

**Gefäße und Nerven des Herzens,
Erregungsleitungssystem,
Herzbeutel, Situs cordis,
Auskultationspunkte, Herzdämpfung.**

Aufteilung des Mediastinums.

Dr. Tamás Ruttkay

**Anatomisches, Histologisches und Embryologisches Institut
2019.**

Vasa privata → Herzkranzarterien

Ramus nodi sinuatrialis

Arteria coronaria dextra

Spalteholz

Arteria coronaria sinistra

Ramus circumflexus

Ramus marginalis sinister

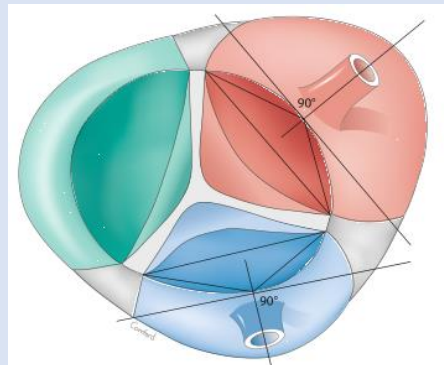
Ramus interventricularis anterior

Ramus interventricularis septalis

Ramus lateralis/diagonalis

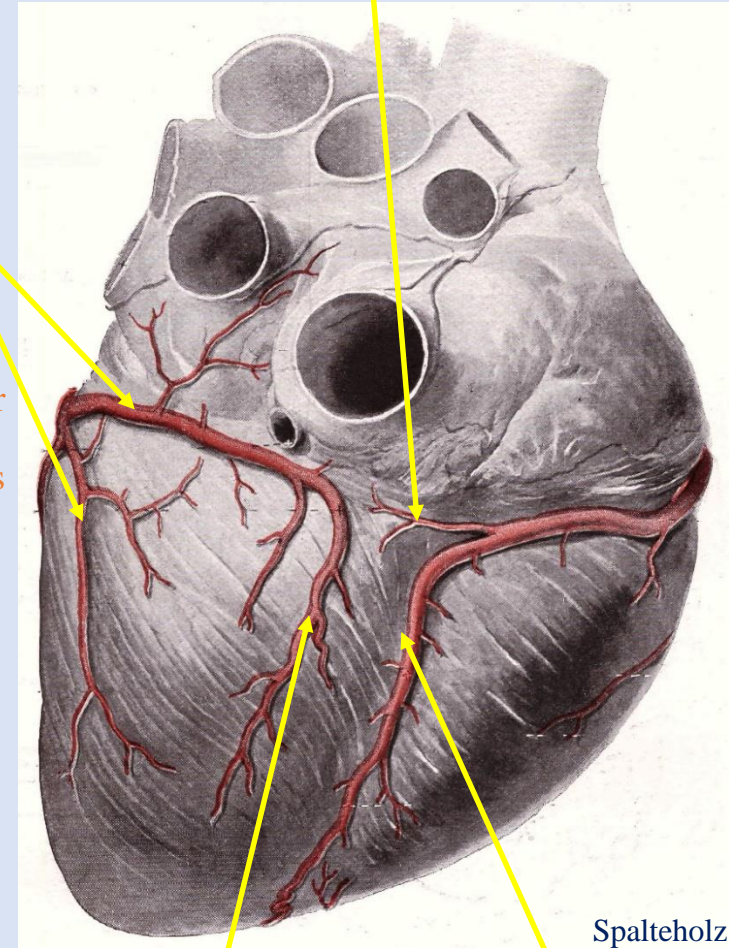
Ramus conii arteriosi

Ramus marginalis dexter



Berdajs

Ramus nodi atrioventricularis

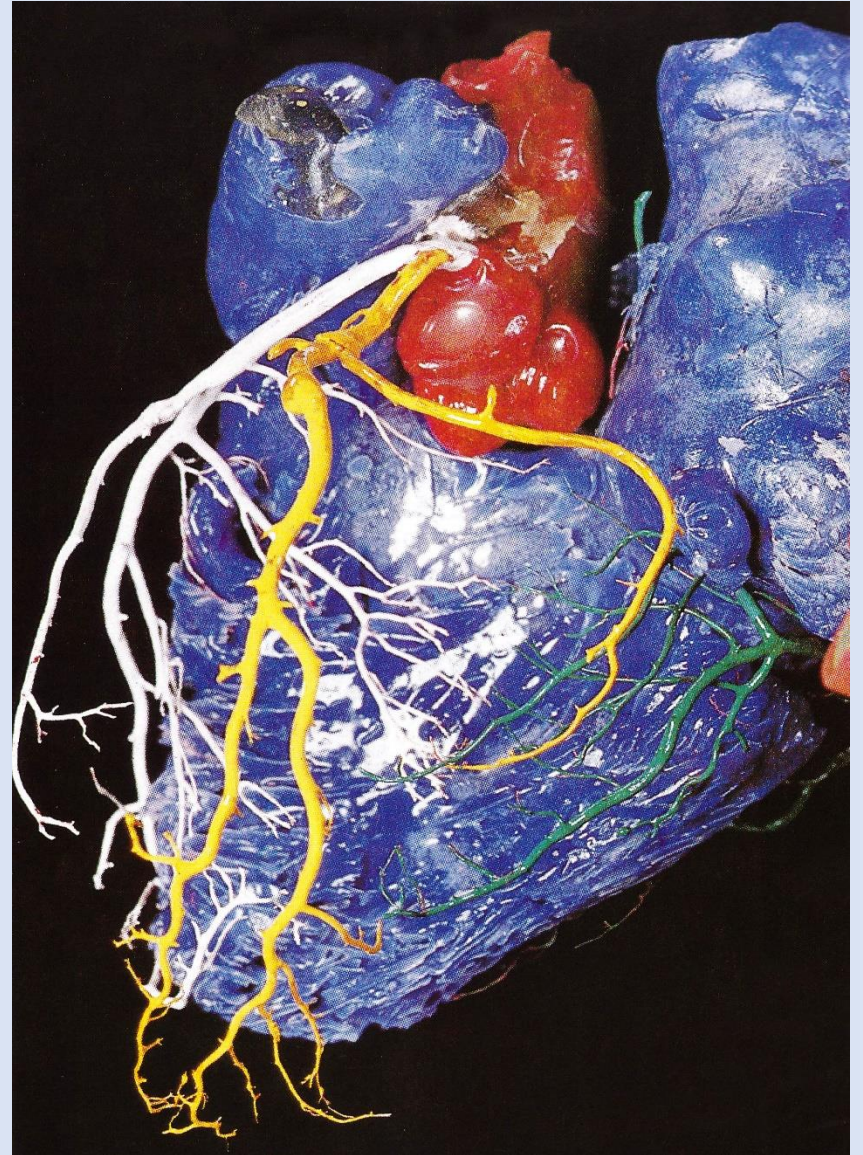
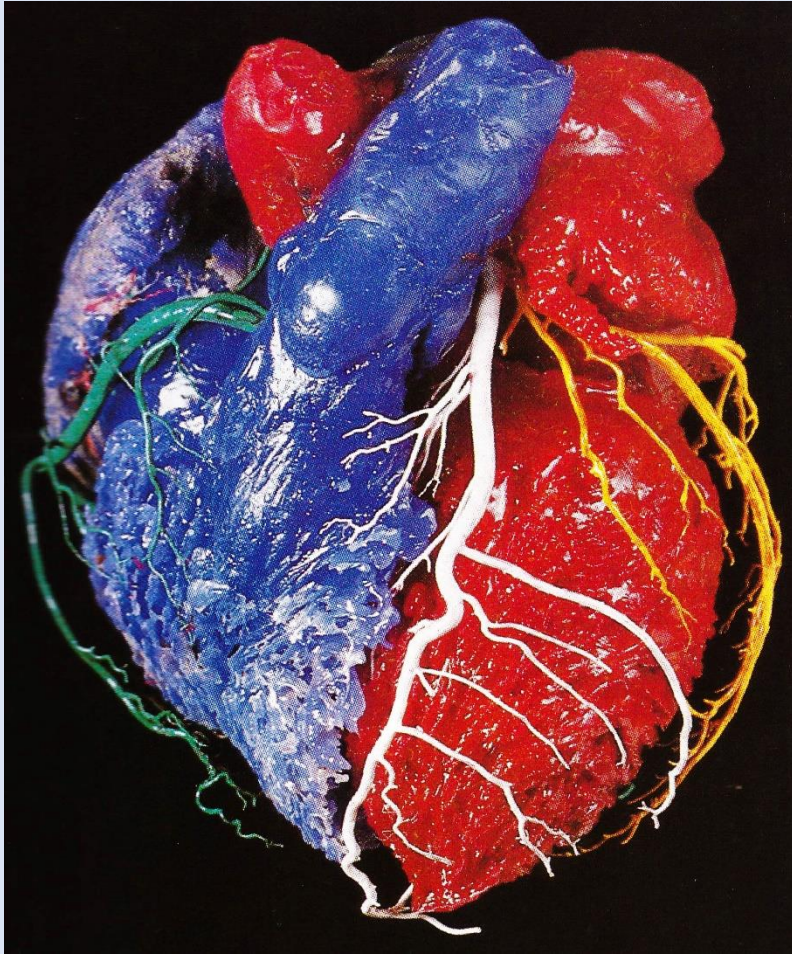


Spalteholz

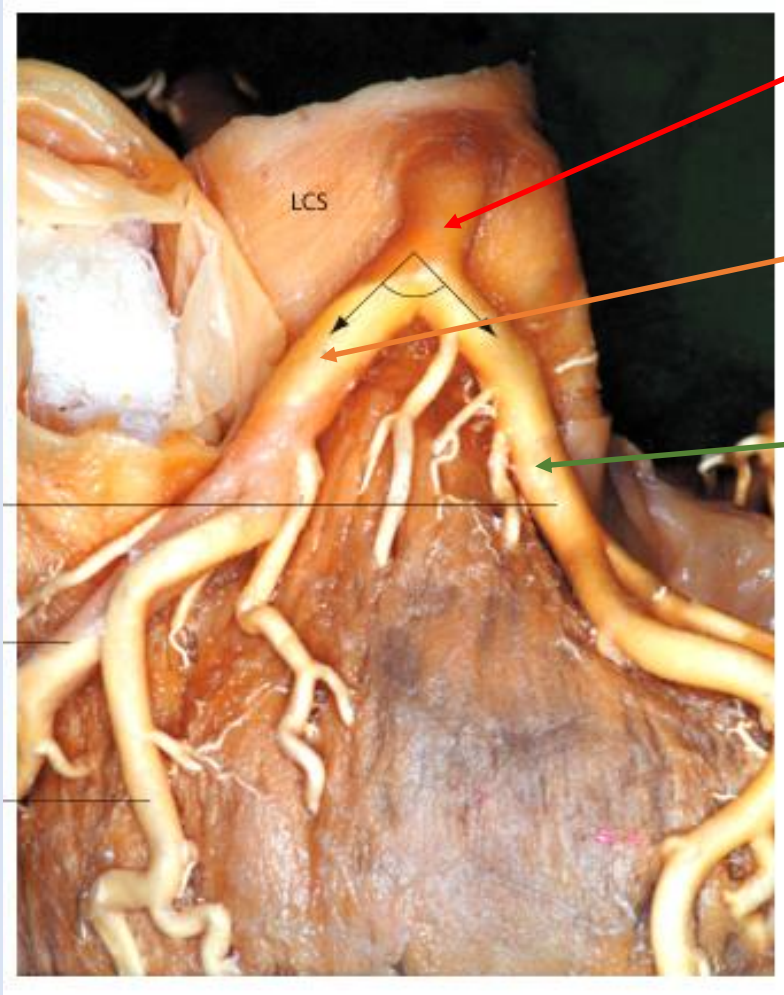
Ramus posterior ventriculi sinistri

Ramus interventricularis posterior

Herzkranzarterien



Arteria coronaria sinistra – linker Hauptstamm

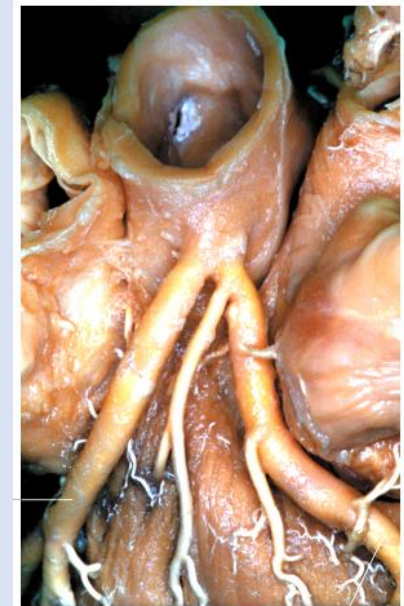
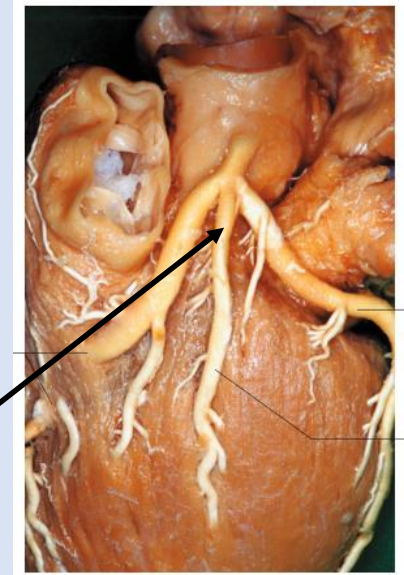


Arteria coronaria sinistra

Ramus
interventricularis
anterior

Ramus
circumflexus

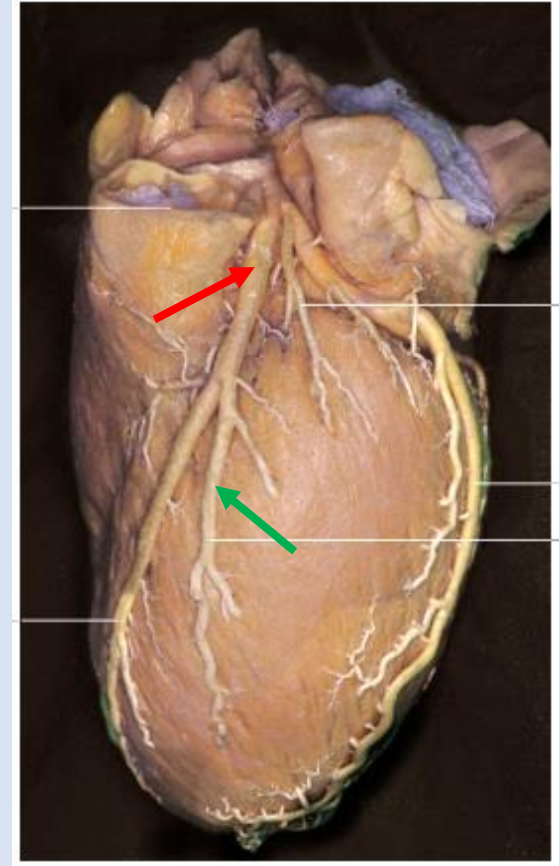
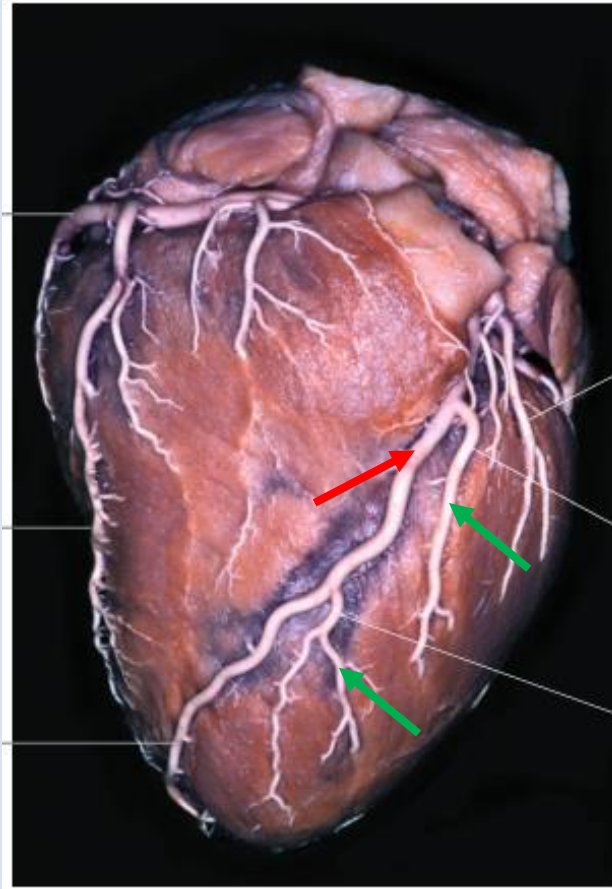
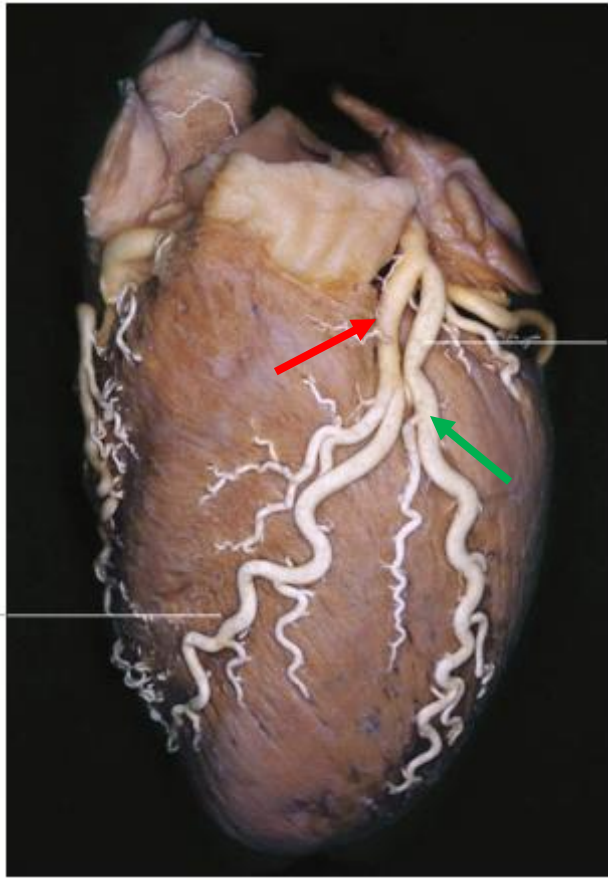
(Ramus intermedius)

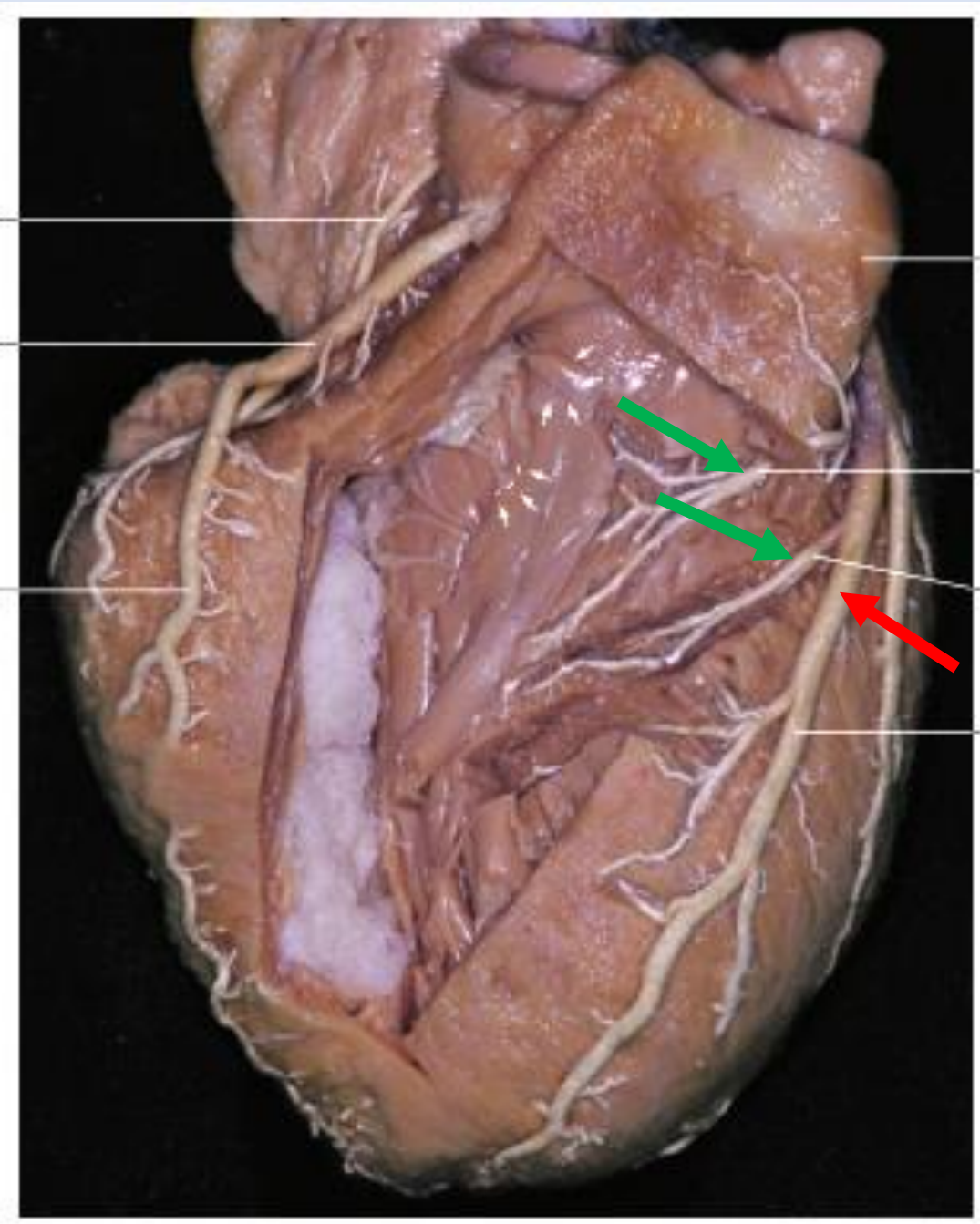


mögliche Variante:

Bifurkation – Trifurkation – getrennter Abgang

Ramus interventricularis anterior: Rami laterales/diagonales





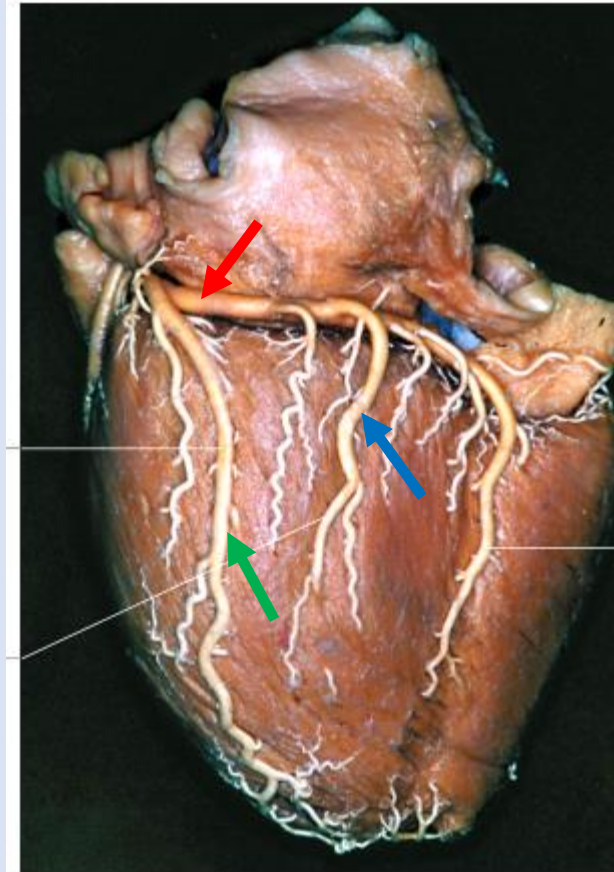
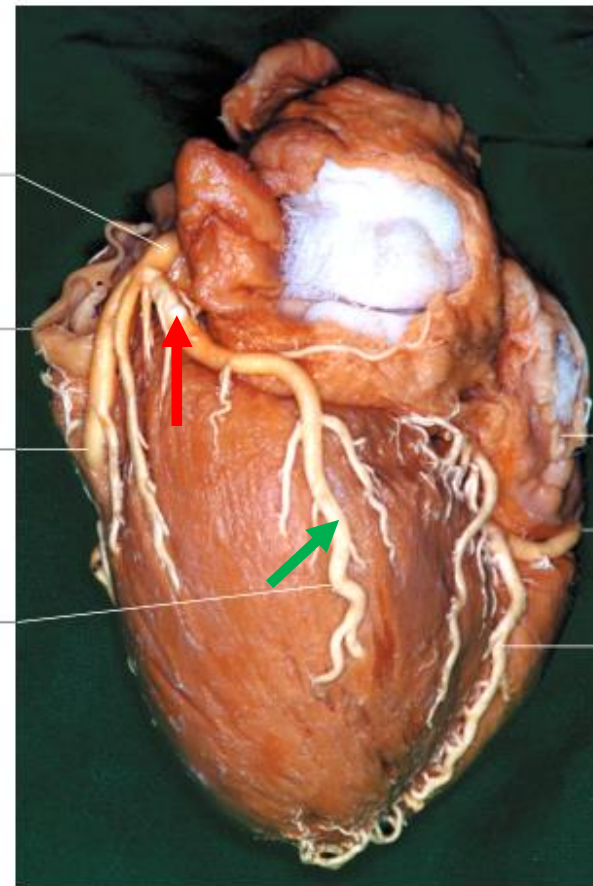
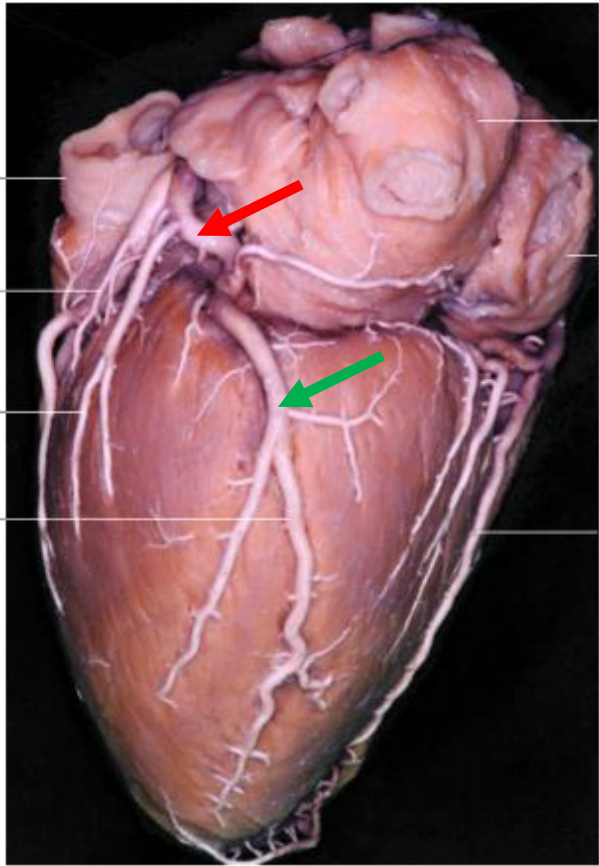
Ramus
interventricularis
anterior:

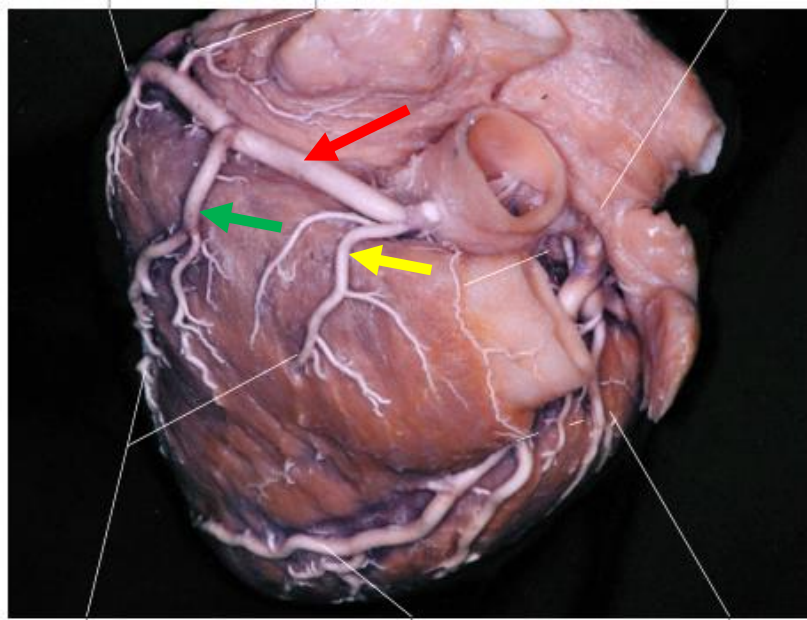
Rami
interventriculares
septales

Ramus circumflexus:

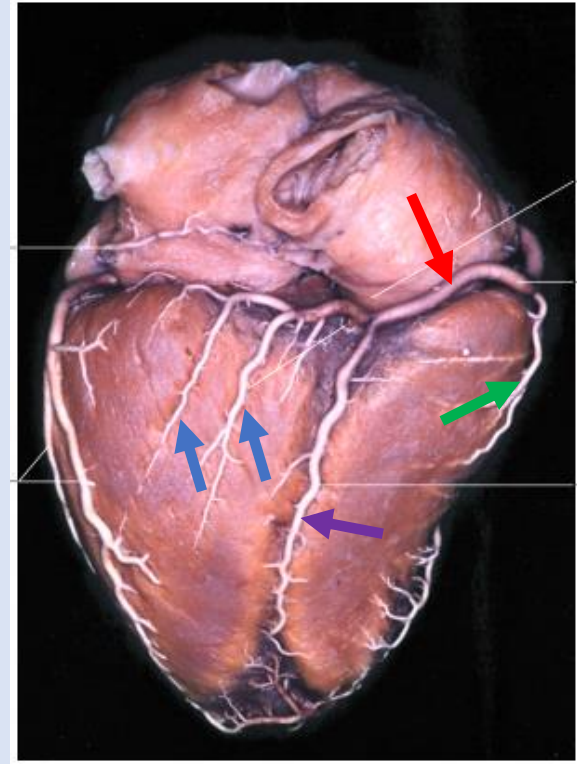
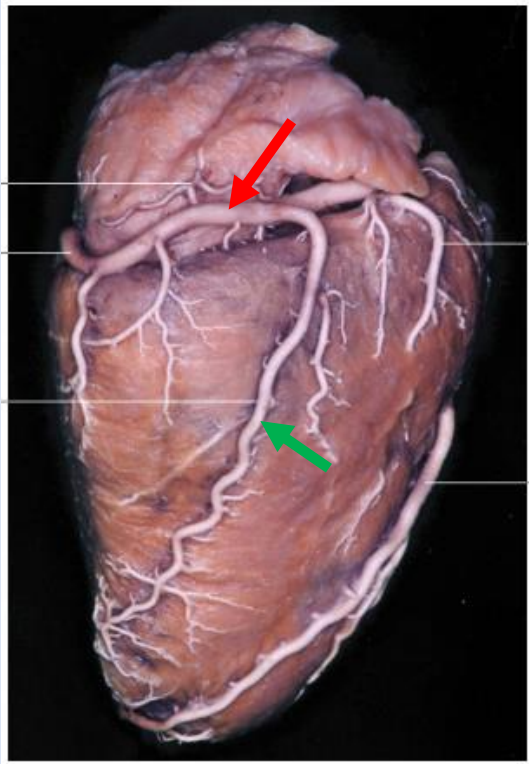
Ramus marginalis sinister,

Rami posteriores ventriculi sinistri

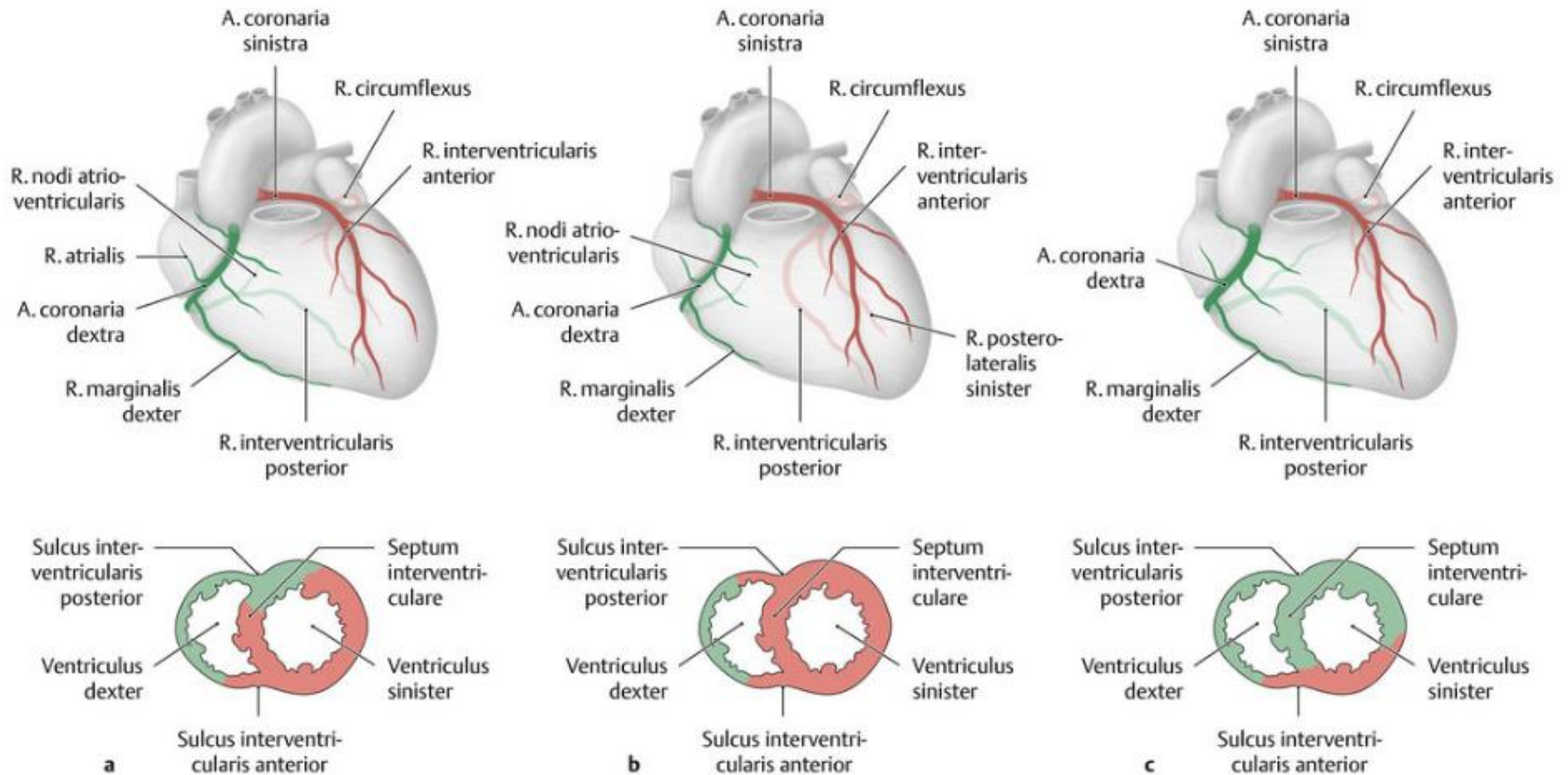




Arteria coronaria dextra:
Ramus conii arteriosi,
Ramus marginalis dexter,
Ramus interventricularis posterior,
Rami posterolaterales dextrae



Blutversorgungstypen des Herzens im Vergleich

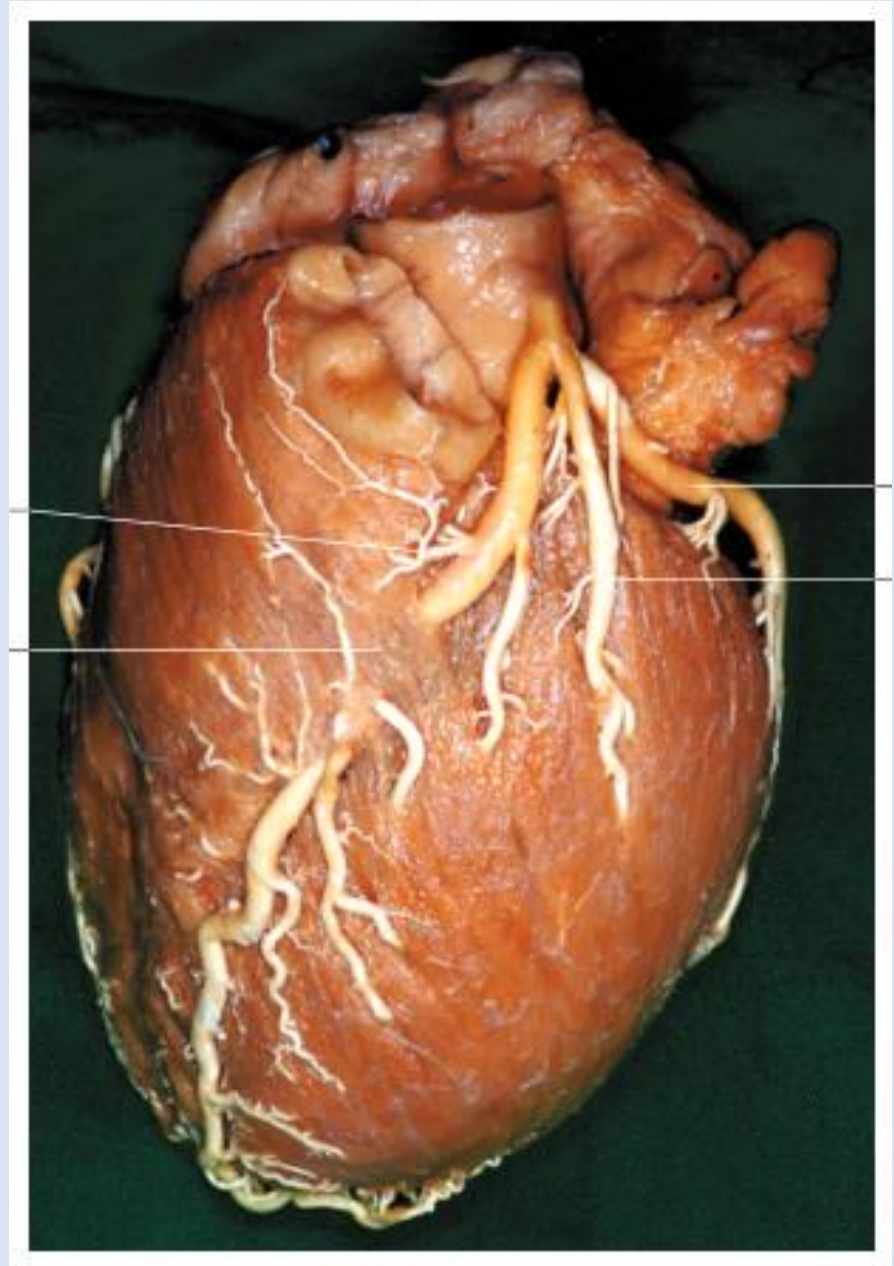
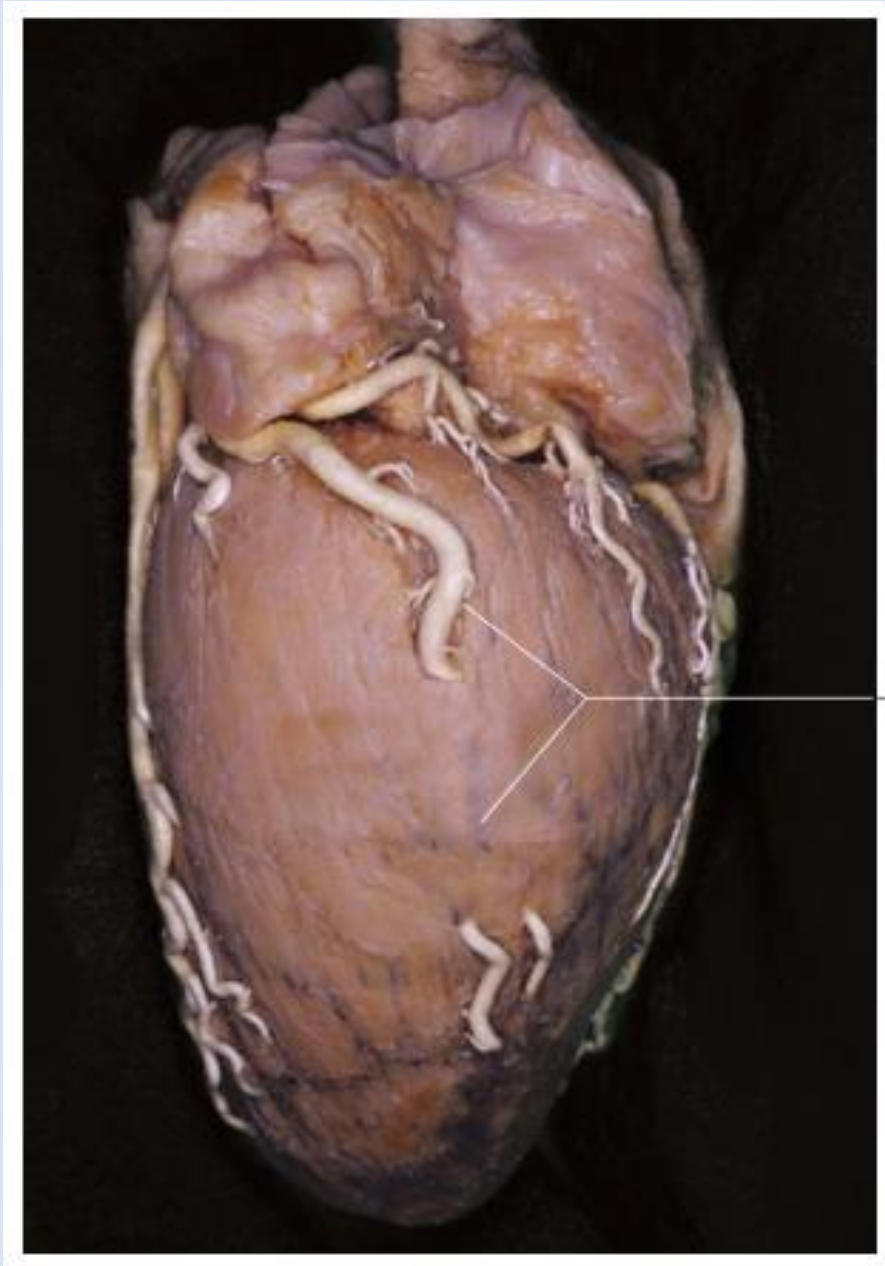


D Blutversorgungstypen des Herzens im Vergleich

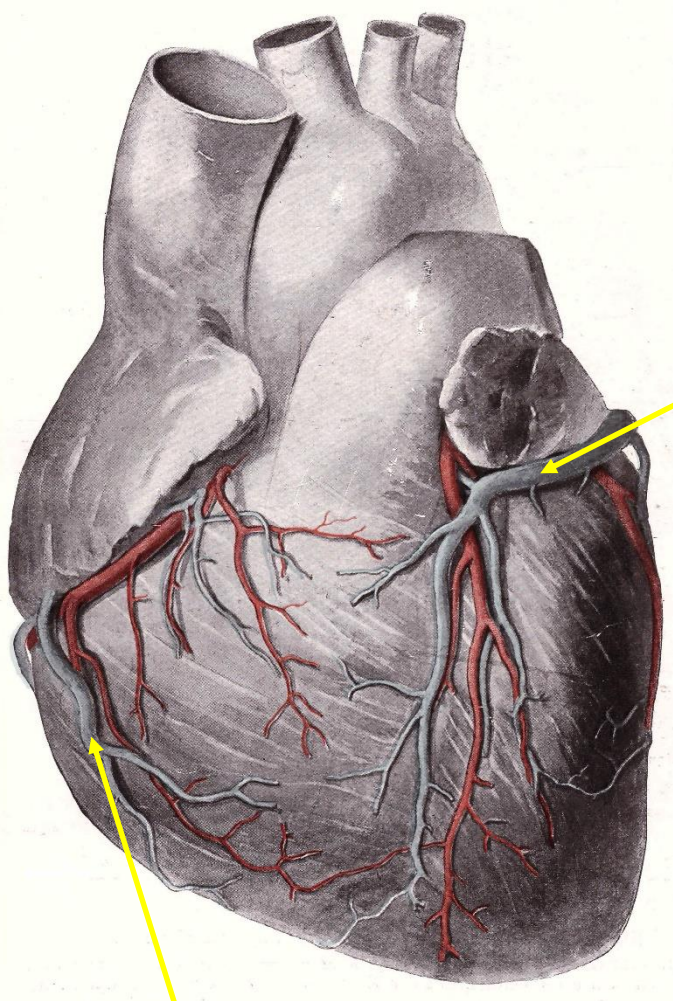
a Normalversorgungstyp (70 % der Fälle); **b** Linksversorgungstyp (15 % der Fälle); **c** Rechtsversorgungstyp (15 % der Fälle).

Dargestellt ist jeweils eine Ansicht von ventral sowie ein Querschnitt durch beide Kammern in der Ansicht von oben; linke Koronararterie und Versorgungsgebiet rot, rechte Koronararterie und Versorgungsgebiet grün.

Myokardbrücken



Vasa privata → Herzvenen



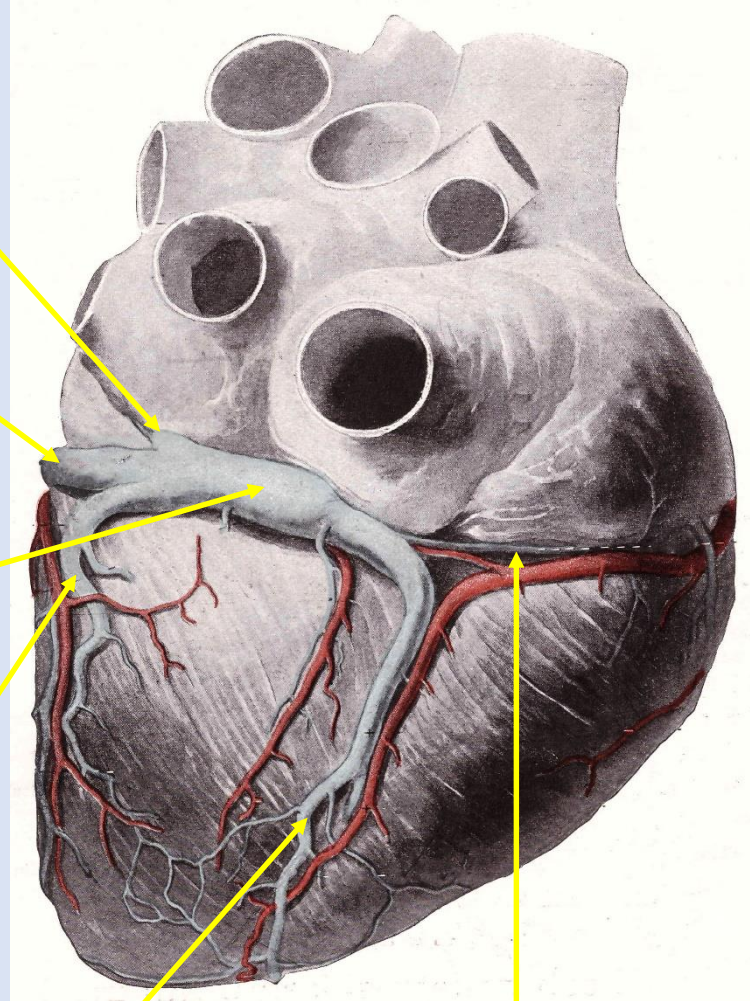
(Venae cordis anteriores)

Vena obliqua atrii sinistri (Marschall-Vene)

Vena cordis magna

Sinus coronarius

Vena ventriculi sinistri posterior

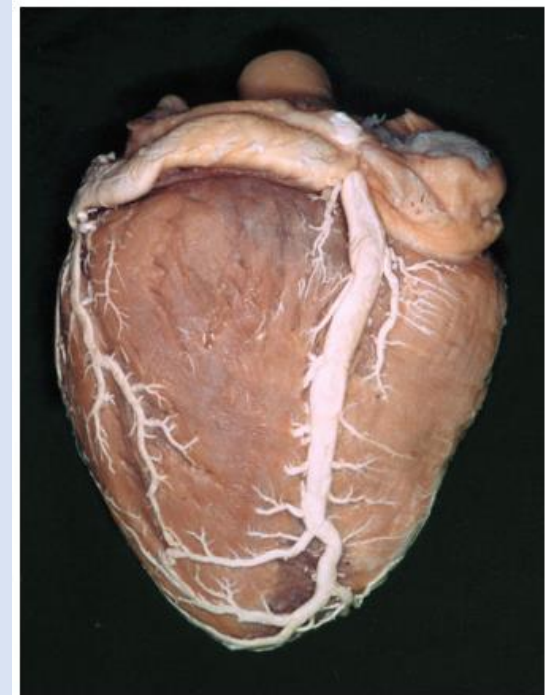
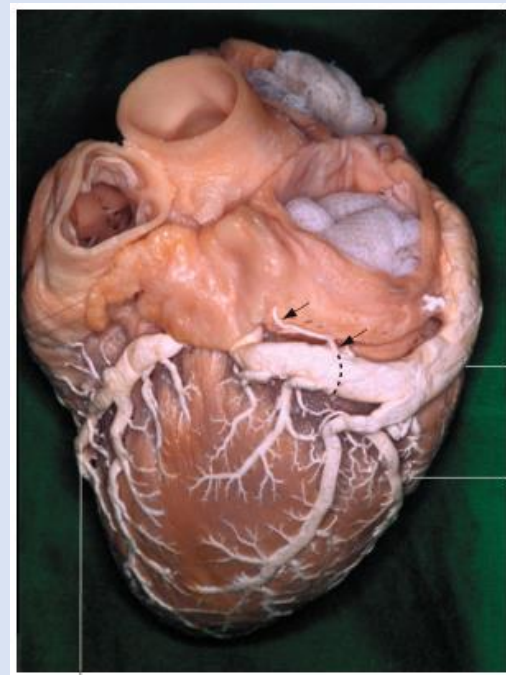
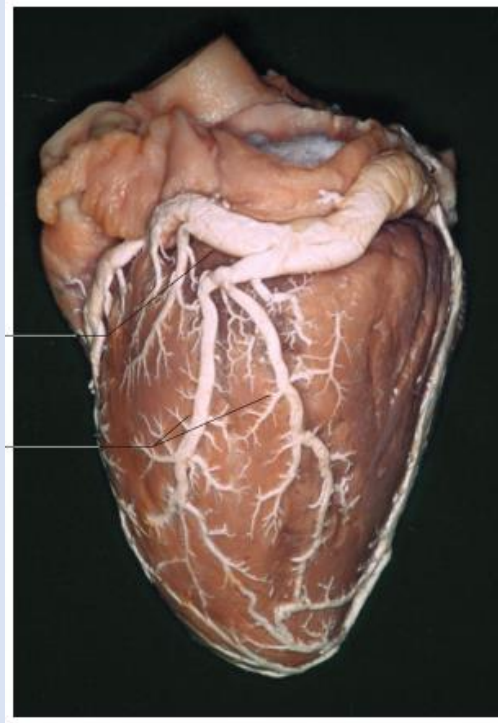
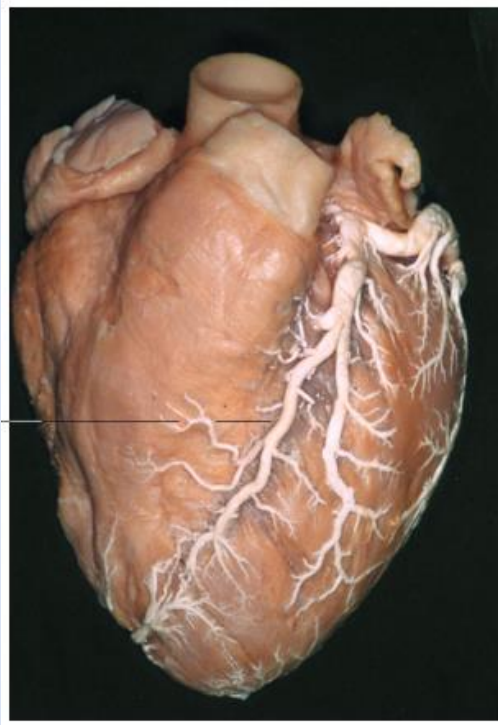


Vena cordis media

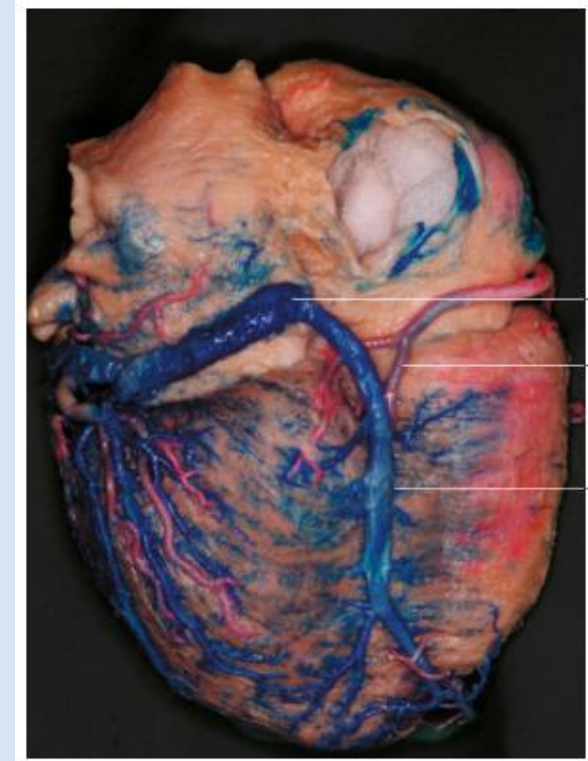
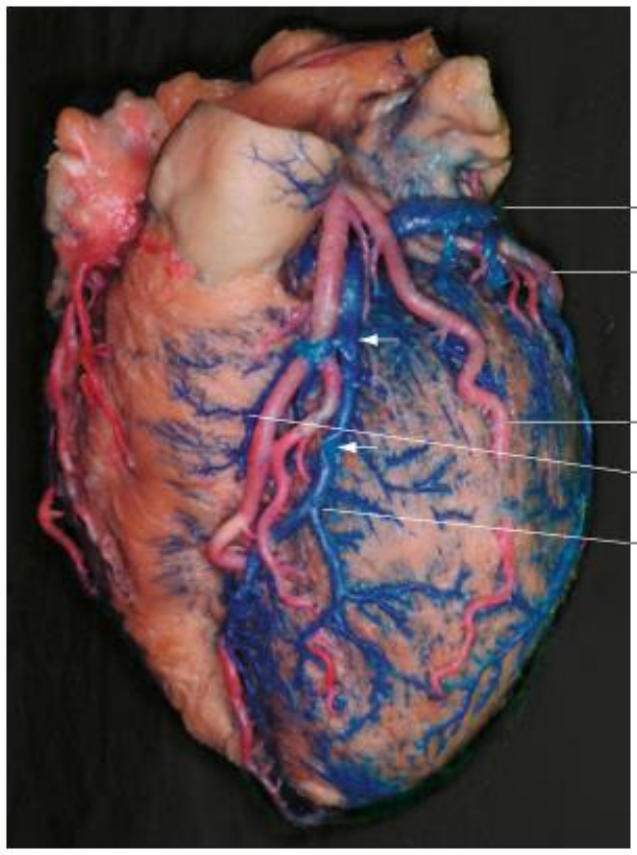
Vena cordis parva

+ Venae cordis minimae

Vasa privata → Herzvenen



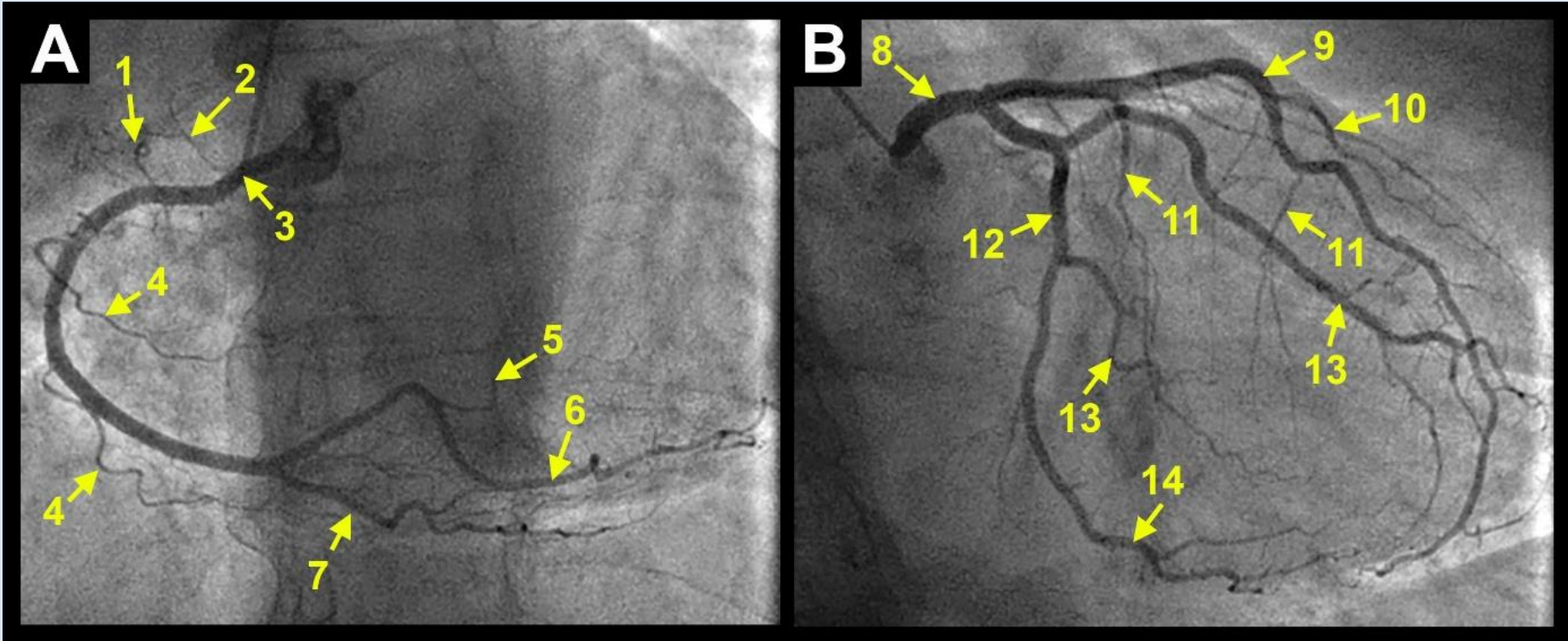
Herzvenen und Herzkranzarterien



Koronarangiografie

rechte Herzkranzarterie

linke Herzkranzarterie



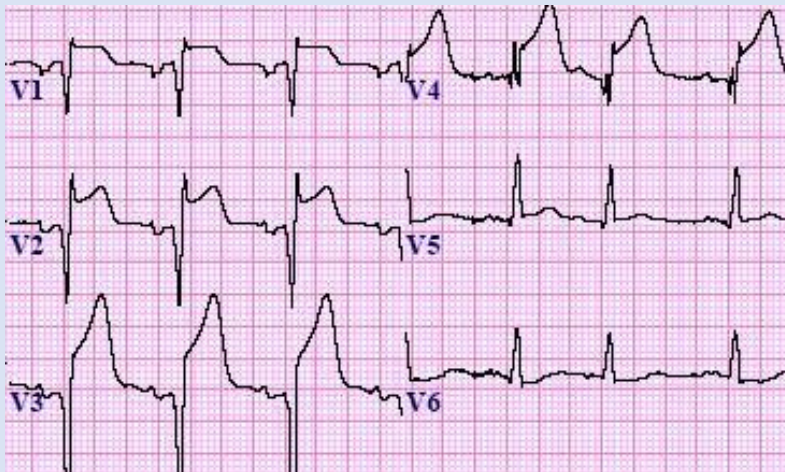
Zala Megyei Szent Rafael Krankenhaus

1: Ramus nodi sinuatrialis; **2:** Ramus coni arteriosi, **3:** Arteria coronaria dextra,
4: Rami marginales dextrae, **4:** Ramus interventricularis posterior, **5:** Ramus nodi atrioventricularis,
6: Ramus posterolateralis dexter, **7:** Ramus interventricularis posterior

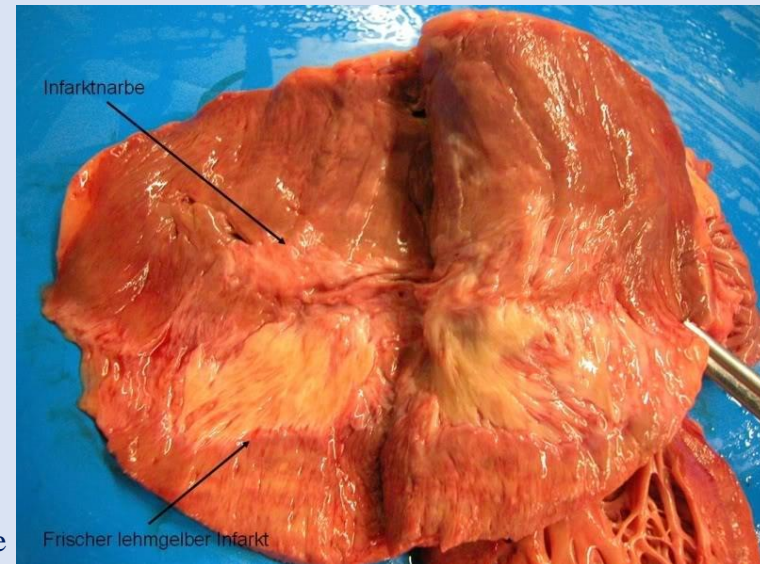
8: Arteria coronaria sinistra, **9:** Ramus interventricularis anterior, **10:** Ramus lateralis,
11: Rami interventriculares septales, **12:** Ramus circumflexus, **13:** Rami marginales sinistrae,
14: Ramus interventricularis posterior

Herzinfarkt

Frank C. Müller, Baden-Baden



<https://www.healio.com>



<http://www.mikroskopie-forum.de>

Interventionelle Versorgung einer Koronarstenose

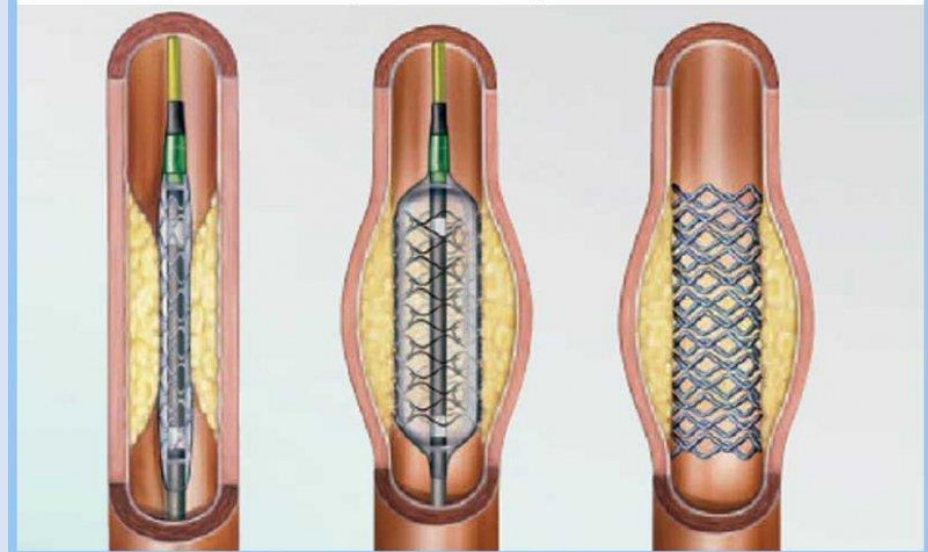
<http://www.kardiologie-luedenscheid.de>



<https://www.ndr.de>



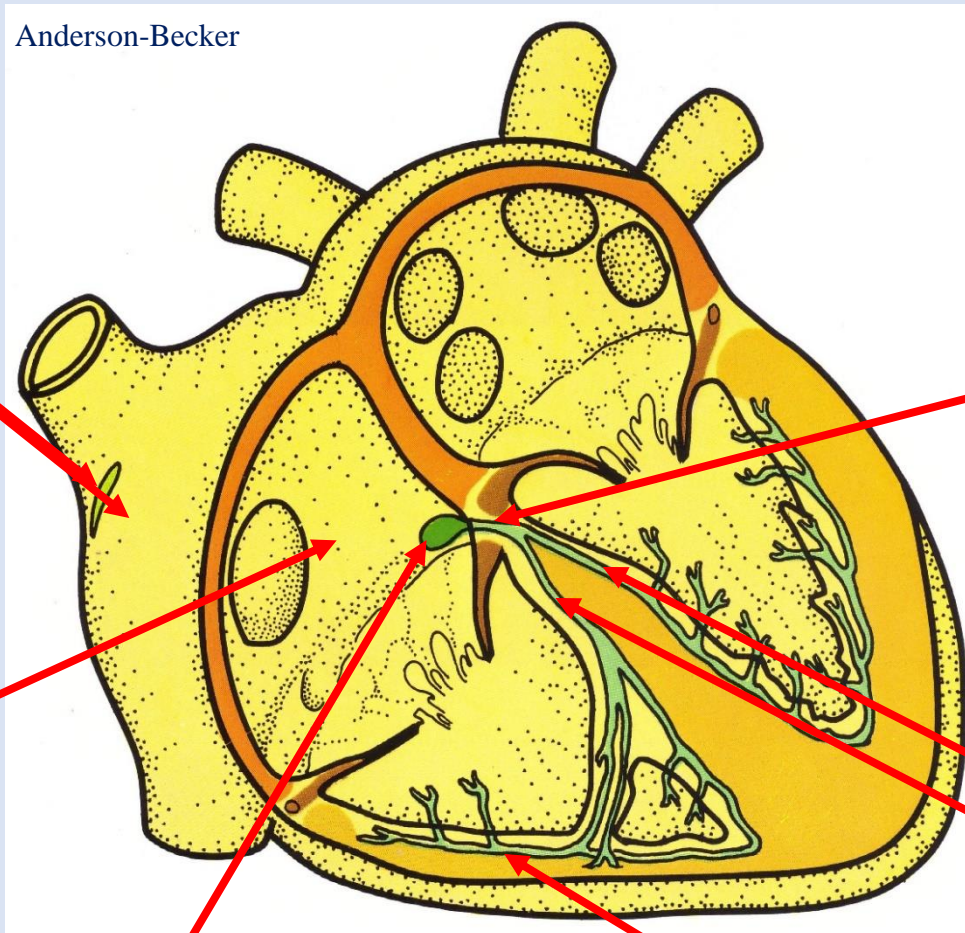
Schematische Darstellung einer Stentimplantation



<http://www.auw-media.de>

<http://www.kardiologie-peine.de>

Erregungsbildung- und Erregungsleitungssystem



Sinusknoten
- Nodus sinuatrialis
(Keith-Flack-Knoten)

Myokard des
rechten Vorhofs

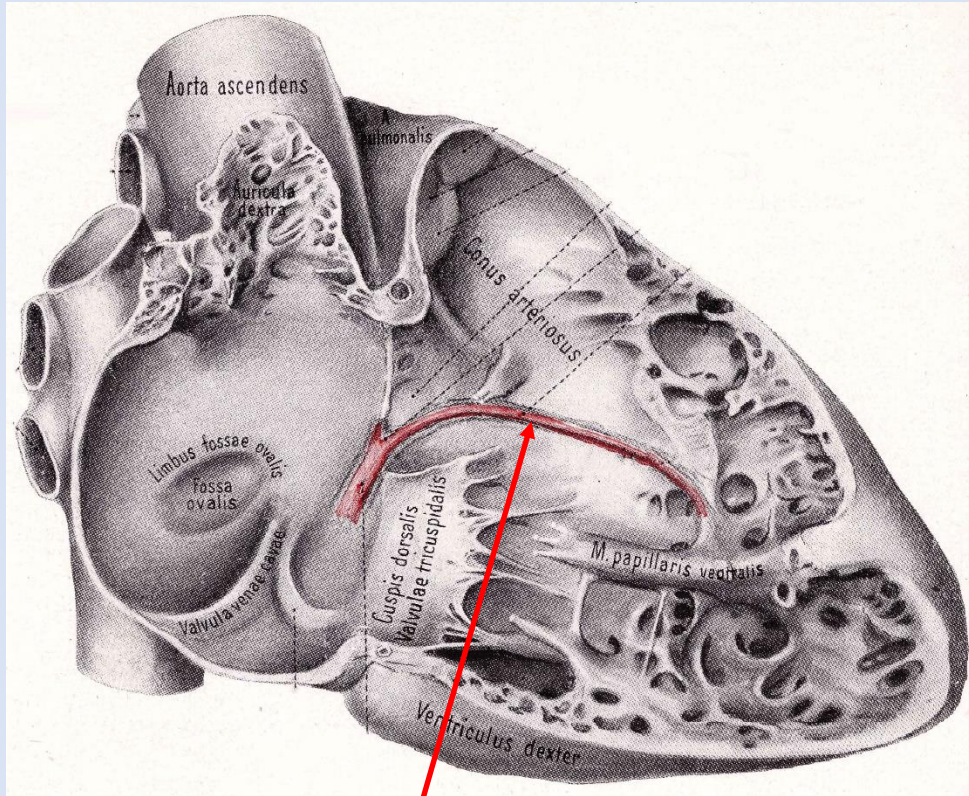
Atrioventrikularknoten
- Nodus atrioventricularis
(Aschoff-Tawara-Knoten)

Atrioventrikularbündel
- Fasciculus
atrioventricularis
(His-Bündel)

Rechter und linker
Kammerschenkel
- Crus sinistrum
- Crus dextrum
(Tawara-Schenkel)

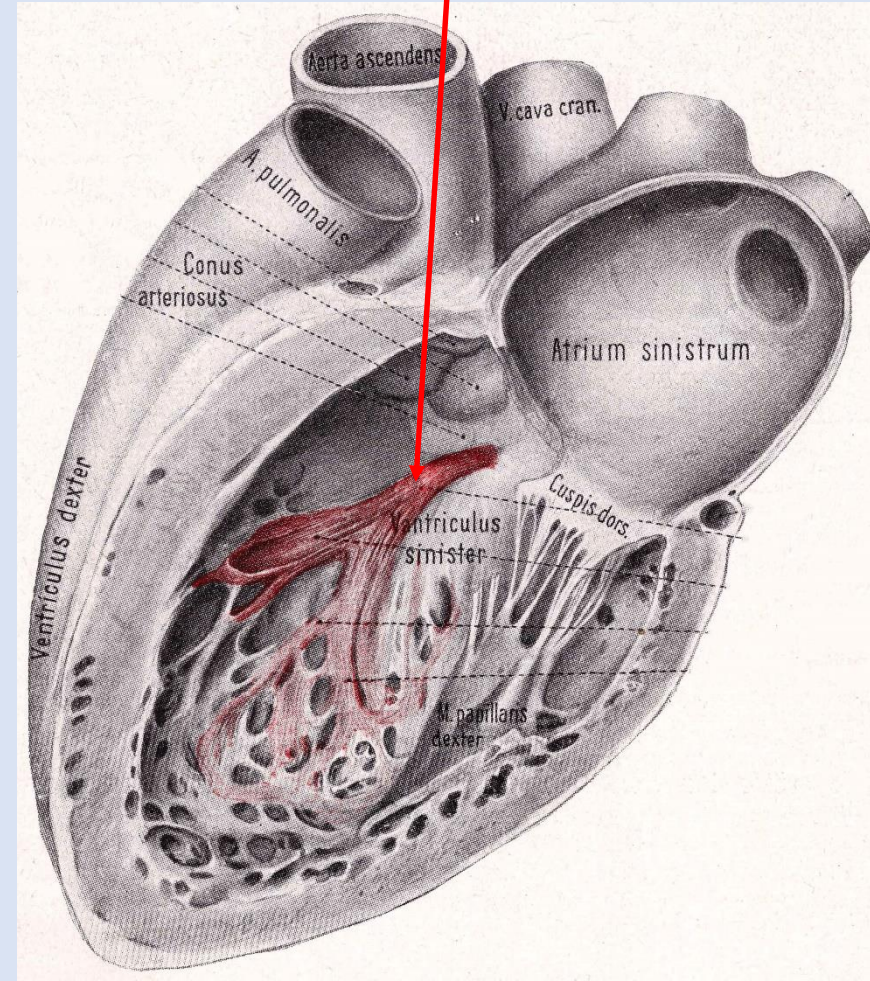
Rami subendocardiales
(Purkinje-Fasern)

Erregungsleitungssystem

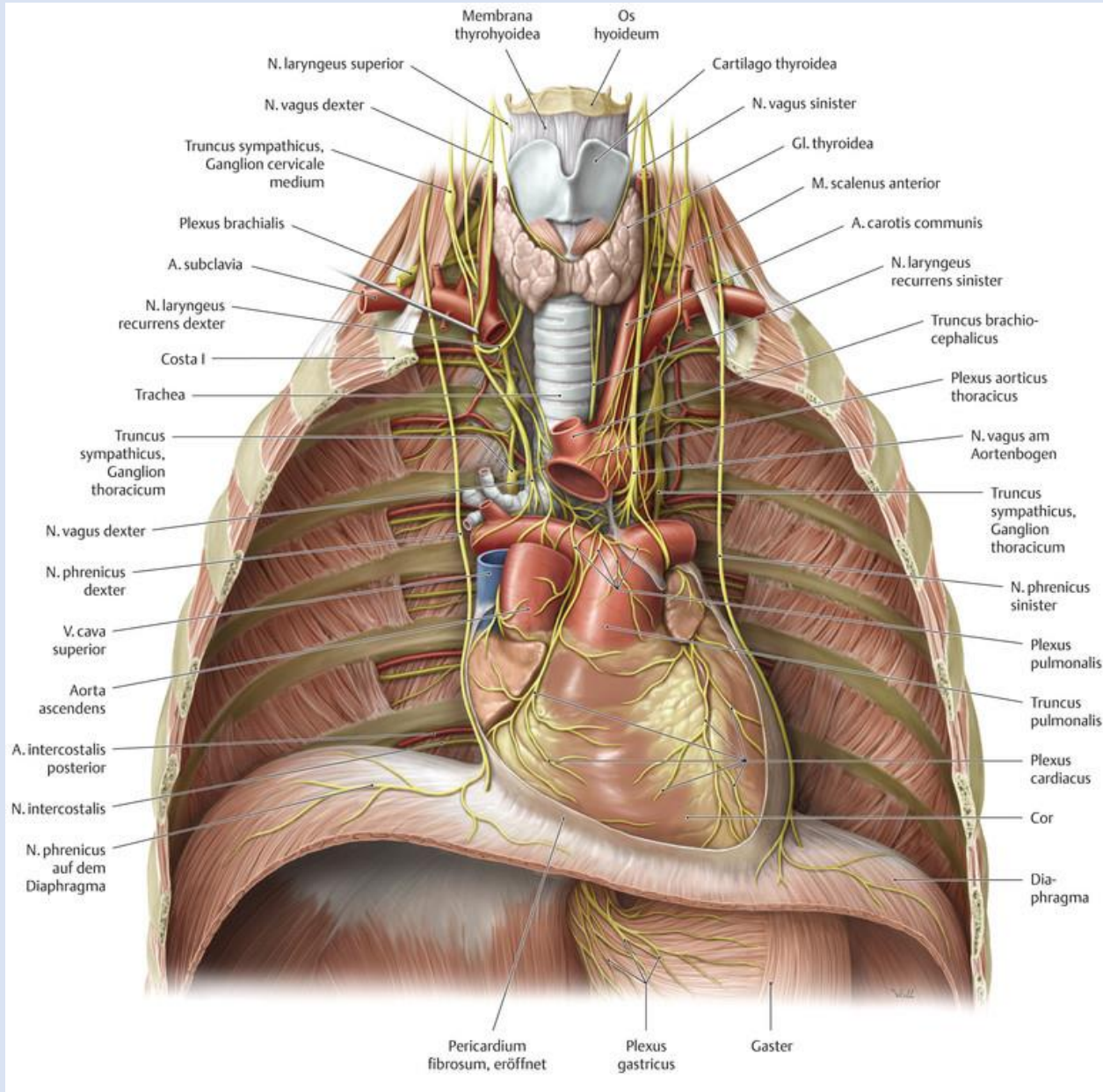


rechter Tawara-Schenkel

linker Tawara-Schenkel



Extrakardiale Innervation



Parasympathisch:

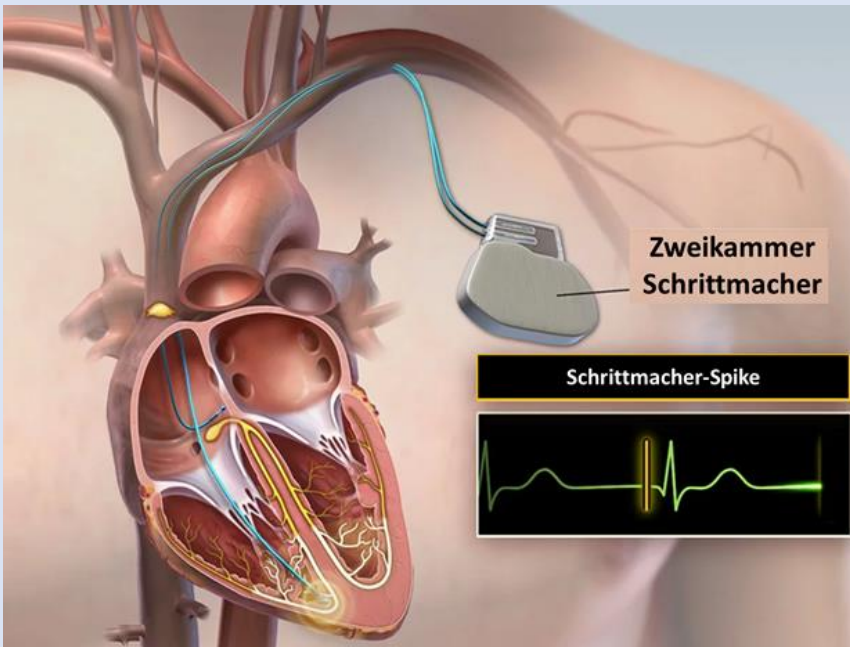
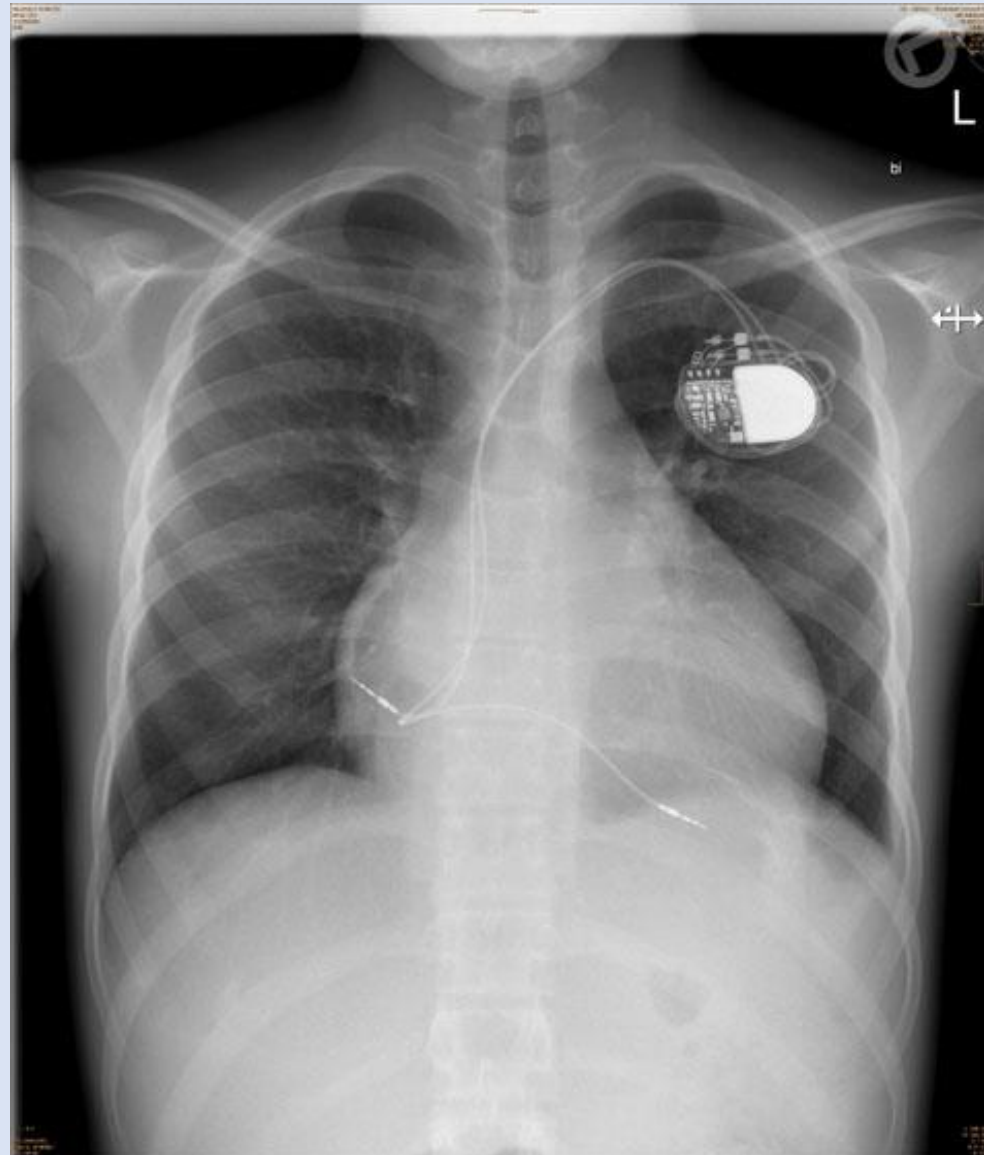
→ Nervus vagus (N. X.)

Sympathisch:

→ Truncus sympathicus
(zervikale Ganglien)

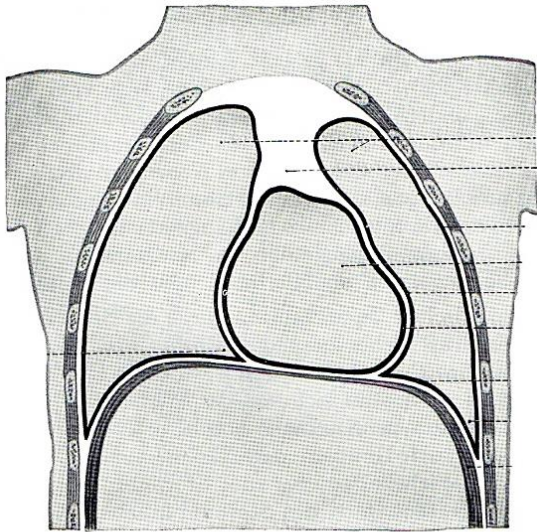
Herzschrittmacher

<http://www.dr-antretter.at>



<http://www.osypka-herzzentrum-muenchen.de>

Perikard



Das Perikard ist ein der großen serösen Häute (Perikard, Pleura, Peritoneum).

Es besteht aus 2 Blättern:

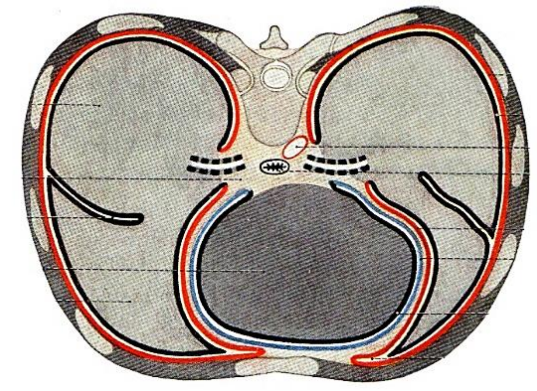
a) Lamina parietalis pericardii / Pericardium parietale

→ 2 Schichten: äußere fibröse + innere seröse

b) Lamina visceralis pericardii / Pericardium viscerale = **Epikard**

Zwischen a) und b): Cavum pericardii

In dem Cavum pericardii: Liquor pericardii (ca. 50 ml, seröse Flüssigkeit)



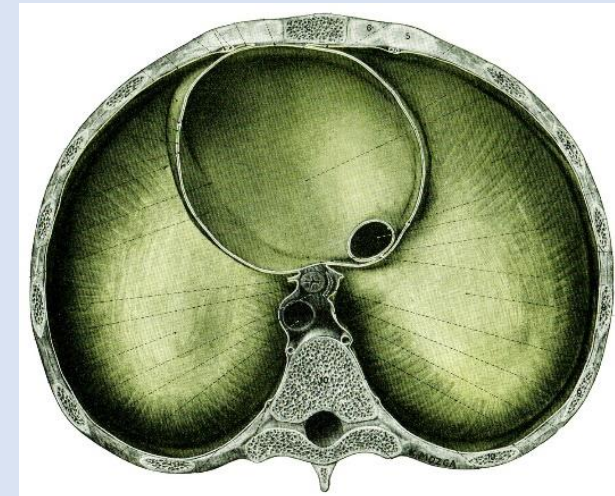
Perikarderguss, Herzbeutel tamponade!!!

Perikard

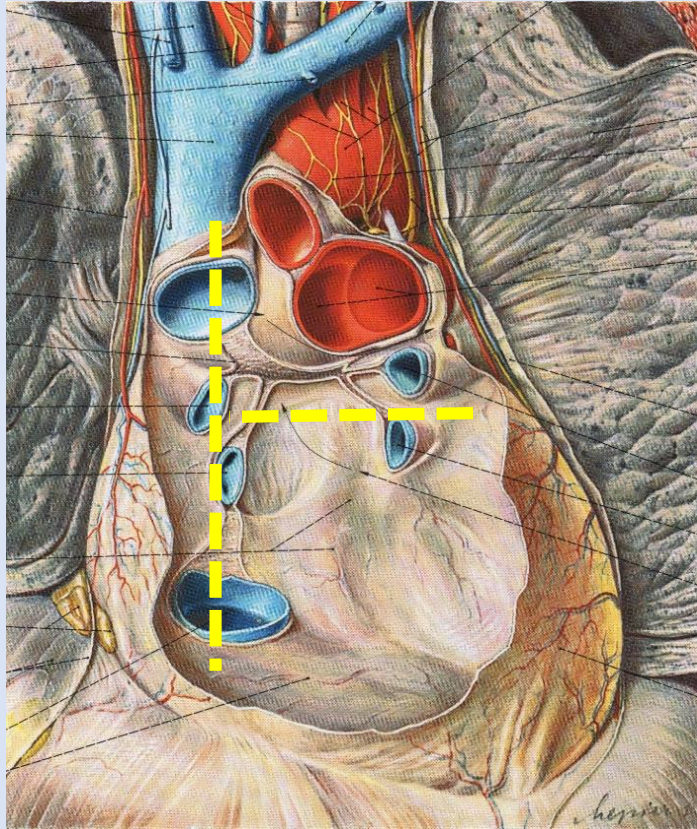
Es ist zu seiner Umgebung durch die fibröse Schicht des parietalen Blattes straffer befestigt:

- Ligg. sternopericardiaca (zum Brustbein)
- Centrum tendineum (zum Zwerchfell)
- Porta arteriosa (arterielle Umschlagstelle)
- Porta venosa (venöse Umschlagstelle)
- Lig. tracheopericardiacum (zur Luftröhre)

Spatium pleuromediastinale (N. phrenicus, A. et V. pericardiocophrenica)

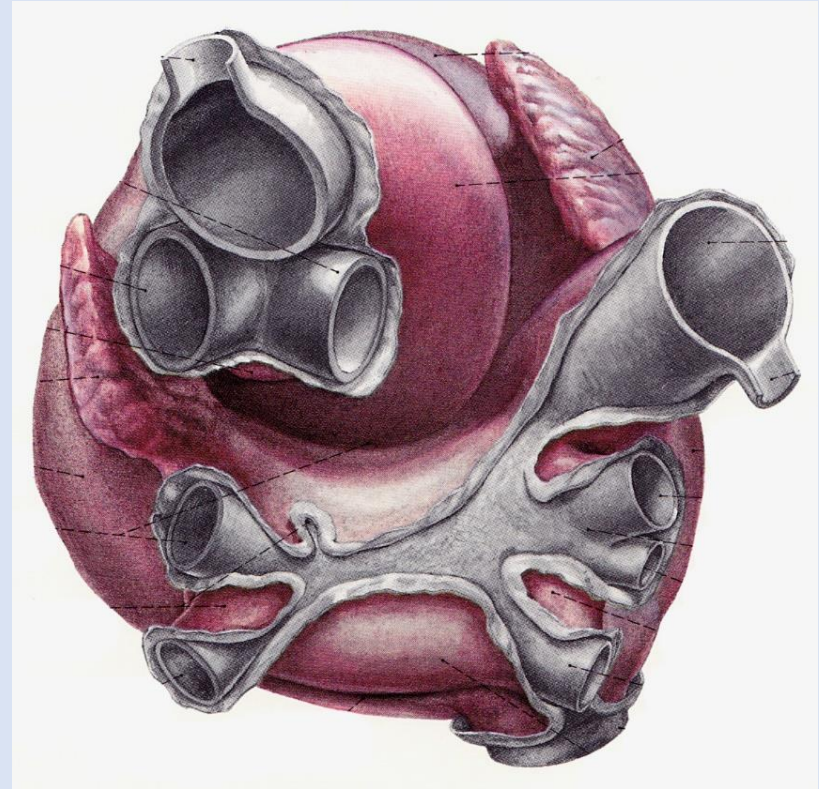


Umschlagstellen des Perikards



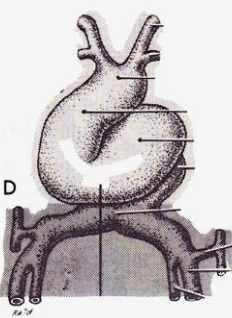
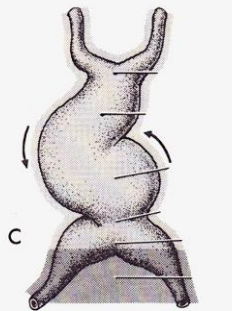
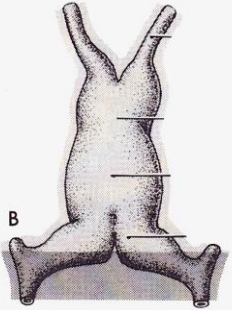
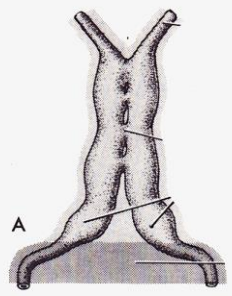
Sobotta

Sappey
„T“

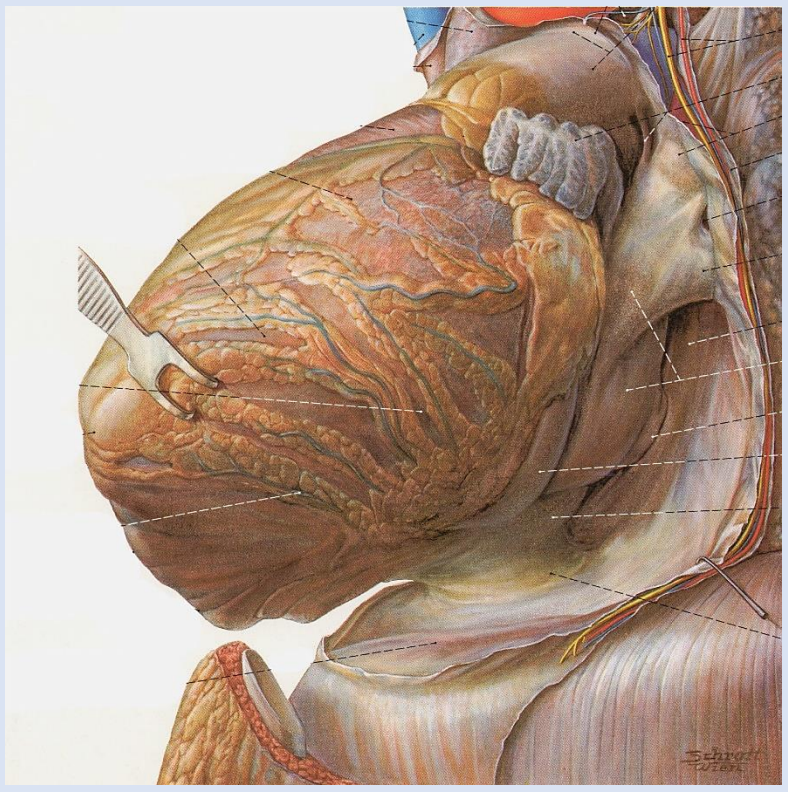


Pernkopf

Sinus pericardii

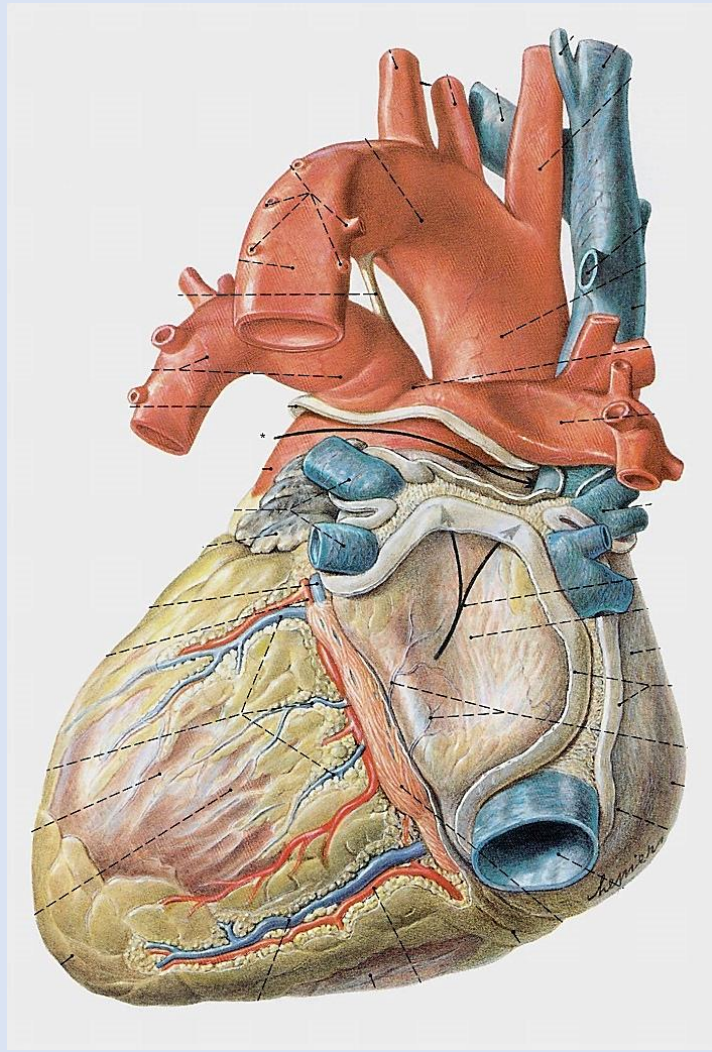


Pernkopf



Sinus obliquus pericardii

Sinus transversus pericardii



Sobotta

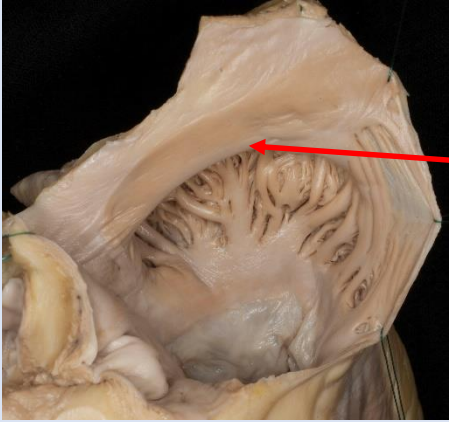
Sinus transversus pericardii



Sinus obliquus pericardii



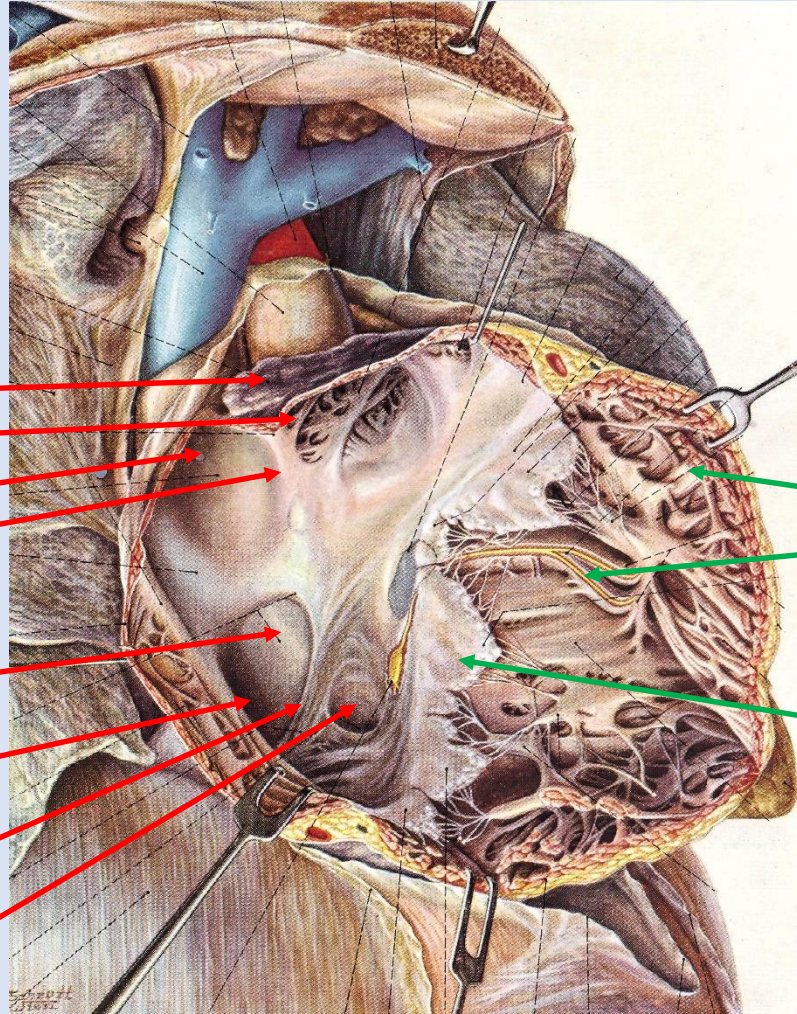
Das rechte Herz



Crista terminalis

Rechter Vorhof:

- Auricula dextra
- Musculi pectinati
- Vena cava superior
- Crista terminalis
- Septum interatriale
- Fossa ovalis
- Limbus fossae ovalis
- Vena cava inferior
- Valvula venae cavae inf.
(→Eustach)
- Ostium sinus coronarii
- Valvula sinus coronarii
(→Thebesius)

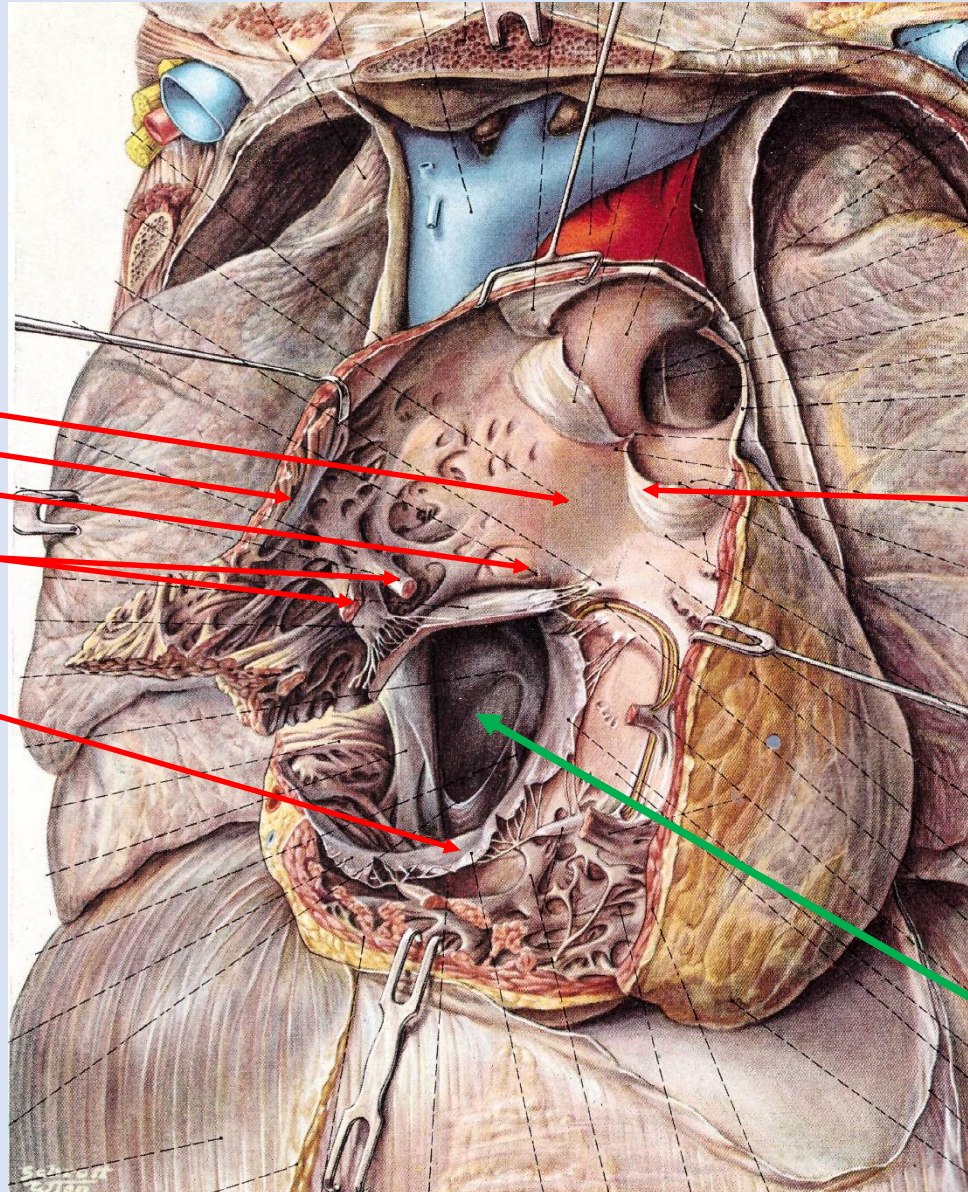


Rechter Ventrikel:

- Trabeculae carneae
- Trabecula septomarginalis
- Crista supraventricularis
- Valva tricuspidalis

Pernkopf

Das rechte Herz



Rechter Ventrikel:

Infundibulum

Trabeculae carneae

Crista supraventricularis

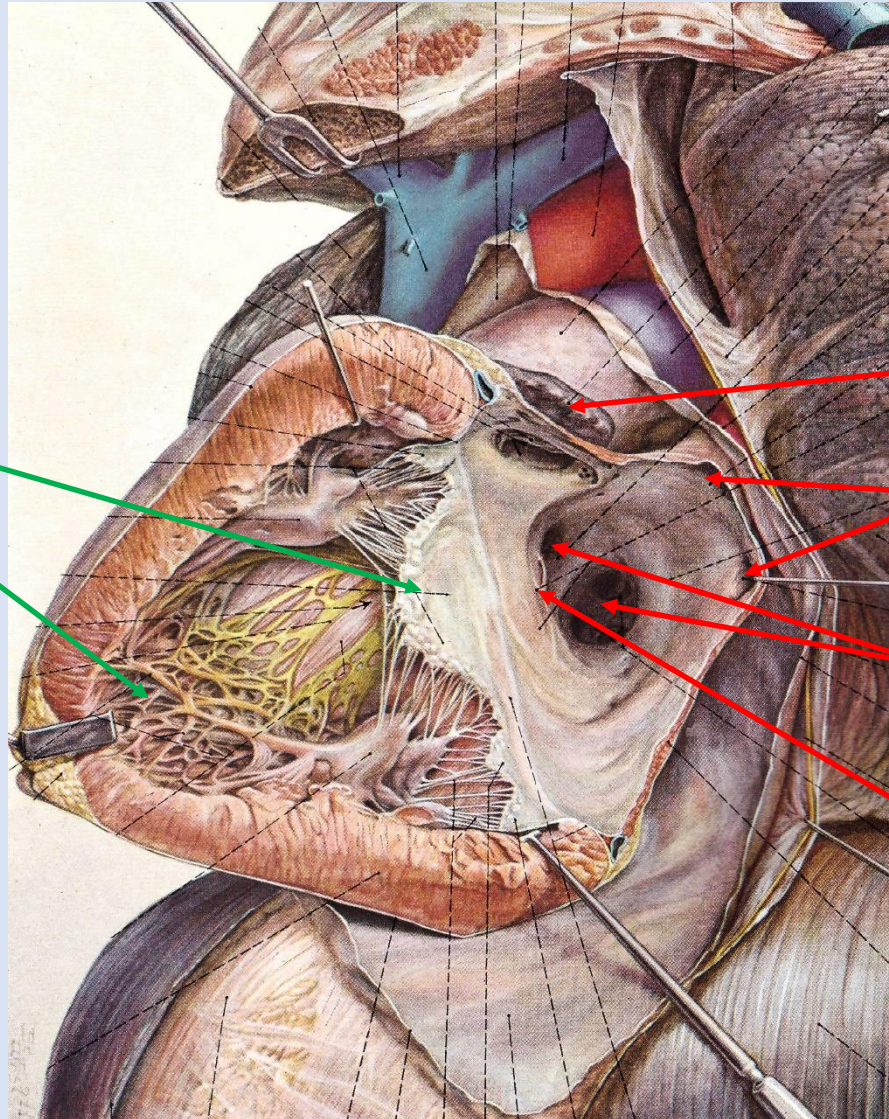
Trabecula septomarginalis

Valva tricuspidalis

Valva trunci
pulmonalis

Rechter Vorhof

Das linke Herz



Linker Ventrikel:

Valva mitralis

Trabeculae carneae

Linker Vorhof:

Auricula sinistra

Vena pulmonales sinistrae

Venae pulmonales dextrae

Septum interatriale

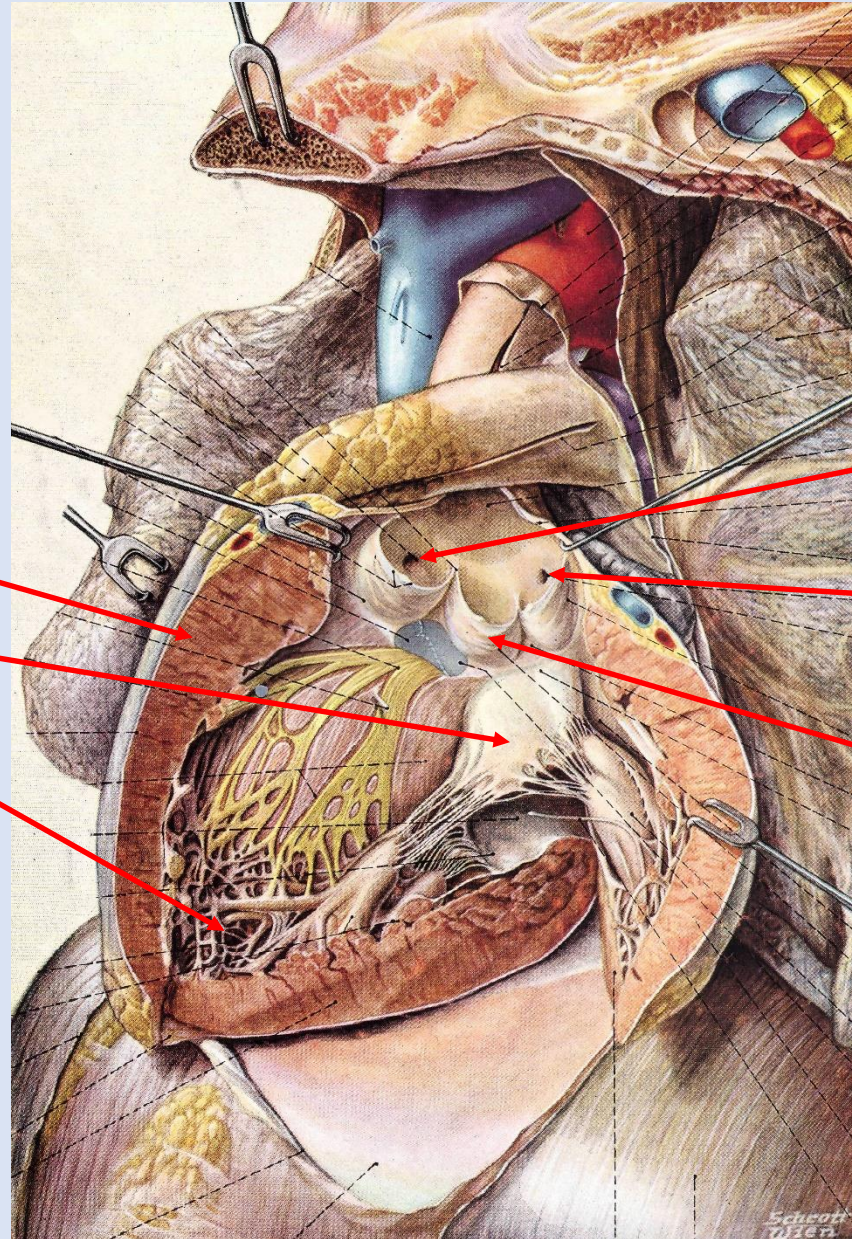
Das linke Herz

Linker Ventrikel:

Myokard

Valva mitralis

Trabeculae carneae



Arteria coronaria
dextra

Arteria coronaria
sinistra

Valva aortae

Mediastinum: zwischen beiden Lungen freigehaltener Mittelfellraum

Mediastinum~

~ **posterius**

(*V. azygos/hemiazygos, Aorta thoracica, Oesophagus, Ductus thoracicus, Nn. vagi, N. laryngeus recurrens, Truncus sympathicus, interkostale Strukturen*)

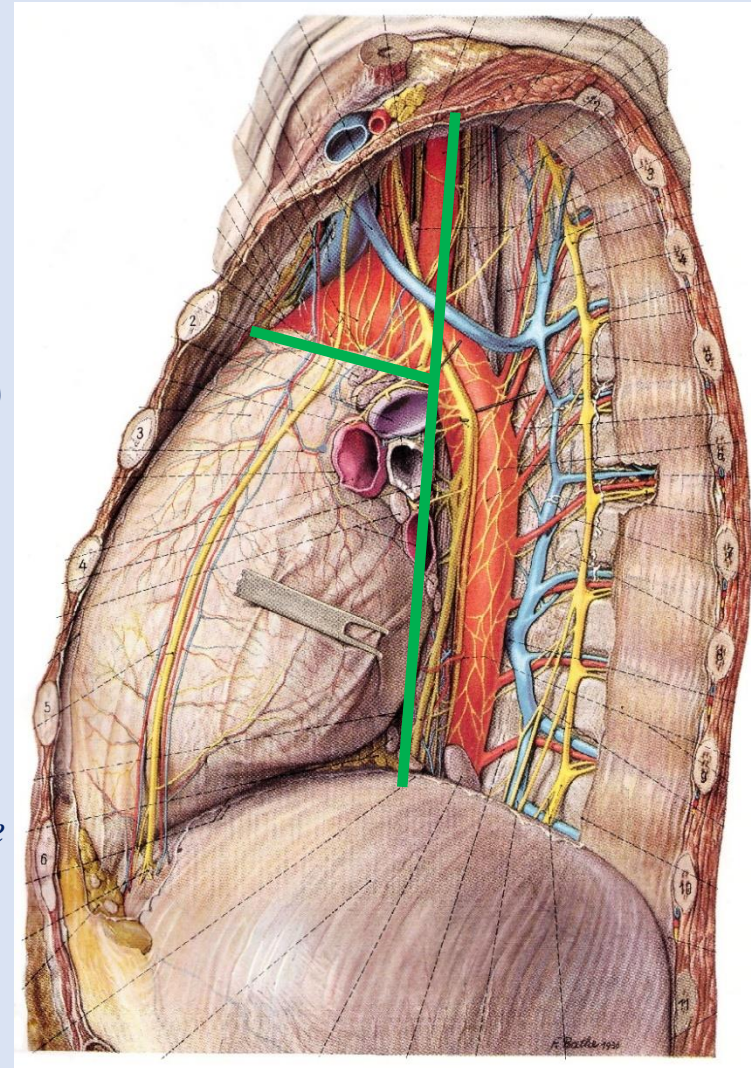
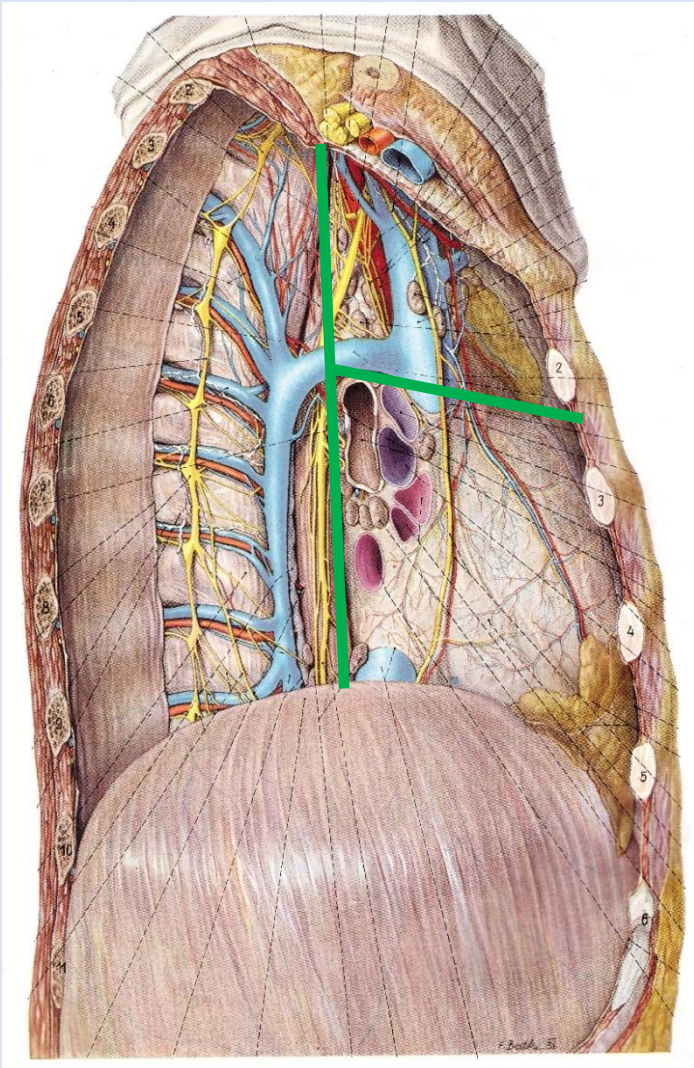
~ **anterior**

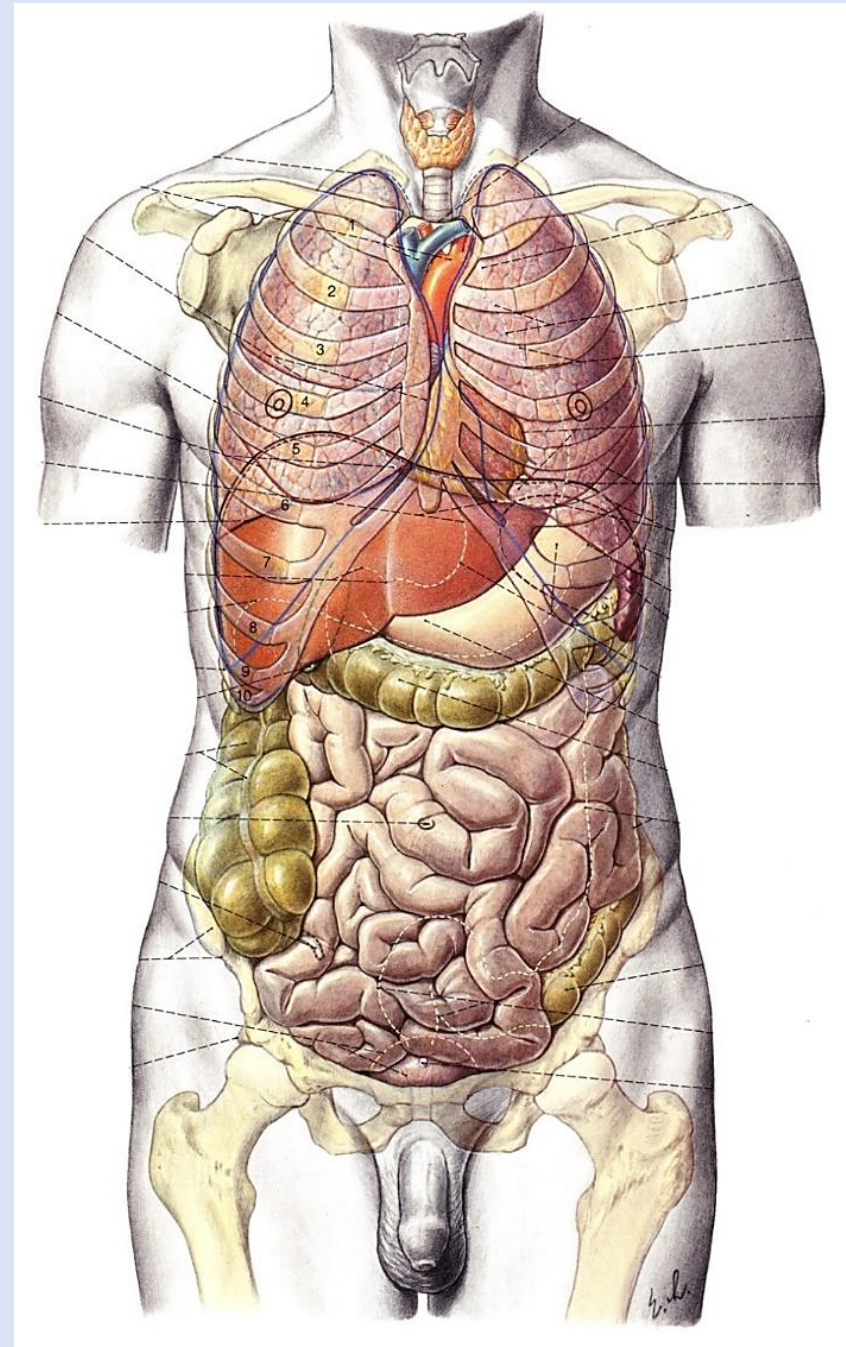
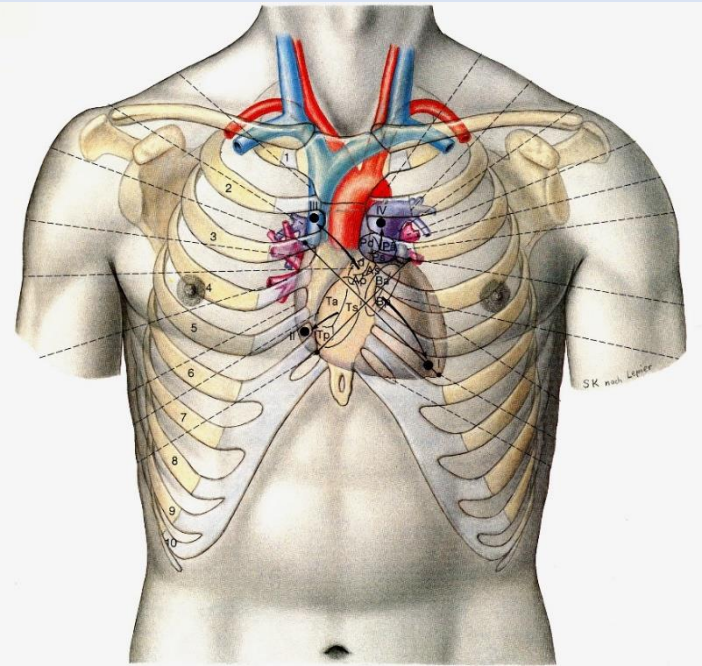
→ supracardiacum

(*Thymus, Vv. Brachiocephalicae, V. cava superior, Arcus aortae und seine Äste, Arteriae pulmonales, Trachea, Nn. Phrenici, Nn. vagi*)

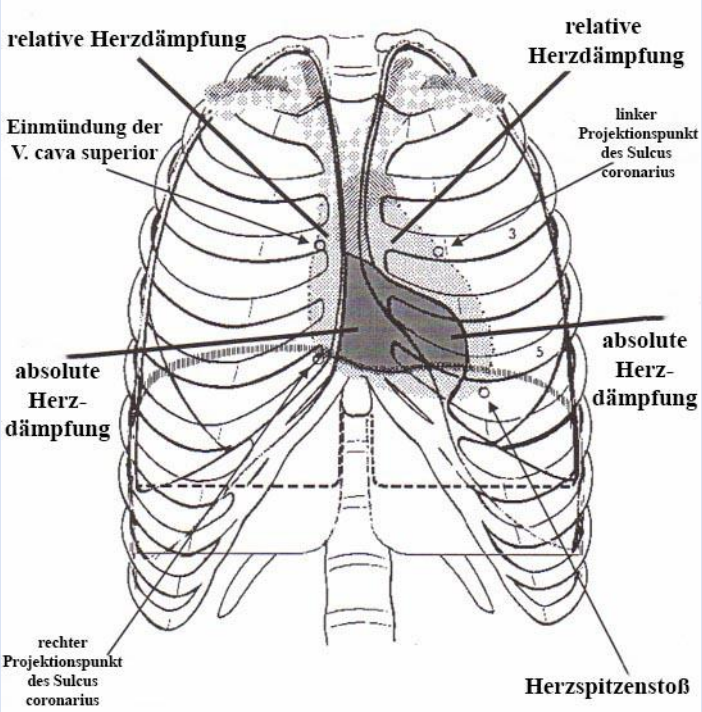
→ cardiacum

(*Herz*)

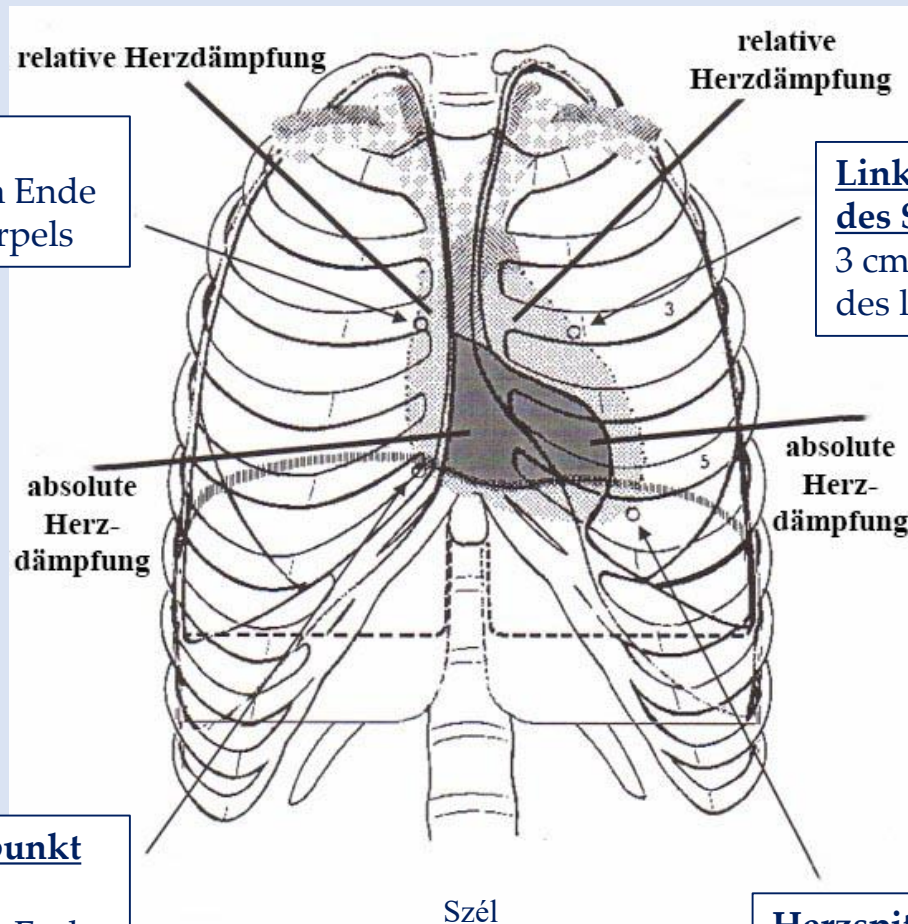




Situs cordis



Situs cordis



Einmündung der VCS:

2 cm rechts vom sternalen Ende
des rechten 3. Rippenknorpels

Linker Endprojektionspunkt des Sulcus coronarius:

3 cm vom sternalen Ende
des linken 3. Rippenknorpels

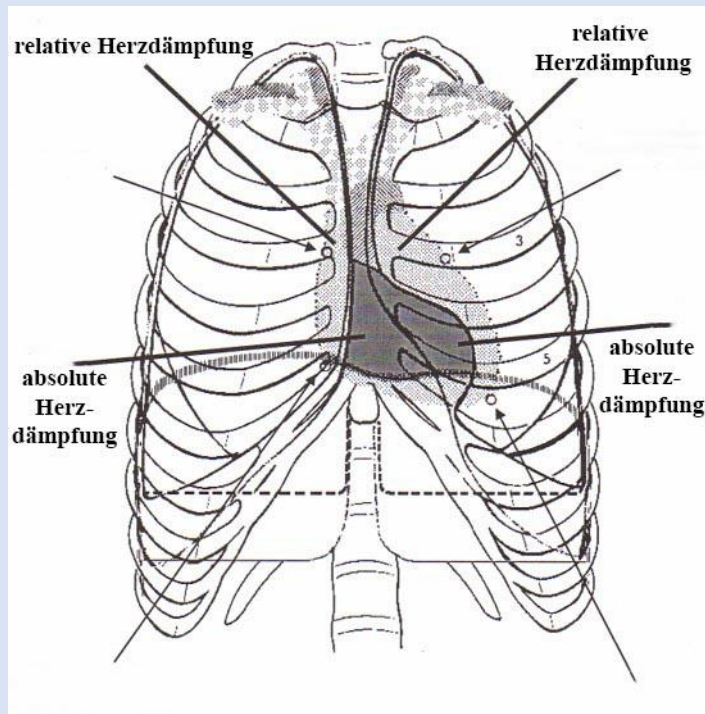
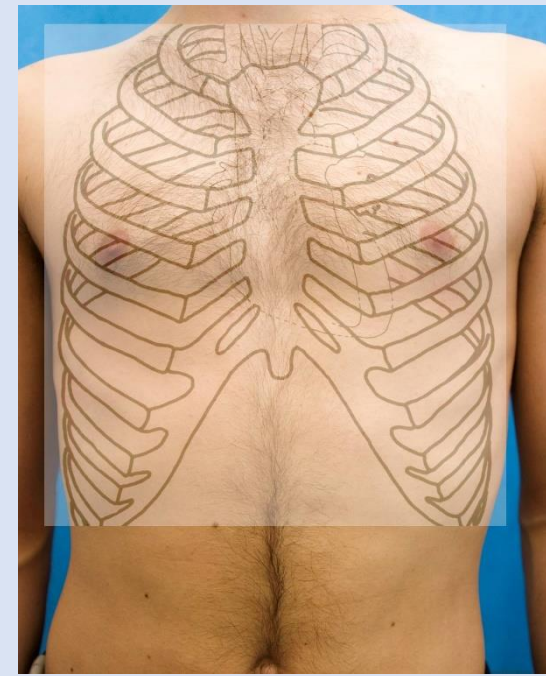
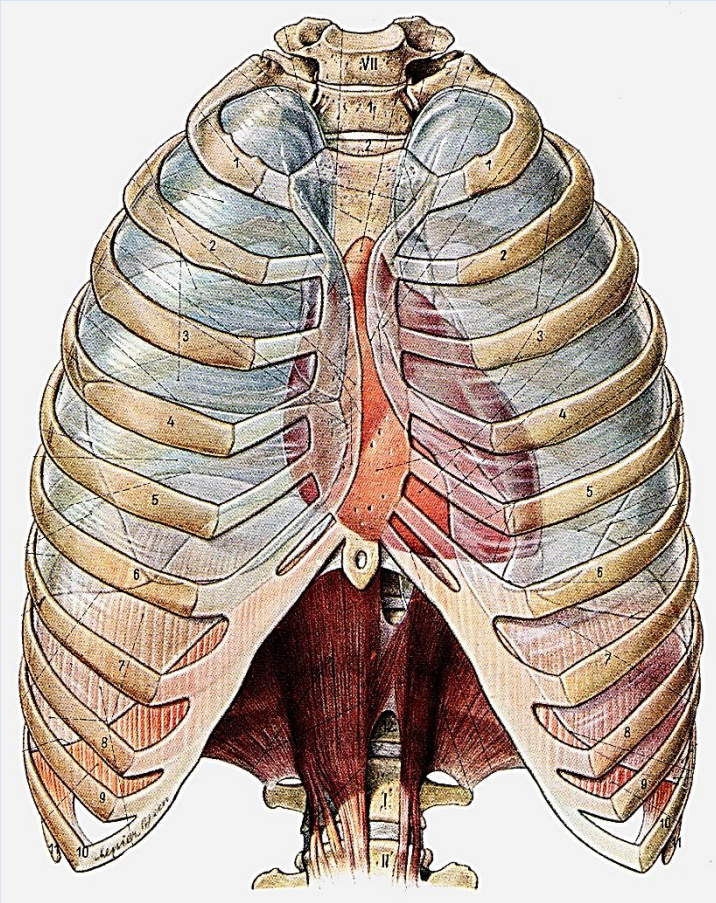
Rechter Endprojektionspunkt des Sulcus coronarius :

2 cm rechts vom sternalen Ende
des rechten 6. Rippenknorpels

Herzspitzenstoß:

8-10 cm links von der Mittellinie
im 5. Interkostalraum

Herzdämpfungen



Pernkopf

Szél

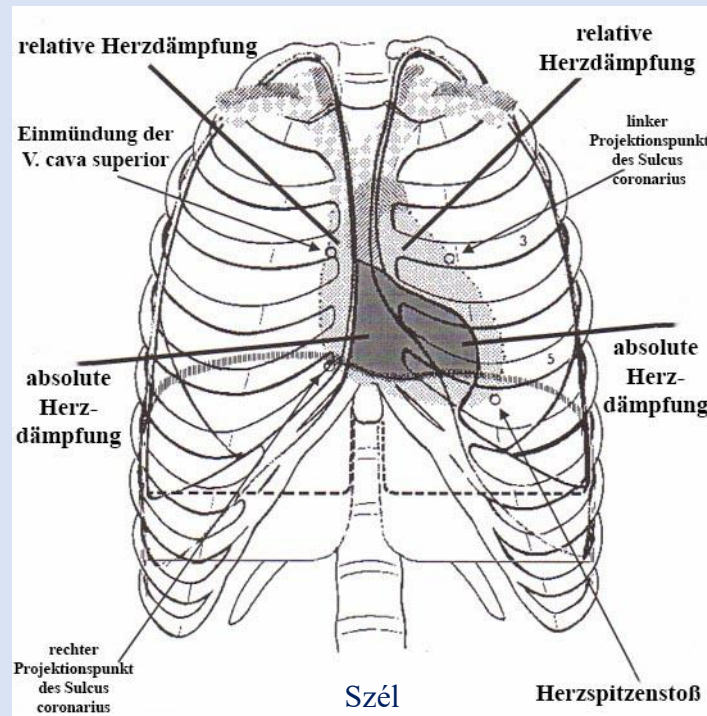
Herzdämpfung

RELATIV

bogige Verbindung
der Projektionspunkte

Während der physikalischen
Untersuchung sind die
durch Lunge bedeckten
Anteile des Herzens beim
Beklopfen erkennbar

Es zeigt ungefähr die
wahre Größe des Herzens



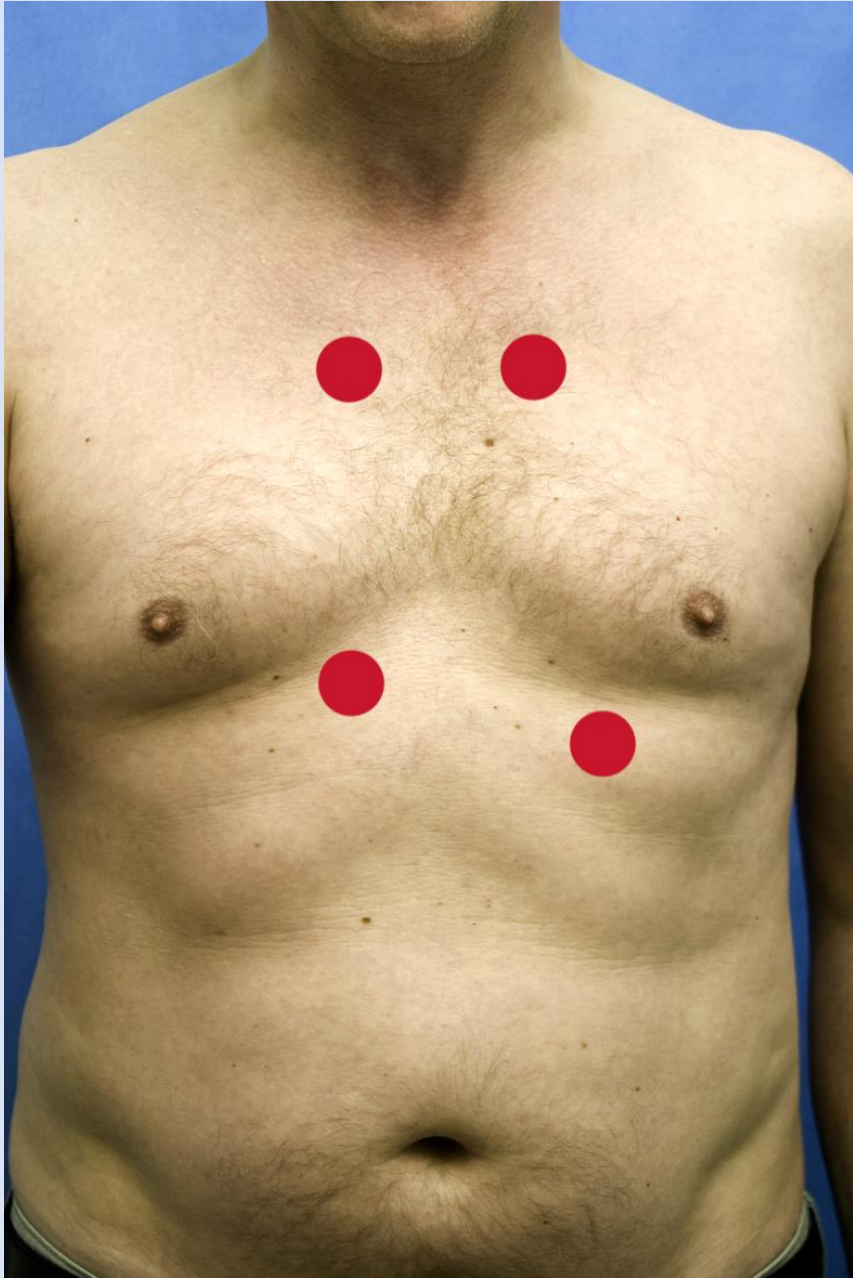
ABSOLUT

Normalerweise ist sie kleiner,
als die relative Herzdämpfung

Begrenzung:
untere Grenze gleich,
links: 1 Querfinger medialer
vom Herzspitzenstoß,
oben: die 4. Rippe,
rechts: Rand des Sternums

Während der physikalischen
Untersuchung sind die
durch Lunge nicht bedeckten
Anteile des Herzens beim
Beklopfen erkennbar

Auskultation



www.klinikaikozpont.u-szeged.hu

Auskultationspunkte

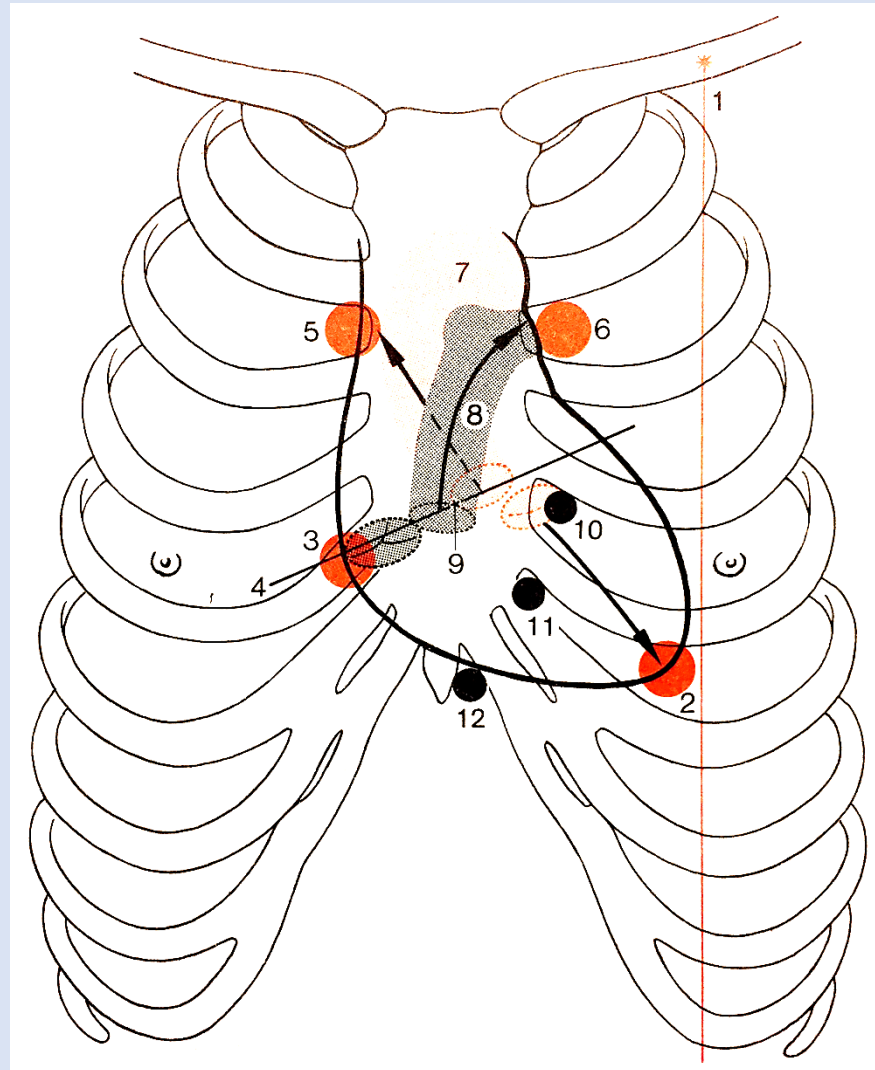
Aortenklappe

!!!

parasternal im *rechten*
2. Interkostalraum

Trikuspidalklappe:

sternales Ende der 5. Rippe



Pulmonalklappe

!!!

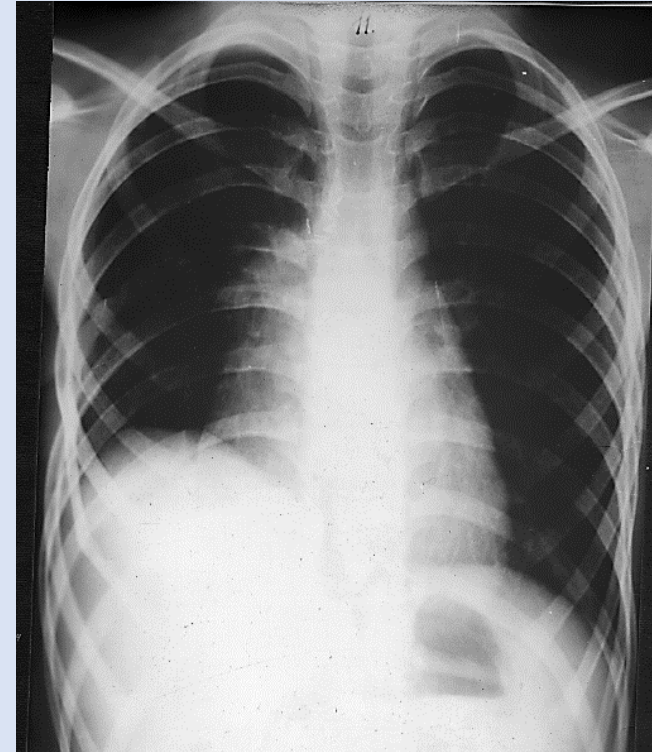
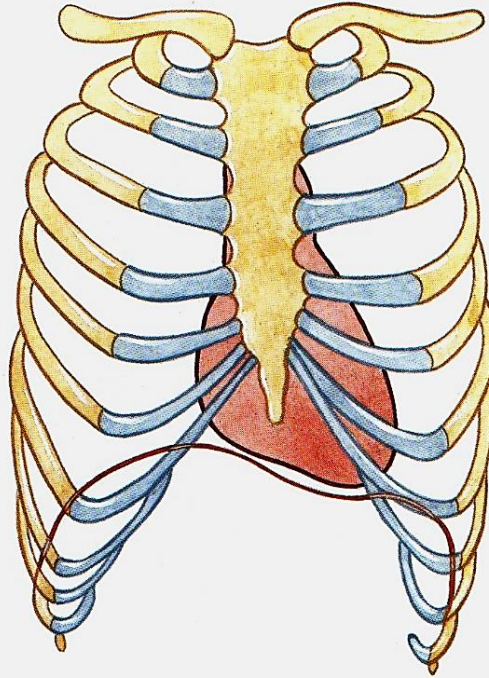
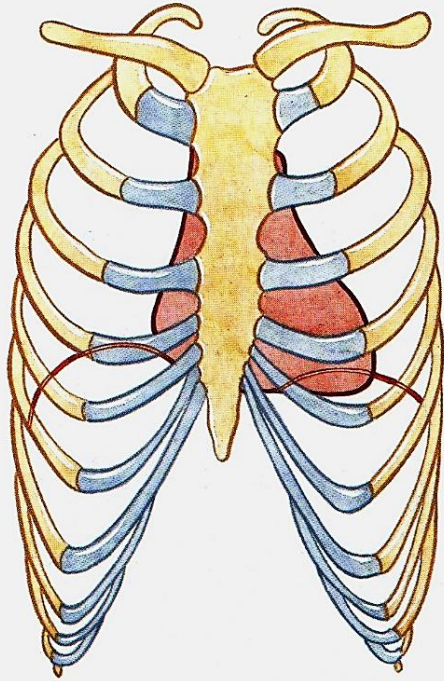
parasternal im *linken*
2. Interkostalraum

Mitralklappe:

an der Stelle des
Herzspitzenstoßes



...weitere beeinflussende Faktoren



Röntgenbild des Herzens

