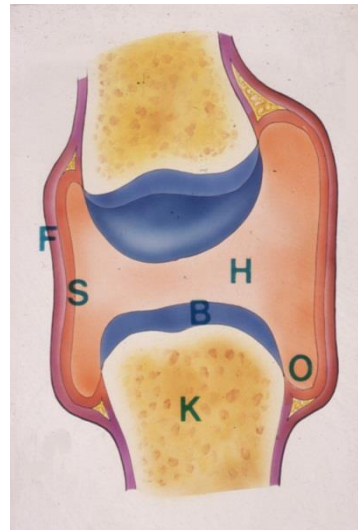


LED



ANATOMI

Henrik Løvschall

Anatomisk afsnit, TA

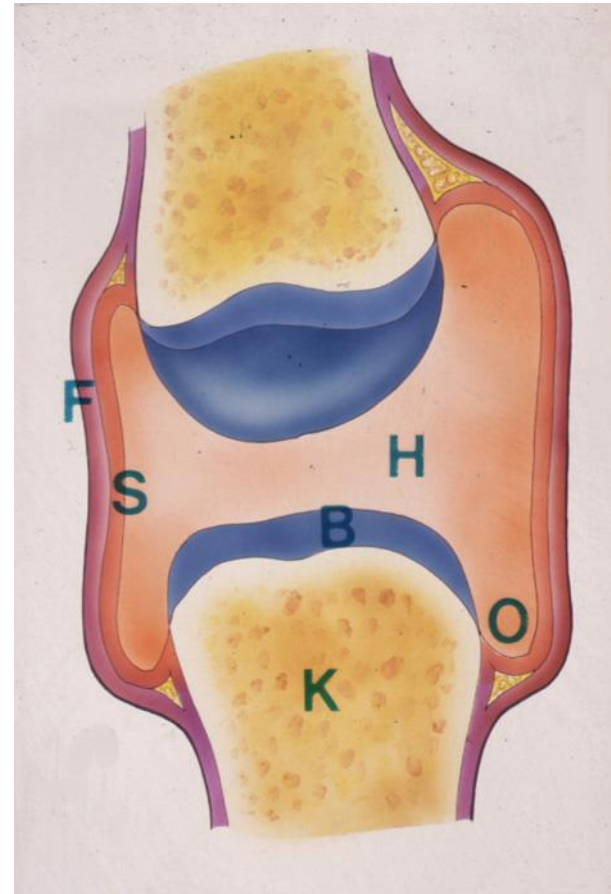
Århus Tandlægeskole

LED

- UÆGTE
- ÆGTE

ÆGTE LED

- ledhule
- ledflader



UÆGTE LED

- ingen ledhule
- lille bevægelighed

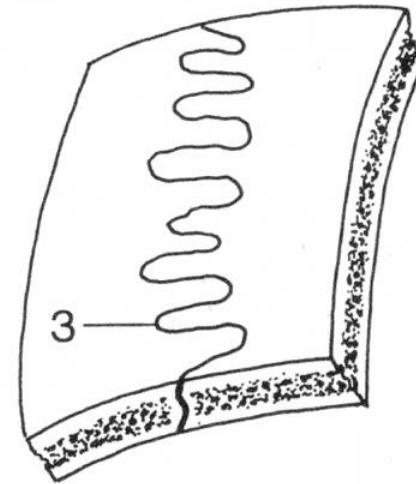


FIG. 2

UÆGTE LED

- SYNDESMOSER

- knogler holdes sammen af bindevæv

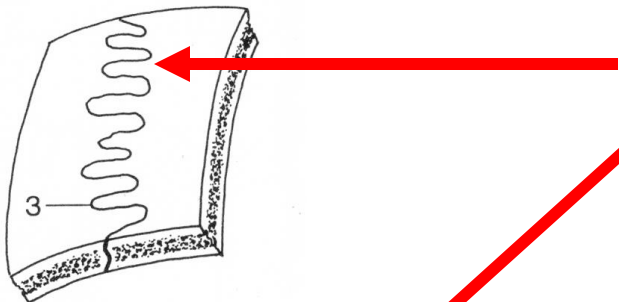
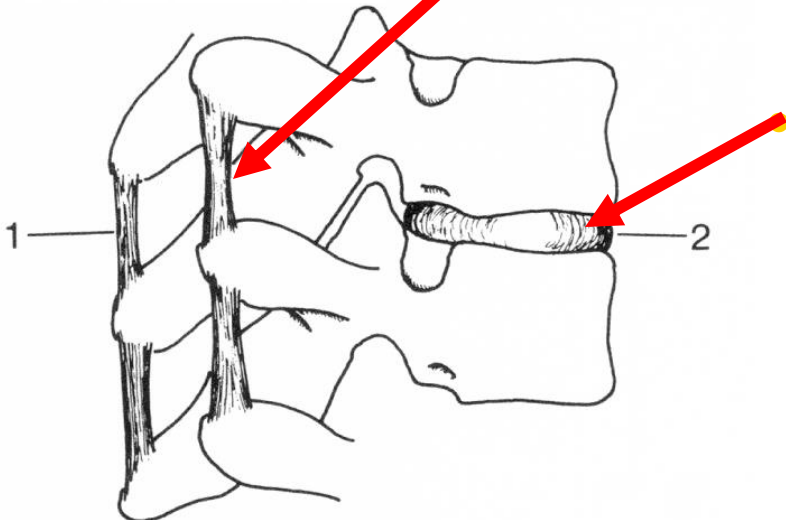


FIG. 2

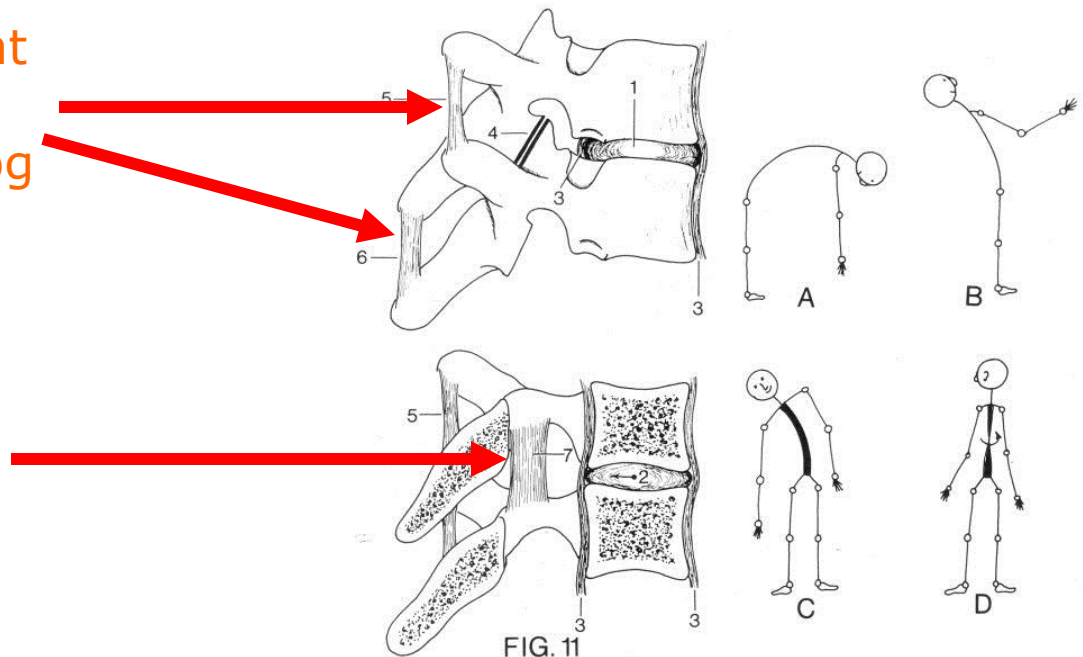
- SYNCHONDROSER

- knogler holdes sammen af brusk



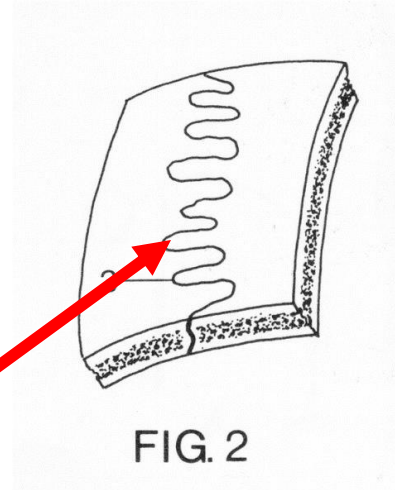
UÆGTE LED

- SYNDESMOSER (membraner eller ledbånd)
 - Fibrøse
 - fibrillært, kollagent bindevæv
 - fx mellem tvær- og torntappe
 - Elastiske
 - elastisk bindevæv
 - fx på hvirvelbuer



UÆGTE LED

- eksempel på savtakkeformede fibrøse syndesmoser
- *sutura serratae*

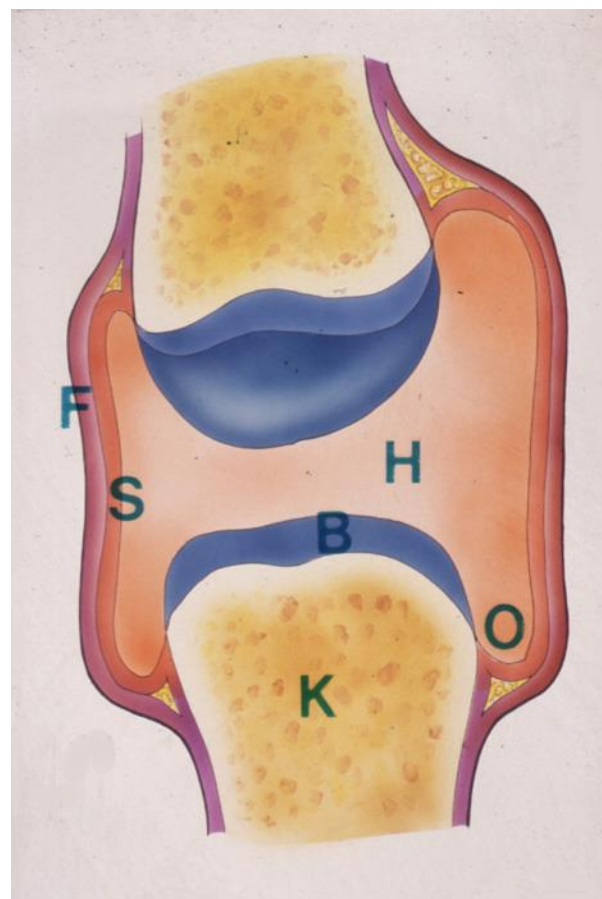


ÆGTE LED

De ægte led har:

- LEDBRUSK
- LEDKAPSEL
- OMSLAGSFOLD O
- LEDHULE H

B
FS



ÆGTE LED

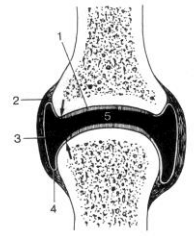
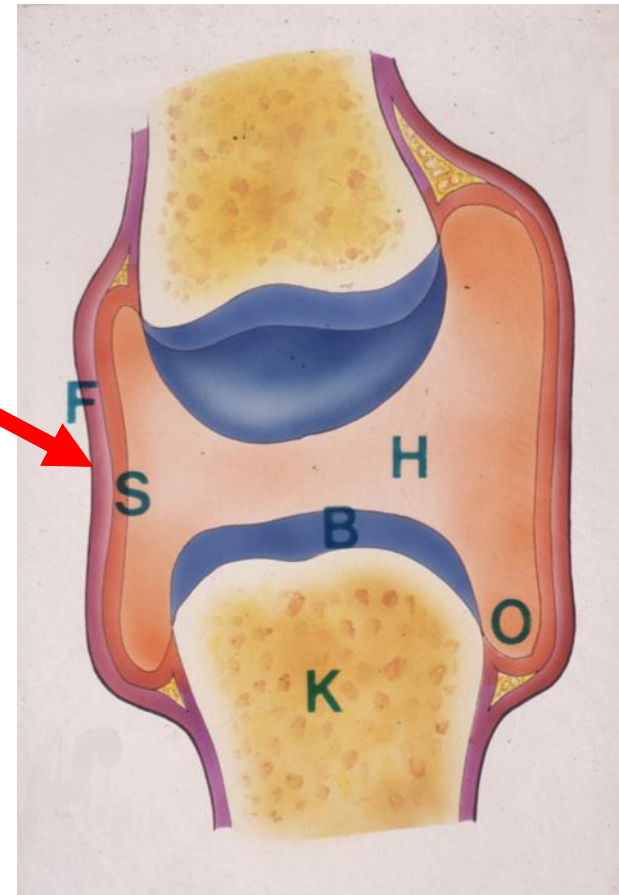


FIG. 4

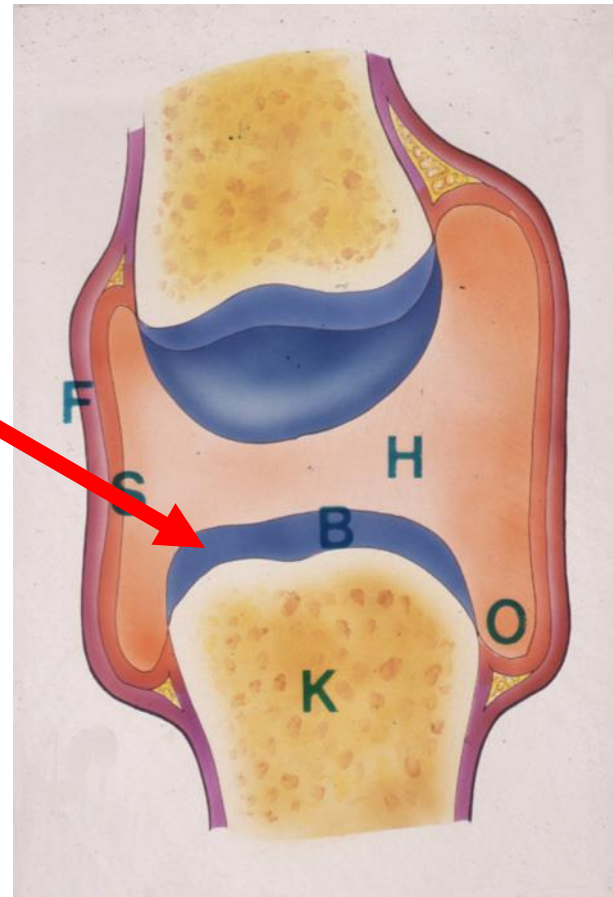
- LEDHULE

- spalte med ledvæske
- begrænses af bindevævskapsel



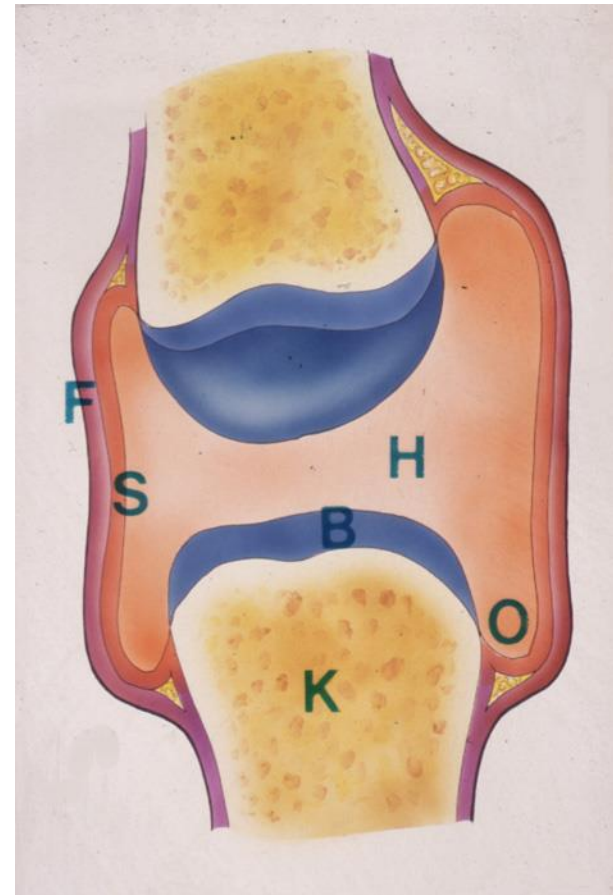
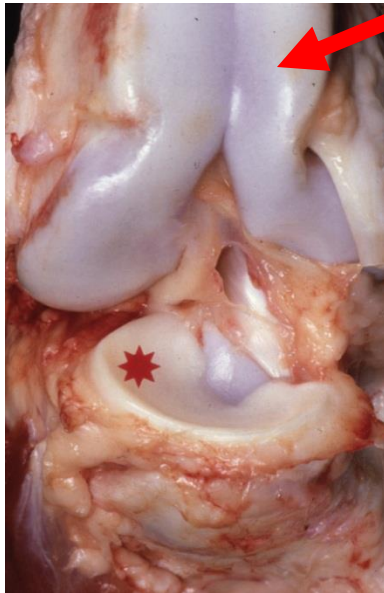
ÆGTE LED

- LEDBRUSK
 - gør knogleender glatte og eftergivelige
 - ernæres af ledvæsken



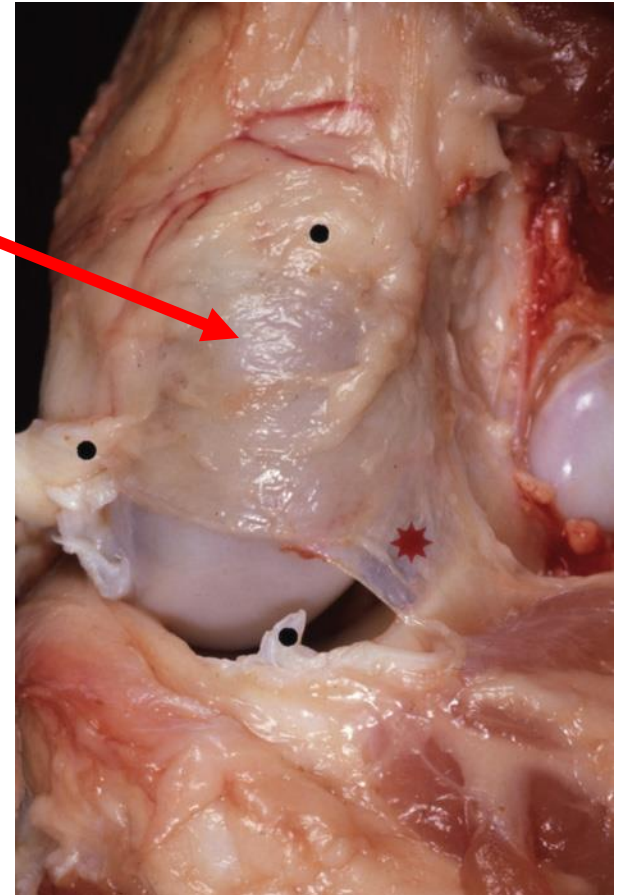
ÆGTE LED

- LEDBRUSK
 - her hyalinbrusk



ÆGTE LED

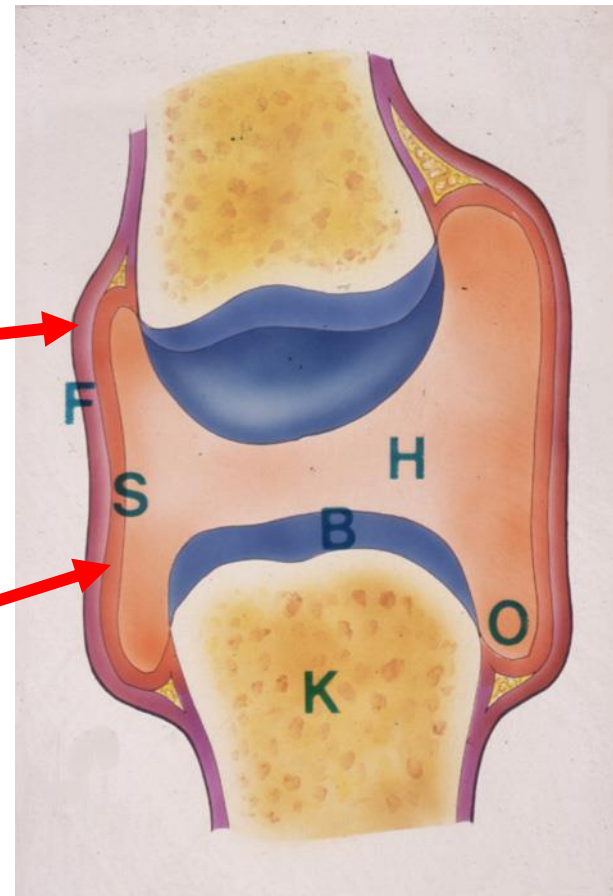
- LEDKAPSEL
 - holder knogleender sammen
 - aflukker ledhule



ÆGTE LED

- LEDKAPSEL

- *membrana fibrosa*
 - fortsættelse af periost
 - fibrillært kollagent organiseret bindevæv
- *membrana synovialis*
 - fortsættelse af bruskrande
 - flade bindevævsceller



ÆGTE LED

- LEDBÅND
 - kaldes også ligamenter
 - løber et stykke væk fra leddet



ÆGTE LED

- LEDBÅND

- fx ligamenter i kæbeleddet som er indvævet i en kapsel
- ledbånd løber et stykke væk fra leddet

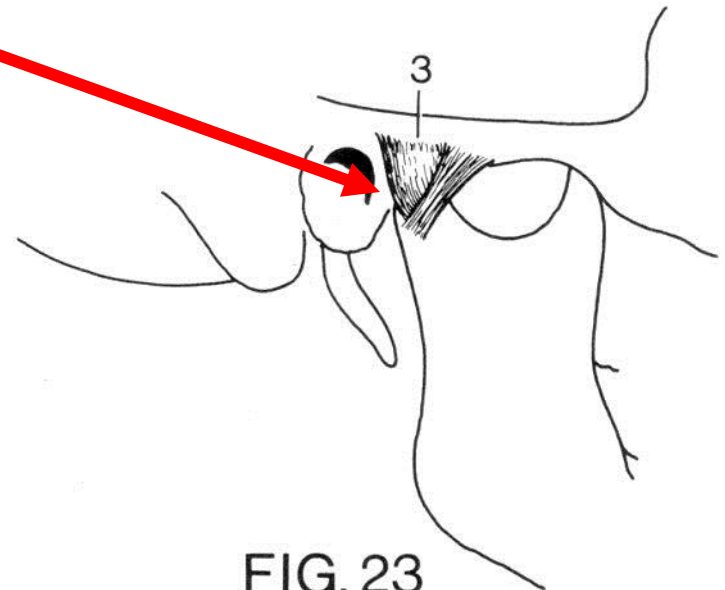


FIG. 23

ÆGTE LED

- LEDSKIVER
 - ***discus articularis***
 - *deler ledhulen i to*
 - ***menisci articularis***
 - *deler ufuldstændigt*
- altid fibrocartilago

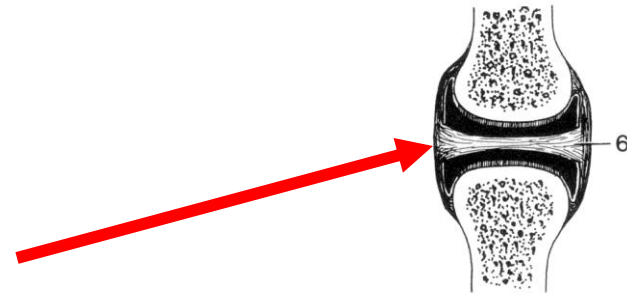


FIG. 5

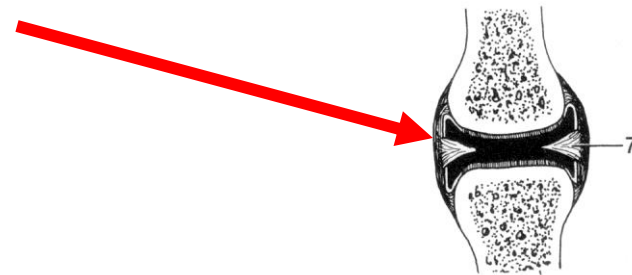


FIG. 6

INDDELING AF ÆGTE LED

- GLIDELED
- CYLINDERLED
 - Hængselled
 - Ledhovedet valseformet
 - Ledskål konkav
 - Drejeled / Tapled
- KUGLELED
 - Ledhovedet kugleformet

INDDELING AF ÆGTE LED

- GLIDELED

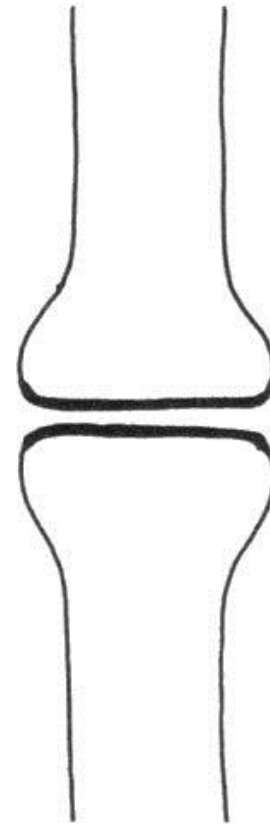


FIG. 7

INDDELING AF ÆGTE LED

- CYLINDERLED
 - Hængselled
 - Ledhovedet valseformet
 - Ledskål konkav

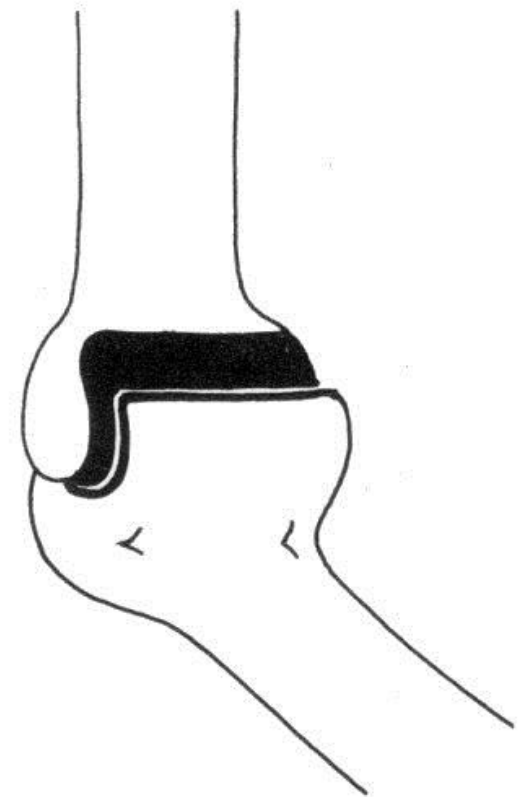


FIG. 8

INDDELING AF ÆGTE LED

- CYLINDERLED
 - Drejeled / Tapled

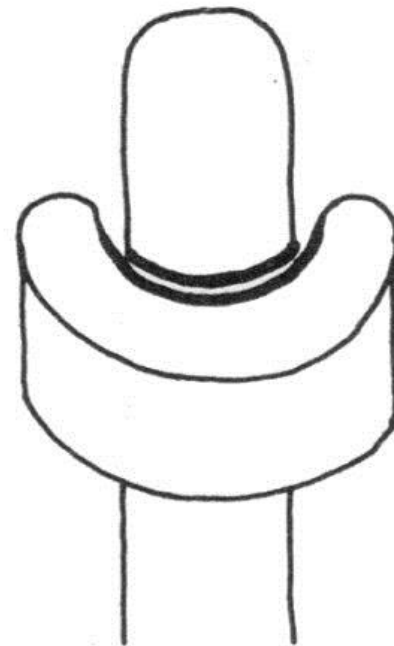


FIG. 9

INDDELING AF ÆGTE LED

- KUGLELED
 - Ledhovedet kugleformet

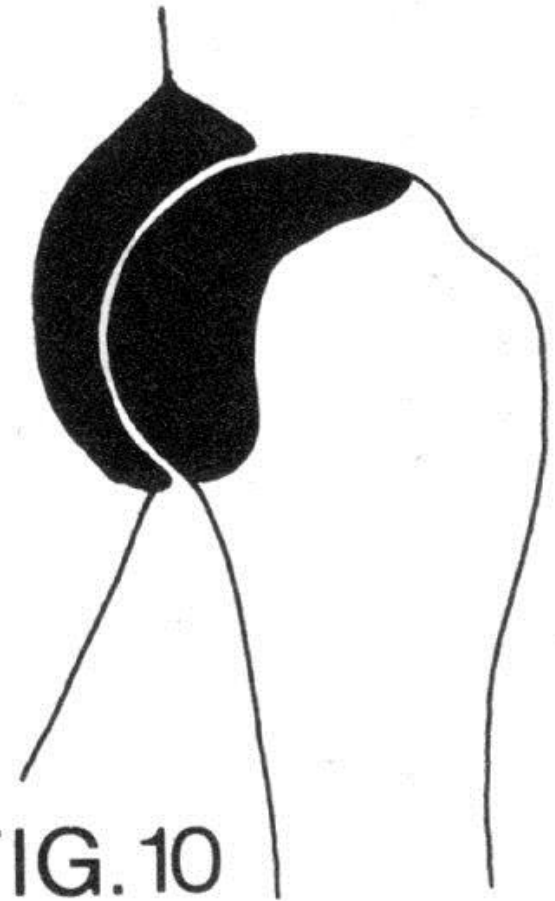


FIG. 10

LED

- HVIRVELSØJLENS LED
- BRYSTKASSENS LED
- BÆKKENETS LED
- OVEREKSTREMITETENS LED
- UNDEREKSTREMITETENS LED
- KRANIETS LED

LED

- HVIRVELSØJLENS LED
- BRYSTKASSENS LED
- BÆKKENETS LED
- OVEREKSTREMITETENS LED
- UNDEREKSTREMITETENS LED
- KRANIETS LED

HVIRVELSØJLENS LED

- Led mellem hvirvellegemer
- Led mellem hvirvelbuer
- Nakkeleddene

Led mellem hvirvellegemer

Uægte led:

- Synchondroser
- Syndesmoser

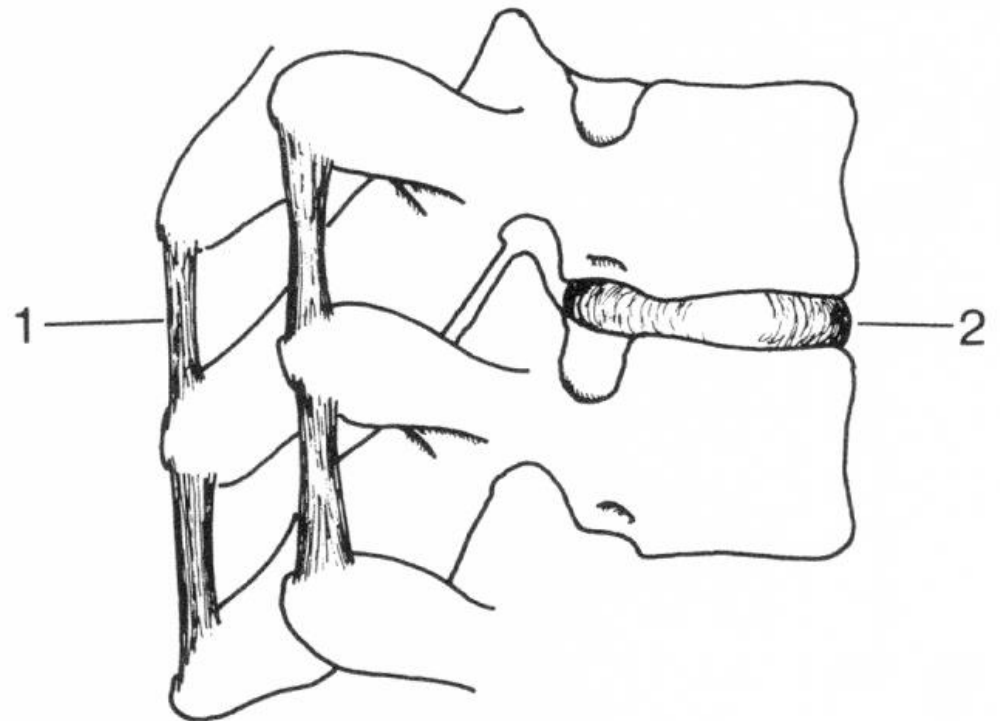


FIG. 1

Led mellem hvirvellegemer

- Synchrondroser

- **Disci intervertebrales**

- nucleus pulposus (blød kerne)
 - anulus fibrosus (solid perifer del)
 - diskusprolaps

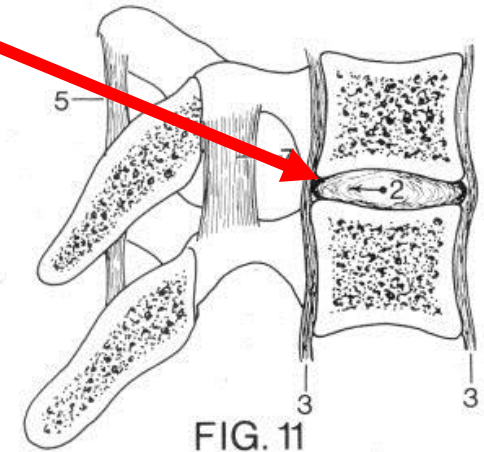
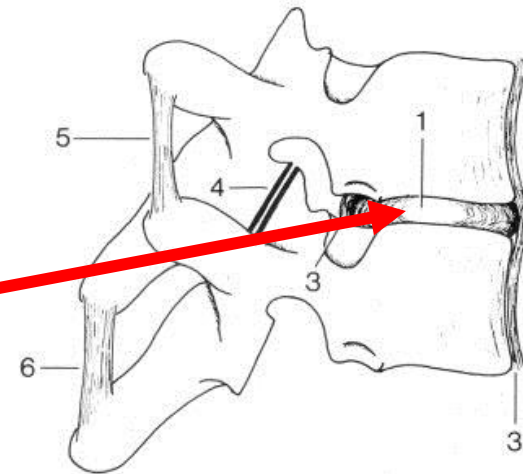
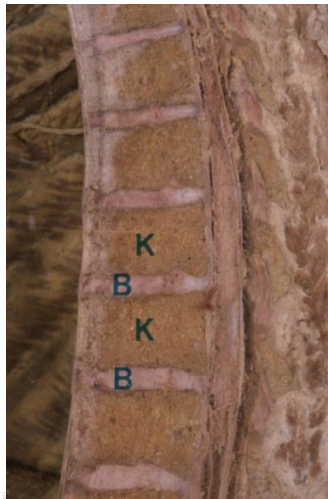


FIG. 11

Led mellem hvirvellegemer

- Syndesmoser
 - Ligamentum longitudinale anterius
 - på forflade af hvirvellegeme
 - Ligamentum longitudinale posterius
 - på bagflade af hvirvellegeme

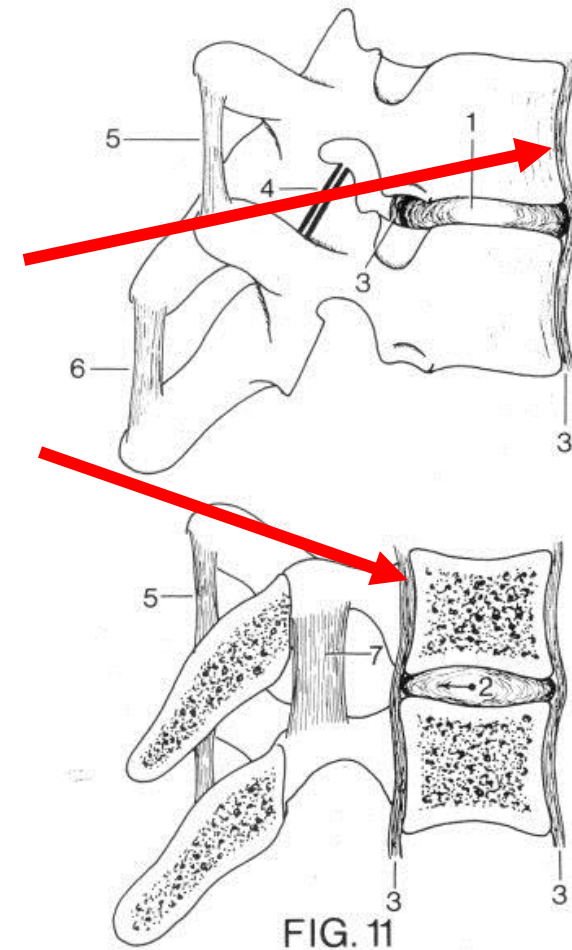
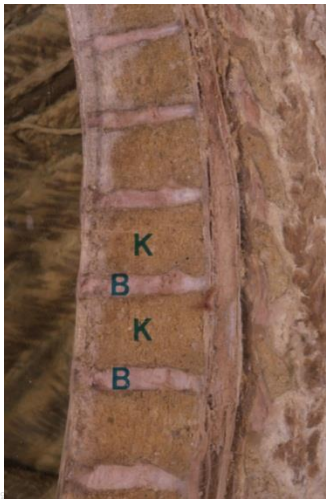


FIG. 11

Snit gennem columna vertebralis



Led mellem hvirvelbuer

- Ægte Led
- Uægte led

Led mellem hvirvelbuer

- Ægte Led
 - mellem ledtappe
 - articulationes intervertebrales ("zygapophysialis")

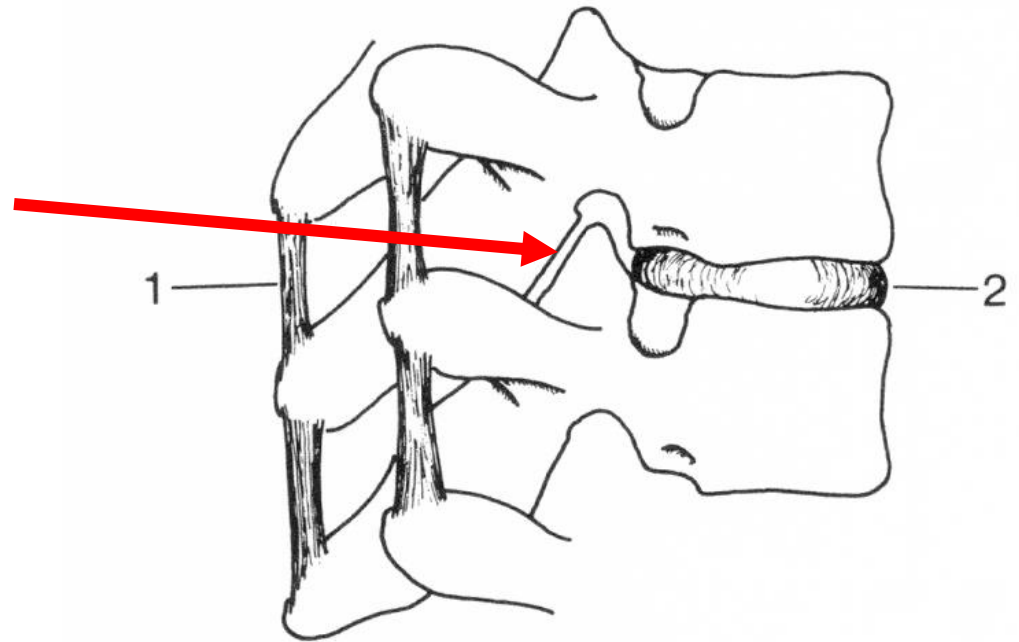
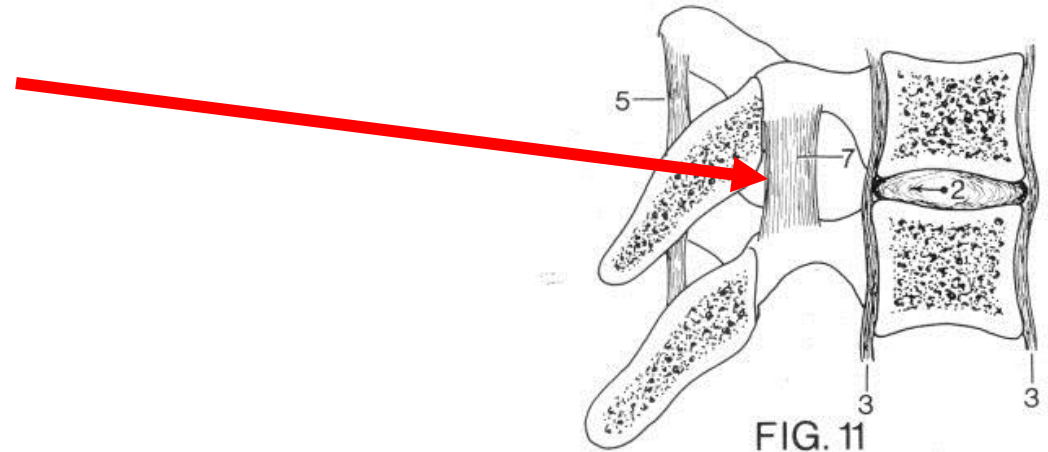
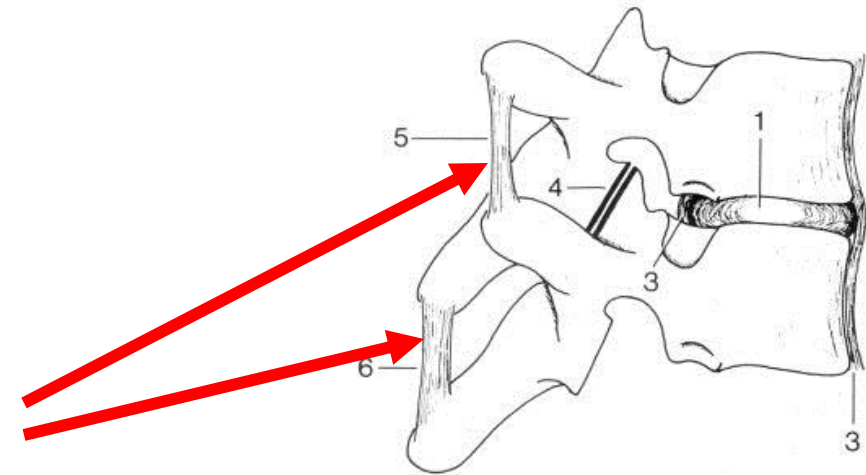


FIG. 1

Led mellem hvirvelbuer

- Uægte led
 - syndesmoser
 - Fibrøse led
ml. tvær- og torntappe
 - Elastiske led
ml. hvirvelbuer



Nakkeled

- **Articulationes atlantooccipitalis**
 - **ÆGTE LED**
 - laterale glideled
 - condyli occipitalis
 - ledtappe på atlas

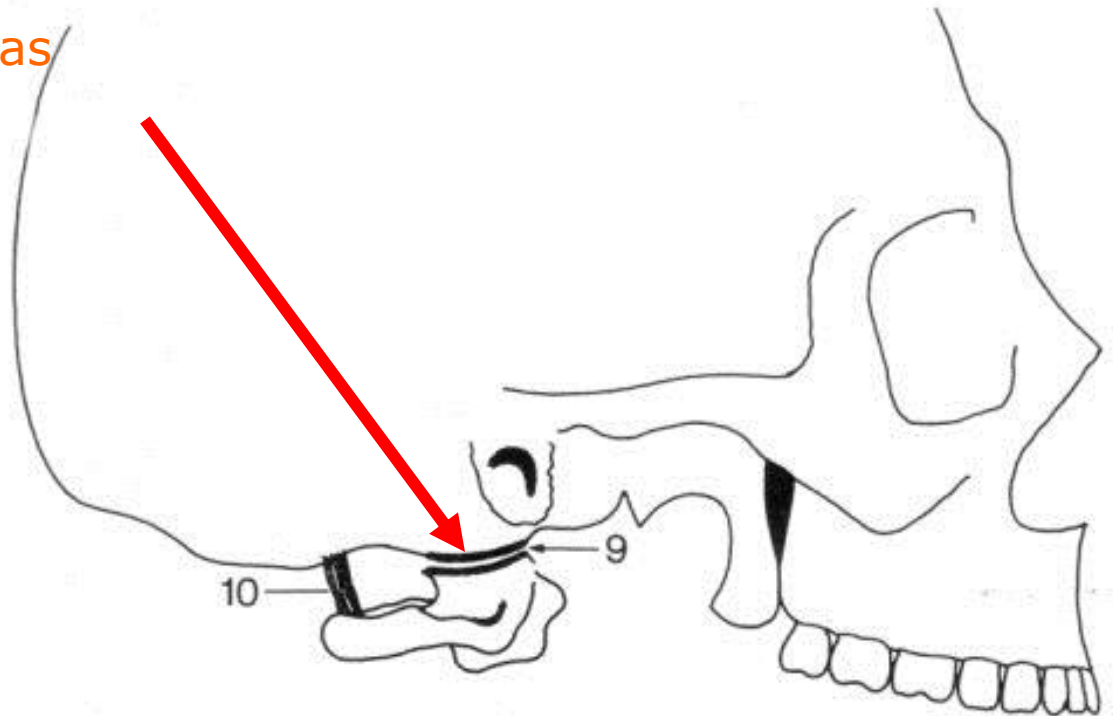


FIG. 13

Nakkeled

- **Articulationes atlantooccipitalis**
 - UÆGTE LED
 - Membraner for- og bagtil
 - mellem arcus og nakkebenet

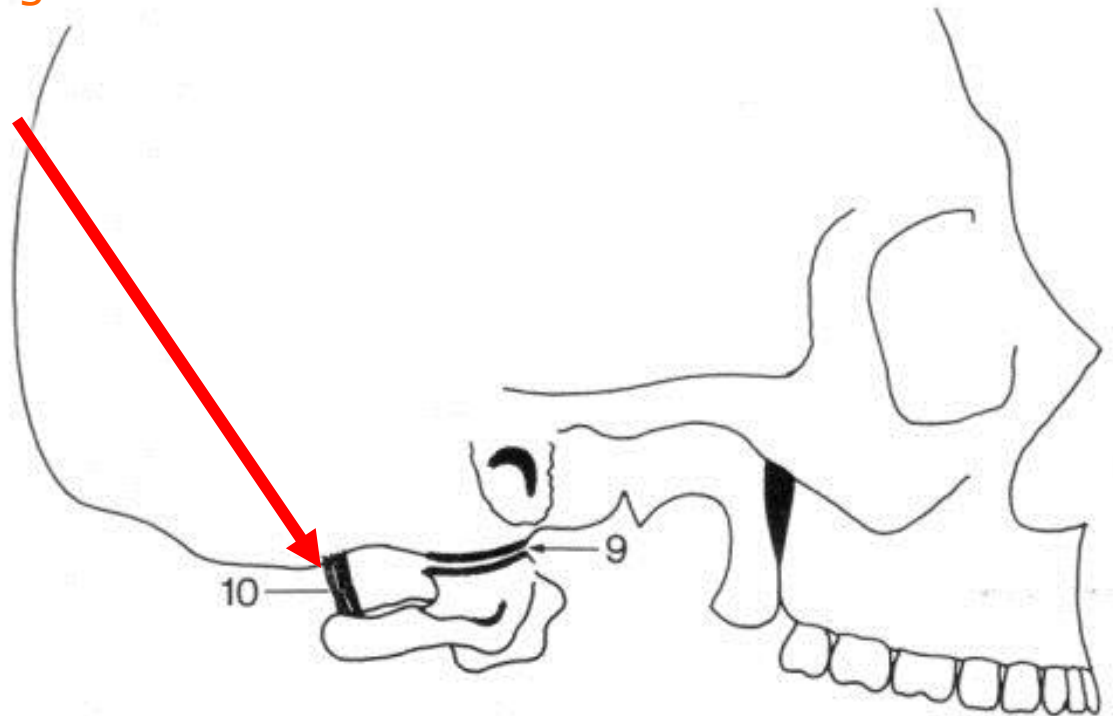


FIG. 13

Nakkeled

- **Articulationes atlantooccipitalis**
 - nikke- og vugge-bevægelser

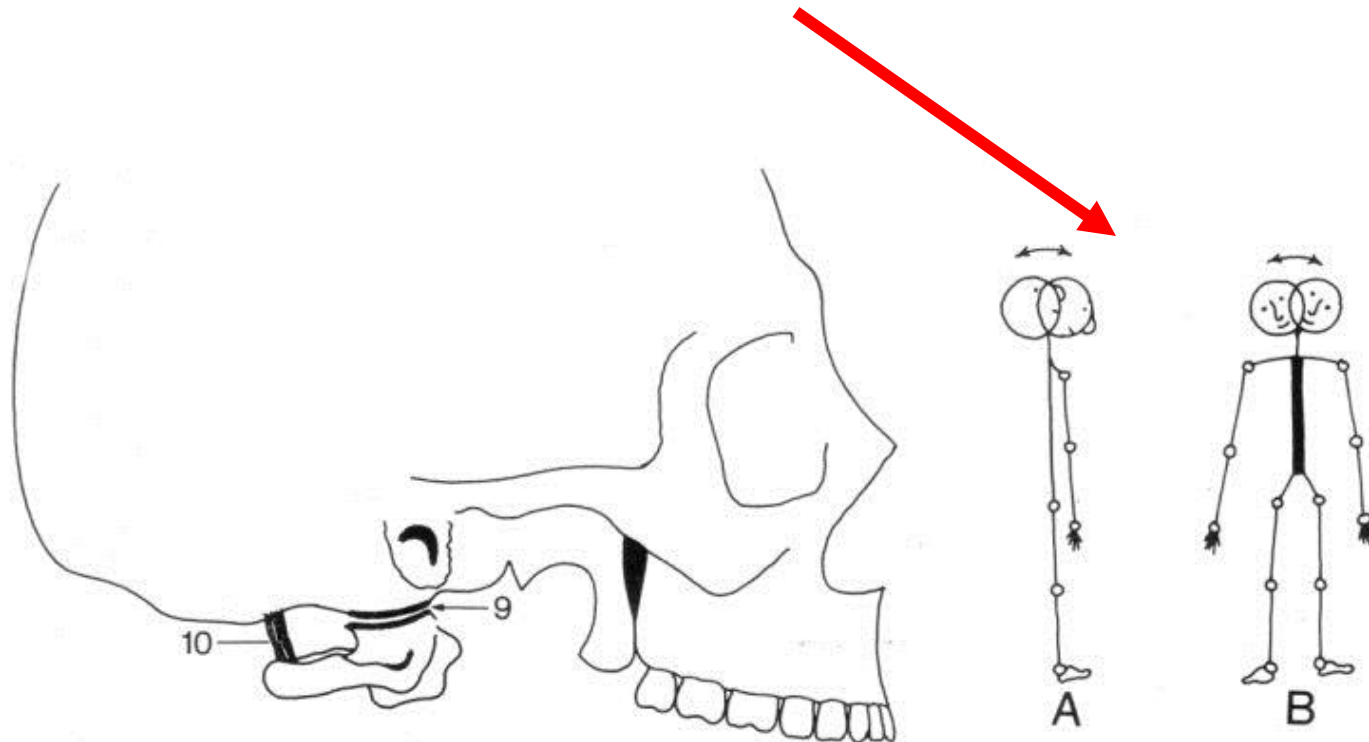


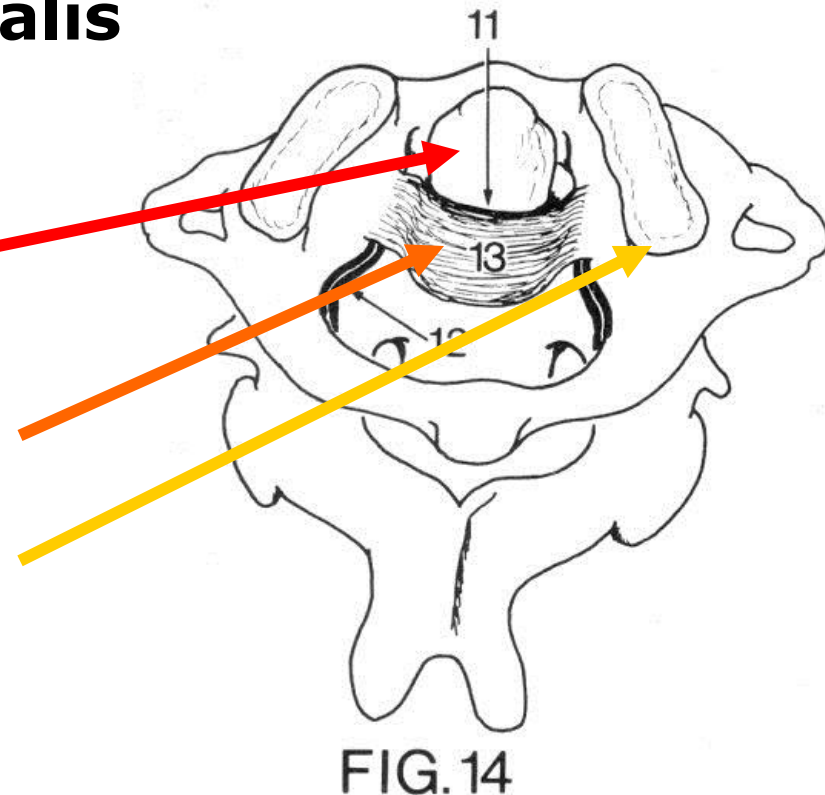
FIG. 13

Nakkeled

- **Articulationes atlantoaxialis**

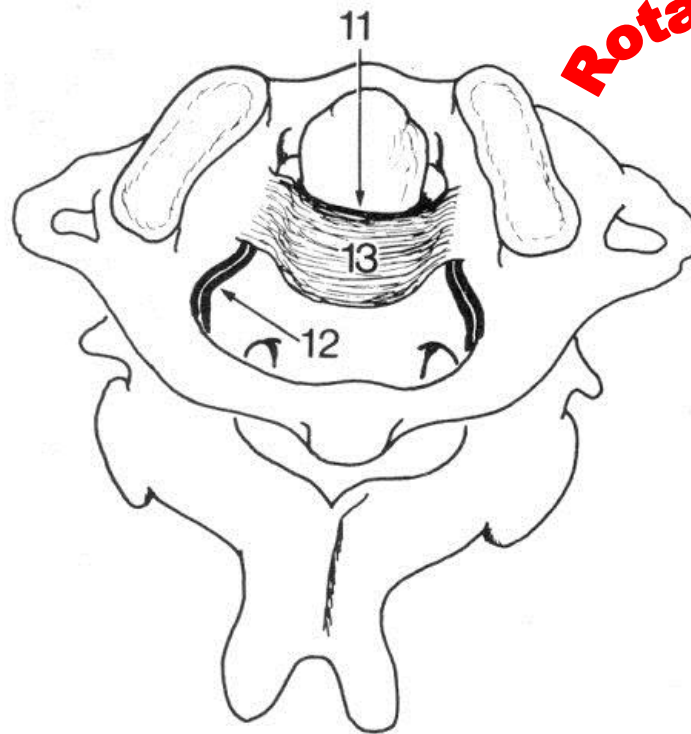
ÆGTE LED

- tapled (drejeled)
- ligamentum transversum atlantis
- laterale ledtappe (glideled)



Nakkeled

- **Articulationes atlantoaxialis**



Rotationsbevægelse

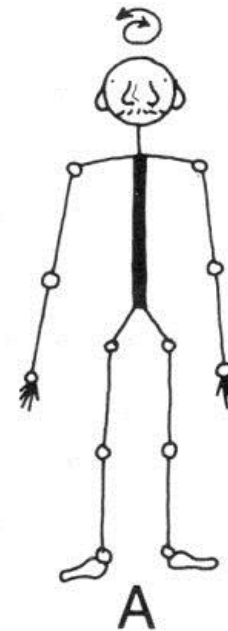


FIG. 14

HOVEDETS LED

- Uægte led
 - suturer (fibrøse syndesmose)
 - synchondroser
- Ægte led

HOVEDETS UÆGTE LED

SUTURER

- Kranssømmen
(sutura coronalis, 1)
- Pilsømmen
(sutura sagittalis, 2)
- Lambdasømmen
(sutura lambdoidea, 3)
- Skælsømmen
(sutura squamosa, 4)

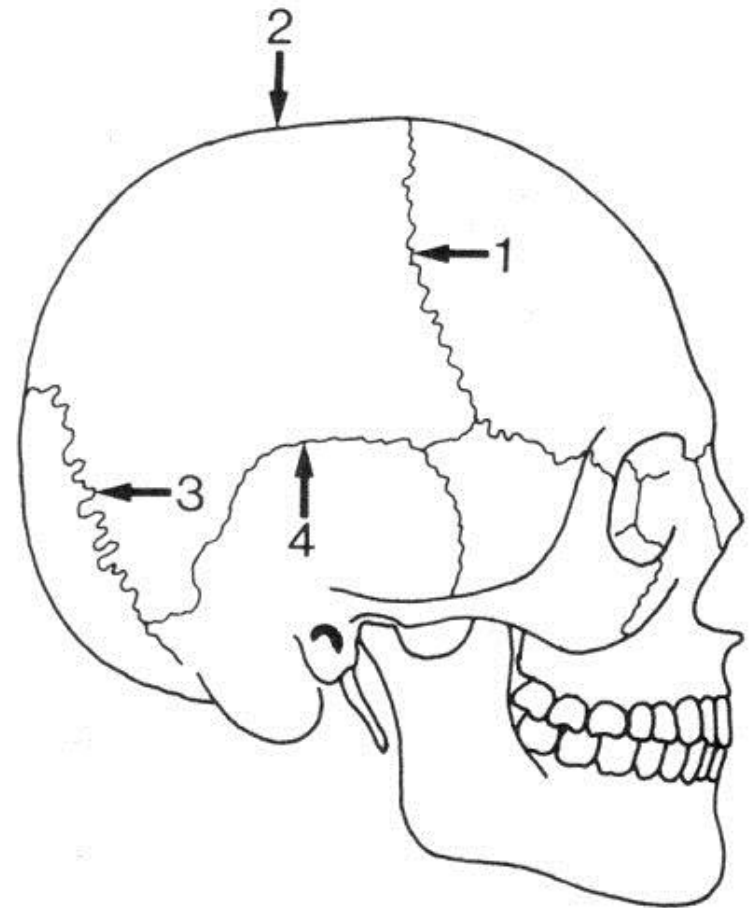


FIG. 21

HOVEDETS UÆGTE LED

SYNCHONDROSER

- **Synchondrosis sphenoccipitalis** (clivus)

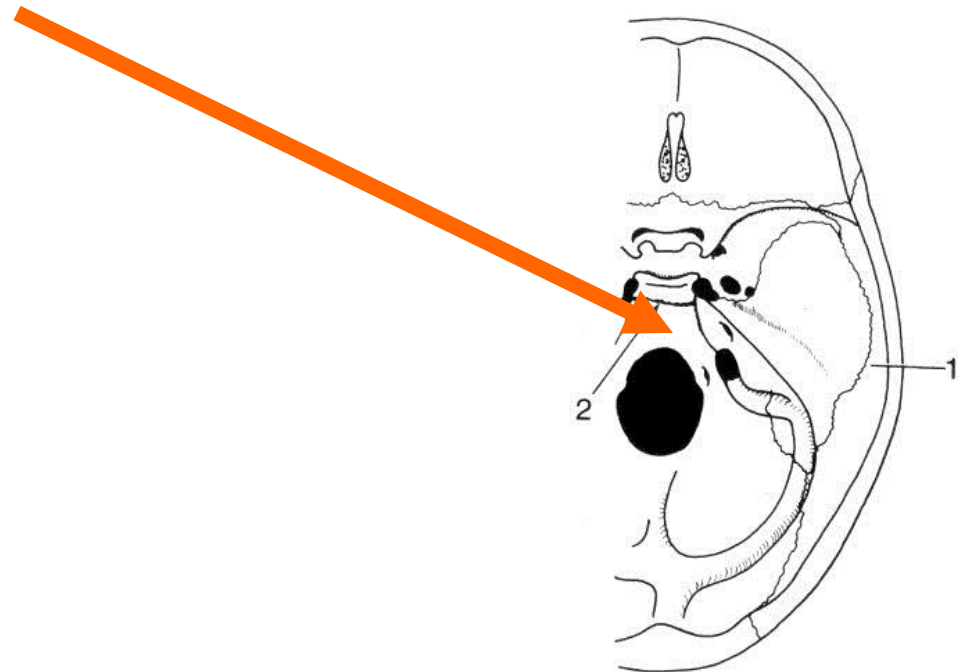


FIG. 22

HOVEDETS ÆGTE LED:

- Articulatio temporomandibularis

- Caput mandibulae

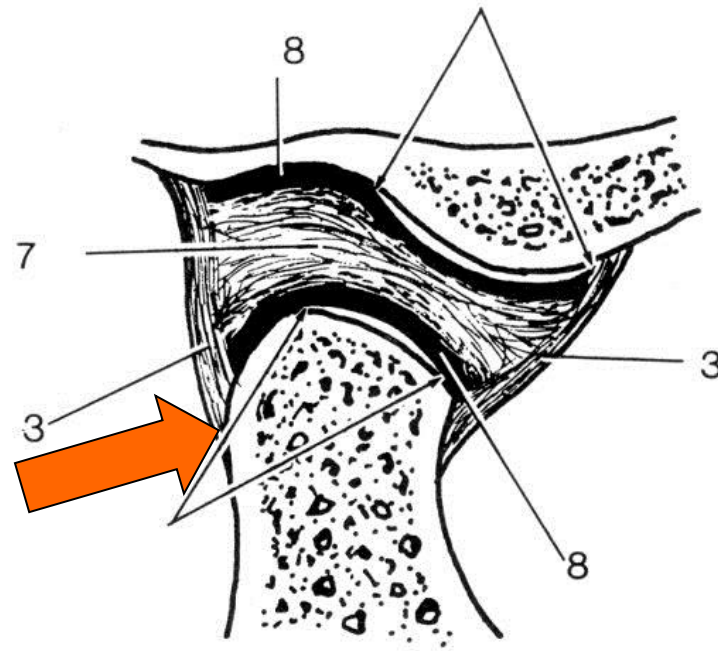
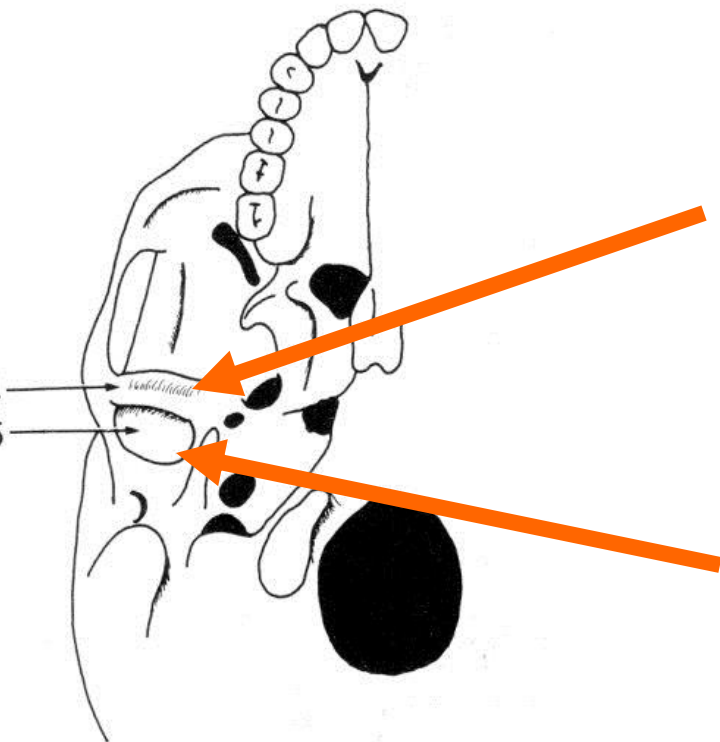


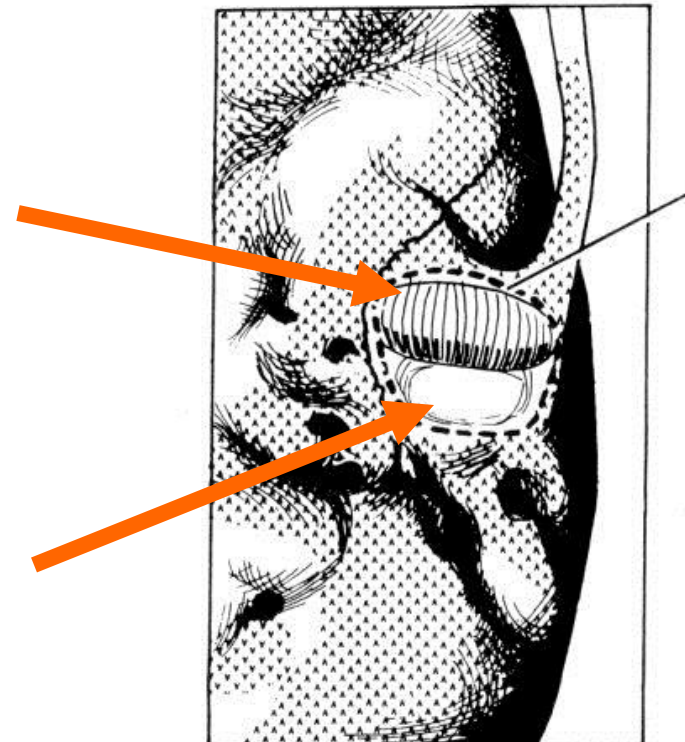
FIG.26

Articulatio temporomandibularis



Tuberculum
articulare

Fossa
mandibularis



Articulatio temporomandibularis

- Discus articularis
 - Oval skive
 - Fibrocartilago
- Ledkapsel

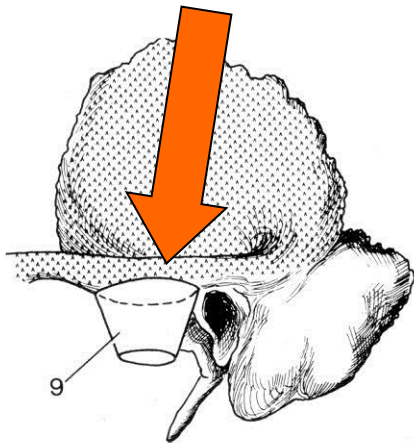


FIG.27

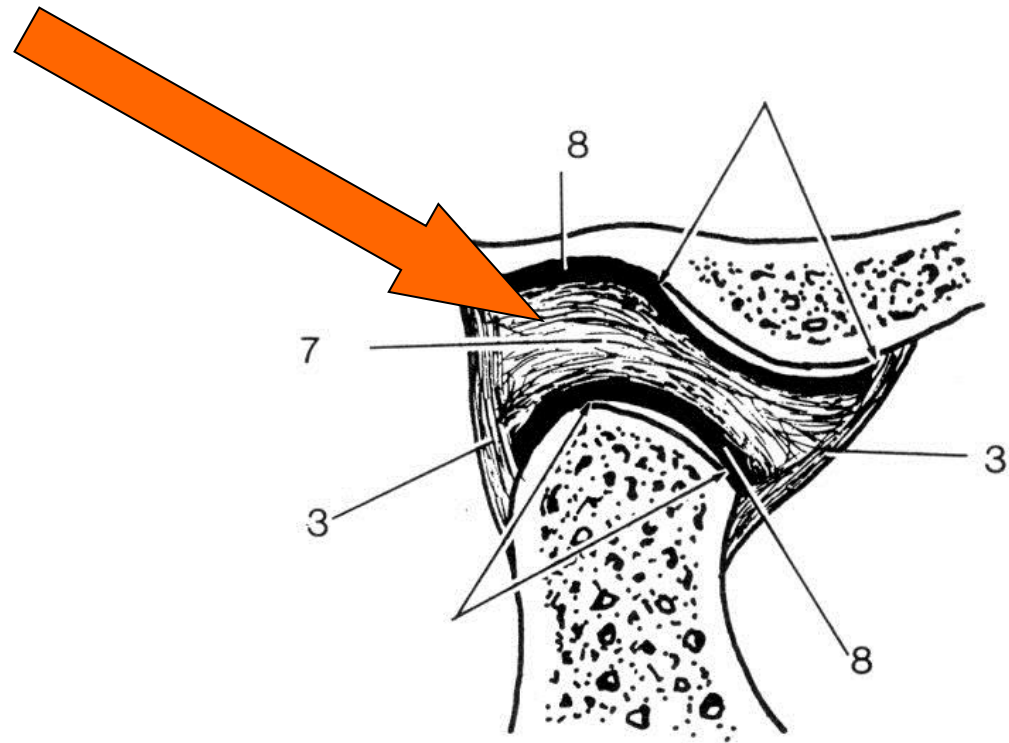


FIG.26

Articulatio temporomandibularis

- hængselbevægelser foregår i nedre ledkammer

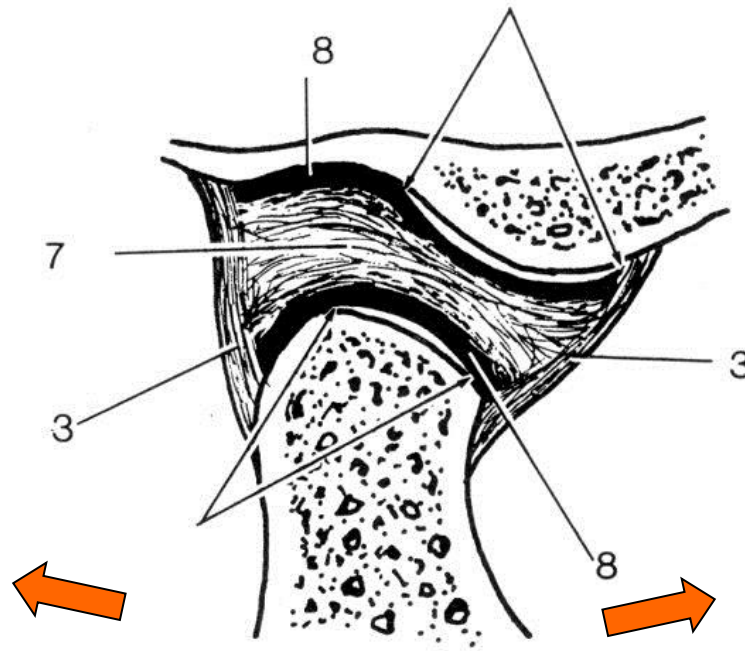


FIG.26

Articulatio temporomandibularis

- glidebevægelser foregår i øvre ledkammer

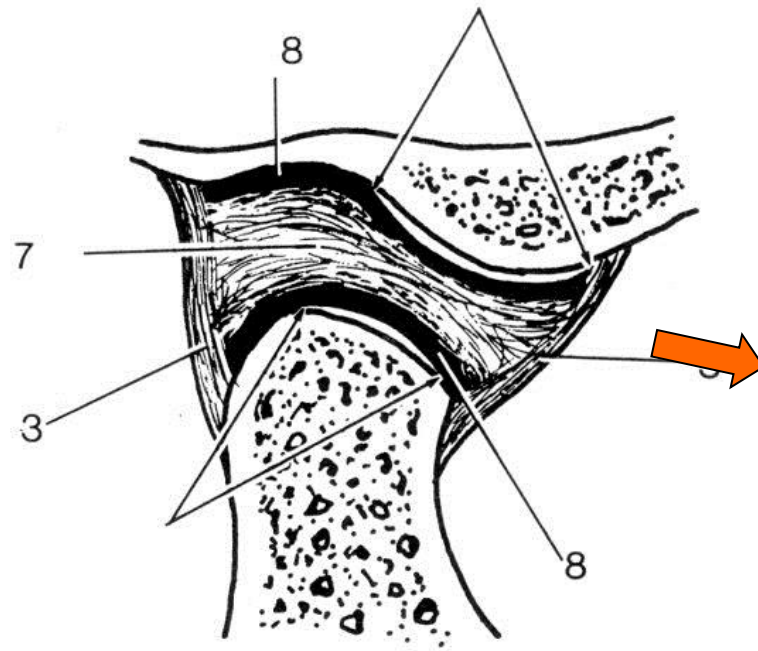


FIG.26

Articulatio temporomandibularis

- samlede bevægelser foregår i begge ledkamre på én gang

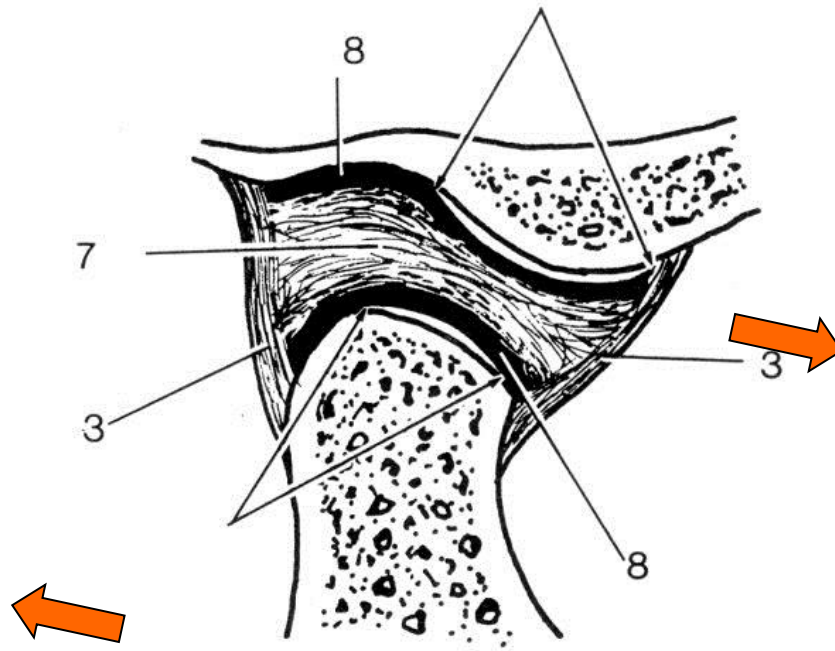
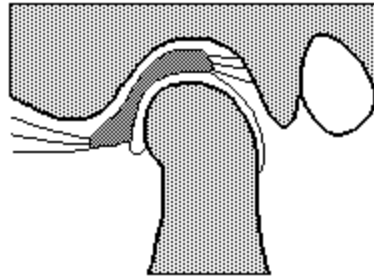


FIG.26

Articulatio temporomandibularis



TMJ Muscles of mastication (youtube)

- TMJ Muscles of
- <https://www.youtube.com/watch?v=wHRo9GFrog8mastication.mp4>

Tak for nu



<http://www.blackwellscience.com/matthews/myosin.html>