

GENERAL ARTHROLOGY

Synarthrosis: definition, different types of synarthrosis (syndesmosis, synchondrosis a synostosis), characteristic and examples

Diarthrosis (synovial joint):

- definition of the joint (= *movable connection of two or more bones by contact surfaces covered by articular cartilage*)
- general features of a joint (facies articulares – articular surfaces, cartilaginee articulares – articular cartilage, synovia synovial fluid, cavitas articularis – joint fissure – joint cavity) capsula articularis (division into free, solid, complete, incomplete), description and significance of different parts
- special (accessory) joint apparatus (additional joint structures): (labrum articulare, disci et menisci articulares, ligamenta, muscoli articulares, bursae synoviales) – description and significance of these structures
- elementary position of a joint – explanation of this term
- middle position of a joint – explanation of this term
- basic movements (flexion = ventral flexion; extension = dorsal flexion; abduction; adduction; rotation (internal = pronation; external = supination))
- classification of joints, examples
 - *according to the number of connecting bones* (simple and composed joints), characteristic
 - *according to the shape of contact surfaces* (1. spheroidal joint (ball and socket joint), articulatio spherioidea: free – arthrodia; restricted – enarthrosis; 2. ellipsoidal joint, articulatio ellipsoidea; 3. sellar (saddle) joint, articulatio sellaris; 4. cylindrical joint, articulatio cylindroidea: a) axis of movements is perpendicular to the longitudinal axis of bone (ginglymus); b) axis of movements is parallel to the longitudinal axis of a long

bone (articulatio trochoidea (trochoid, pivot joint), wheel joint); 5. trochlear joint (hinge joint), articulatio trochlearis; 6. flat joint, articulatio plana; 7. joint with minimal movements (amphiarthrosis)

- *according to the level of moveability* – joints with minimal movements, sliding movements, rotational movements (monoaxial joint, biaxial joint, triaxial joint) – characteristic and mobility of different joints

In describing the joints is required for each joint to state: 1. name of the joint, 2. name of the articular surfaces, 3. characteristic of the joint capsule, 4. special joint apparatus, 5. type of the joint, 6. movements of the joint. It includes description of the native joint radiographs in the sagittal and lateral projection.

SPECIAL ARTHROLOGY

Connection of the skull

- **Syndesmosis:** suturae (sutures) – examples; lig. stylohyoideum
- **Synchondrosis:** fibrocartilago basialis, synchondrosis sphenopetrosa, synchondrosis petrooccipitalis
- **Articulatio temporomandibularis (temporomandibular joint)**

Type of the joint: articulatio composita; special joint apparatus: discus articularis, lig. laterale, lig. sphenomandibulare, lig. stylomandibulare

- **Craniovertebral articulation**
 - articulatio atlantooccipitalis (articulatio ellipsoidea)
 - articulationes atlantoaxiales laterales (articulatio plana)
 - articulatio atlantoaxialis mediana (articulatio trochoidea)

Special joint apparatus: membrana atlantooccipitalis anterior et posterior, membrana tectoria, lig. apicis dentis, ligg. alaria, lig. transversum atlantis, fasssiculi longitudinales

Connection of the spine (Union of the spine)

- **Connection between vertebral bodies:** *disci intervertebrales* – number, structure (*anulus fibrosus*, *nucleus pulposus*), significance
- **Connection between vertebral arches:** *ligg. flava*
- **Connection between articular processes:** *articulationes intervertebrales* – type of the joints: *articulatio plana*
- **Connection between spinous processes:** *ligg. interspinalia*, *lig. nuchae*
- **Connection between transversal processes:** *ligg. intertransversaria*
- **Connection common for all vertebrae:** *lig. longitudinale anterius et posterius*, *ligg. sacrococcygeum*, *lig. supraspinale*

Structure and shape of vertebral column: *canalis vertebralis*, *foramina intervertebralia*, *lordoses* and *kyphoses* of the spine.

Movements of vertebral column – *anteflexion*, *retroflexion*, *lateroflexion*, *rotational* and *springy movements*, differences in different parts of the spine.

Connection of the thorax

- **Articulationes costovertebrales**
 - *articulationes capitis costae*
 - *articulationes costotransversariae*

Special joint apparatus: *lig. capitis costae radiatum*, *ligg. costotransversaria*

- **Juncturae sternocostales**

Special joint apparatus: *ligg. sternocostalia radiata*, *membrana sterni interna*, *membrana sterni externa*

- **Membrana intercostalis externa et interna**

Chest cage shape, description of the walls.

Connection of bones of upper extremity

○ **Articulatio sternoclavicularis**

Type of the joint: articulatio composita – spherioidea; special joint apparatus: discus articularis, lig. sternoclaviculare, lig. interclaviculare, lig. costoclaviculare

○ **Articulatio acromioclavicularis**

Type of the joint: articulatio composita – spherioidea; special joint apparatus: discus articularis, lig. acromioclaviculare, lig. coracoclaviculare

○ **Articulatio humeri**

Type of the joint: arthrodia; special joint apparatus: labrum glenoidale, ligg. glenohumeralia, lig. coracohumerale, vagina synovialis intertubercularis, bursae

○ **Articulario cubiti** - articulatio composita

- *articulatio humeroradialis* (articulatio spherioidea)
- *articulatio humeroulnaris* (articulatio trochlearis)
- *articulatio radioulnaris proximalis* (articulatio trochoidea)

Special joint apparatus: lig. anulare radii, lig. collaterale radiale, lig. collaterale ulnare

○ **Articulatio radioulnaris distalis**

Type of the joint: articulatio trochoidea

○ **Membrana interossea antebrachii**, significance

Joints of the hand

○ **Articulatio radiocarpalis et mediocarpalis**. Type of the joint: articulatio composita - ellipsoidea

- *articulario radiocarpalis* – special joint apparatus: discus articularis, lig. radiocarpeum, lig. ulnocarpeum

- *articulatio mediocarpalis* – articular surfaces: surfaces between proximal and distal line of carpal bones; special joint apparatus: ligg. intercarpalia
- **Articulationes carpometacarpales**

Type of the joints: I. articulatio sellaris, II.-V. amphiarthrosis; special joint apparatus: ligg. carpometacarpalia
- **Articulationes metacarpophalangeales**

Type of the joints: transitional = spheroidal transiting to the cylindrical; special joint apparatus: ligg. collateralia, lig. metacarpale transversum profundum
- **Articulationes interphalangeales manus**

Type of the joints: articulationes trochleares; special joint apparatus: ligg. collateralia

Connection of lower extremity

- **Connection of pelvic girdle**
 - *articulatio sacroiliaca* – type of the joint: amphiarthrosis; special joint apparatus: ligg. sacroiliaca; moveability of the joint: **translational** movements
 - *symphysis pubica* – type of connection: synchondrosis; special joint apparatus: discus, lig. pubicum superius, lig. arcuatum pubis
 - *membrana obturatoria* (canalis obturatorius)
 - *lig. sacrospinale, lig. sacrotuberale* (foramen suprapiriforme et infrapiriforme)
- **Pelvis as a whole** – *pelvis minor, pelvis major* (border)
 - *pelvic planes* – aditus pelvis (pelvic inlet), amplitudo pelvis (pelvic width), angustia pelvis (narrow part), exitus pelvis (pelvic outlet) (course of the border of the plains, not dimensions)
 - *pelvimetry* – external pelvic measurements (distantia bispinalis, distantia bicristalis, distantia bitrochanterica, conjugata externa - not dimensions)
- **Articulatio coxae**

Type of the joint: enarthrosis; special joint apparatus: labrum glenoidale, lig. iliofemorale, lig. pubofemorale, lig. ischiofemorale, zona orbicularis, lig. capitis femoris, bursa iliopectinea

○ **Articulatio genus**

Type of the joint: articulatio composita; special joint apparatus: meniscus medialis et lateralis, lig. cruciatum genus anterius et posterius, lig. patellae, retinaculum patellae mediale et laterale, lig. collaterale tibiale et fibulare, lig. popliteum obliquum, bursae

○ **Juncturae tibiofibulares**

- *articulatio tibiofibularis* – type of the joint: articulatio plana; special joint apparatus: lig. capitis fibulae
- *membrana interossea cruris*
- *syndesmosis tibiofibularis* (lig. tibiofibulare anterius et posterius)

Foot joints

○ **Articulatio talocruralis**

Type of the joint: articulatio trochlearis; special joint apparatus: lig. collaterale mediale et laterale

○ **Intertarsal joints:**

- *articulatio subtalaris et articulatio talocalcaneonavicularis* (talus + calcaneus + os naviculare)
- *articulatio calcaneocuboidea* (calcaneus + os cuboideum)
- *articulatio cuneonavicularis* (ossa cuneiformia + os naviculare)
- *articulatio cuneocuboidea* (os cuneiforme lateralis + os cuboideum)
- ✓ movements: **inversion** (association of plantar flexion, adduction and supination of the foot); **eversion**: (association of dorsal flexion, abduction and pronation of the foot) and **springy movements**
- ✓ special joint apparatus, ligaments: collateral, interosseous, dorsal, plantar (lig. plantare longum)

- **Articulationes metatarsophalangeales**

Type of the joints: transitional = **spheroid surface transiting to the cylindrical surface**;
special joint apparatus: ligg. collateralia, lig. metatarsale transversum profundum

- **Articulationes interphalangeales pedis**

Type of the joints: articulationes trochleares; special joint apparatus: ligg. collateralia

Foot vault (Arches of the foot)

- longitudinal foot vault- longitudinal foot arch (medial and lateral lengthwise row) – description
- transversal foot vault- transversal foot arch – description
- special apparatus (muscles, ligaments– not into the details), significance of foot vault