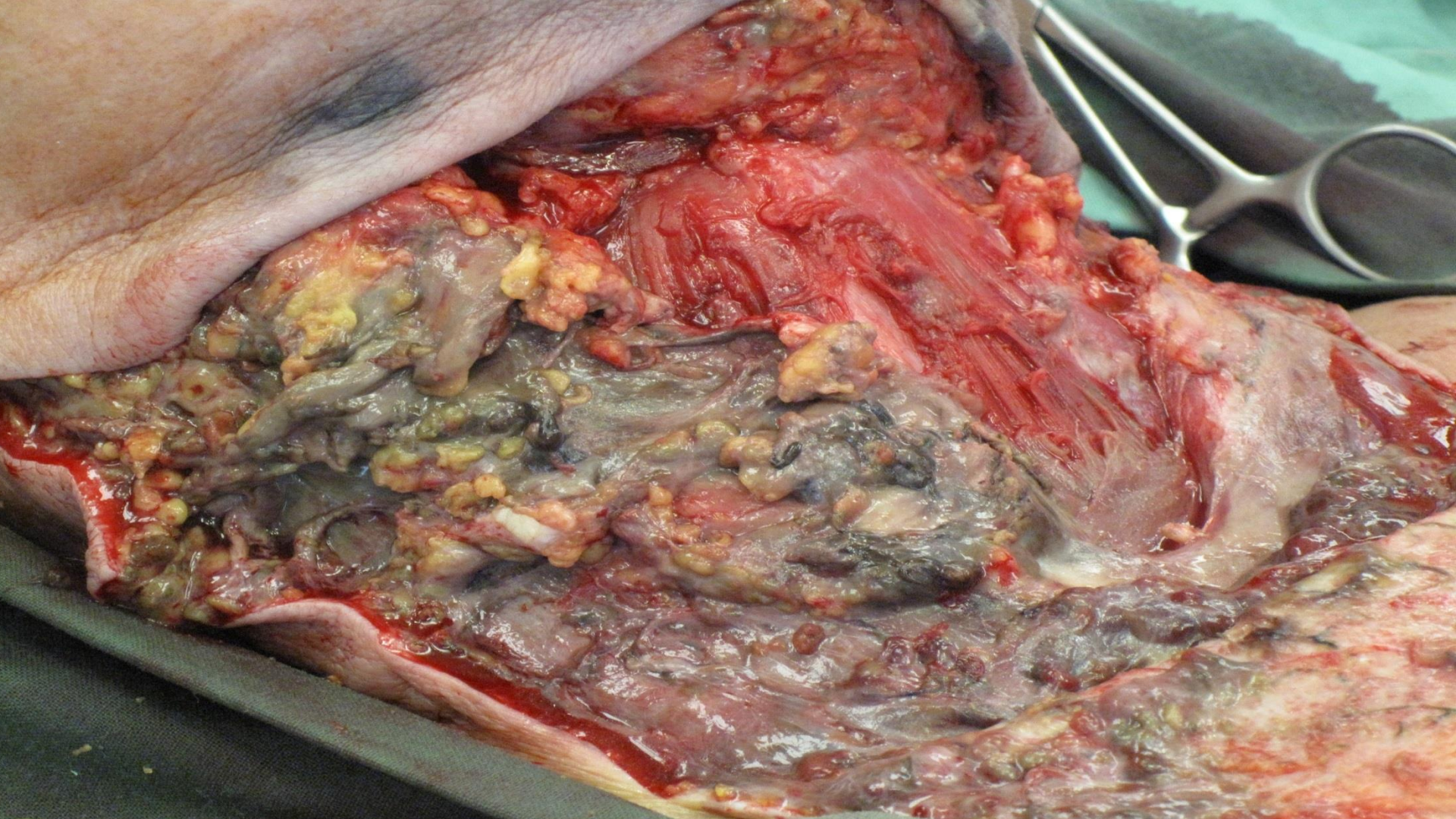


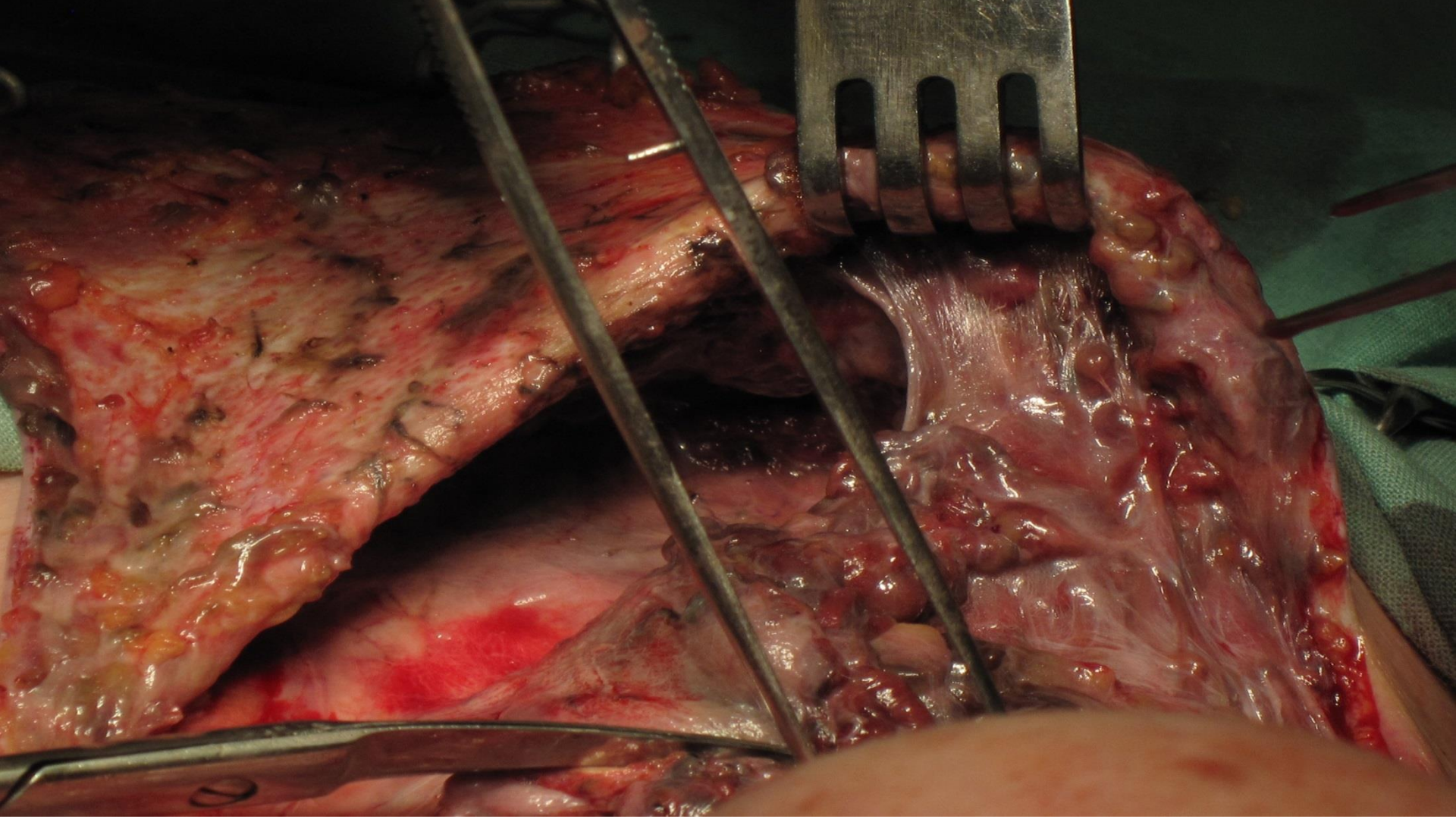


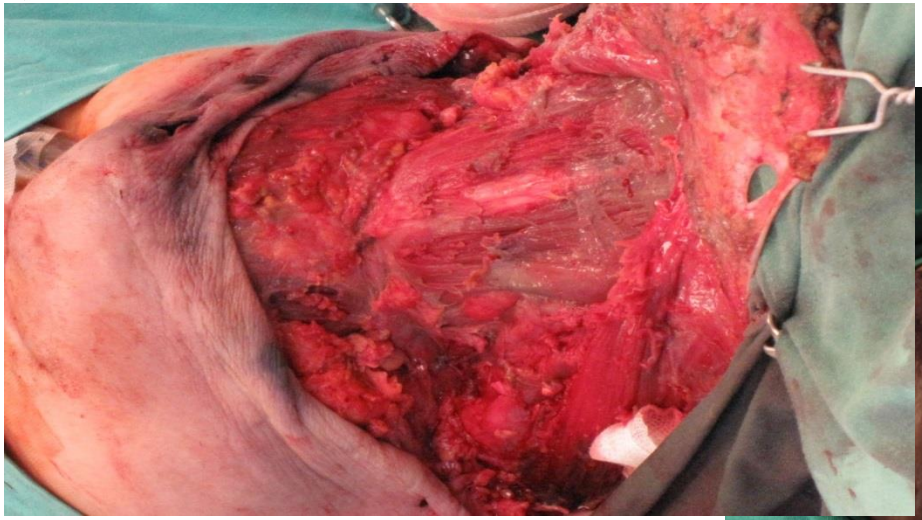


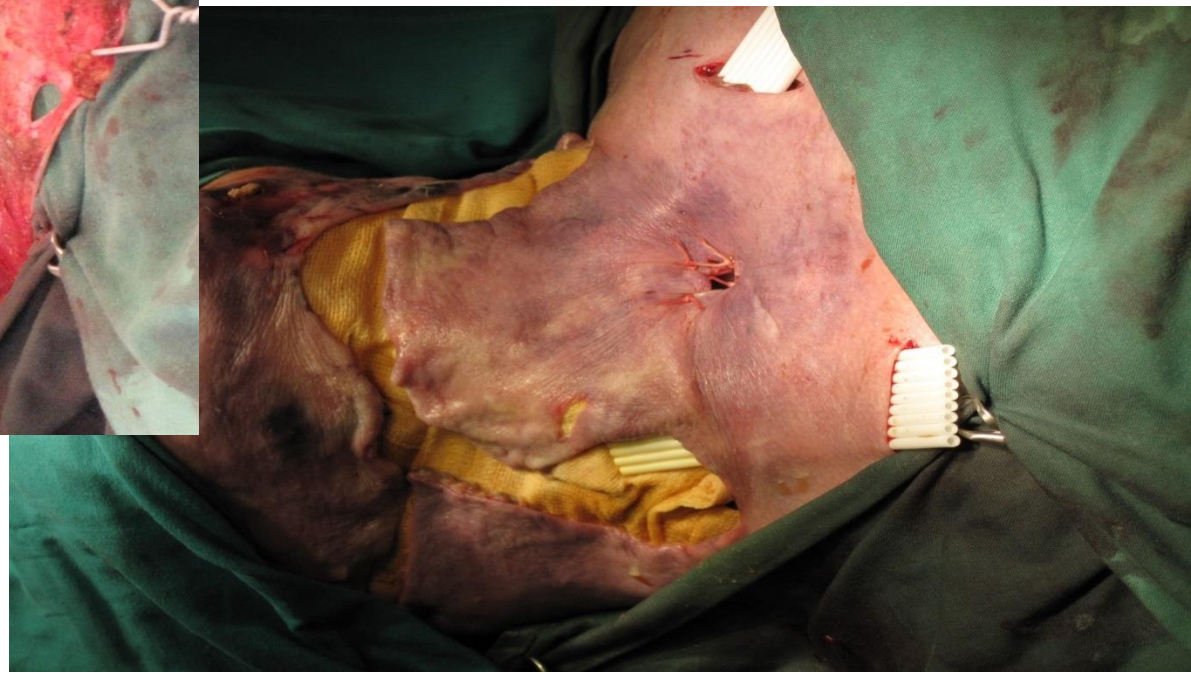












60y female, caries teeth, submandibular fistula and phlegmon of soft tissues of neck and anterior mediastinum, death as consequence of sepsis next day after surgery.

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Genesis of tonsillogenic (internal) complications (sepsis)

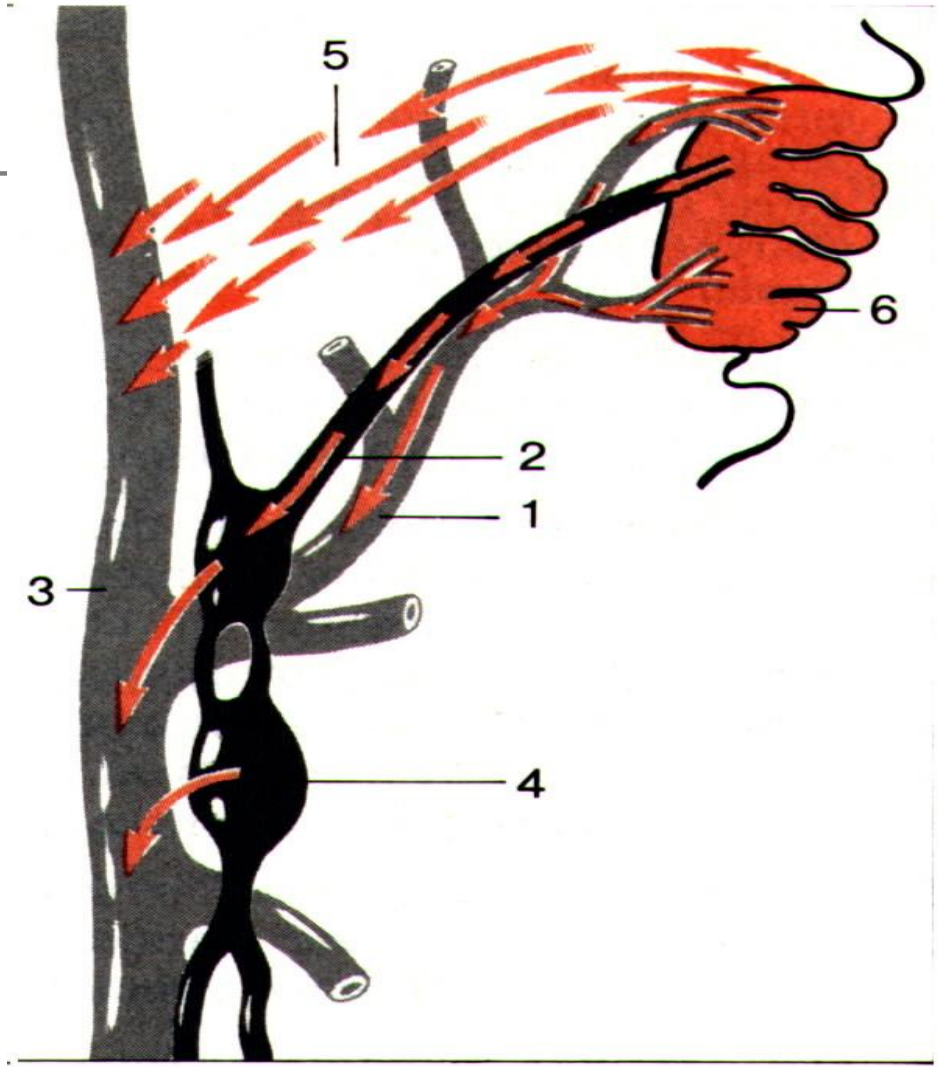
1) Extension through veins

2) Extension through lymph vessels

3) Internal jugular vein

4) Regional lymph nodes around the VJI

5) Extension in continuity via the cervical soft tissue



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Sepsis tonsillogenes

Angina septica – thrombophlebitis of small veins occurring during tonsillitis – spreading into internal jugular vein. Symptoms: fever, shivering fit, palpation pain before anterior edge of sternocleidomastoid muscle. Possibility of spreading into the intracranial space.

Sepsis post anginam – symptoms free interval of a few days after tonsillitis, normal finding on tonsils; Lymphatic way: lymph node – periadnitis -periphlebitis- trombophlebitis VJI

Thrombophlebitis v. jug. int. – treatment :surgery, removal of inflam. focus, suture of VJI and resection in extension of thrombosis, antibiotics

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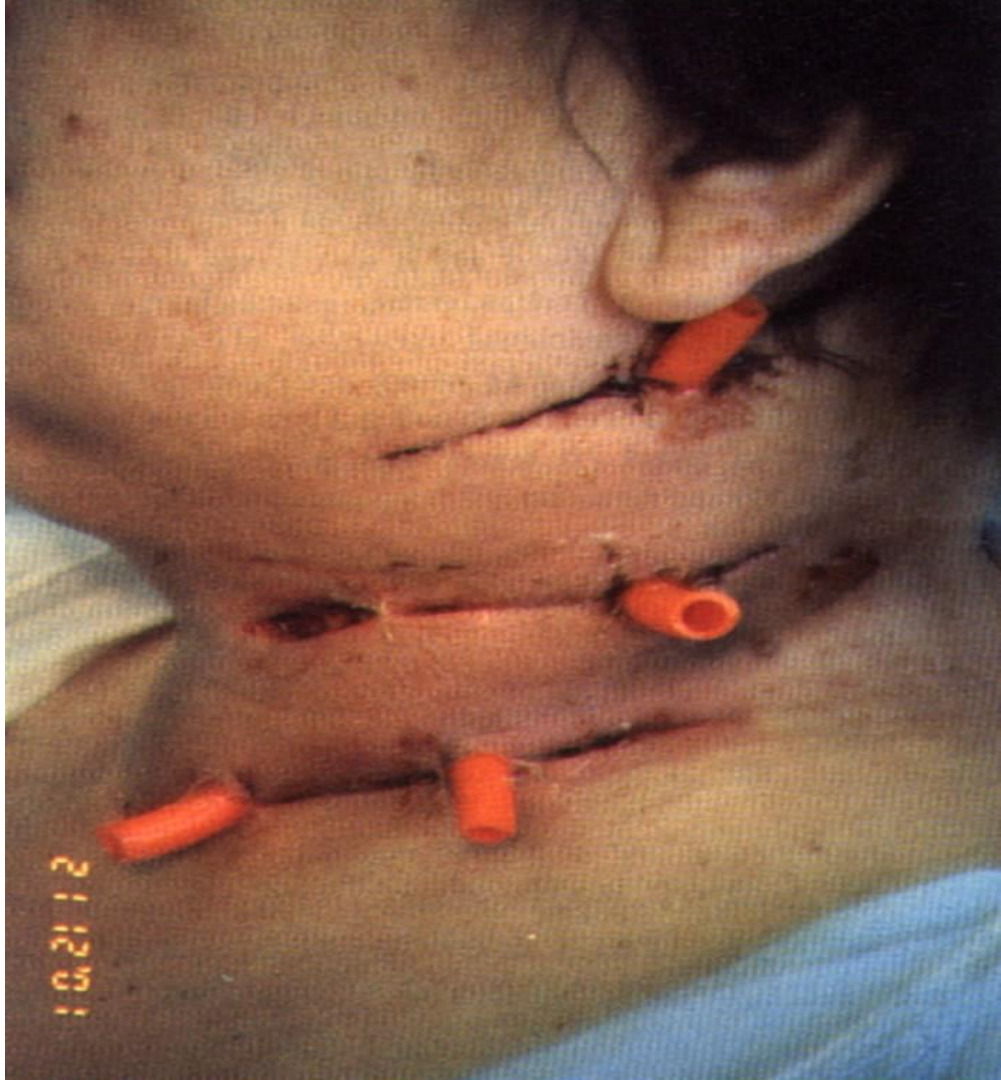
Fasciitis necrotisans

inflammation of soft tissues of the neck with fast spreading in fascial compartments without borders, with necrosis

Incision, drainage



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Chronic pharyngitis

- Frequent disease in adult population
- Part of chronic inflammation of breathing pathways

- Etiology – chronic inflammation , long lasting nasal blockage, breathing through mouth, fume and dust, extreme temperatures, spicy food, hard alcohol, smoking, GERD – gastro-esophageal-reflux-disease

Hyperplastic

Atrophic

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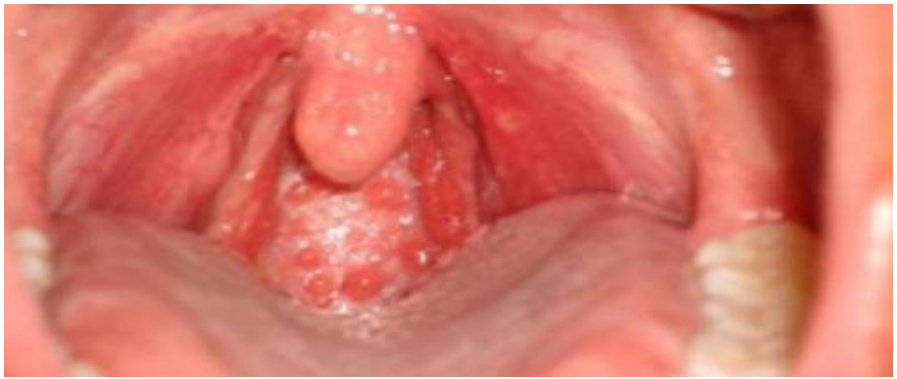
Chronic hyperplastic pharyngitis

- symptoms: strange sensation in the pharynx with compulsive throat-clearing and swallowing, little better after income of food
- Objective finding: the mucosa of posterior pharyngeal wall is thickened and granular, prominent solitary follicles, venous telangiectasis and secretion
- Therapy: reduction of hyperplasti
  nitrate, removal of focuses in
  breathing ways



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Chronic atrophic faryngitis

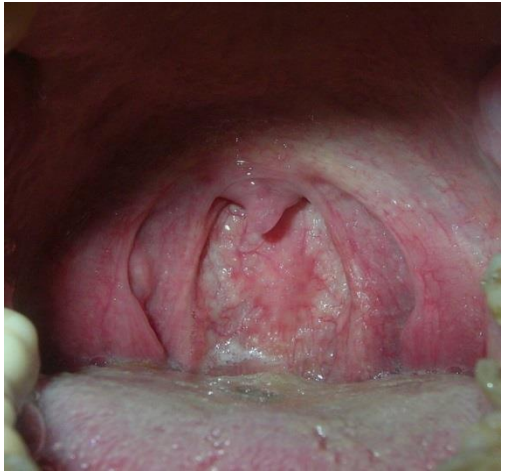
- Etiology: stay in dry or extremely humid environment, frequently in diabetes mellitus and after tonsillectomy
- Symptoms: feeling of foreign body, burning sensation and dryness feeling;
- Objective: posterior pharyngeal wall is dry and glazed, often with dry crusts of secretion. The mucosa is smooth, pink
- Therapy: moisturizing the pharyngeal mucosa

  with steam inhalation, saline solution,

  „vincentka“, a change of climate, air humidity,

  seaside stay

Nicotin, alcohol mentol, chamomile, sage must be avoided,



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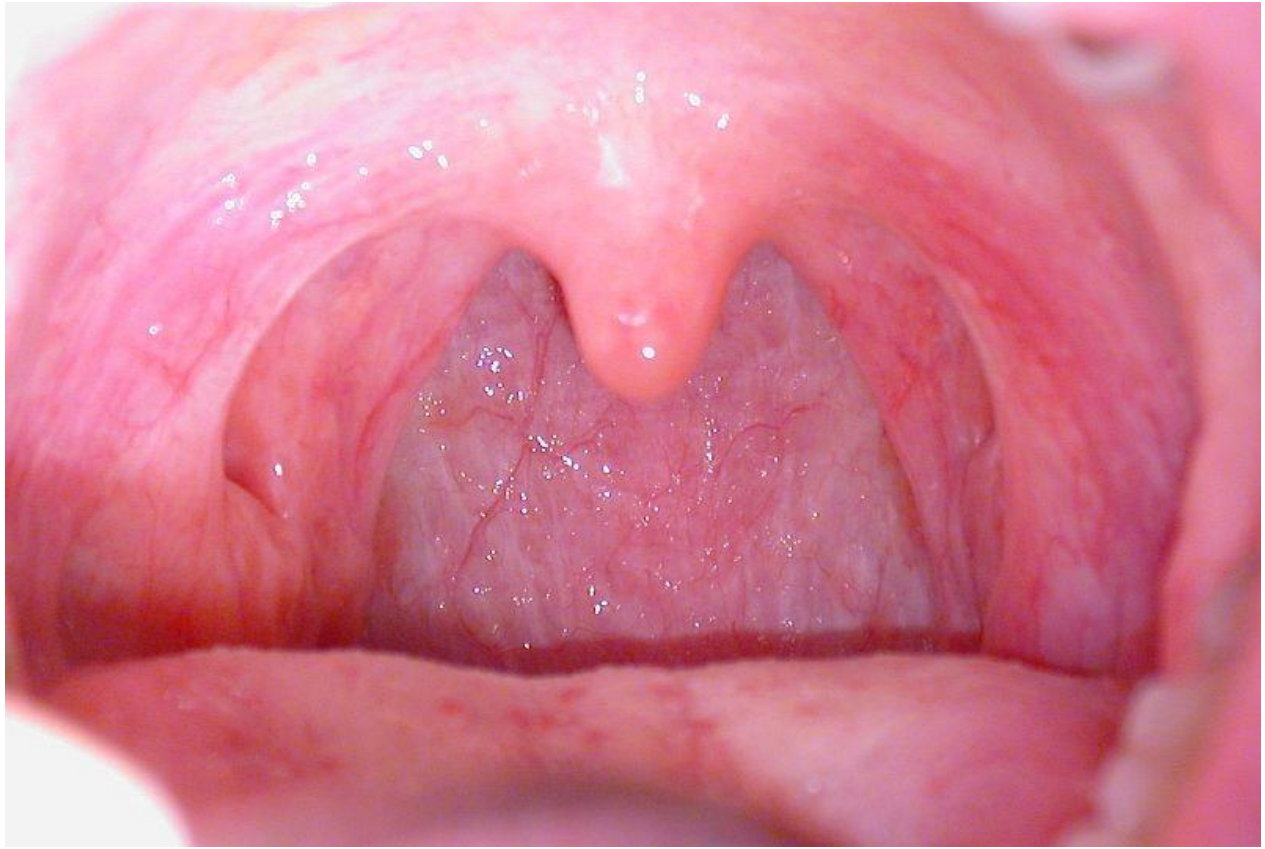
Chronic atrophic pharyngitis



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Chronic tonsillitis

- Focal inflammation in tonsillar tissue
- Frequent disease in population
- Etiology: mixed bacterial infection in tonsillar crypts - Streptococcus β-hemolyticus gr. A, less B,C,G, gold staphylococcus)
- Symptoms: strange feeling in pharynx, feeling of foreign body, foetor ex ore, higher level of ASLO, sometimes subfebrilie. After exercising fevers, pain in muscles… repeated use of antibiotics

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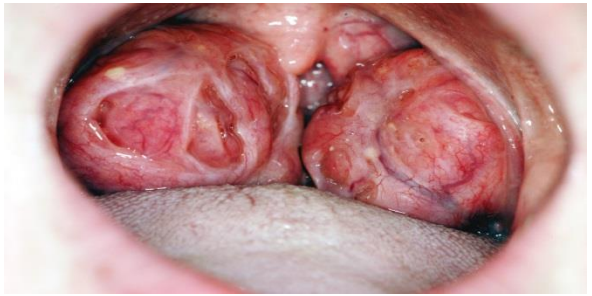
Chronic tonsillitis

Objectively: hypertrophic / atrophic tonsils; tonsils are fixed to theirs base, tonsillar surface is fissured or scared, watery pus and grayish-yellow material can be pressed out of the openings of the crypts



Therapy:

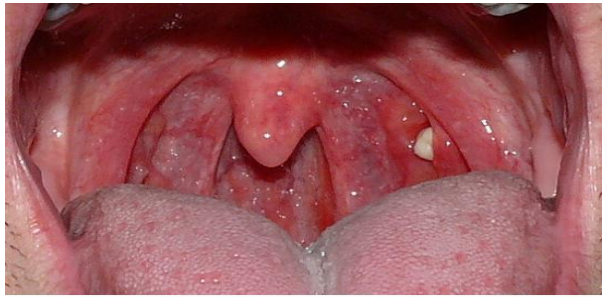
- Conservative – antibiotics

  (uncertain effect – bad spreading into crypts)

  local antiseptics, autovaccines,

  immunostimulants

- Surgery : tonsillectomy



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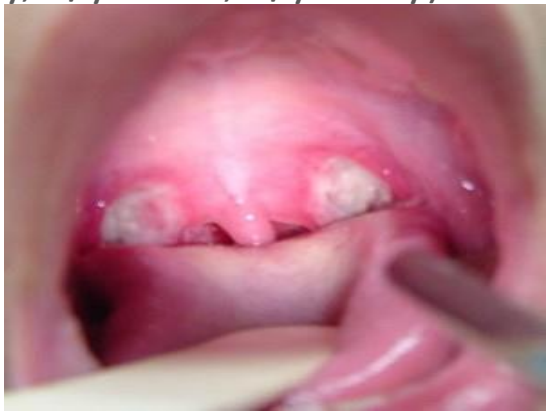
Tonsillectomy - indication

- Recurrent tonsillitis according to Pittsburg protocol (7/y in 1st y, 5/y in 2 x, 3/y in 3 y)
- Chronic tonsillitis
- Tonsillar hypertrophy with sleep apnea syndrome
- Peritonsillar (or parapharyngeal) abscess
- Suspicion on tumor
- Tonsillogenic septicemia, Angina septica
- Focal infection – „metatonsilar troubles“ (pain in joints, trouble in cardiology, urology)
- Branchial cleft fistulas (2nd branchial arch)
- Processus styloideus elongatus with dysphagia
- Part of plastic treatment of palate cleft



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Principples of tonsillectomy

- Performed under intubation anesthesia,
- introduced McIvor gag
- „cold“ vs. „hot“ technics
- Infiltration of tonsillar pillars, combination of blunt and sharp dissection
- Bleeding – bipolar el

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Tonsillotomy

Tonsils are removed only partly

- **Laser**
- coblation technique
- Radiofrequency surgery

- simple tonsillar hypertrophy in children (with clinical symptoms – breathing, swallowing etc.),
- sleep apnea syndrome in children

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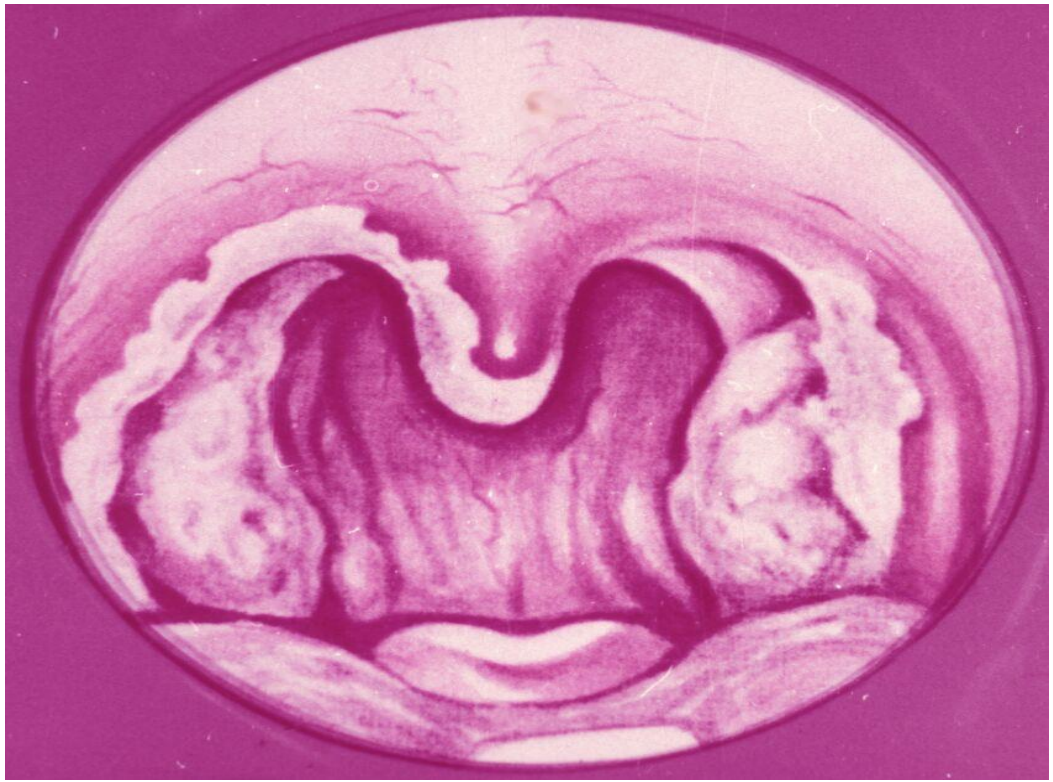
Diphtery



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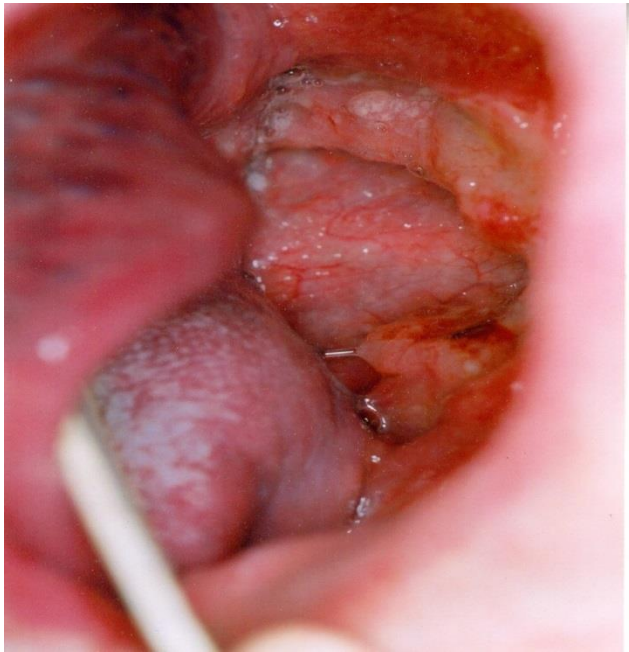
tumors of oropharynx

history – long lasting: pain, feeling of foreign body, bleeding, halitosis

asymetric changes in istmus facium, ulceration, hyperkeratosis, bleeding, tough tonsil, exofytic growth – histology !



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Foreign bodies

onside pain, feeling of foreign body

History- sudden onset during eating, finding of foreign body.

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Evaluation of epipharynx

- Posterior indirect rhinoscopy
- Direct epipharyngoscopy
- Rtg, CT
- (Palpation)

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Evaluation of Eustachian tube

- Epipharyngoscopy
- Politzeration
- Catheterization - murmur
  - Normal dry, filled
  - In stenosis – discontinuous, abrupt
  - In liquid in middle ear cavity– moist fennomen's
  - In perforation of ear drum – high, whistle
- Tubometry – even in perforated ear drum (Valsalva, Toynbee),

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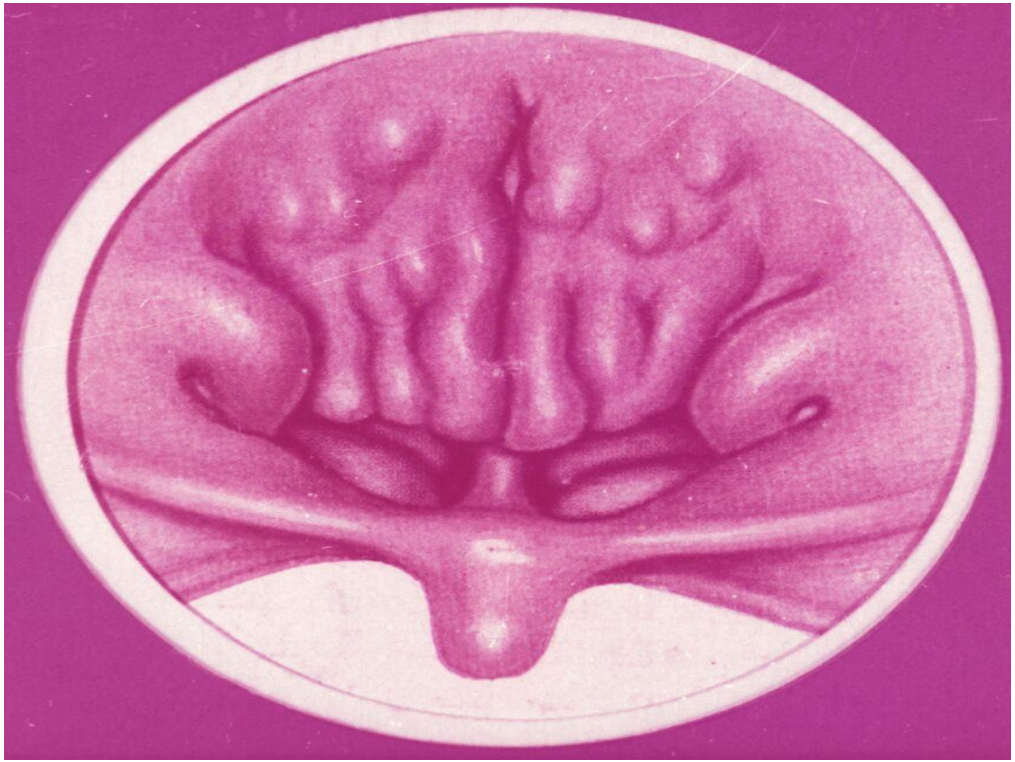
Vegetationes adenoideae (tonsila pharyngea)



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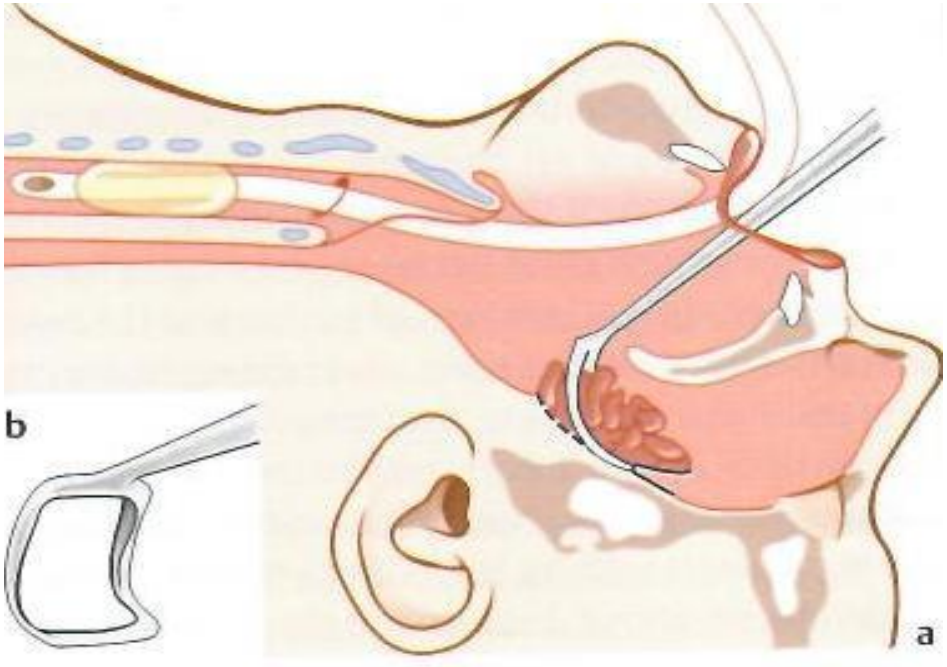
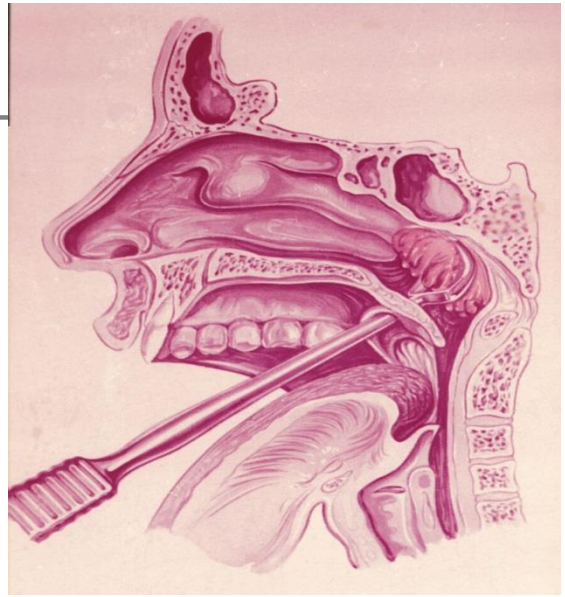
Adenoidectomy

under general anesthesia





under local anesthesia

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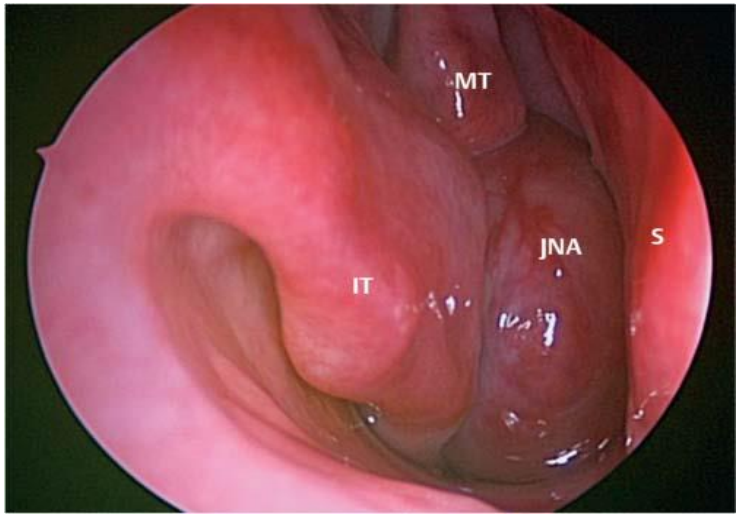
Benign tumors of epipharynx – juvenil angiofibroma

- Frequent benign tumor of epipharynx, usually arises from the pterygomaxillary fissure (foramen sphenopalatinum), spreading into epipharynx, or nasal cavity , paranasal sinuses, orbit and base of the skull.
- Highly vascularized tumor, locally destructive, recurrent
- Occurs exclusively in males 15-25 let
- Vessels –

  ACE (a.maxillaris, a.pharyngica asc.)

  ACI (a.opthalmica, sin.cavernosus)



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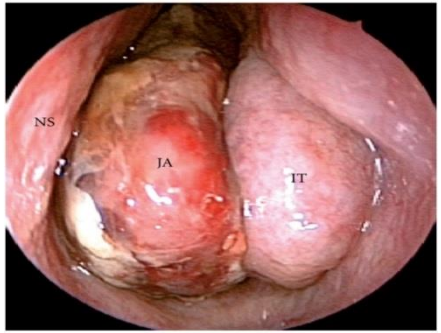
Nasopharyngeal angiofibroma



Etiology not sufficiently known

A) hormonal - adolescent male

B) other – disturbances in embryonal development

Classification according to Chandler

I) limited to nasopharynx

II) spreading into nasal or sphenoidal cavity

III) spreading into maxillary and ethmoidal cavities, fossa pterygopalatina or infratemporalis, into orbit or face

IV) intracranial spreading

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Nasopharyngeal angiofibroma

Symptoms: recurrent epistaxis, one sided or both sided nasal ostruction, nasal discharge, rhinosinusitis, rhinolalia, hearing disorder, headache, in advanced stage: diplopia, eye bulb protrusion, liquorhea, loss of smell, deformaties of face, palate

Diagnossis

- rhinoendoscopy red-yellow soft, bleeding tissue on contact
- Imagination methods CT with contrast medium+angiogragphy, NMR with contrast medium+angiogragphy, DSA
- Biopsy usually contraindicated for strong bleeding

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Nasopharyngeal angiofibroma - therapy

Surgery

- Trans nasal endoscopic technique (small tumors)
- External approaches – medial maxillectomy from lateral rhinotomy, transpalatinal, transantral, neurosurg. approaches
- Preoperative embolization of the feeding vessels – within 48 hours before surgery (risk of CMP)

Actinotherapy - success rate 80 %

chemotherapy intraarterial – only advance, or palliative

Recurrences in 20-50% - uncomplete removal

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Nasopharyngeal cancer

- South-east asia; in European rare
- WHO classification:
  - I. Spinocelular cancer with keratinization
  - II. Small differentioted Spinocelular cancer without keratinization
  - III. Not-differentiated cancer
- Type I – local spred into base of the skull, less frequently regional or distant metastasis, low chemo and radiosenzitivity
- Typ II a III (lymphoepithelioma, nasopharyngeal type cancer)

- usually both large regional metastasis and distant metastasis, good chemo-radiosensitivity, is thought to be due to the Epsttein-Barr virus

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Nasopharyngeal cancer

Symptoms

- 1st symptom frequently – enlarged, not painful bilateral neck lymph nodes
- Ear - Eustachian tube dysfunction from obstruction- conductive hearing loss, tinnitus, middle ear effusion
- Nasal obstruction, bloodstained purulent nasal discharge
- Neurology typical for advanced tumors (n.VI, n.V – diplopia, disorder of face sensitivity, n.IX-XI), Trotterova trias: palate paresis, neuralgia n V., conductive hearing loss

Diagnosis

- rhinoepipharyngoscopy
- Biopsy
- CT (bone destruction) a MR (intracranial spread)

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Nasopharyngeal cancer

- Radiotherapy
- Advanced primary tumor - Radiotherapy + chemotherapy (neoadjuvant, concomitant)
- Surgery only in case persisting neck metastases after non surgical treatment – neck dissection
- Lymphoepithelioma

(Schmincke-Regaud) 5y survival rate 40 %

other malignant tumors in this region 20 %