

DIGESTIVE SYSTEM

overview: oral cavity (cavum oris), pharynx, oesophagus, stomach (ventriculus, gaster, stomachus), small intestine (intestinum tenue), large intestine (intestinum crassum)

Glands of digestive system: intramural, extramural

Common structure of gastrointestinal tube:

1. tunica mucosa: lamina epithelialis, lamina propria mucosae, lamina muscularis mucosae (papillae, plicae, villi)
2. tela submucosa (plexus submucosus)
3. tunica muscularis: stratum circulare, stratum longitudinale (plexus myentericus)
4. adventitia/serosa

CAVUM ORIS

Rima oris

Vestibulum oris: shape, boundaries

Labium superius et inferius: anguli oris, philtrum, tuberculum labii sup., sulcus nasolabialis, sulcus mentolabialis. Structure: skin, subcutaneous tissue kůže, podkožní vazivo, m. orbicularis oris, submucous tissue (glandulae labiales). transitional zone – red of the lips.

Buccae: Structure: skin, subcutaneous tissue, m. buccinator, submucous tissue (glandulae buccales et molares), mucous membrane. Papilla parotidea.

Mucous membrane (lips and cheeks) → fornix vestibuli sup. et inf. (frenulum labii sup. et inf.) → mucogingival border → gingiva (processus alveolares): attached, free (differences, boundaries – paramarginal groove). Papillae interdentes.

Tremata, trigonum retromolare.

Cavum oris proprium: boundaries

Palatum durum: Hard palate (bony palate) (1. semestr), papilla incisiva, plicae palatinae transversae, torus palatinus. Structure: mucous membrane + periosteum of hard palate = mukoperiosteum. Only small portion of subcutaneous tissue (glandulae palatinae, taste buds).

Palatum molle: 2 parts (horizontal and dorsocaudal). Structure: mucous membrane, aponeurosis palatina (aponeurotic insertion for muscles of soft palate: m. palatoglossus, palatopharyngeus, m. tensor veli palatini, m. levator veli palatini, m. uvulae). Uvula.

Diaphragma oris: Structure: mucous membrane, m. geniohyoideus, mylohyoideus, venter anterior m. digastrici. Frenulum linguae, plica sublingualis, caruncula sublingualis.

Isthmus faucium: boundaries

Arcus palatoglossus et palatopharyngeus. Sinus tonsillaris, plica semilunaris. Tonsilla palatina: mucous membrane: fossulae et cryptae tonsillares, lymphatic tissue. Capsula tonsillaris.

Lingua (glossa):

Radix linguae: plica glossoepiglottica mediana, plicae glossoepiglotticae laterales, valliculae epiglotticae. Tonsilla lingualis.

Corpus linguae: dorsum, sulcus terminalis, foramen caecum, papillae linguales, facies inferior, plicae fimbriatae, margines linguae;

Apex linguae: glandulae linguales, aponeurosis linguae, septum linguae, intraglossal and extraglossal muscles

Facies a) dorsalis: sulcus medianus linguae, sulcus terminalis, foramen caecum linguae, papillae: filiformes, fungiformes, vallatae, foliatae (localization). Caliculi gustatorii.

b) inferior: frenulum linguae, plicae fimbriatae.

Margines linguae

Glandulae linguales: serous (of Ebner), mucinous (of Weber), gl. apicis major.

Structure of tongue: mucous membrane, aponeurosis linguae, muscles (extraglossal muscles: m. genioglossus, m. hyoglossus, m. styloglossus and intraglossal muscles: m. longitudinalis linguae sup. et inf., m. transversus linguae, m. verticalis linguae).

Septum linguae.

Dentes:

Parts: corona dentis, collum dentis, radix/radices dentis.

Surface: margo incisalis, facies oclusalis (tubercula dentalia, intertubercular grooves), approximalis (mesialis, distalis), vestibularis (labialis, buccalis) et oralis (palatina, lingualis).

Structure: dentinum (crown, neck, root), enamelum(crown), cementum (neck)

Cavity: cavum dentis, canalis radices dentis, foramen apicis dentis. Pulpa dentis.

Fixation of the tooth (gomphosis): periodontal ligaments. Periodontium. Paradontium.

Types of teeth: **dentes incisivi, canini, praemolares et molares – description of temporal and permanent tooth**: count in the jaw, shape of the crown, description of surfaces of crown, in the dorsal teeth description of occlusal surface (amount of tubercles, shape of fissural complex), differences in sizes, count and shape of roots, shape of dental cavity, number of root canals.

Dentition: temporary (dentes decidui), permanent (dentes permanentes). Mixed dentition.

Marking of teeth. Dental cross.

a) part of dental cross. Temporary teeth: small letters or roman numbers. Permanent teeth: large numbers or arabian numbers.

b) two-digit code: first digit: number of quadrant (Permanent teeth 1-4 , Temporary teeth 5-8; second digit: the tooth)

Eruption of teeth (Temporary teeth: from 6 months to 2,5 year; Permanent teeth: from 6 to 16 years). order of eruption according to temporary and permanent dentition

Glandulae salivariae: division according to the secretion (serous, mucinous, mixed), division according to size (small, large)

gll. salivariae minores: labiales, buccales, molares, palatinae. Localization, frequency, secretion

gll. salivariae majores:

glandula submandibularis: position, type, size. Ductus submandibularis (course, opening)

glandula sublingualis: position, type, size. Ductus sublingualis major et minor (course, opening)

glandula parotis: position, type, size. Ductus parotidicus (course, opening). Fascia parotidea

PHARYNX

Attachment to the basis cranii externa (course)

Parts:

Nasopharynx: extent; choanae, fornix pharyngis; tonsilla pharyngea; ostium pharyngeum tubae auditivae, torus tubarius et levatorius, plica salpingopharyngea et salpingopalatina; tonsilla tubaria

Oropharynx: extent, isthmus faucium

Laryngopharynx: extent. **Aditus laryngis:** plicae aryepiglotticae, incisura (plica) interarytaenoidea. Recessus piriformis

Structure of pharynx: 1. mucous membrane (gll. pharyngeae, lymphatic tissue), 2. submucous tissue (fascia pharyngobasilaris), 3. muscles: a) constrictors: m. constrictor pharyngis superior, medius et inferior (including parts), b) levators: m. stylopharyngeus, m. glossopharyngeus, 4. adventitia

OESOPHAGUS

Length, extent, division: pars cervicalis, thoracica et abdominalis

Fyziological constictions

Structure of wall: 1. mucous membrane (folds), 2. submucous tissue 3. musculature (striated, mixed, smooth), adventitia/serous membrane

X-ray examination (oesophagography)

VENTRICULUS (GASTER)

Basic function. Position. Volume

Parts: pars cardiaca, ostium cardiacum, incisura cardiaca, fundus ventriculi, corpus ventriculi, incisura angularis, pars pylorica, ostium pyloricum (m. sphincter pylori)

Facies anterior et posterior

Curvatura major et minor

Structure of wall: 1. Mucous membrane (sulcus salivarius and irregular folds, areae gastricae, foveolae gastricae, glandulae gastricae); 2. submucous tissue 3. musculature (stratum longitudinale, stratum circulare, fibrae obliquae), 4. serous membrane

X-ray examination (gastrography)

INTESTINUM TENUE

Basic function. Length. Position. Beginning, end

Duodenum:

Position. Beginning, end

Parts: pars superior (bulbus duodeni, lig. hepatoduodenale), flexura duodeni sup., pars descendens (pars supramesocolica et inframesocolica), flexura duodeni inf., pars horizontalis (crossing of radix mesocoli), pars ascendens, flexura duodenojejunalis

Structure of wall: 1. Mucous membrane: villi intestinales, plicae circulares, plica longitudinalis duodeni, papilla duodeni major et minor; glandulae intestinales – production of isotonic fluid, 2. submucous tissue: glandulae duodenales – correction of pH 3. musculature, 4. serous membrane (in whole extent of pars superior, other parts secondarily retroperitoneally)

Jejunum et ileum:

Beginning, end. Radix mesenterii, ansae intestinales. Differences between jejunum and ileum (length, localization, color, width, thickness of wall, types of plicae, course of blood supply, lymphatic tissue).

Structure of wall: 1. Mucous membrane (villi intestinales, plicae circulares; glandulae intestinales, lymphatická tkáň), 2. submucous tissue, 3. musculature, 4. serous membrane

INTESTINUM CRASSUM

Basic function. Length. Position. Taeniae, haustra, appendices epiploicae

Structure of wall

1. mucous membrane (plicae semilunares)
2. submucous tissue
3. musculature (circular, longitudinal– s.c. taeniae)
4. serous membrane

1. Caecum:

length, position, ostium ileocaecale, valva ileocaecalis. Appendix vermiformis (ostium appendicis vermiformis, valva appendicis vermiformis, lymphatic tissue, s.c. tonsilla abdominalis), positions of appendix: positio pelvina, retrocaecalis, praecaecalis, ileocaecalis, lateralis

2. Colon:

- **colon ascendens**: beginning, end (flexura coli dextra), length, position according to the peritoneum
- **colon transversum**: beginning, end (flexura coli sinistra), length, position according to the peritoneal cavity, mesocolon transversum
- **colon descendens**: beginning, end, length, position according to the peritoneal cavity
- **colon sigmoideum**: beginning, parts (pars iliaca, pars pelvina), end, length, position according to the peritoneal cavity. Mesosigmoideum

3. Rectum:

beginning, opening (crena ani, anus), length.

Parts: pars pelvina et canalis analis.

Curvatures: in sagittal plane (flexura sacralis, flexura perinealis)
in frontal plane (plicae transversales recti)

Structure of wall in rectum:

1. mucous membrane: in **ampulla recti**: plicae transversales (middle, right, s.c. plica of Kohlrusch), in **canalis analis** a) *zona hemorroidalis* (columnae anales; sinus anales, valvulae anales), b) *zona intermedia* (as transitional zone of lip) a c) *zona cutanea*
2. submucous tissue (thin- possible prolaps; venous plexuses- v zona hemorroidalis)
3. musculature: circular (m. sphincter ani int. et ext.) and longitudinal
4. serous membrane/adventitia

X ray examination: irigography

HEPAR

Basic functions, position, color, weight

Surfaces: **facies diaphragmatica**: pars superior et anterior

facies visceralis: fissura ligamenti teretis, fissura ligamenti venosi, fossa vesicae biliaris, fossa venae cavae inf.; porta hepatis (a. hepatica propria, v. portae, ductus hepaticus communis, plexus hepaticus)

Lobes: lobus dexter, sinister, quadratus et caudatus. Segments of liver.

Structure: capsula fibrosa, liver parenchyme + tissue

Morfological unit: lobulus hepatis

Functional unit: lobulus v. interlobularis

Excretory ducts: ductus hepaticus: dx., sin., ductus hepaticus communis

Blood supply: **nutritive** (a. hepatica propria)

functional (v. portae → ramus. dx. et sin. → vv. interlobulares → sinusoidy → v. centralis → sběrné žíly → vv. hepaticae → v. cava inf.)

VESICA FELLEA (BILIARIS)

Basic functions, position, length, volume

Parts: fundus, corpus, infundibulum, collum (plica spiralis)

Excretory duct: ductus cysticus. Ductus choledochus

Structure of wall: mucous membrane (folds), musculature, serous membrane

X-ray examination: cholecystography

Excretory bile ducts

Production of bile by hepatic cells → intralobular bile duct → interlobular → segmental → ductus hepaticus communis + ductus cysticus → ductus choledochus → papilla duodeni major (m. sphincter ampullae hepatopancreaticae, Oddi). If a foof is not present in duodenum, bile flows back to the gall bladder (Není-li potravu ve dvanáctníku, žluč se vrací zpět do žlučníku (for thickening)

PANCREAS

Basic functions, position, length

Parts: caput (incisura pancreatis, processus uncinatus), corpus (tuber omentale), cauda.

Surfaces: facies ant., post.

Borders: margo sup. et inf.

Excretory duct: **ductus pancreaticus major** (ampulla hepatopancreatica) et **ductus pancreaticus minor** (papilla duodeni minor)

Structure: lobuli pancreatis (succus pancreaticus); Isles of Langerhans (inzuline, glukagon)

LIEN

Basic functions, position, length, color

Surfaces: **facies diaphragmatica**, **facies visceralis** (hilus: av. lienalis, plexus lienalis)

Extremitas post. et ant.

Margo sup. et inf.

Structure: tunica fibrosa (capsula lienis), trabeculae lienis, pulpa lienis, folliculi lymphatici lienales

PERITONEUM

Structure: layer of flat endothelial cells, subserous tissue

Peritoneum parietale. Peritoneum viscerale. Mesenteria

Cavitas peritonealis: **pars supramesocolica, pars inframesocolica** (organs, blood supply).

Position of organs according to the peritoneal cavity: intraperitoneal, secondarily retroperitoneal, retroperitoneal, extraperitoneal

Peritoneal folds: plica umbilicalis mediana, plicae umbilicales mediales, plicae umbilicales lat.; fossae: supravesicales, inguinales mediales, inguinales lat.

Peritoneal folds bound with organs: lig. falciforme hepatis (lig. teres hepatis), ligg. triangularea, omentum minus (lig. hepatoduodenale et hepatogastricum), omentum majus, lig. gastrocolicum, lig. gastrolienale, lig. pancreaticolienale, lig. phrenicolienale, lig. phrenicocolicum, mesenterium (line of attachment), mesocolon transversum (line of attachment), mesoappendix, mesosigmoideum.

Recessus peritonei: duodenales, ileocaecales, paracolici, intersigmoideus. Bursa omentalis (boundaries, entrance)

RESPIRATORY SYSTEM

Overview

- Upper respiratory tract: external nose (nasus externus), nasal cavity(cavum nasi), paranasal sinuses (sinus paranasales)
- Lower respiratory tract: larynx, wind pipe (trachea), bronchi
- Lungs (pulmones)

NASUS EXTERNUS

Basic functions, shape, boundaries

Parts: radix nasi, dorsum nasi, apex nasi, alae nasi, nares

Structure: **skin** (muscles)

ossa nasalialia, maxilla (1. semester)

cartilagineae nasales: cartilago septi nasi, cartilago nasi lateralis, cartilago alaris major (crus mediale et laterale), cartilago alaris minor, cartilagineae nasales accessoriae

CAVITAS NASALIS

Basic functions

Entrance, nares (boundaries), exit, choanae (boundaries)

Mucous memb.: **regio respiratoria** – lokalizace

regio olfactoria (lokalizace)

Parts:

vestibulum nasi: limen nasi, vibrissae, recessus apicis nasi

cavum nasi proprium:

septum nasi: pars ossea (1. semester); pars cartilaginea; pars membranacea

walls: cranial, caudal, medial, lateral (1. semester)

Meatus nasi: superius, medius, inferius, communis, nasopharyngeus

Plexus cavernosi concharum – epistaxis

Sinus paranasales

Evolution, basic function, localization, volume, openings

Sinus frontalis (septum)

Cellulae ethmoidales – ant., medii (bulla ethmoidalis), post.

Sinus sphenoidalis – wall: cranial, lateral, ventral (apertura sinus sphenoidalis)

Sinus maxillaris – wall: ventral, dorsal, cranial, medial(1. semester). Hiatus sinus maxillaris, infundibulum ethmoidale. Recessus sinus maxillaris

Examination: diaphanoskophy - obsolent, contrast X ray - obsolent, semiaxial projection.

LARYNX

Position, shape

Basic structure:

mucous membrane (plicae ventriculares, plicae vocales)

subcutaneous tissue: very thin (oedema!), thick (membrana fibroelastica laryngis: membrana quadrangularis + conus elasticus)

cartiliges (joints)

muscles

Cartilagine laryngis:

Cartilago thyroidea: lamina dx. et sin. (linea obliqua); incisura thyroidea sup. et inf.; cornu sup. et inf. (facies art. cricoidea)

Cartilago cricoidea: arcus; lamina (facies articularis arytaenoidea, facies art. thyroidea).

Cartilago arytaenoidea: apex; basis (facies art. cricoidea, processus vocalis et muscularis); facies: anterolateralis, post., medialis

Cartilago epiglottica: petiolus, lamina

Cartilago corniculata et cuneiformis

Articulationes laryngis: articulatio cricothyroidea et cricoarytaenoidea (movements)

Syndesmoses laryngis: membrana thyrohyoidea; lig. cricotracheale; lig. thyroepiglotticum, lig. hyoepiglotticum; membrana quadrangularis (ligg. ventricularia), 2. conus elasticus (ligg. vocalia)

Musculi laryngis: division considering localization (anterior, posterior and lateral group – origin and attachment); division according to the function. Musculus: thyroepiglotticus, aryepiglotticus, cricoarytaenoideus post., cricoarytaenoideus lat., arytaenoideus, cricothyroideus, thyroarytaenoideus, vocalis

Cavitas laryngis:

Vestibulum laryngis: boundaries; plicae vestibulares (structure, color), rima vestibuli.

Glottis: boundaries; ventriculus laryngis; plicae vocales, rima glottidis - pars intermembranacea et intercartilaginea

Cavitas infraglottica: extetnt

Examination: direct and indirect laryngoscopy, laryngoscopical image – position of vocal cords in fonatition and respiration

TRACHEA

Localization, extent (C6 - cca Th4), lenght

Structure of wall (cartilagine tracheales; ligg. anularia; paries membranaceus; m. trachealis)

Parts: pars cervicalis et thoracica
Bifurcatio tracheae; carina tracheae

BRONCHI

Localization

Structure of wall

Bronchus principalis dexter et sinister (differences in diameter and course)

Arbor bronchialis: bronchi lobares, bronchi segmentales... → bronchioli ... → alveoli pulmonis

PULMO

Localization, shape, color, function. Basic structure

Basis pulmonis, apex pulmonis

Surfaces, facies: diaphragmatica, costalis et mediastinalis (hilum pulmonis)

Margins, margines: inf., ant. (incisura cardiaca pulmonis sin.), post.

Lobes:

pulmo sinister: lobus sup. et inf. (lingula pulmonis sin.)

pulmo dexter: lobus sup., medius, inf.

Fissurae interlobares: fissura obliqua, fissura horizontalis pulmonis dextri.

Bronchopulmonary segments (count)

Nutritional and functional circulation

PLEURA

Pleura visceralis (lig. pulmonale)

Pleura parietalis: cupula (localization); parts of pleura (according to the adjacent structures): pleura costalis, diaphragmatica et mediastinalis

Recessus pleurales: costodiaphragmaticus, costomediastinalis et phrenicomediastinalis

Cavitas pleurales

GLANDULA THYROIDEA

Localization, color, basic functions

Lobus dexter et sinister, isthmus, lobus pyramidalis

Structure: capsula fibrosa (capsula externa + capsula propria → lobuli, folliculi)

GLANDULA PARATHYROIDEA

Position, count, shape, size, basic functions

THYMUS

Position, color, shape (base, apex), basic functions

Lobus dexter et sinister

Structure: capsula thymica → lobuli thymi (cortex, medulla)