Head & Neck Surgeon's Infectiology

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1. Introduction – when to grab the scalpel?
2. Anatomy
3. Surgical treatment

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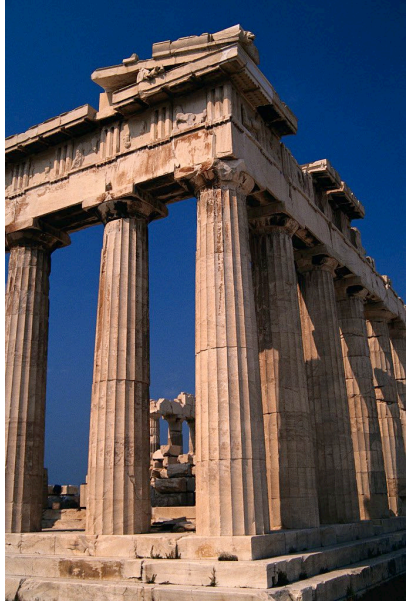
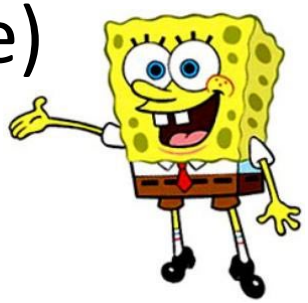
Owls to Athens



Abscess: purulent infection in a virtual space between tissues

Empyema: purulent infection in a pre-formed body cavity

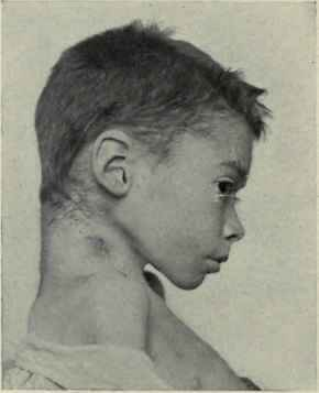
Phlegmon: purulent infection with diffuse spread in the tissue (sponge-like)



Cervical Phlegmon – Abscess

- **Origin:** „banal“ infection, post-traumatic, iatrogenic
- **Symptoms:** pain, trismus (=lockjaw), torticollis, aglutition, dyspnoea (= acute emergency)

- **Complication:** septic shock, asphyxia, vascular involvement with septic thrombosis or vascular invasion with lethal haemorrhage, tongue or vocal cord paresis, *descending abscess* => purulent mediastinitis, pericarditis and/or pleuritis



Ubi pus ibi evacua

- Historically, decision making was easy for a surgeon:
  - No tomographic imaging => diagnostic surgery
  - No antibiotics => „septic surgery“ = evacuation as the only „causal“ therapy option: clean out the pus and rinse with antiseptic solutions
  - "Pus bonum et laudabile": in pre-20th century medicine the creamy-yellowish pus was regarded to be important in the wound healing process... (praise what you cannot fight...)

Today: Information Age

- Blood test: Haemogram, CRP
- Tomographic imaging : US, CT, MR +/- i.v. contrast agent
- Microbiology test from aspirate

- **Specific antibiotic therapy**
- So when to grap the scalpel?

When to grap the scalpel?

- Phlegmon/Mini-abscess: i.v. antibiotic therapy
- Antibiotics have merely no therapeutic effect in case of an abscess (pus encapsulated in a wall of granulation tissue). The antibiotic does not reach the area of purulent colliquation.

- Therefore: An abscess warrants surgical drainage of pus combined with antibiotics to avoid septic complications.

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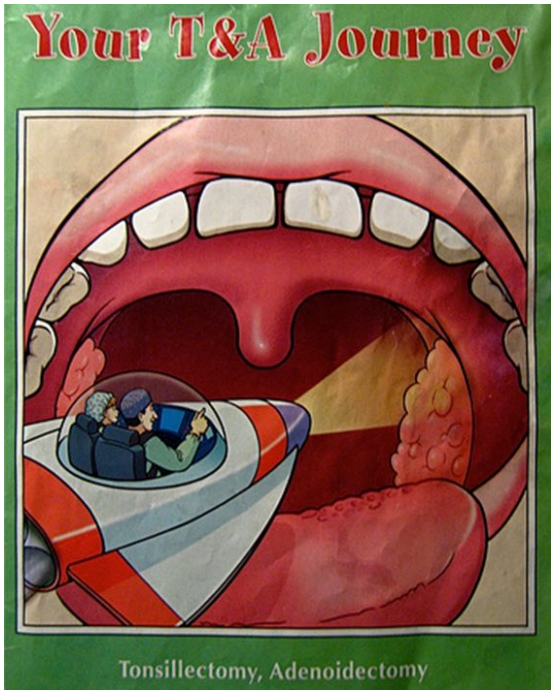
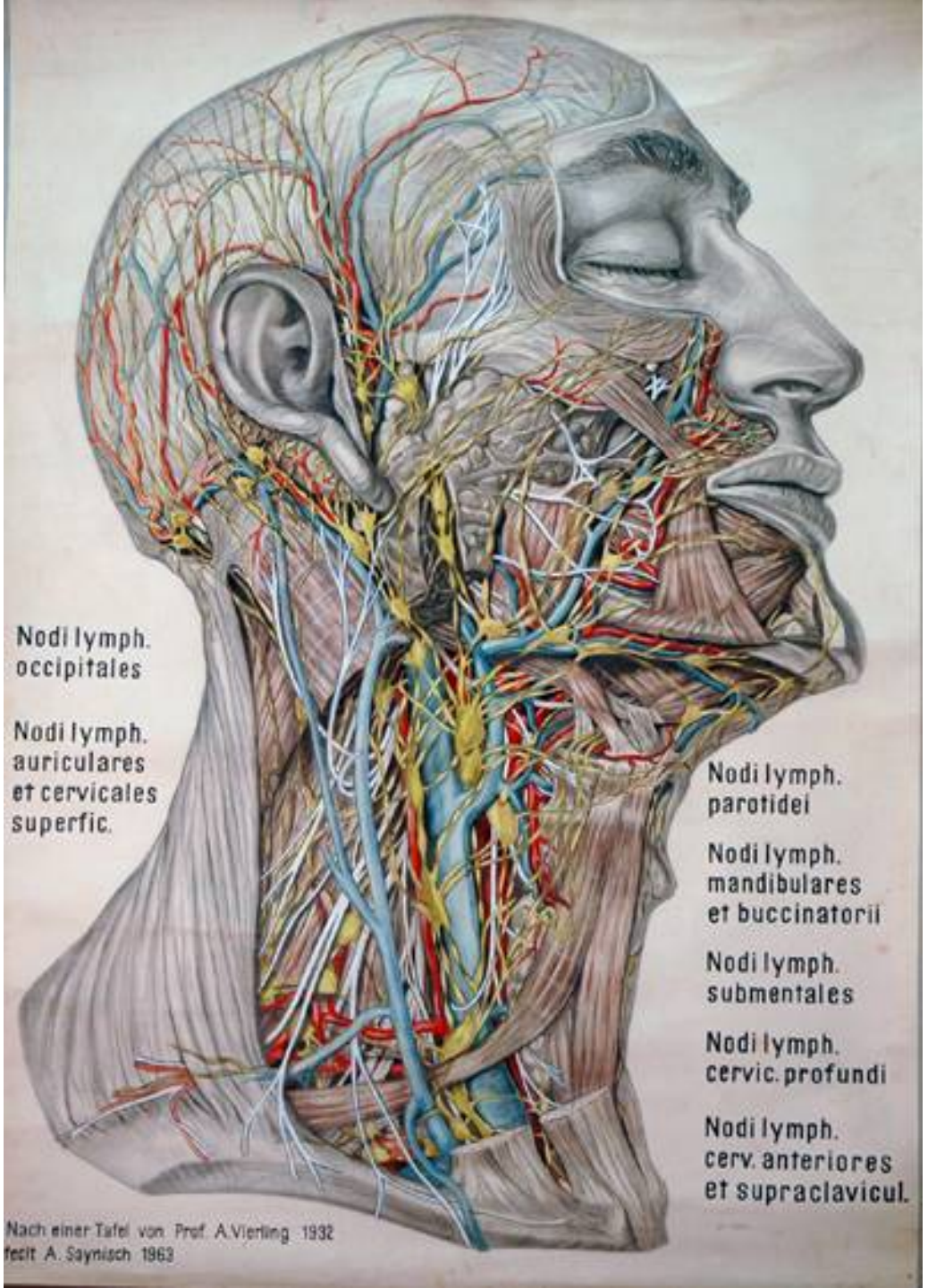
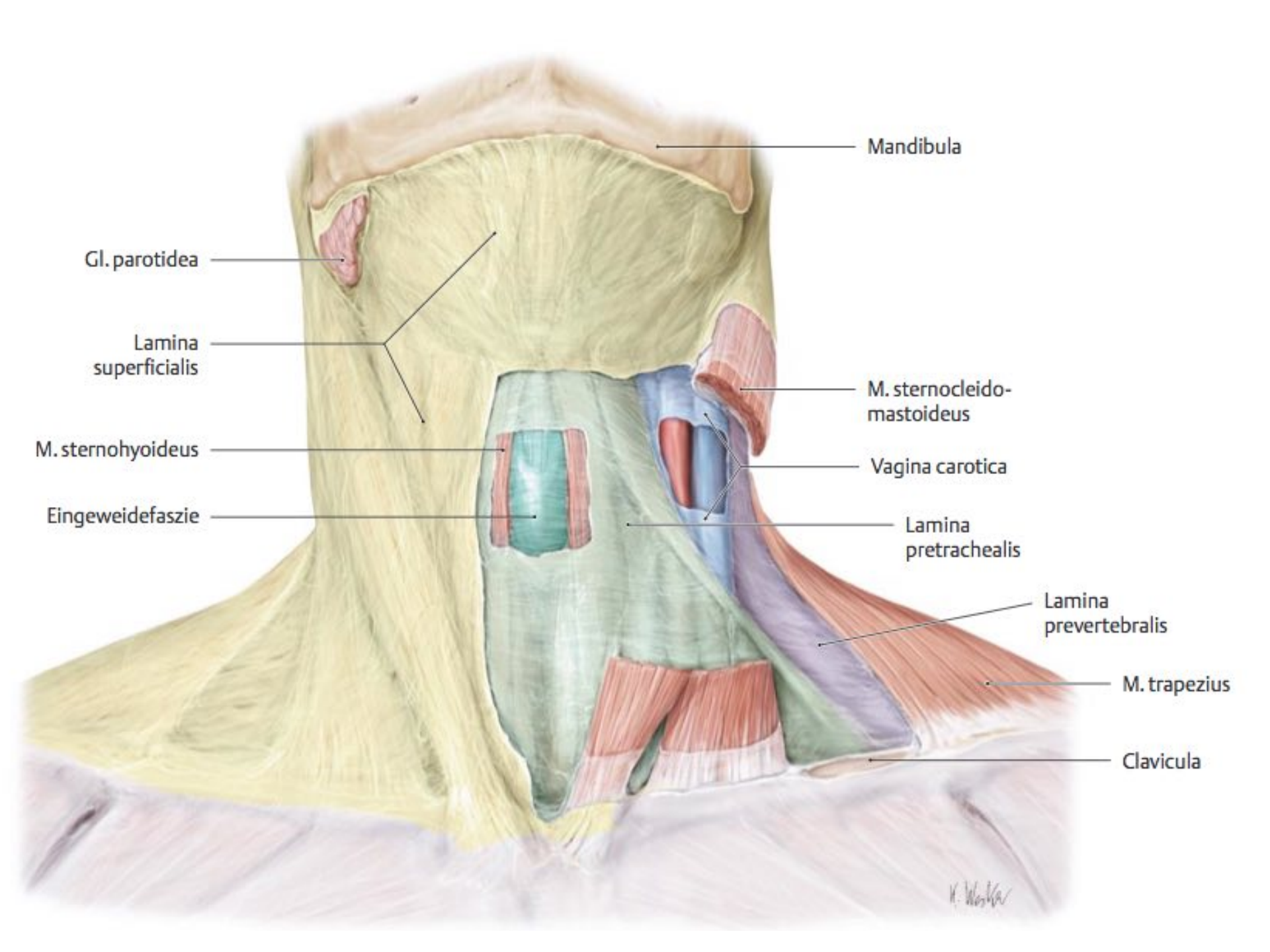
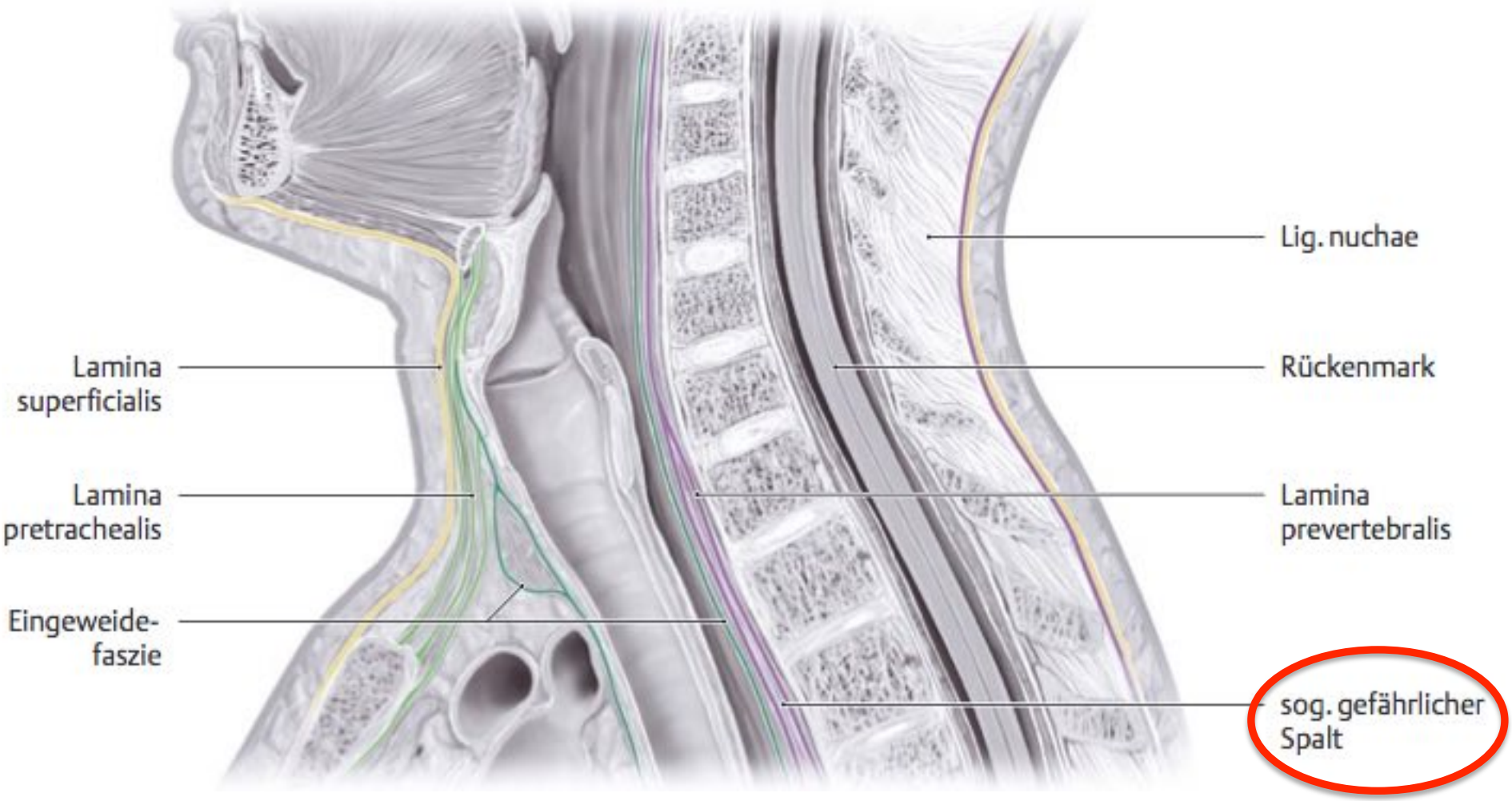



Nodi lymph.
occipitales
Nodi lymph.
auriculares
et cervicales
superfic.
Nodi lymph.
parotidei
Nodi lymph.
mandibulares
et buccinatorii
Nodi lymph.
submentales
Nodi lymph.
cervic. profundi
Nodi lymph.
cerv. anteriores
et supraclavicul.
Nach einer Tafel von Prof. A.Vierling 1932
fecit A. Saynisch 1963


Mandibula
Gl. parotidea
Lamina superficialis
M. sternocleido-mastoideus
M. sternohyoideus
Vagina carotica
Eingeweidefaszie
Lamina pretrachealis
Lamina prevertebralis
M. trapezius
Clavicula


Lig. nuchae
Lamina superficialis
Rückenmark
Lamina pretrachealis
Lamina prevertebralis
Eingeweide-faszie
sog. gefährlicher Spalt

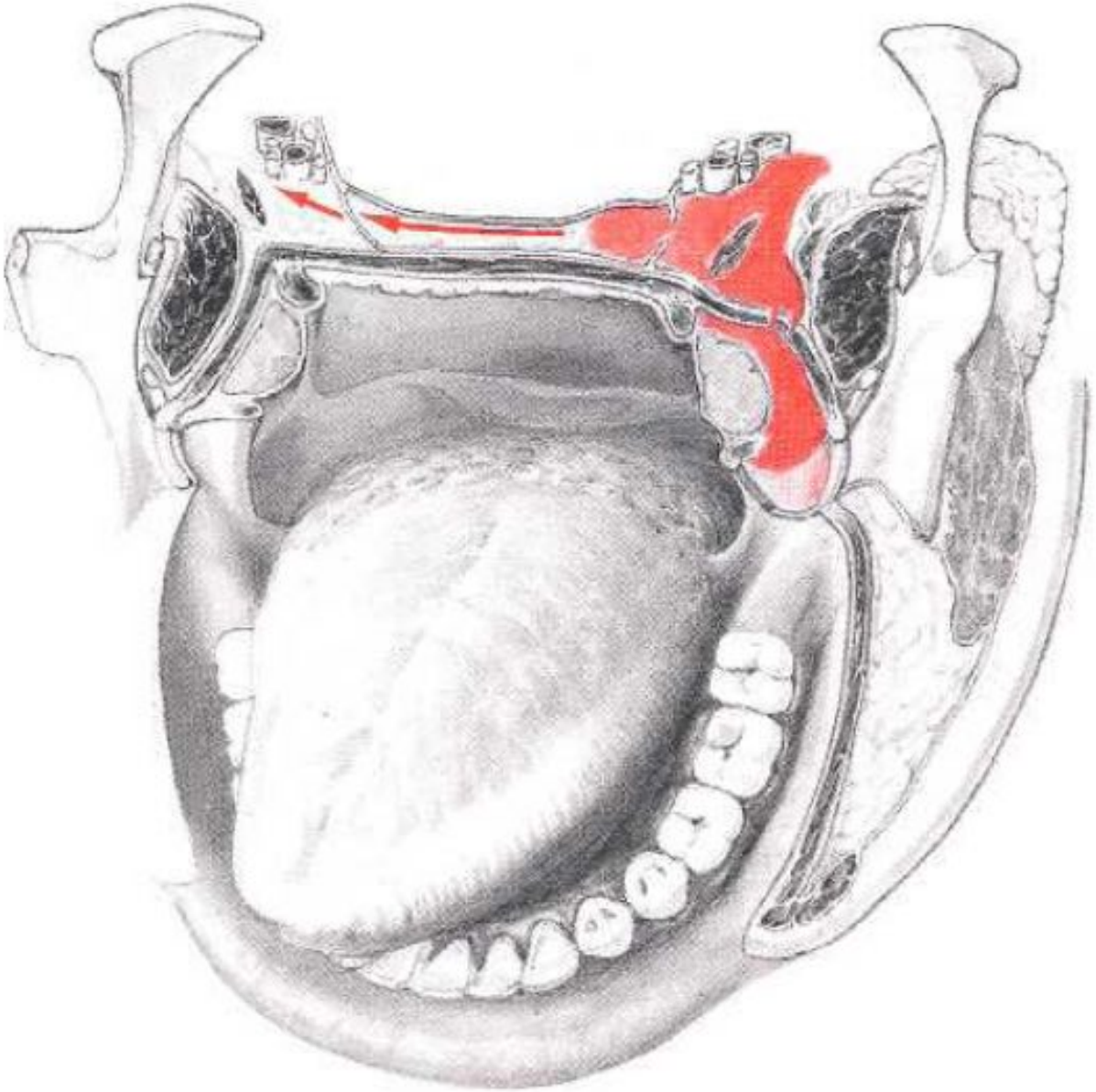
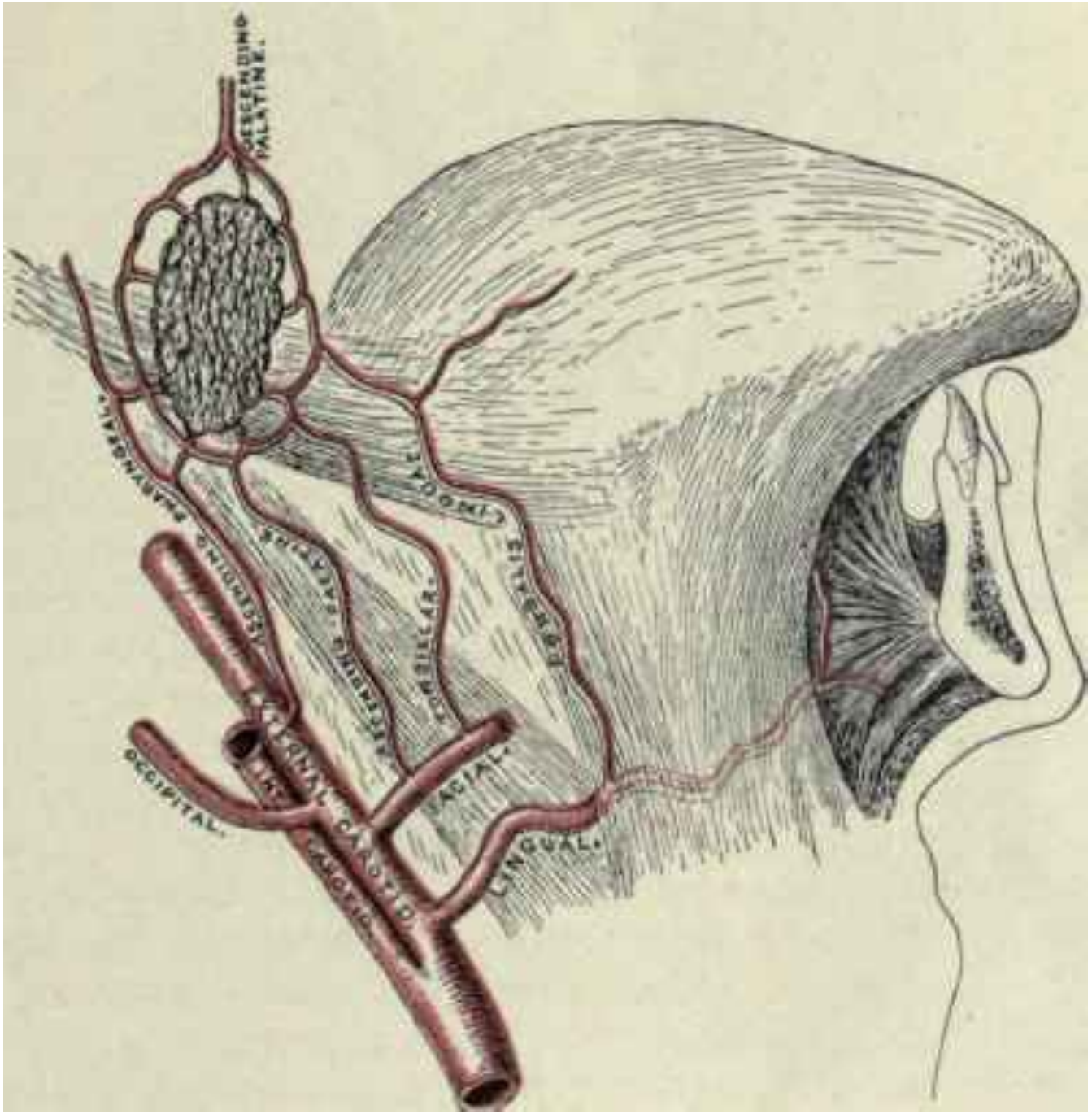


Abb. 5.53. Anatomische Verhältnisse bei Abszessen der Peri- und Retrotonsillar- sowie der Parapharyngealregion


DESCENDING PALATINE.
INFERIOR PHARYNGEAL.
ASCENDING PALATINE.
TONSILLITIC.
INTERNAL CAROTID.
EXTERNAL CAROTID.
OCCIPITAL.
FACIAL.
LINGUAL.

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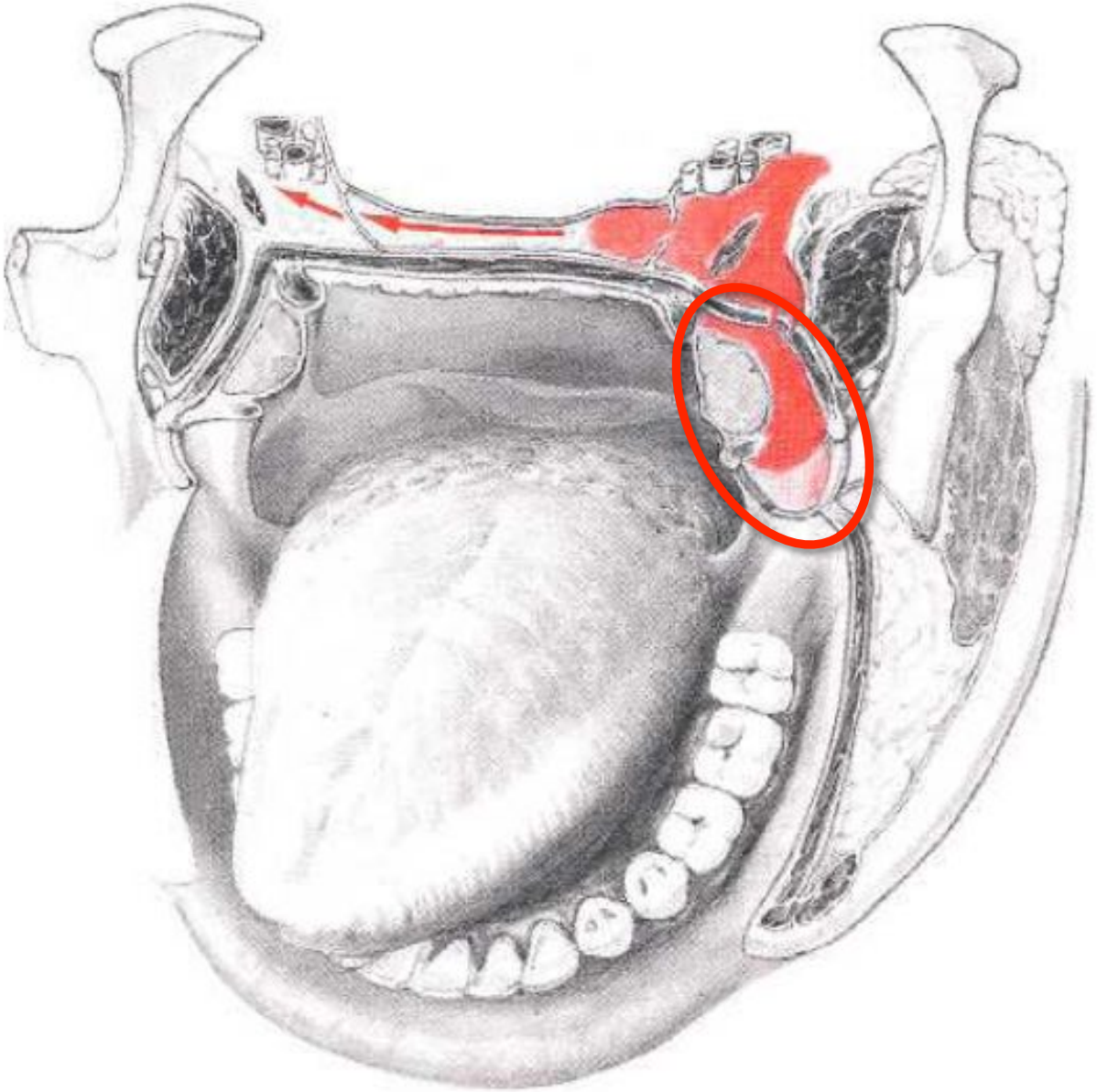

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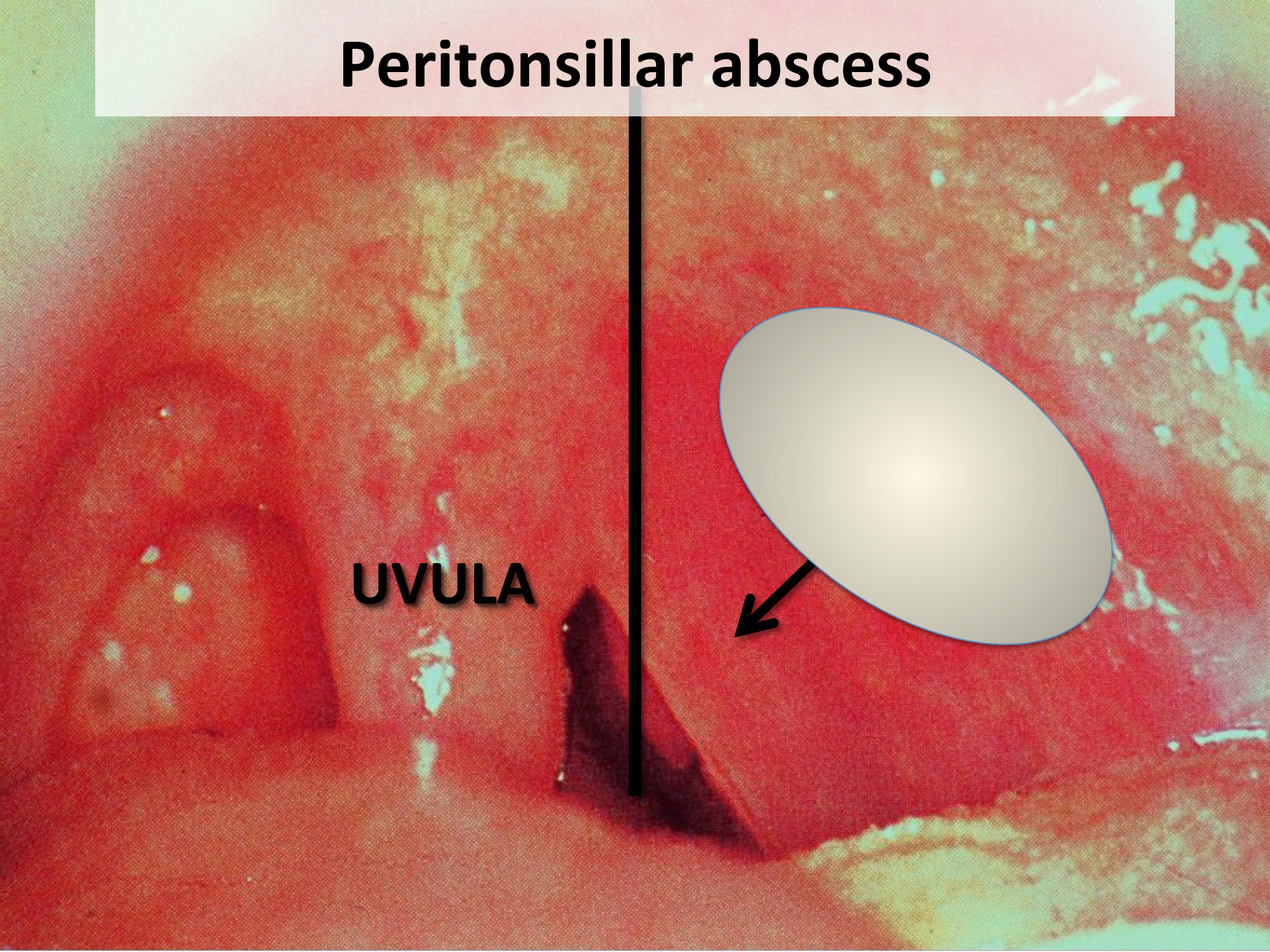
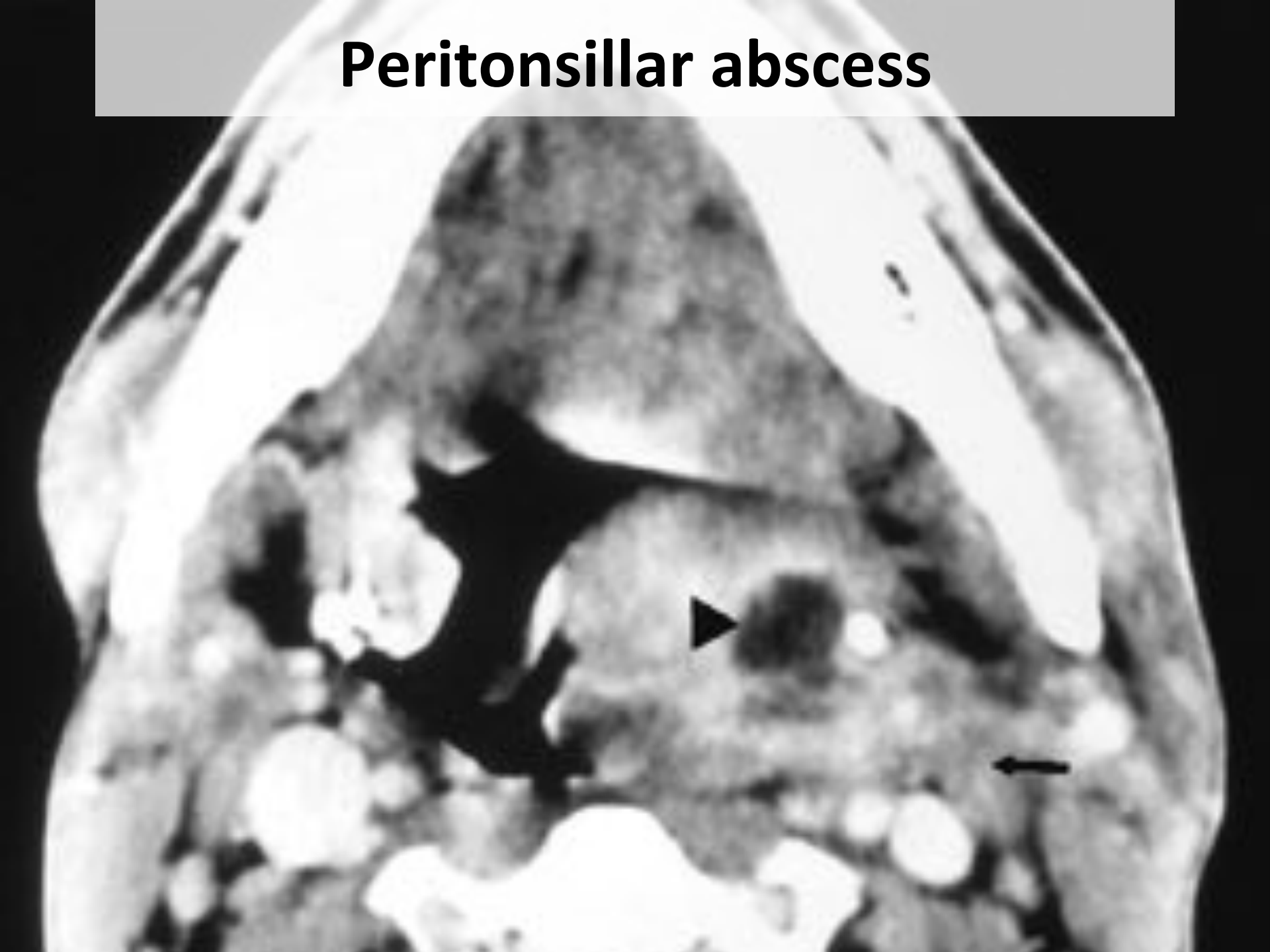
Peritonsillar abscess

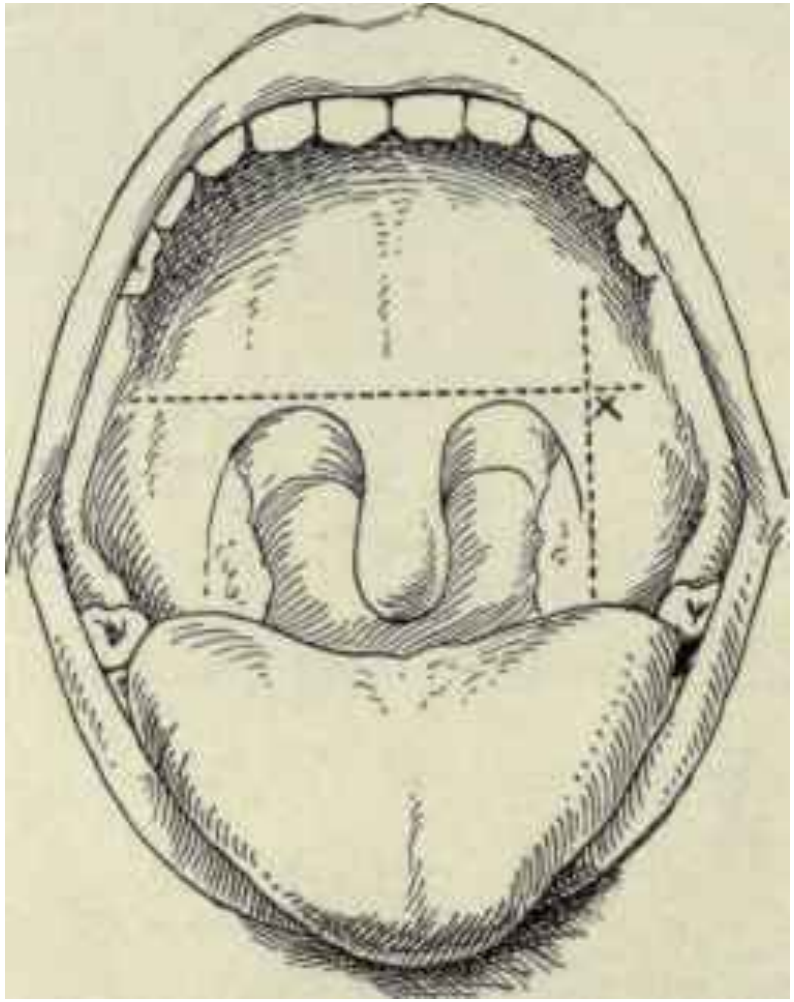


Peritonsillar abscess

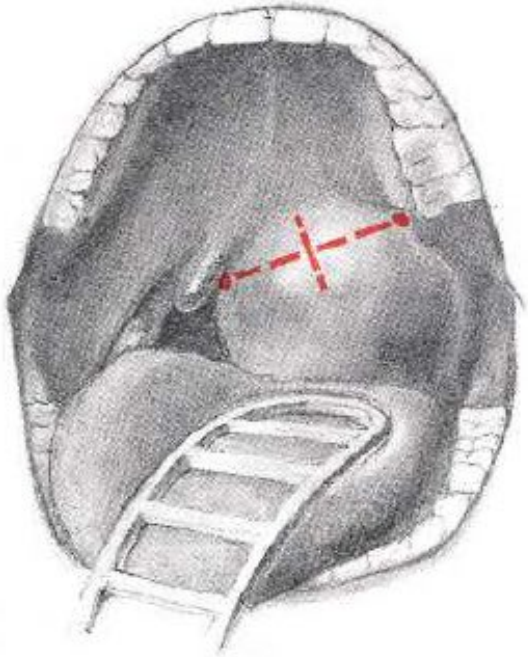


Peritonsillar abscess

- Normally unilateral after tonsillitis (even under antibiotic therapy)
- Aglutition, drooling, trismus
- Incision in LA & daily rinsing with antiseptic
- Alternative: Puncture, often repeated
- Abszess-tonsillectomy (young children)
- Antibiotics
- After incision or puncture, tonsillectomy is often recommended after 3 months



Point of puncture for tonsillar abscess. "If an imaginary horizontal line is drawn across the base of the uvula, and another vertically along the anterior faucial pillar, they will intersect at a point overlying the supratonsillar fossa. Just external to this is the best point for opening a quinsy." - St. Clair Thomson, M.D., Brit. M. J., March 25, **1905**, p. 645.



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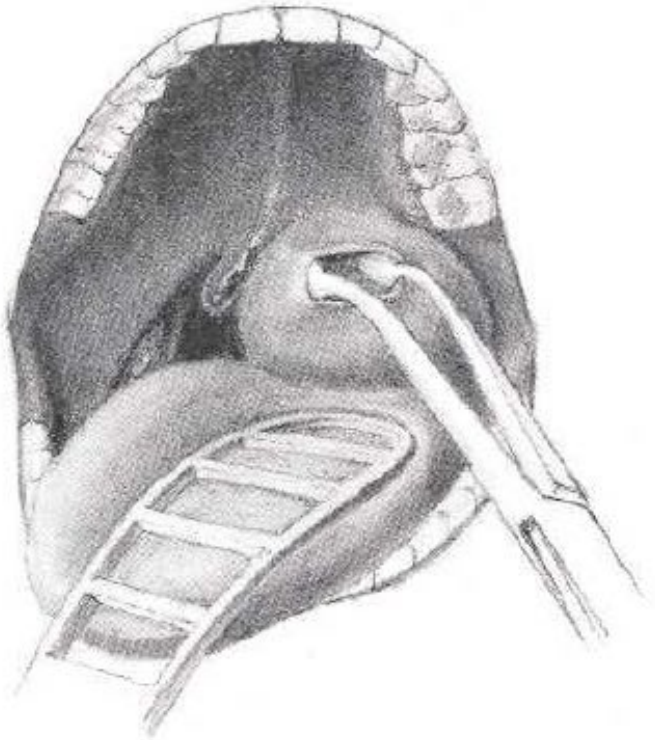
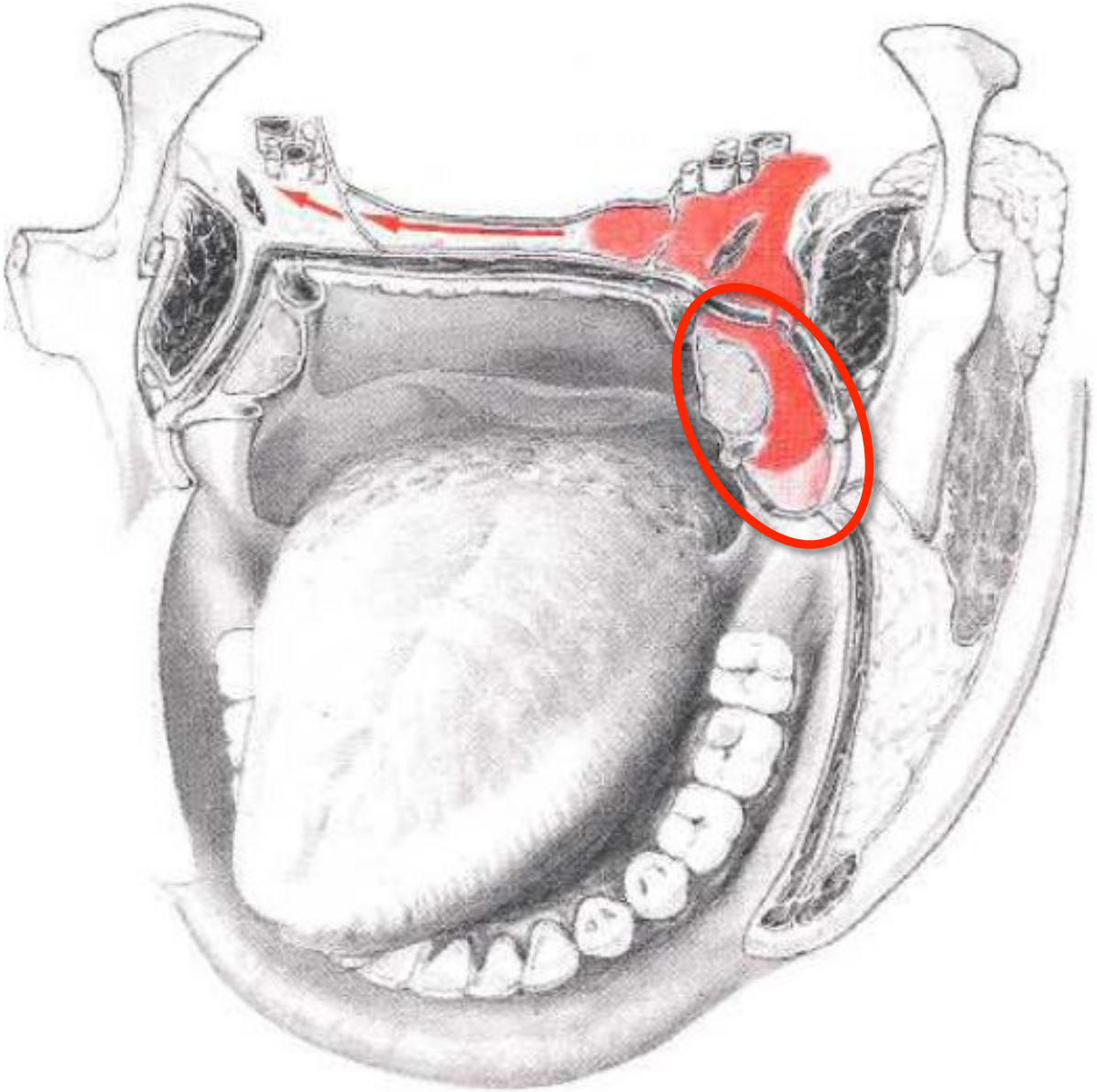


b



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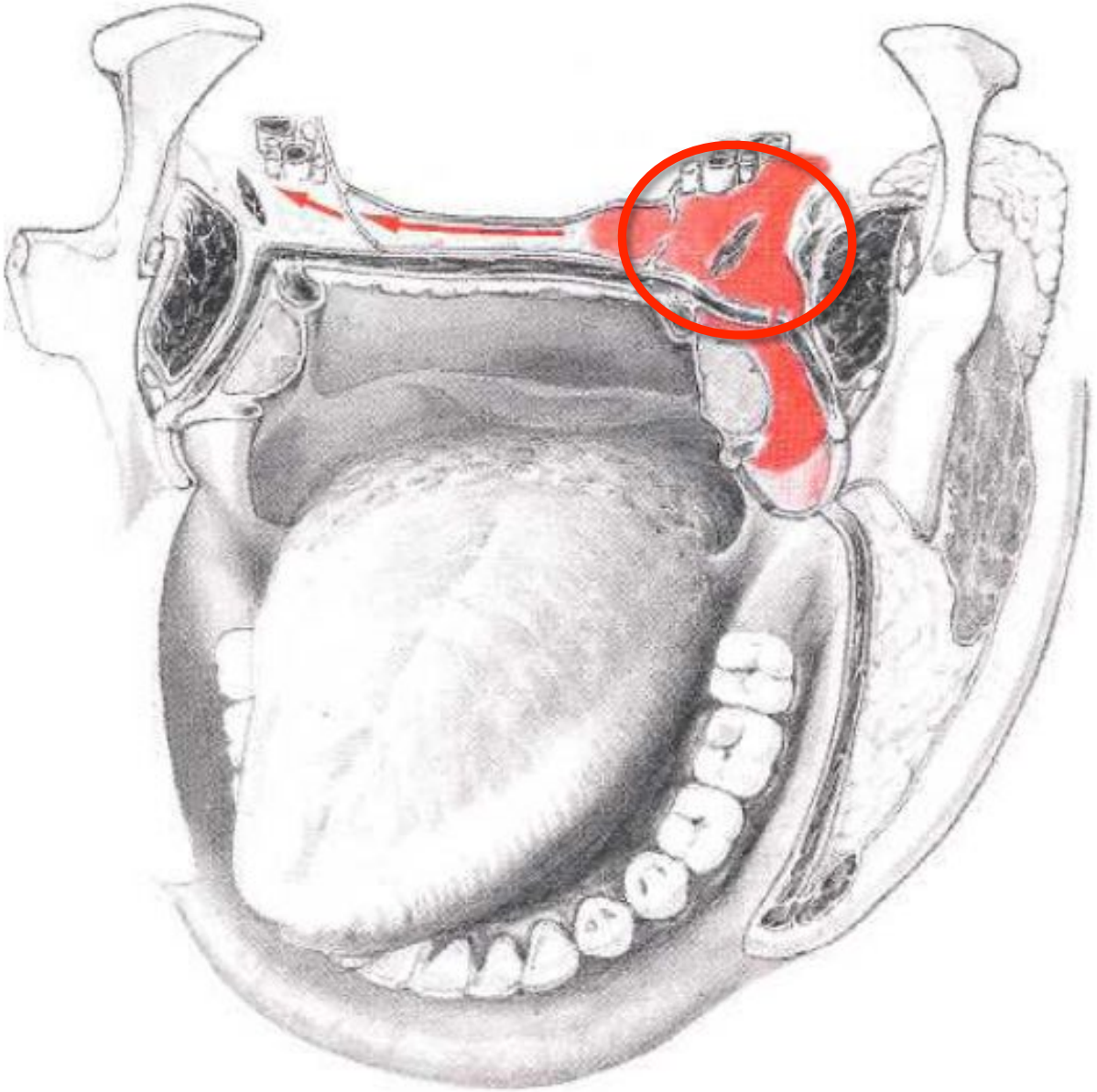

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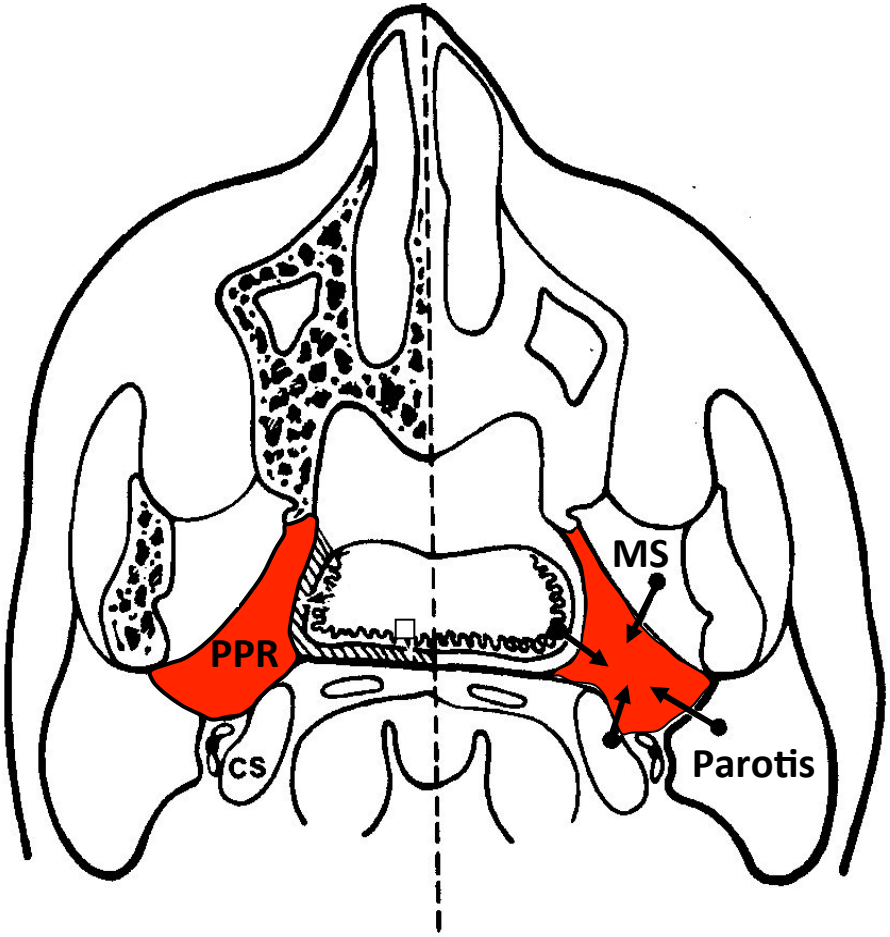
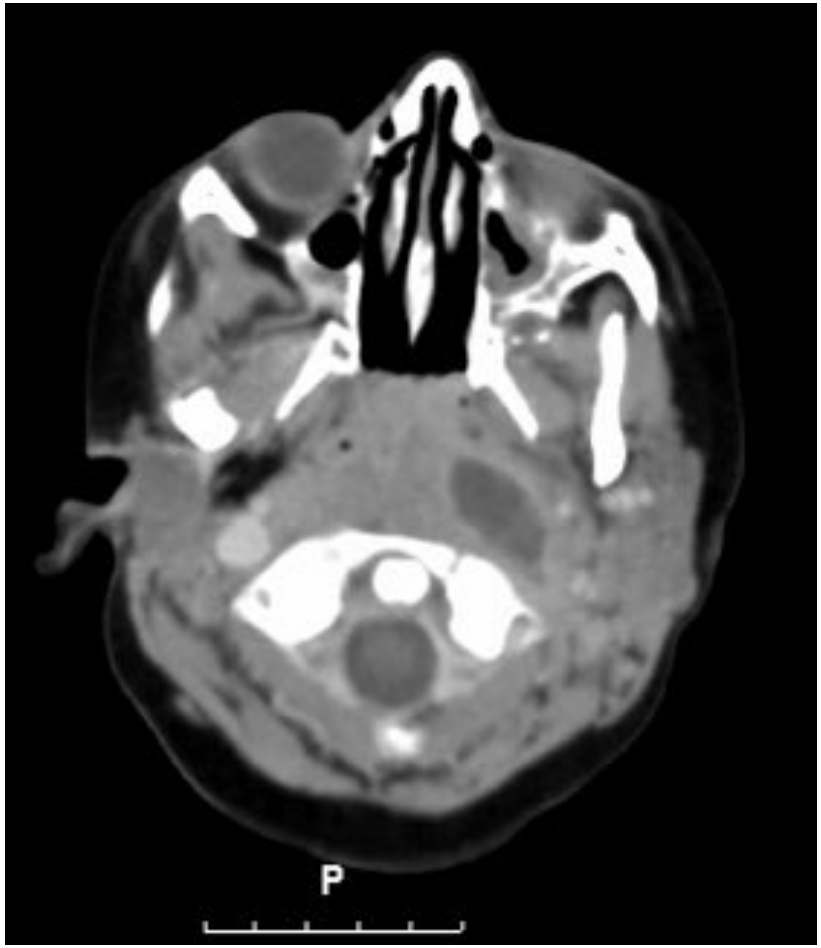
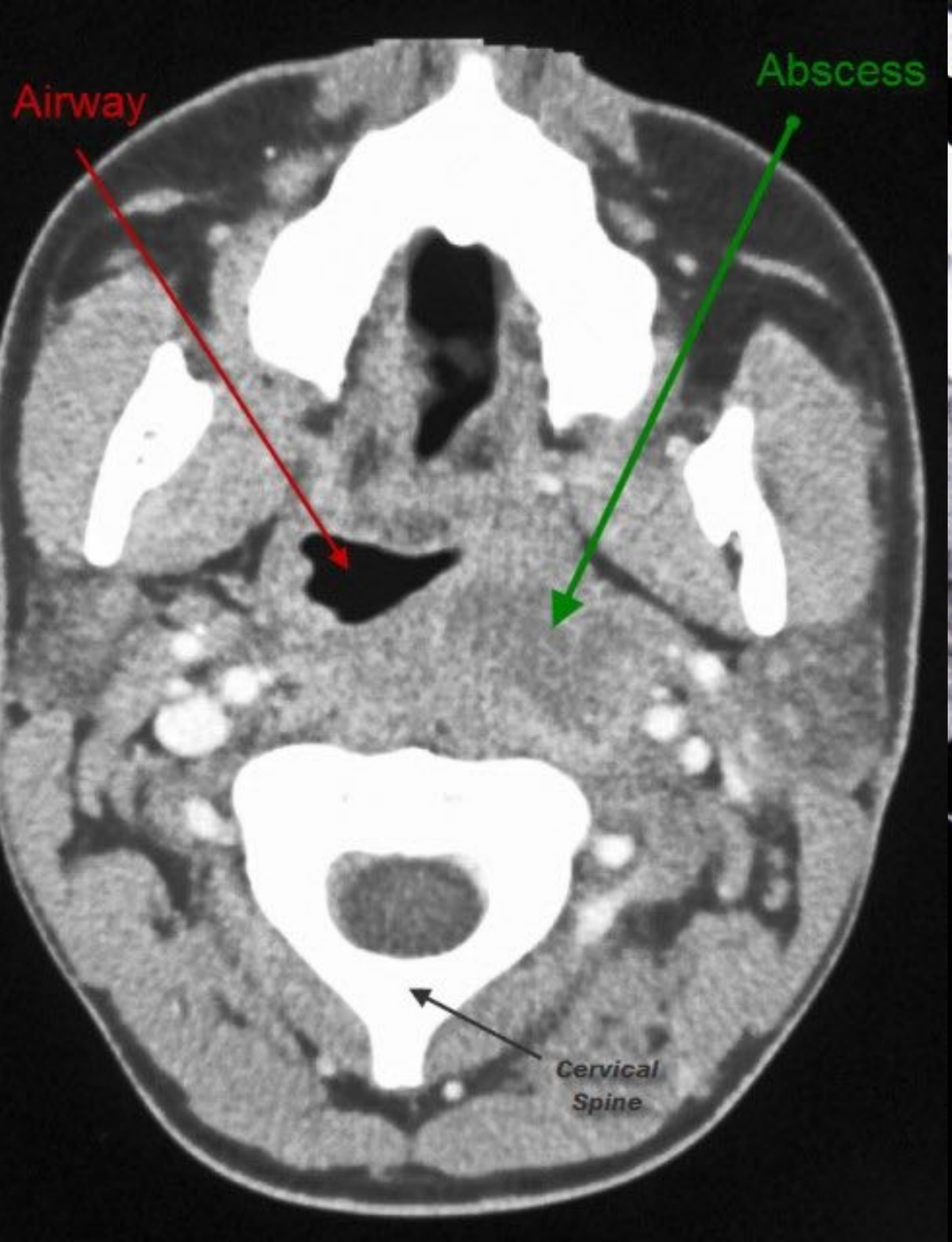
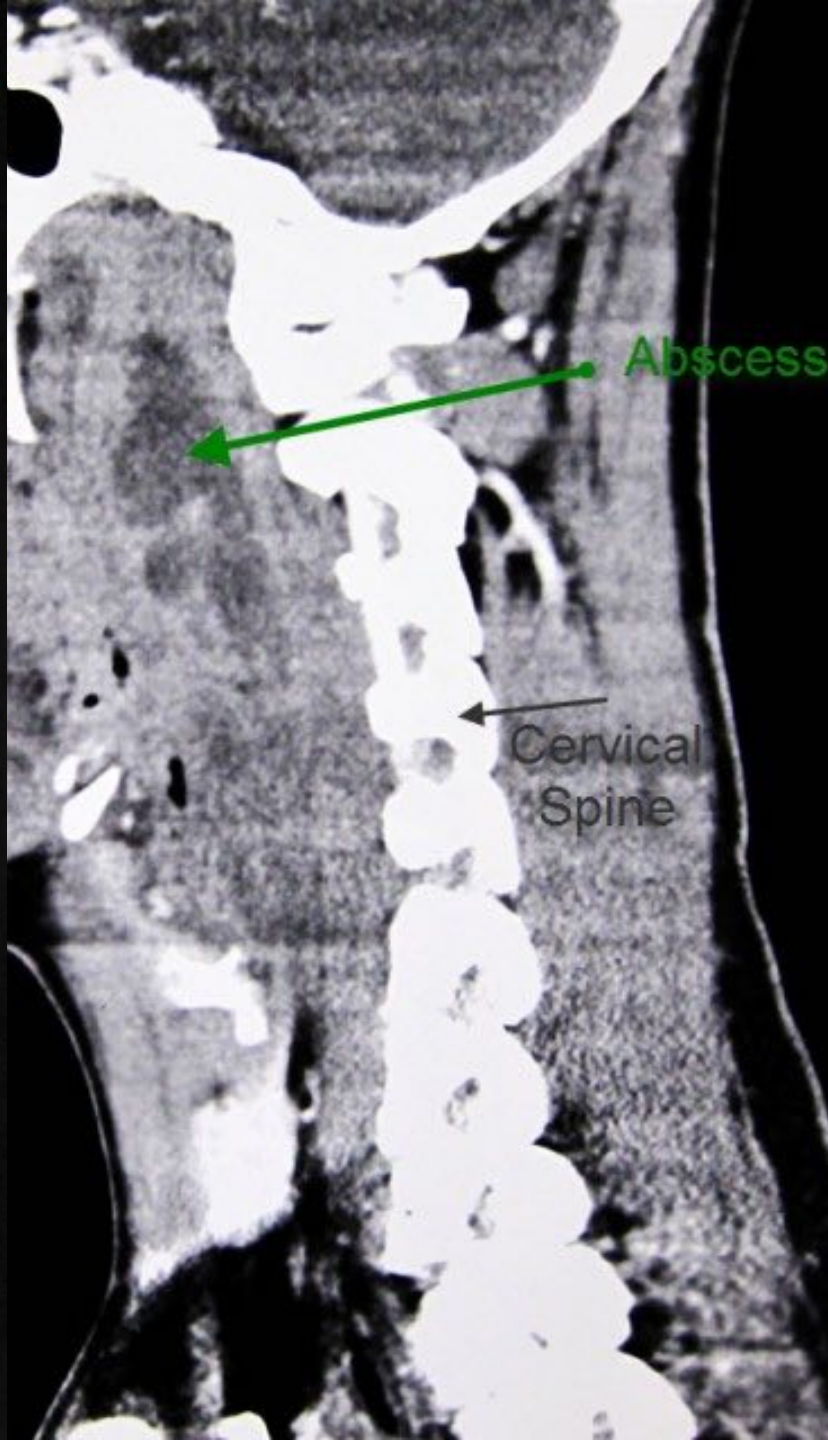
Parapharyngeal abscess



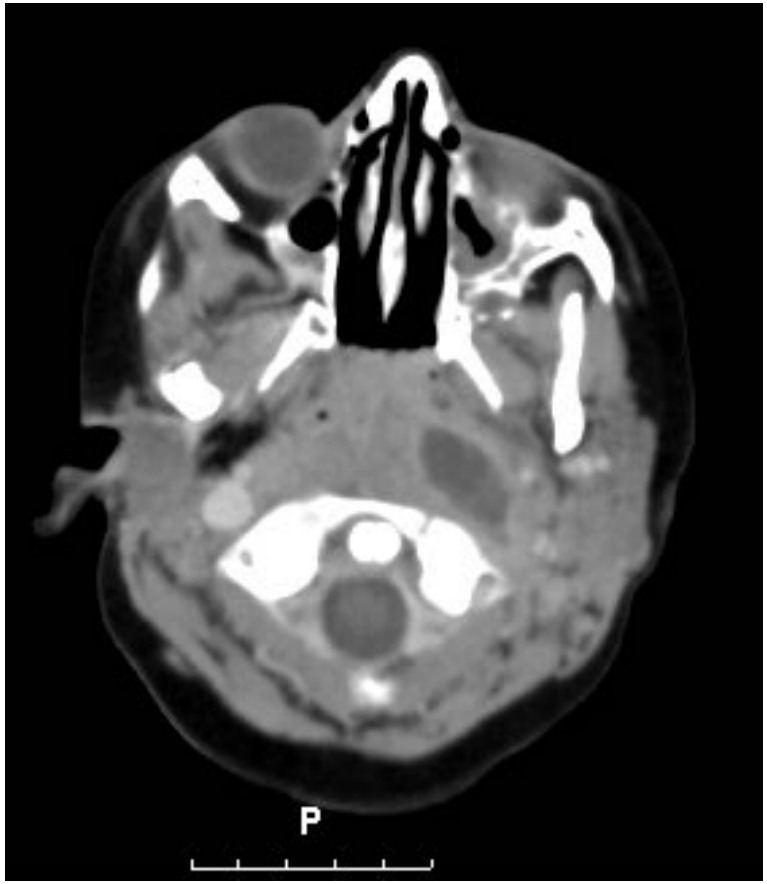


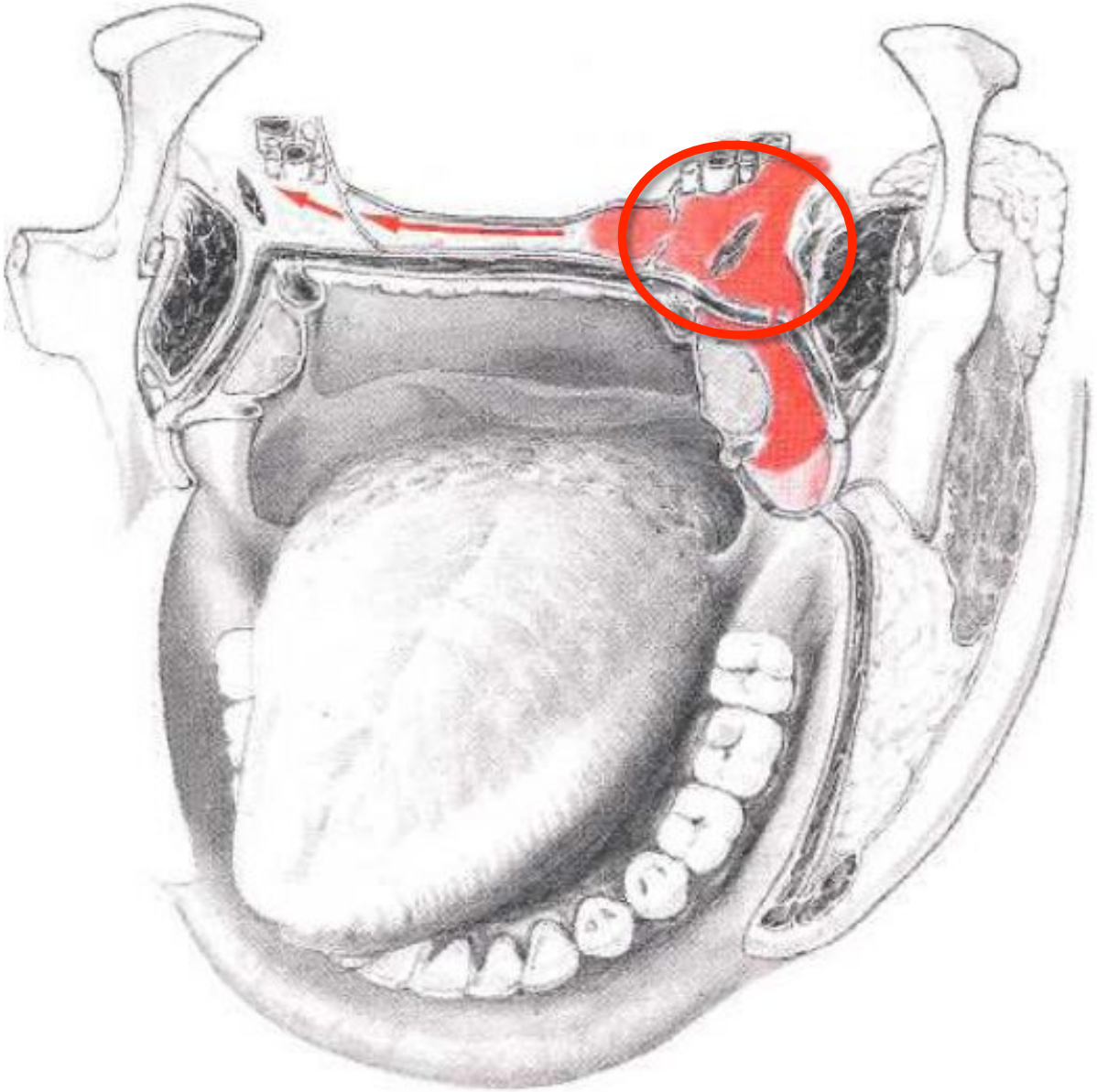

Airway
Abscess
Cervical
Spine


Abscess
Cervical
Spine

Parapharyngeal abscess

- Older children
- TRISMUS (Mm Pterigoidei)
- CT/MR
- Drainage +/- TE
- i.v. antibiotic therapy





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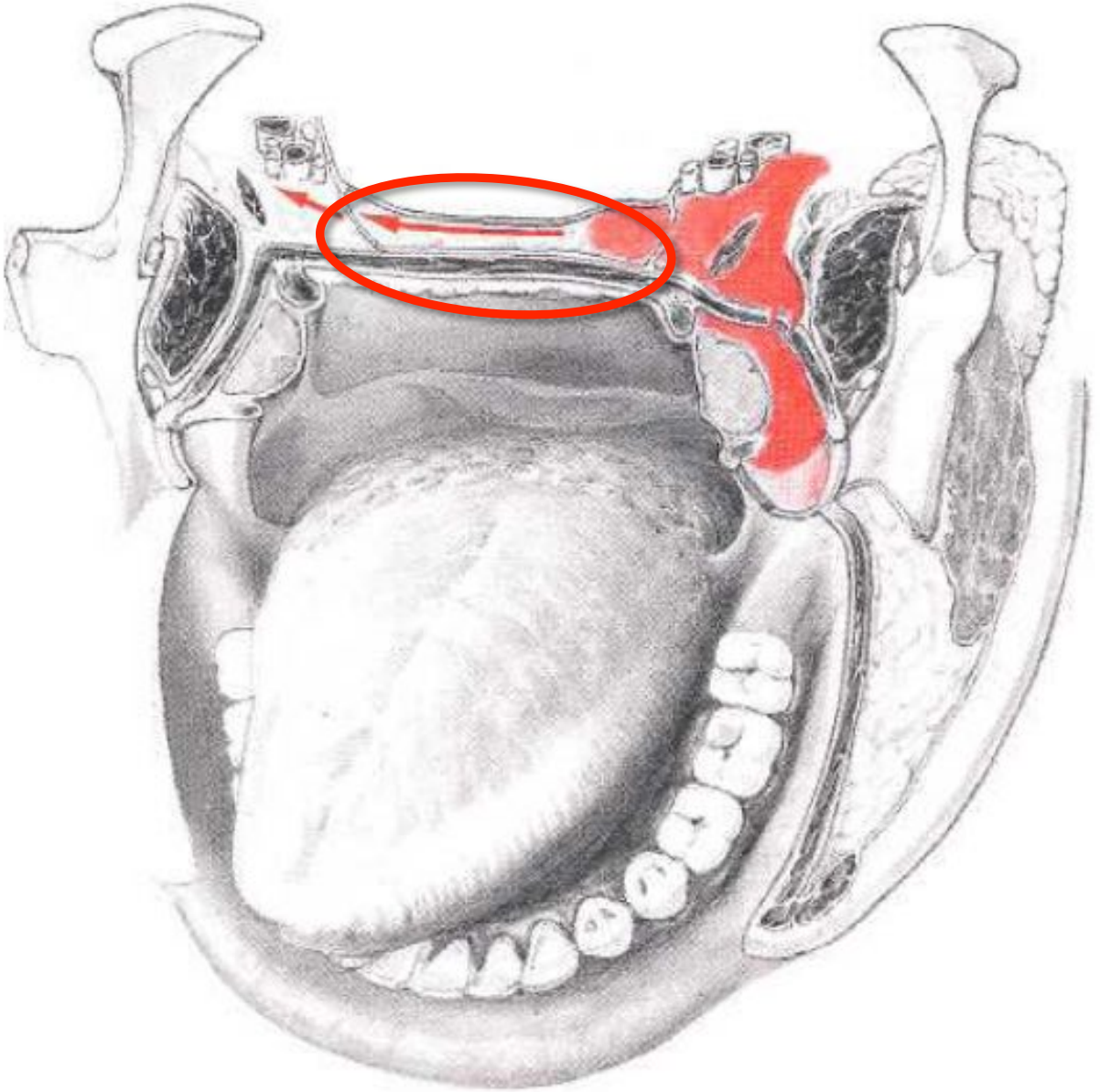

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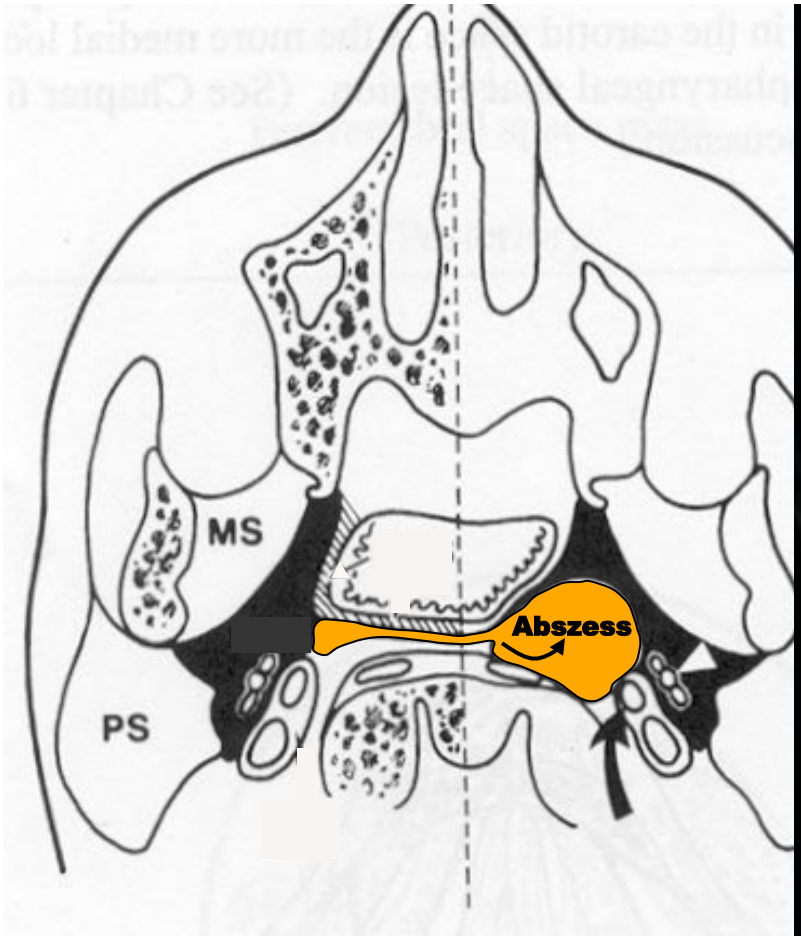
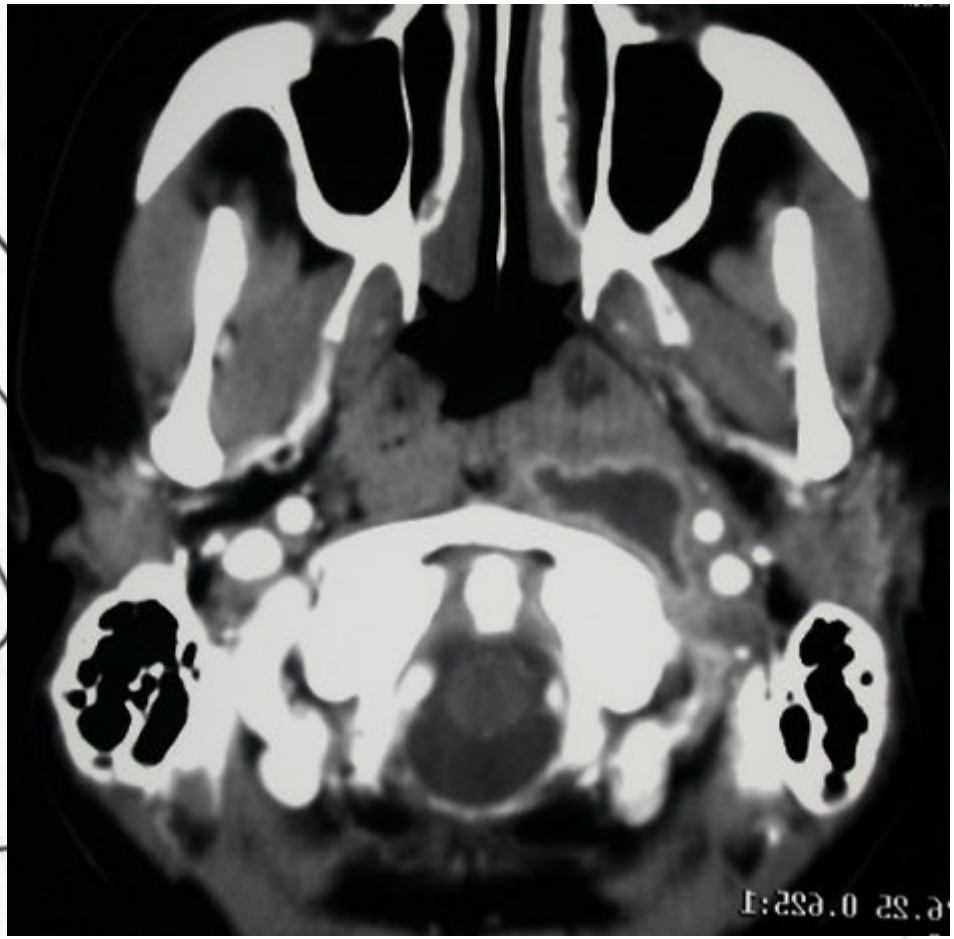
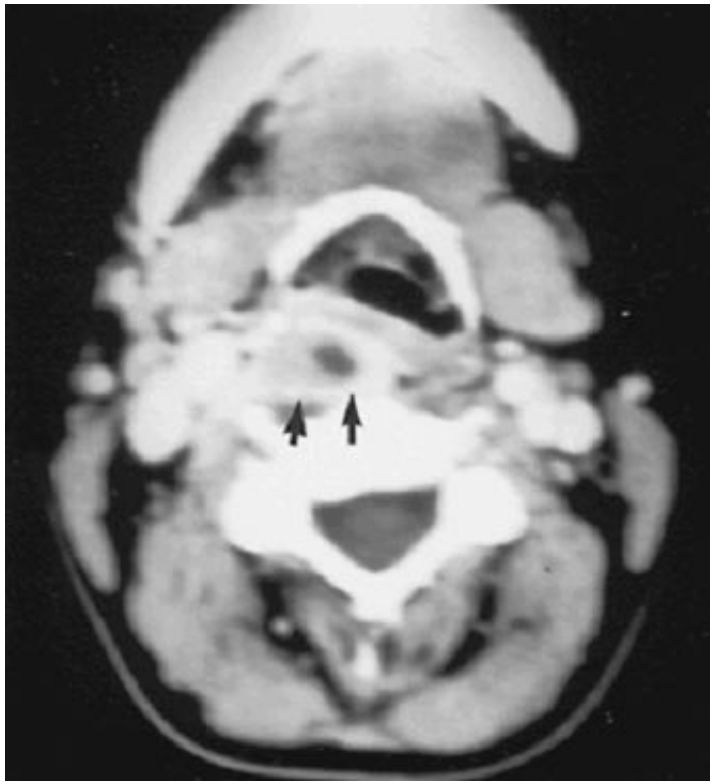
Retropharyngeal abscess

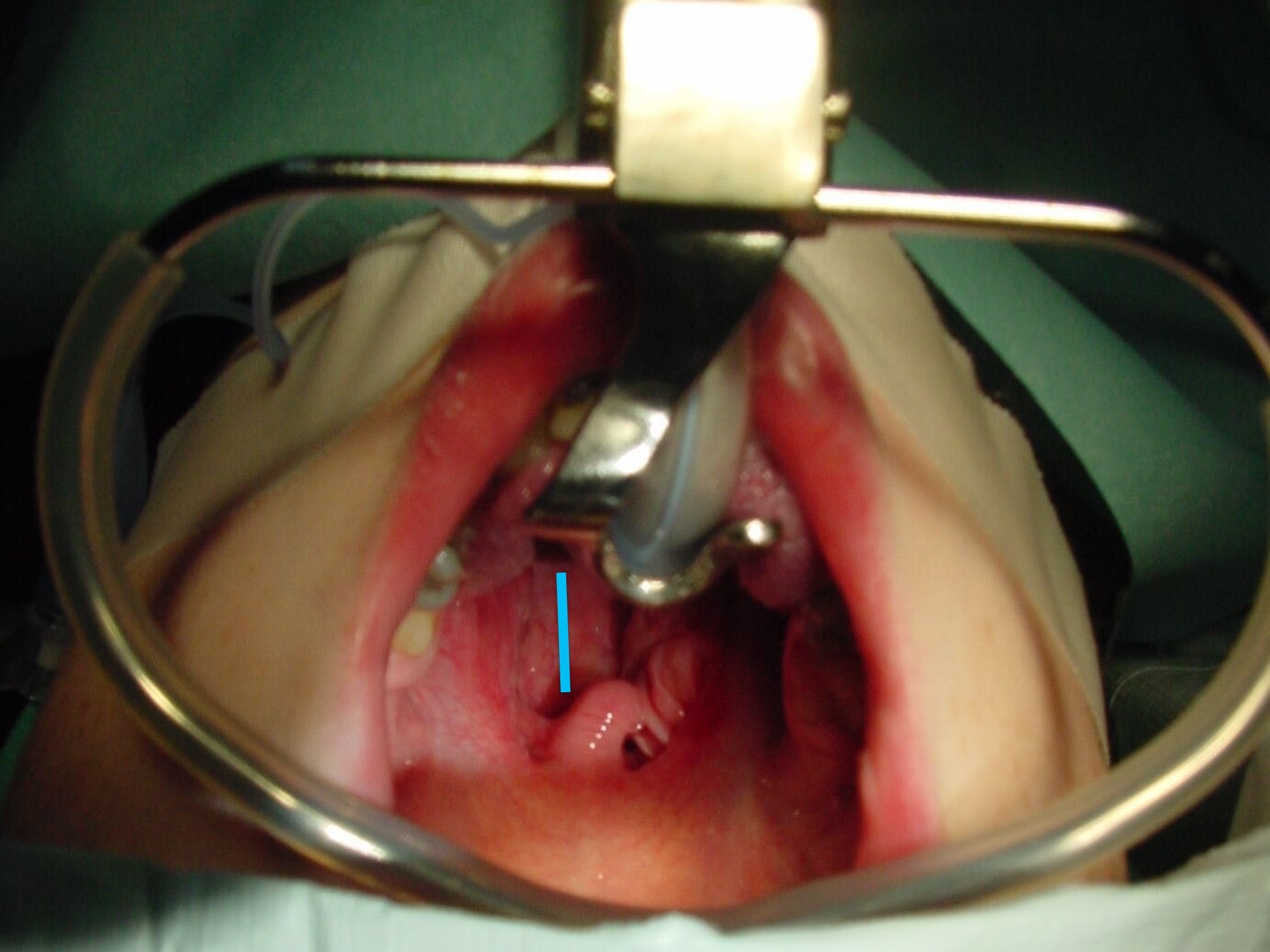


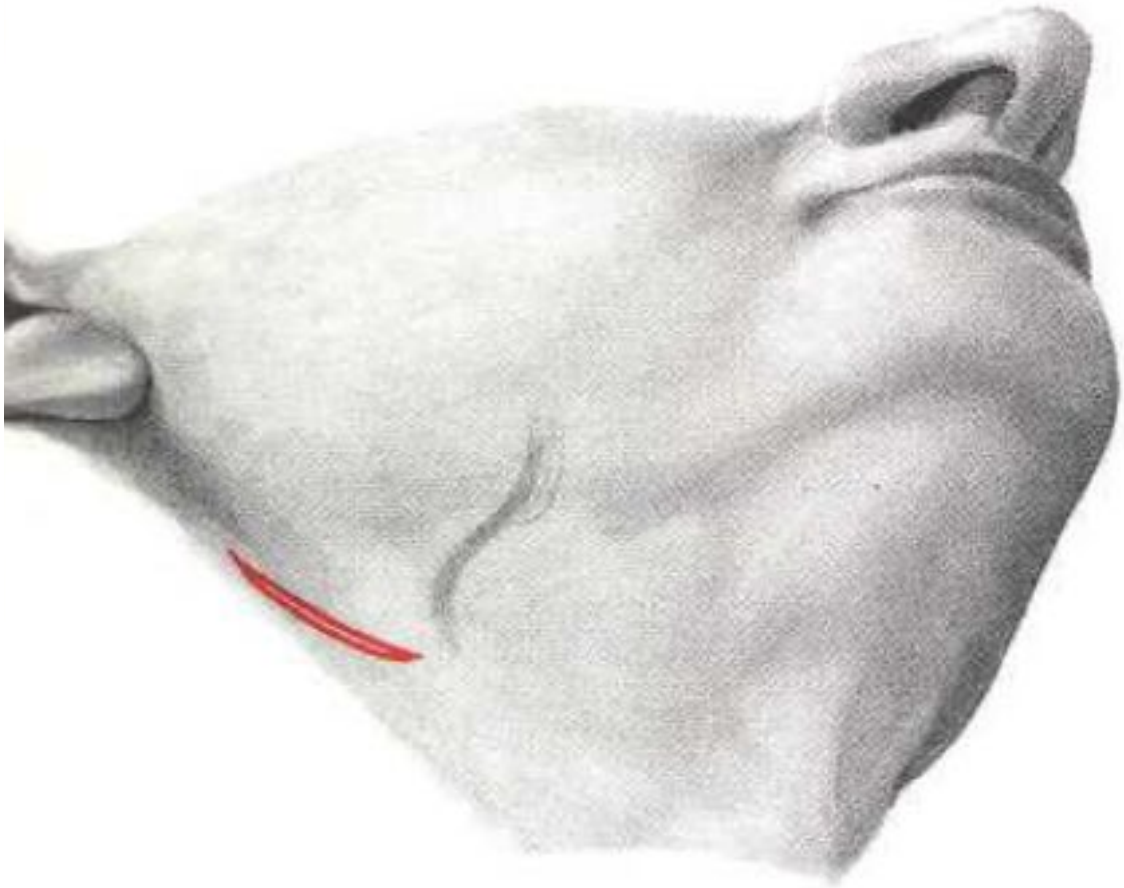


Retropharyngeal abscess

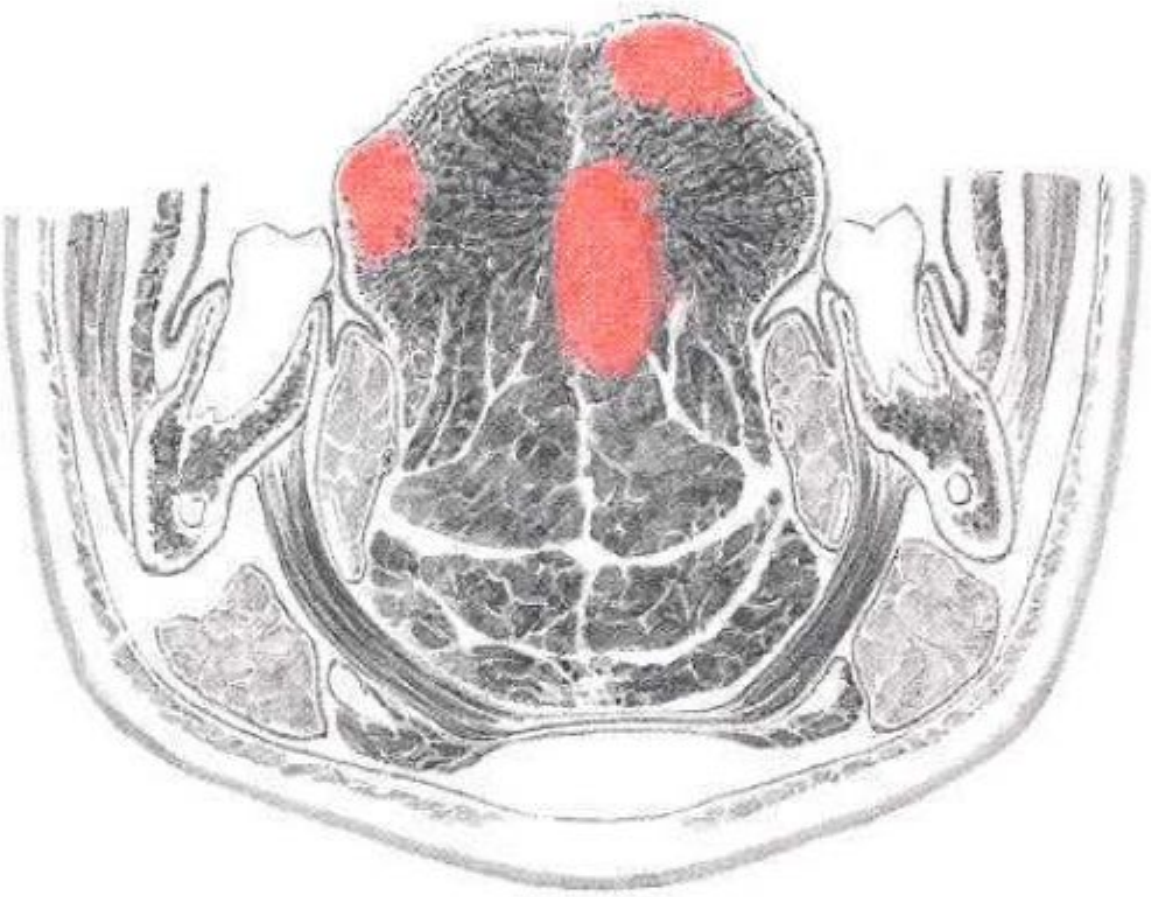
- Children
- Torticollis, dysphagia, dyspnoea
- Bulging of dorsal pharyngeal wall
- CT/MR
- Drainage (peroral/cervical)
- i.v. antibiotic therapy

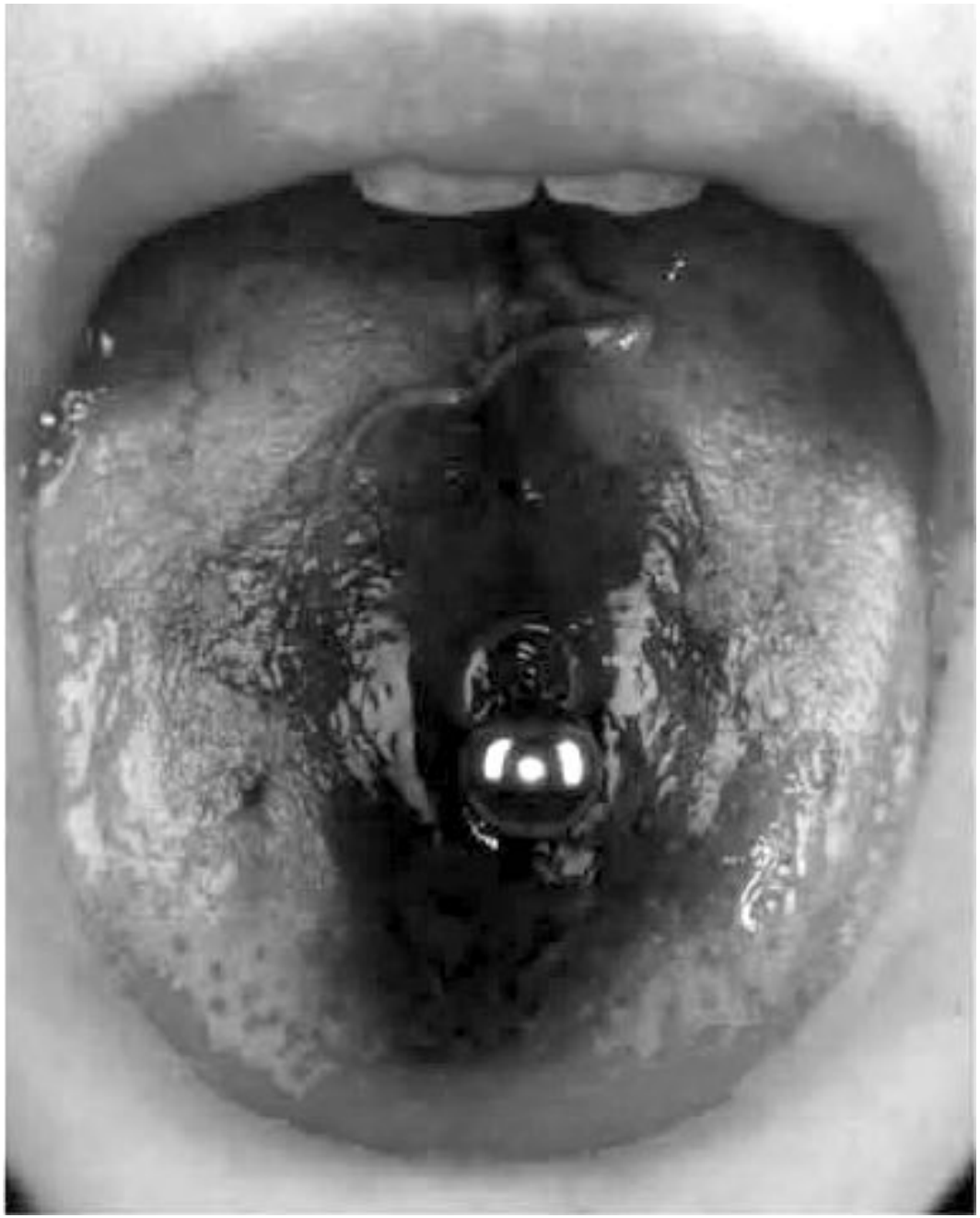


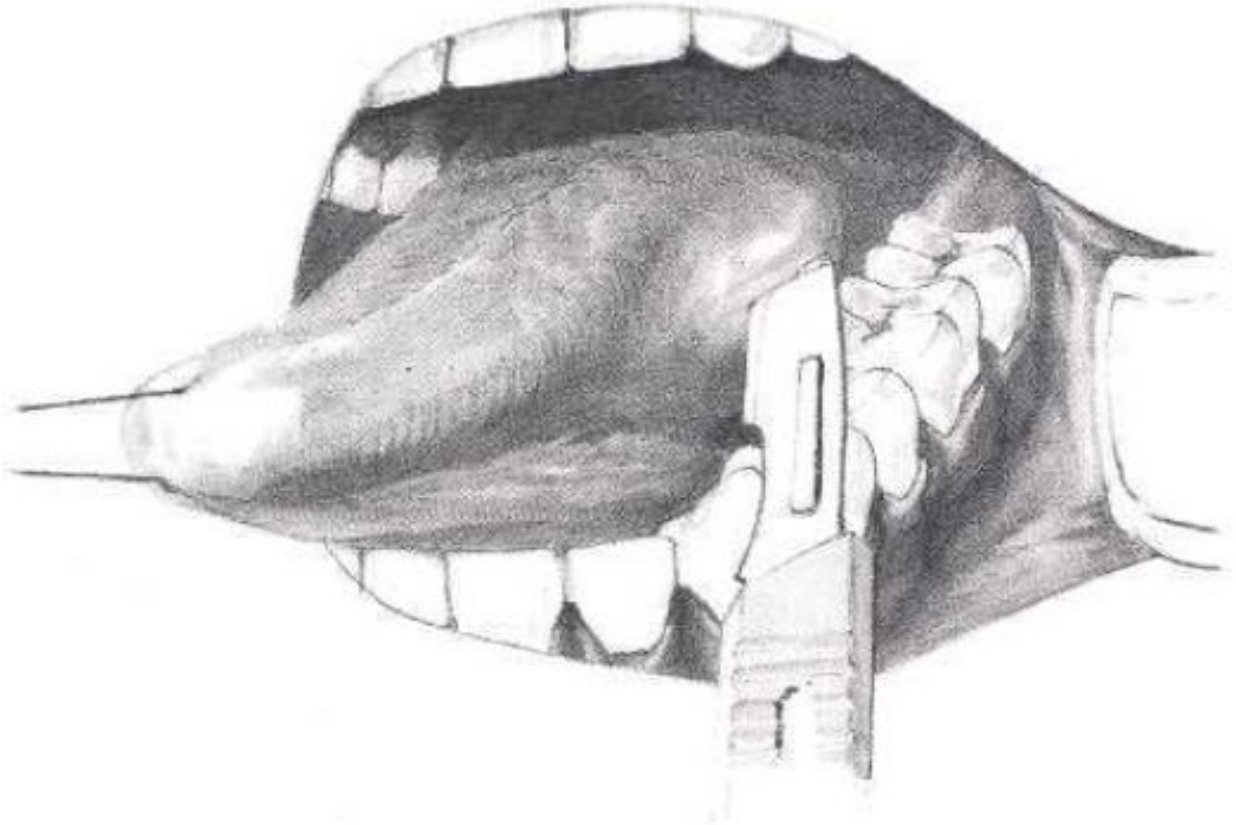




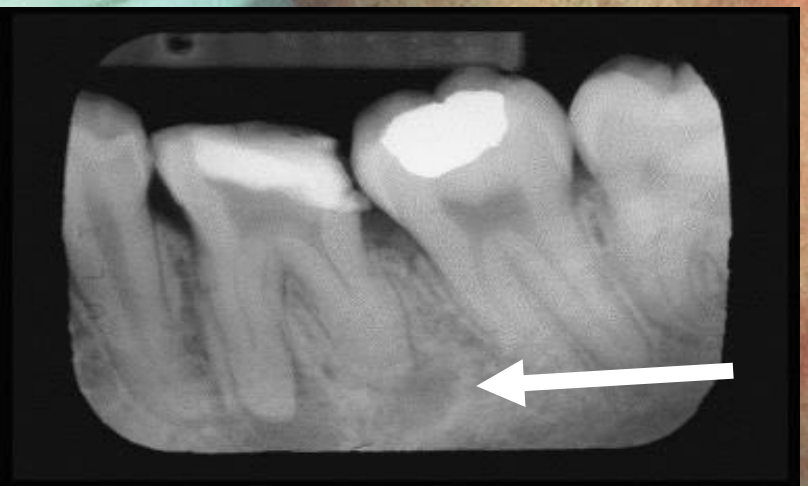
Tongue abscess

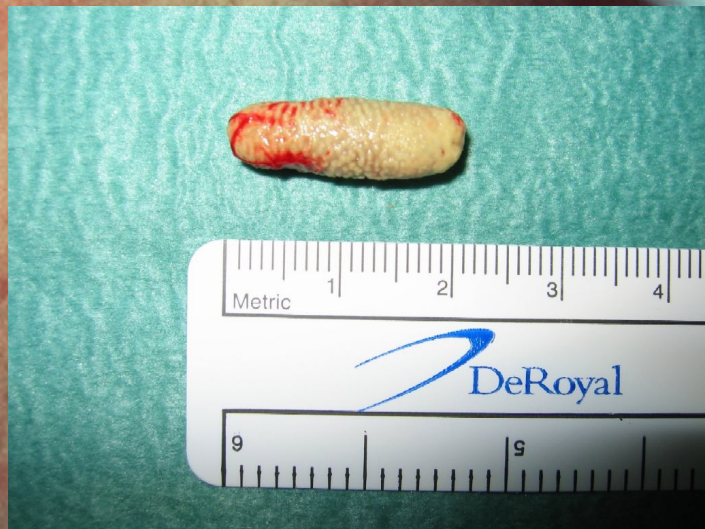


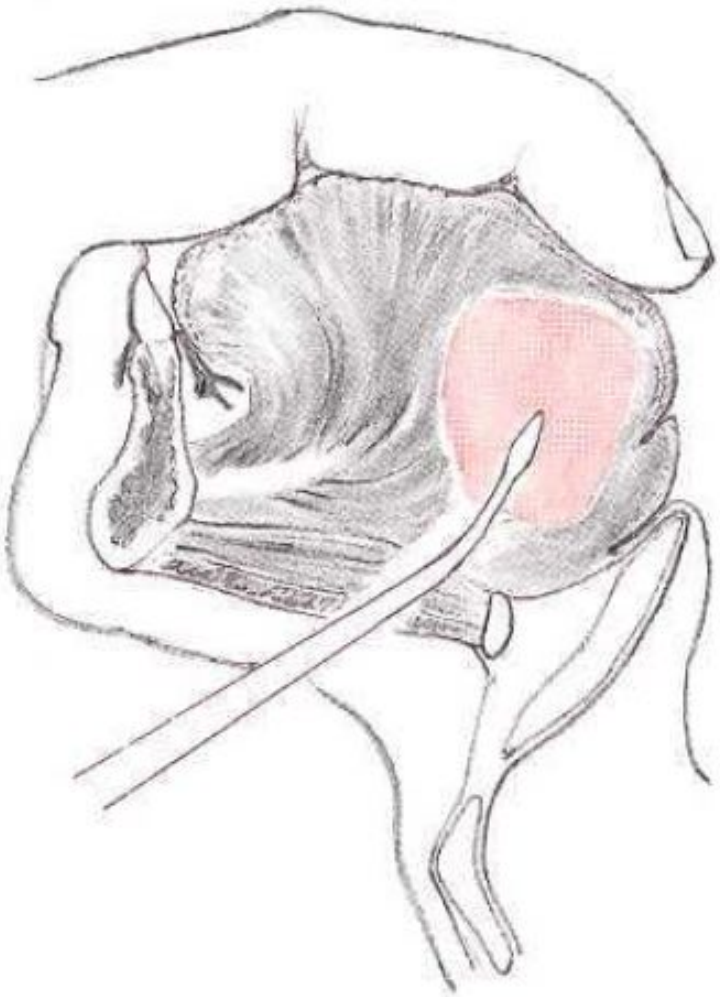




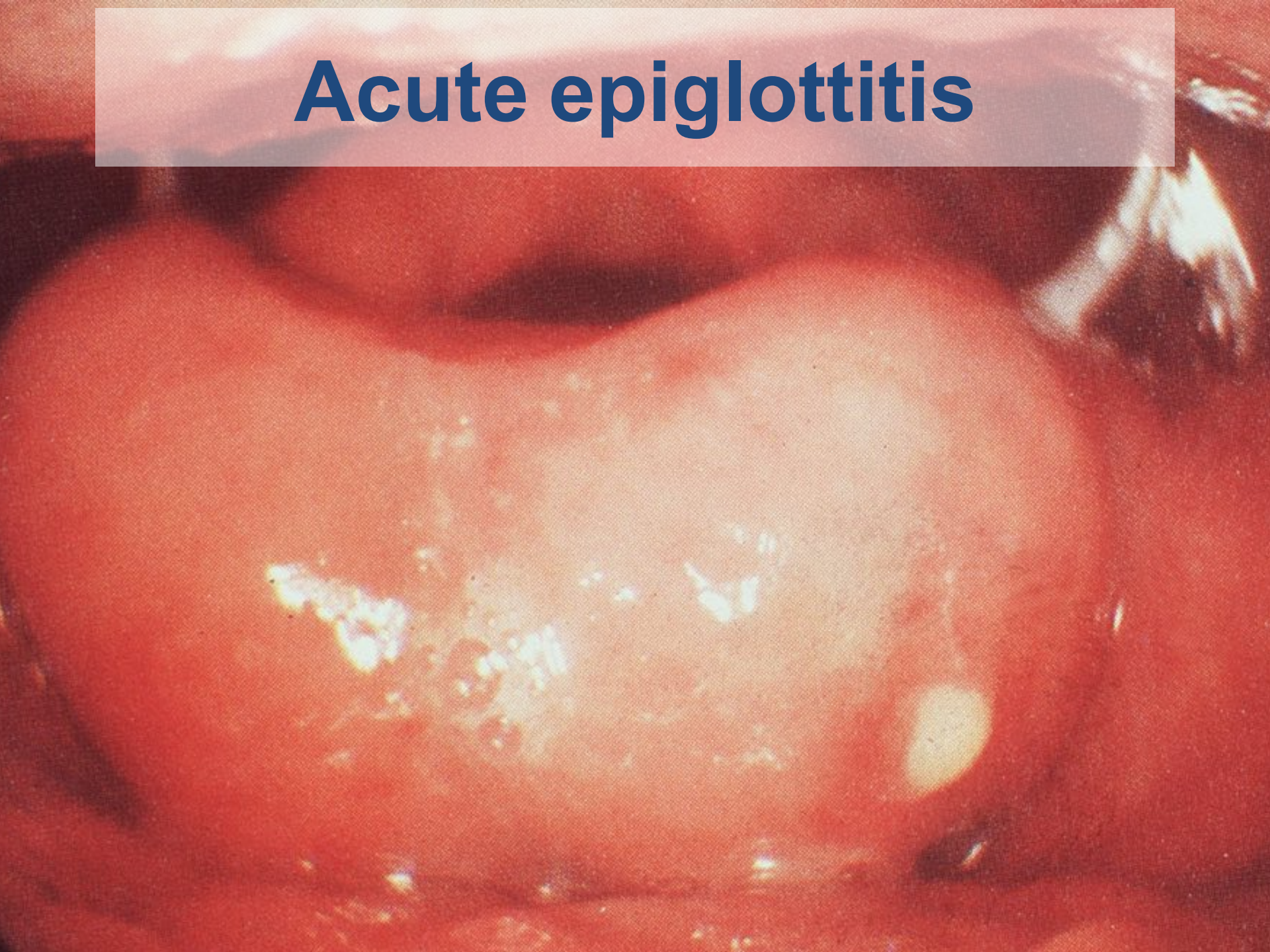
Floor of the mouth abscess (Ludwig‘s angina)



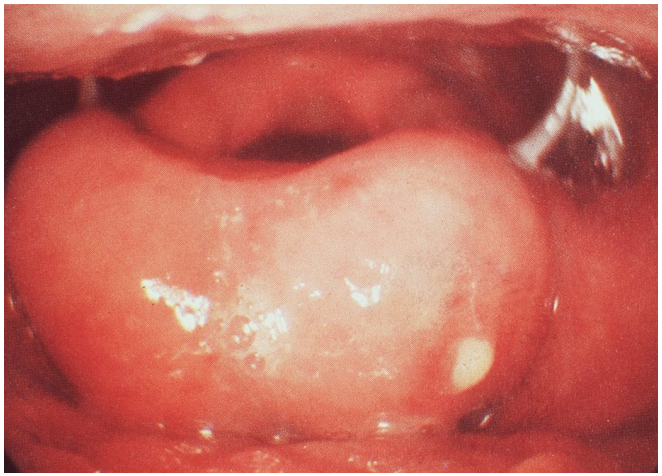




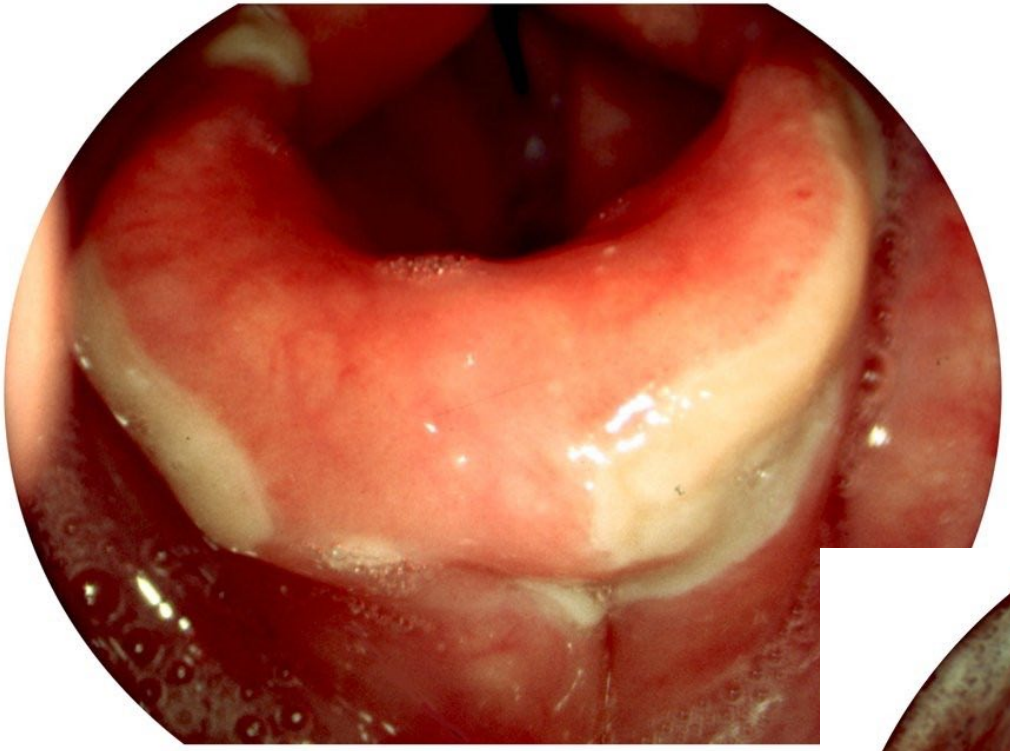
Acute epiglottitis

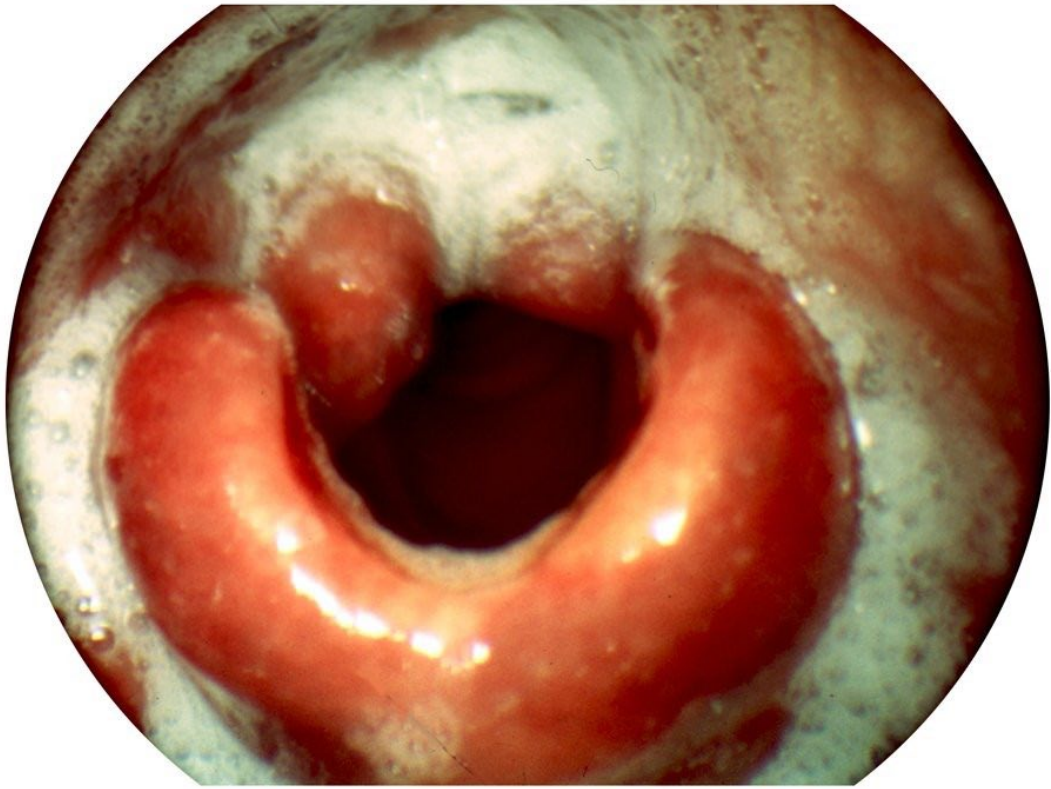


Acute epiglottitis

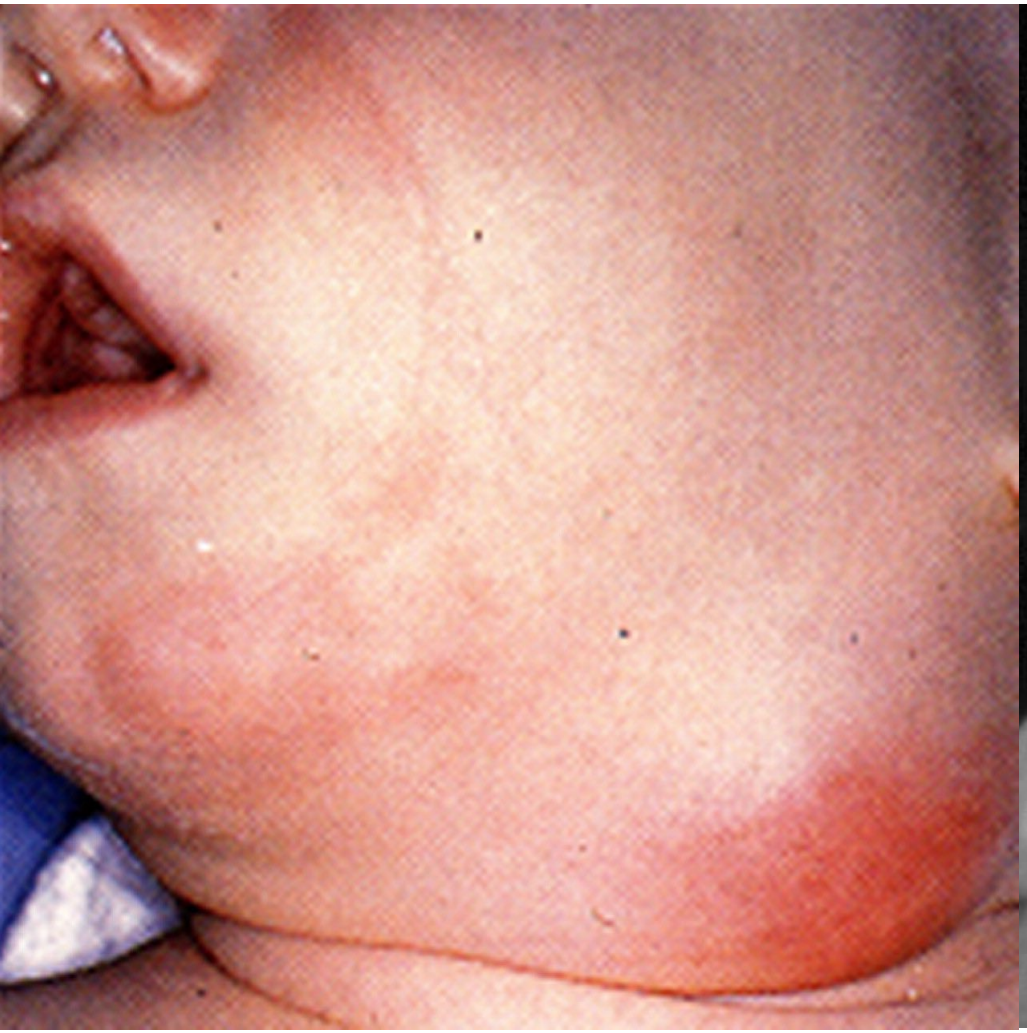


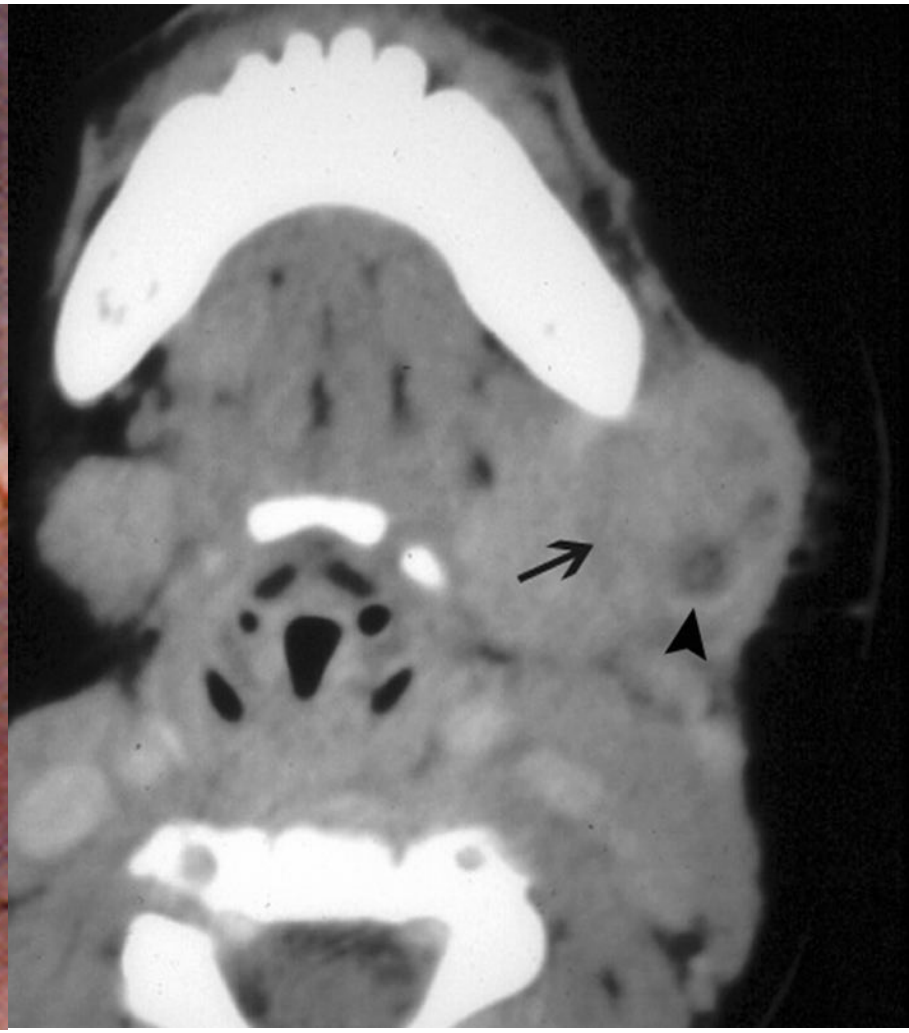
- Children (2-8yrs), adults
- Severe supraglottic infection
- Haemophilus influenza Type B,
  pneumococcus, β-haemolytic streptococcus
- High fever, inspiratory stridor, dyspnoea, „hot potatoe voice“, drooling, severe pain, imminent asphyxia
- Without treatment lethal in 5-10%!
- Early (!) intubation/intensive care unit
- Antibiotics, steroids, inhalation with adrenaline sol.
- Incidence decreased due to vaccination for haemopilus





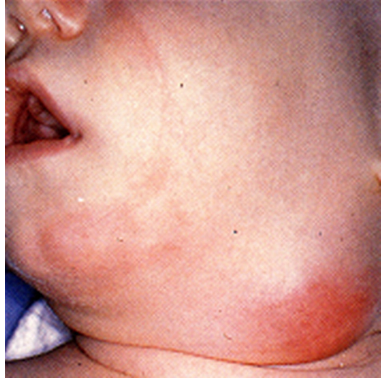
Cervical abscess in a 12 months old child



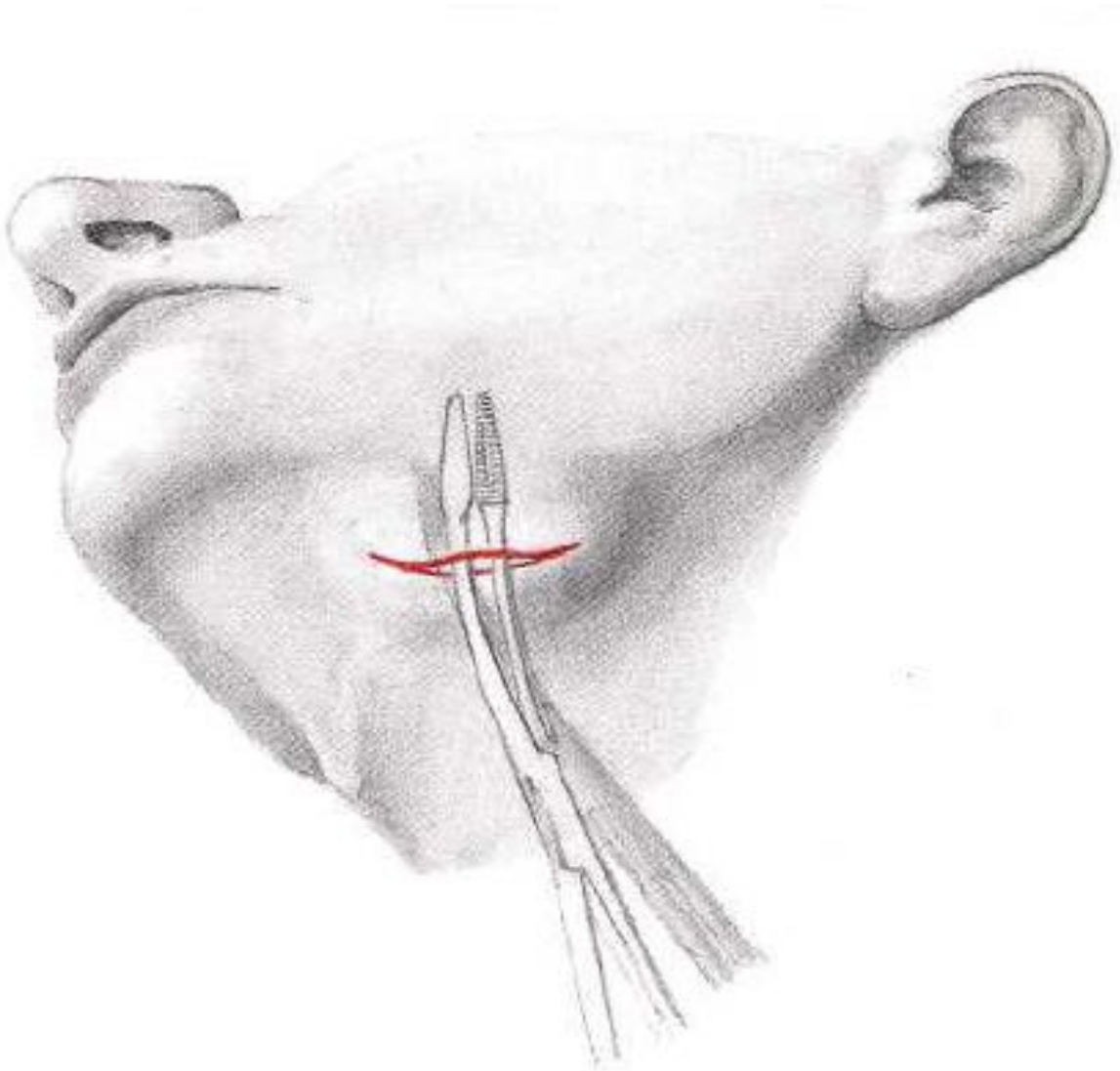


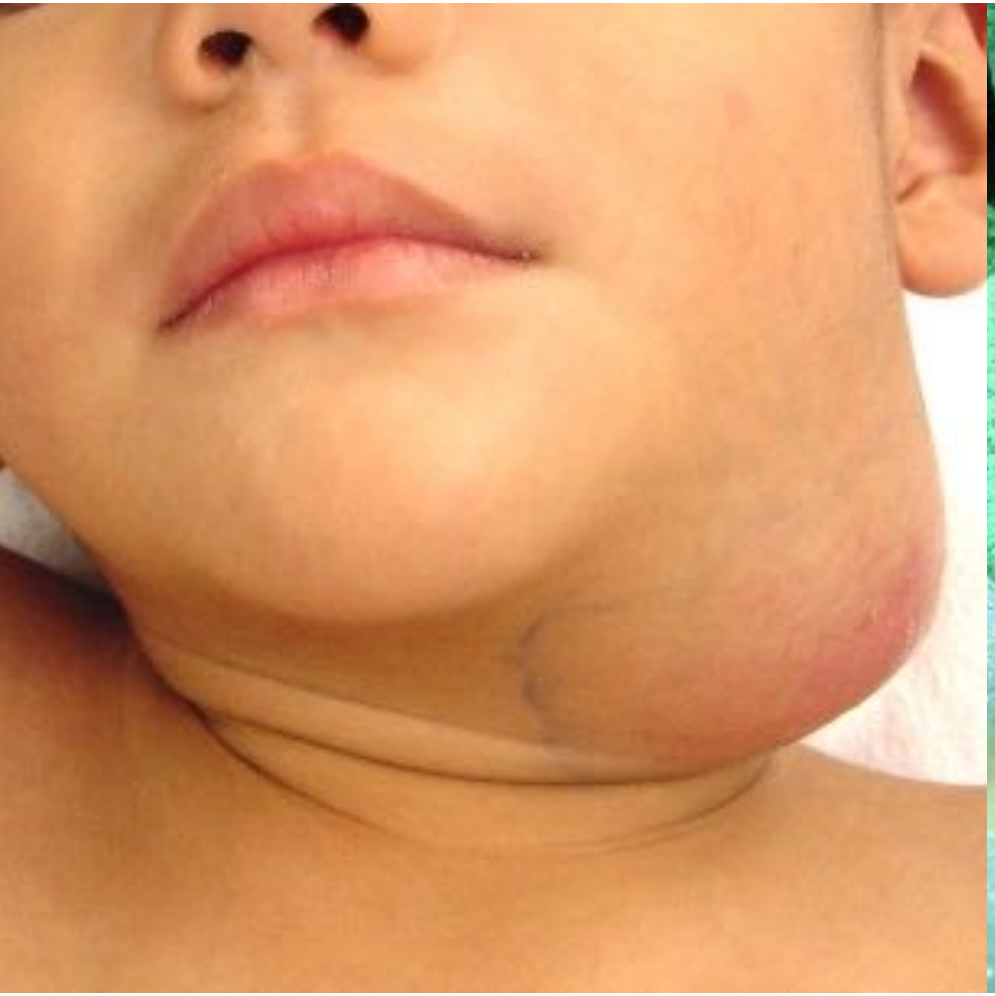
Khanna G et al. Radiographics 2006;26:157-171

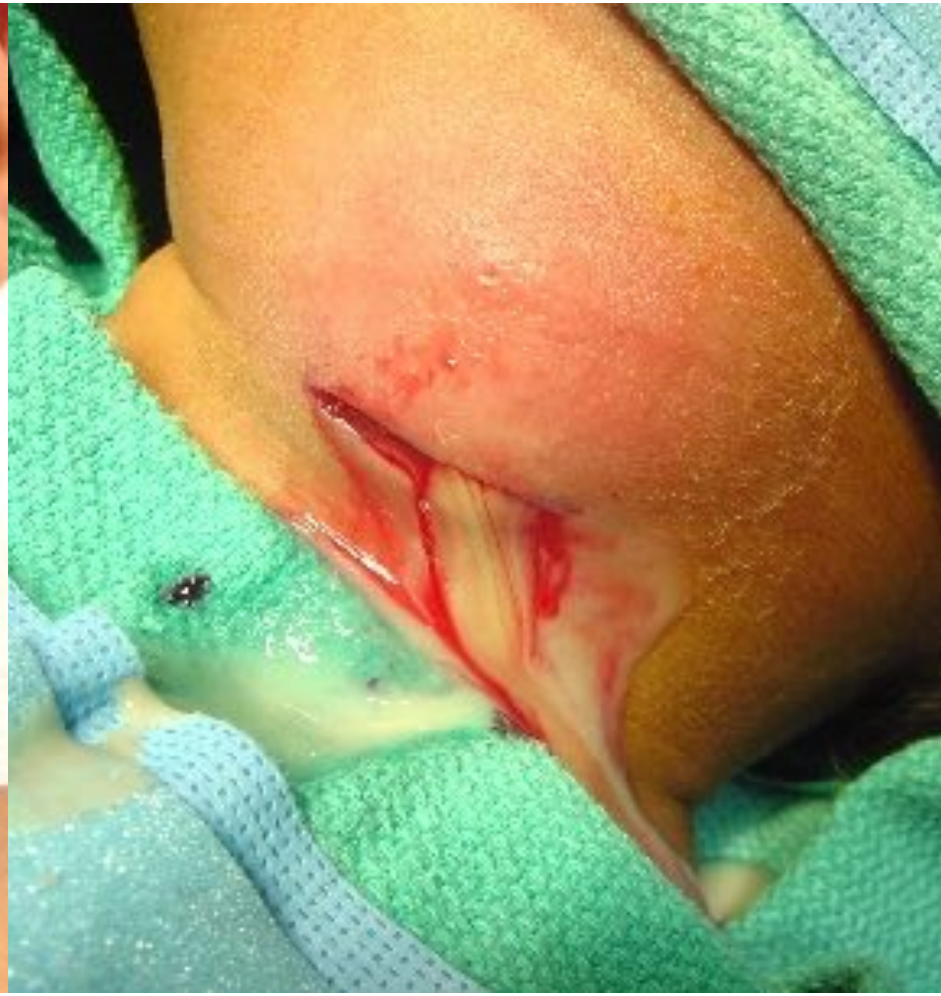
Cervical abscess

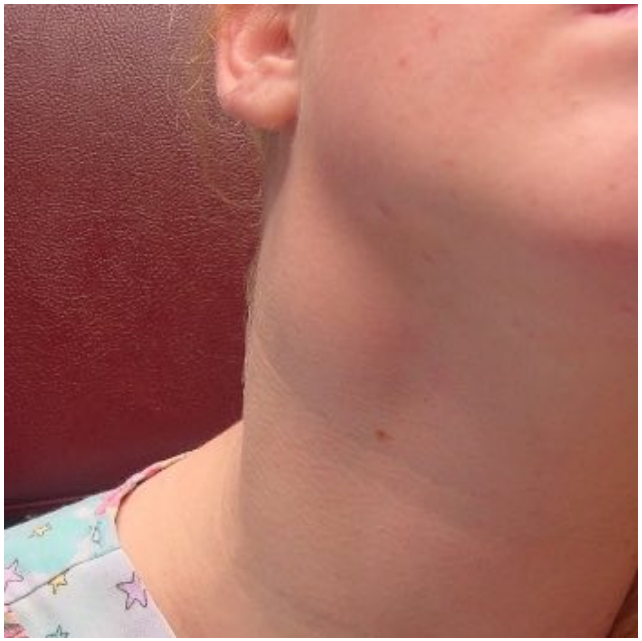


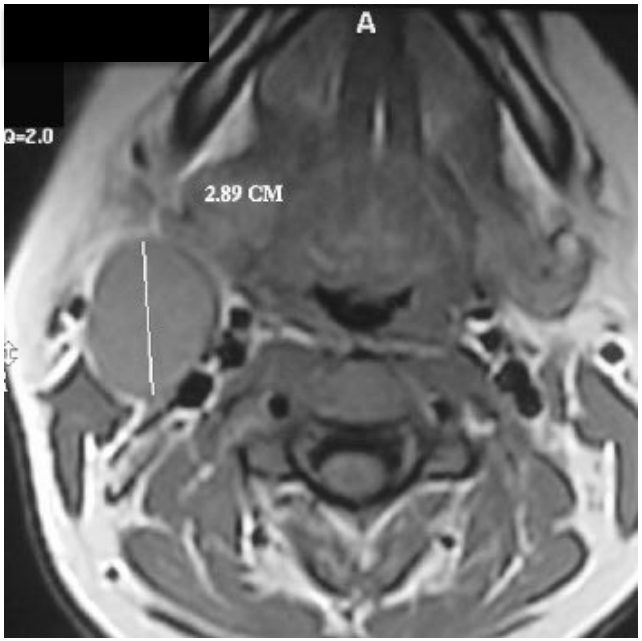
- Inside the inter-fascial spaces of the neck
- Caused by: lymphadenitits, lymphogenous (Tonsillitis), per continuitatem (floor of the mouth injury, iatrogenic, teeth or salivary infections), haematogenous (e.g. from skin infection), descending abscess (e.g. from retropharyngeal abscess)
- Cervical swelling, erythema, perforation
- CT/MR/US
- Drainage (peroral/cervical), daily rinsing
- i.v. antibiotic therapy

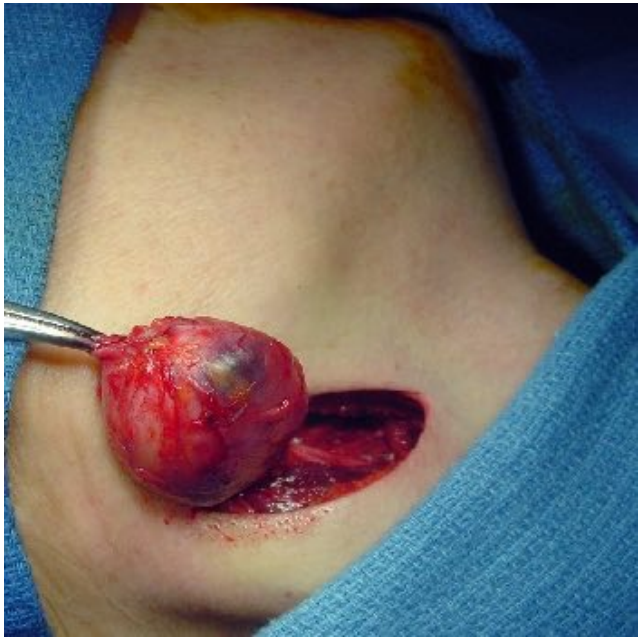


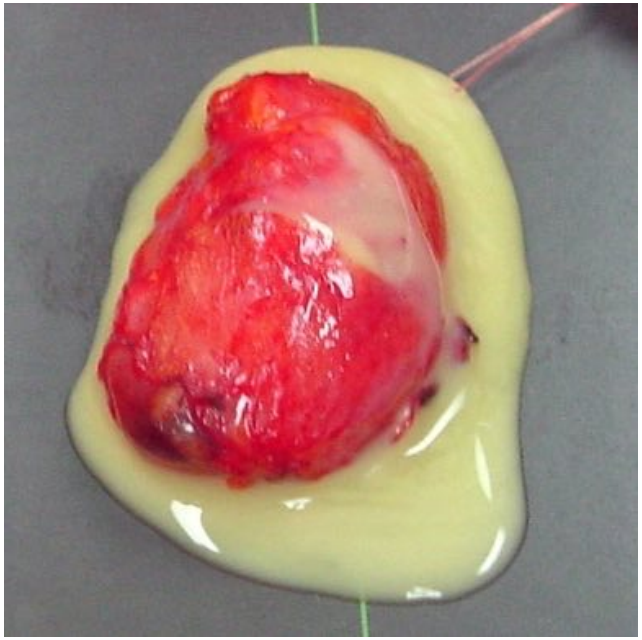




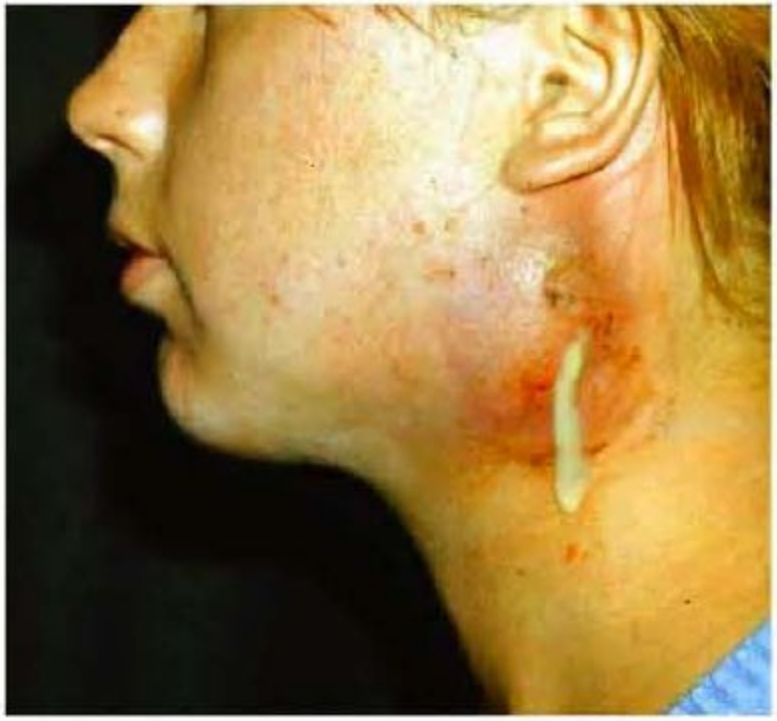


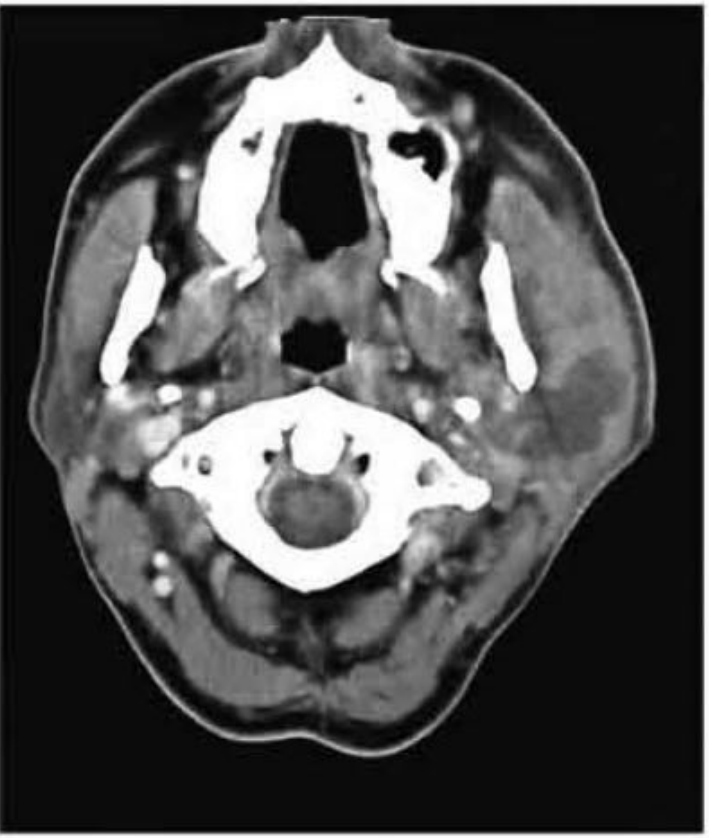

A
2.89 CM

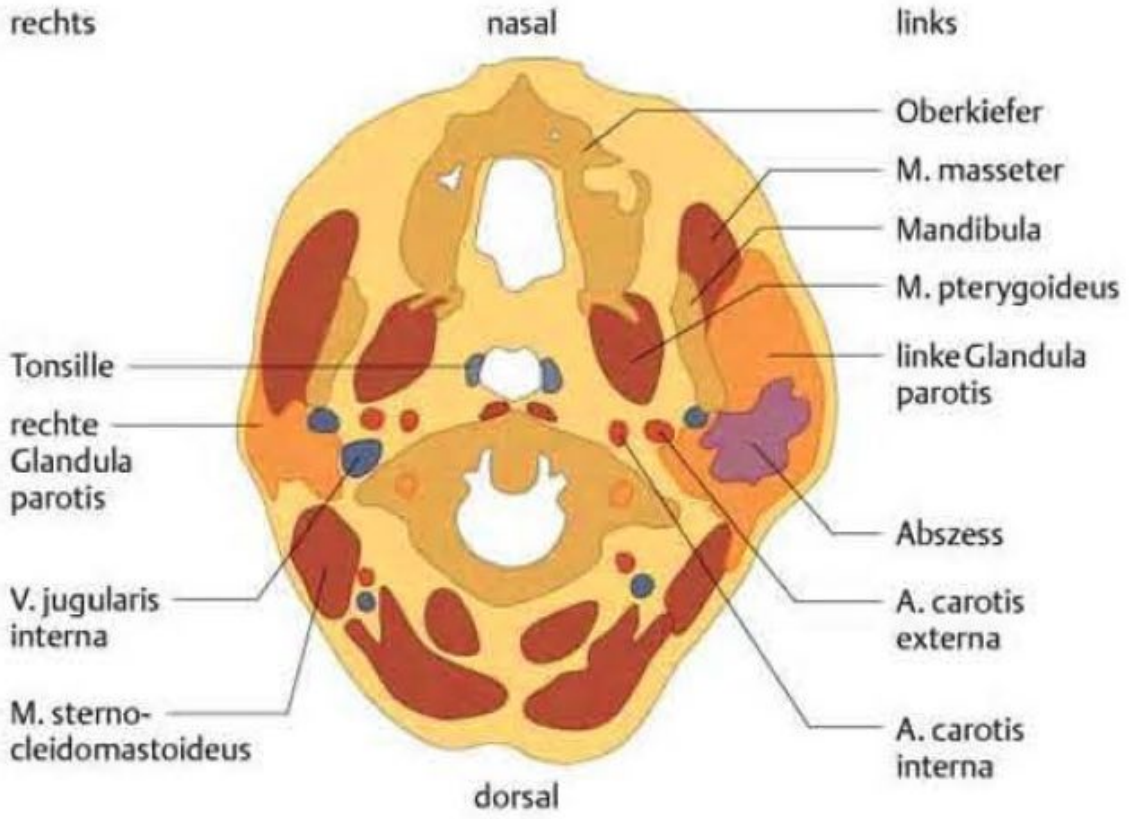


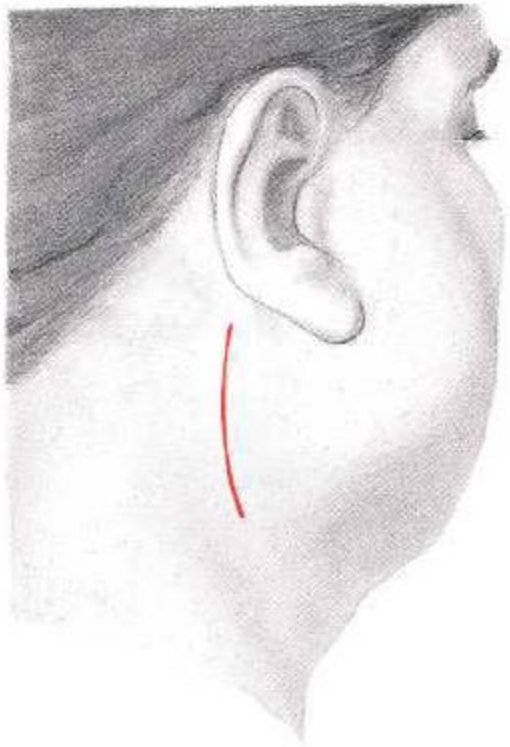


Parotisabszess

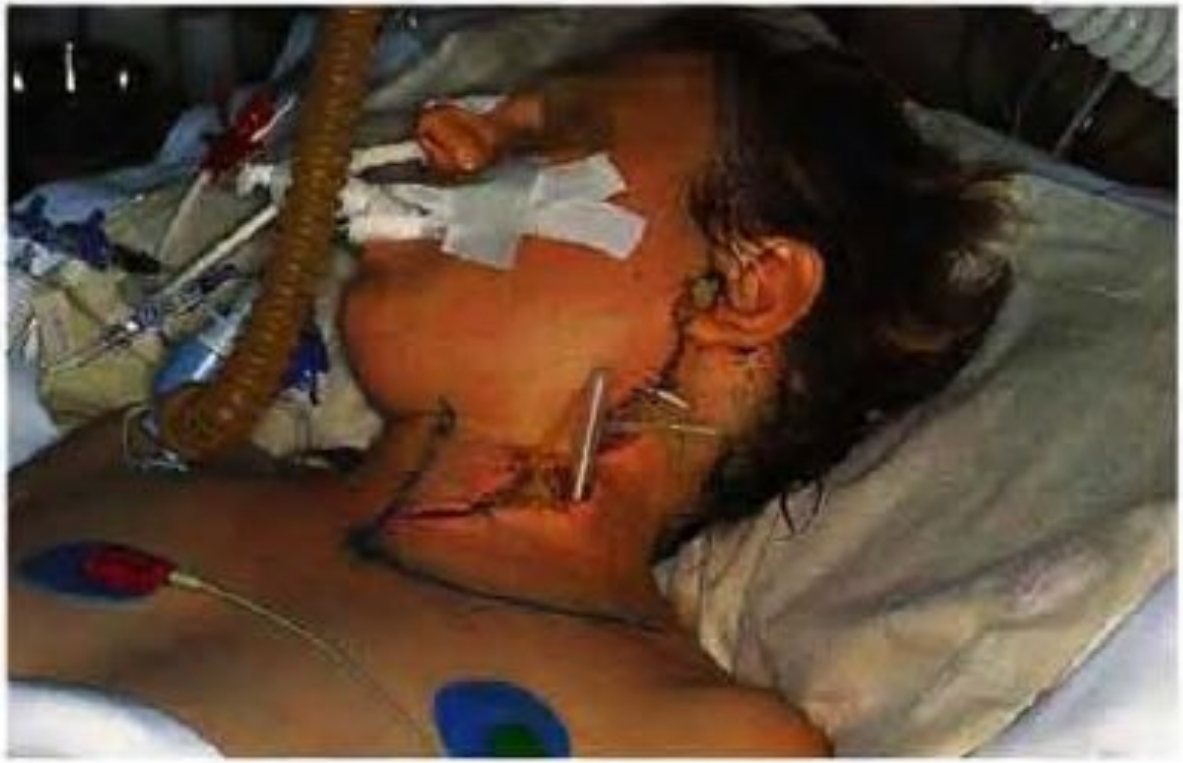




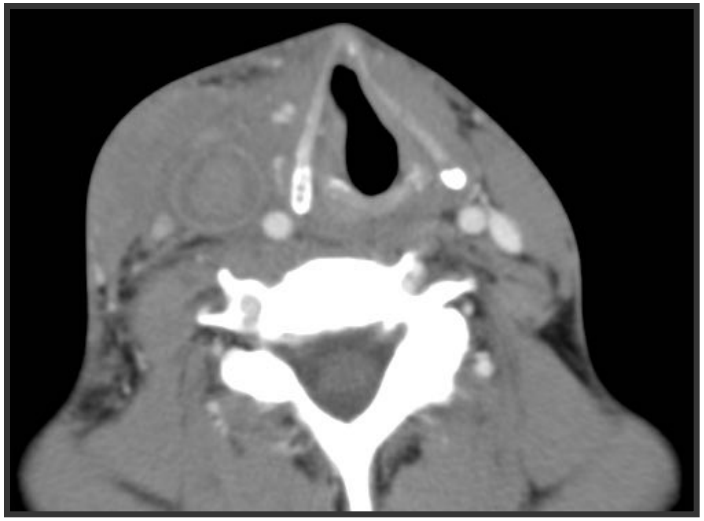

rechts
nasal
links
Oberkiefer
M. masseter
Mandibula
M. pterygoideus
linke Glandula parotis
Tonsille
rechte Glandula parotis
Abszess
V. jugularis interna
A. carotis externa
M. sterno-cleidomastoideus
A. carotis interna
dorsal



Multilevel cervical abscess

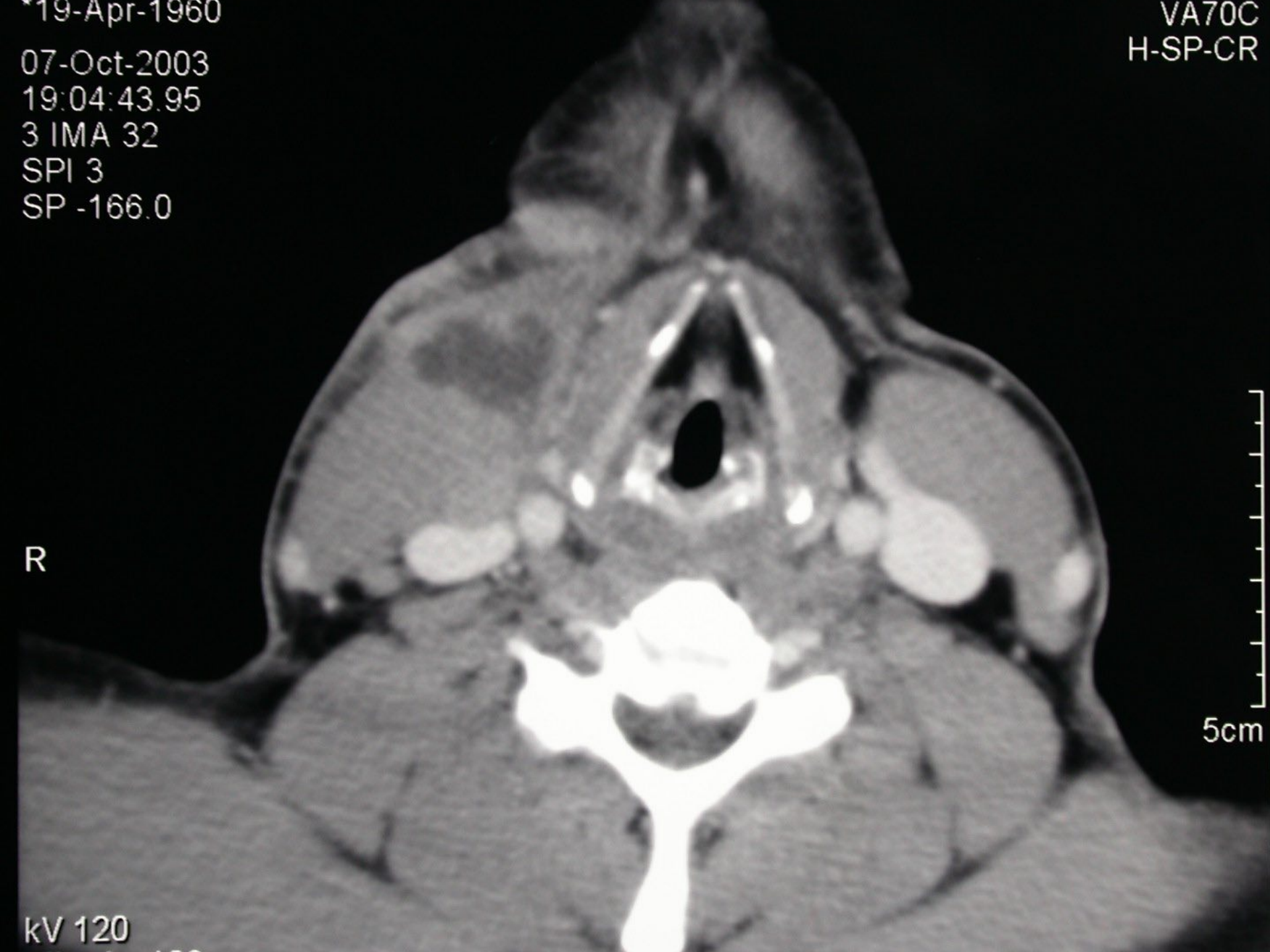


Complications cervical abscess



- septic shock
- asphyxia (airway obstruction)
- vascular involvement with:
  - septic thrombosis of the internal jugular vein (Lemierre)
  - vascular arrosion, psudoaneyrism of the carotid artery, carotid rupture (with lethal haemorrhage in 40%)
- Involvement of cranial/cervical nerval structures: Horner (Sympaticus), hoarseness (X), tongue paresis (XII)
- Descending abscess => purulent mediastinitis, pericarditis and/or pleuritis

(Ling-Feng W et al. Am J Otolaryngol 24: 2003; Gralla J et al. J endovasc ther 11: 2004)


*19-Apr-1960
07-Oct-2003
19:04:43.95
3 IMA 32
SPI 3
SP -166.0
VA70C
H-SP-CR
R
5cm
kV 120

Killer-Bakterien
So schlagen sie zu

■ VON BERNHARD WEISSBERG

BERN/LONDON – England ist geschockt: Nirgendwo ist man vor den Killer-Bakterien sicher. Eine junge Frau starb trotz ärztlicher Überwachung nach einer Kaiserschnitt-Geburt im Spital einen Tag vor der Entlassung! Sie ist Opfer Nummer zwölf.

«Der Patient stirbt einerseits a… den Giften, andererseits an d… lösung des Gewebe… Jürg Munzinge… Mikrobiologie… Luzern den … kampf.

Die Engländer… davon, dass die B…

haben und deshalb so aggressiv sind.

Genaue Zahlen über Opfer gibt es in der Schweiz nicht: Die Krankheit ist nicht meldepflichtig. Aufgrund früherer Zahlen geht man aber v… jährlich etwa zwölf Toten au…

Keine Panik: «Das… noch sehr wenig… Gesamtbev… Desgr…

Todesfallrate nach A… bruch laut Lehrbuch… 47%.

Die K…

…nahme der Streptoko…

…arum der Rat des Speziali… Wunden gut desinfizieren. I… mehr als eine lokale Entzün… frühzeitig zum Arzt gehen und… professionelle Wundversor… machen lassen, bevor es zu sp…

…den …atient be… …Fieber, es wird

Killer-Bakterien Tote auch bei uns!

Necrotising fasciitis

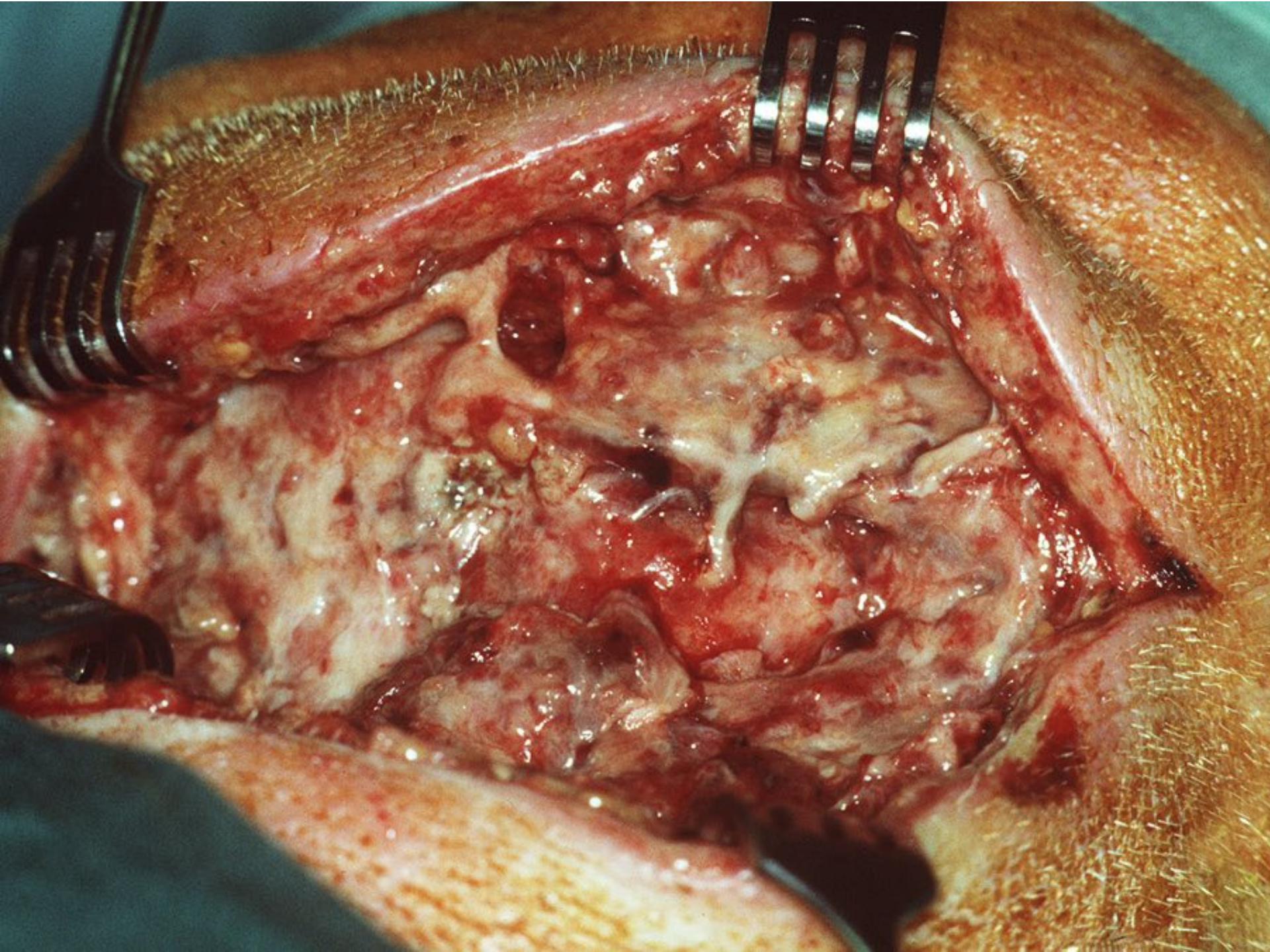
- Rapid progressive necrosis of cervical fascias and subcutaneous fat tissue with possible skin and muscle necrosis, accompanied by toxic systemic reaction (1952)
- often mixed flora: often β-haemolytic streptococcus, also staphylococcus, clostridia, gram negative cocci

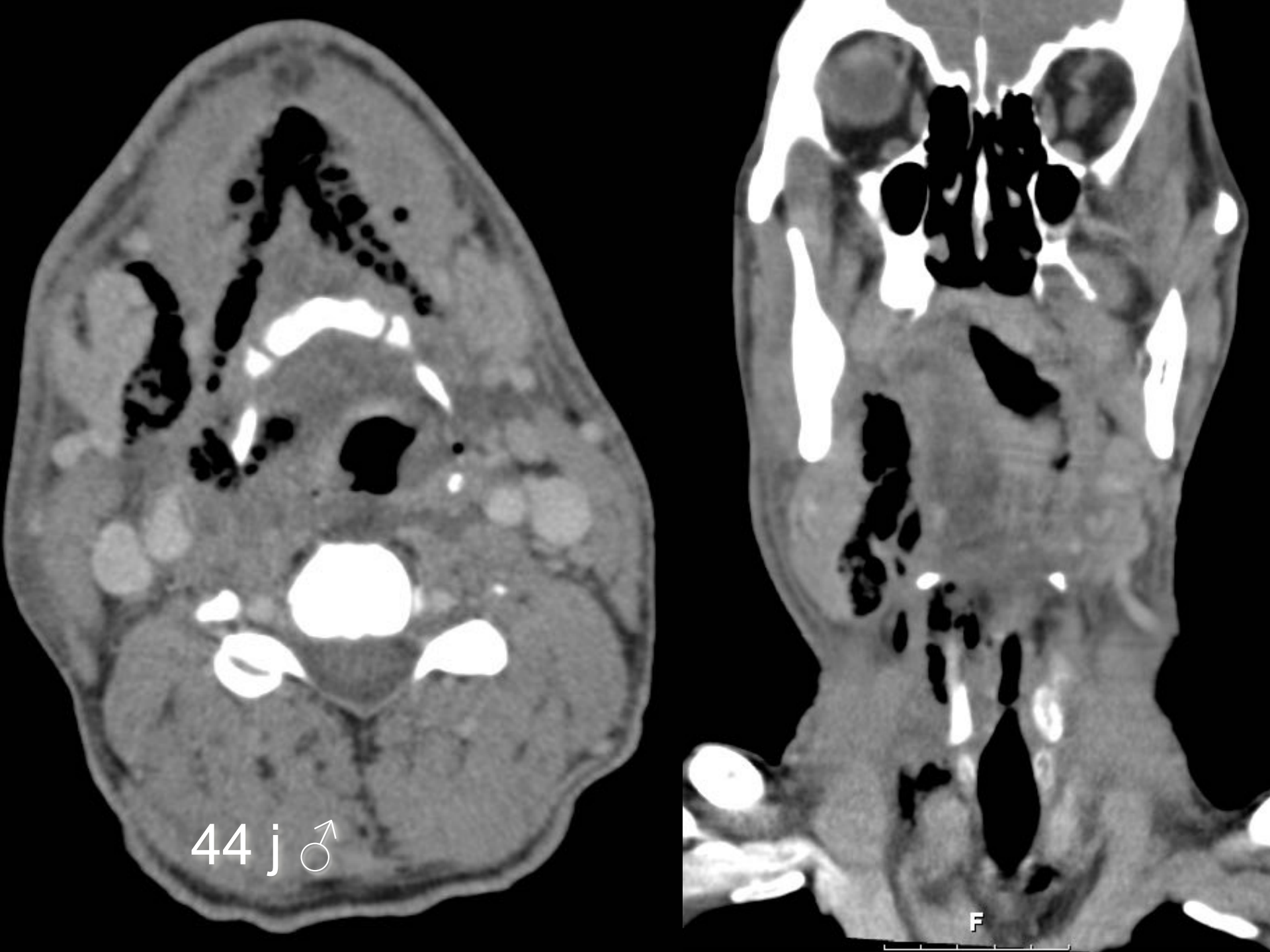
- Tooth infection, tonsillitis, pharyngitis, (banal) injuries

- diabetics, immune-suppressed, malignoma, but also young otherwise healthy individuals!

Necrotising fasciitis

- Odynophagia, dysphagia, fever, progressive erythematous cervical swelling, septic shock and organ failure within hours!
- CT/MRI
- Emergency cervicotomy with incision and wide opening of all fascial compartments, debridement und drainage. (+/- thoracotomy, often tracheotomy)
- i.v. antibiotic therapy
- Intensive care measures
- High mortality (19-37%)




44 j ♂
F

Head & Neck Surgeon's Infectiology

- Purulent cervical infections may have a rapid and fatal course
- Exceptionaly dangerous, when spreading along cervical fascias
- Rapid diagnostics and antibiotic therapy
- Abscesses warrant surgical drainage


Merci!