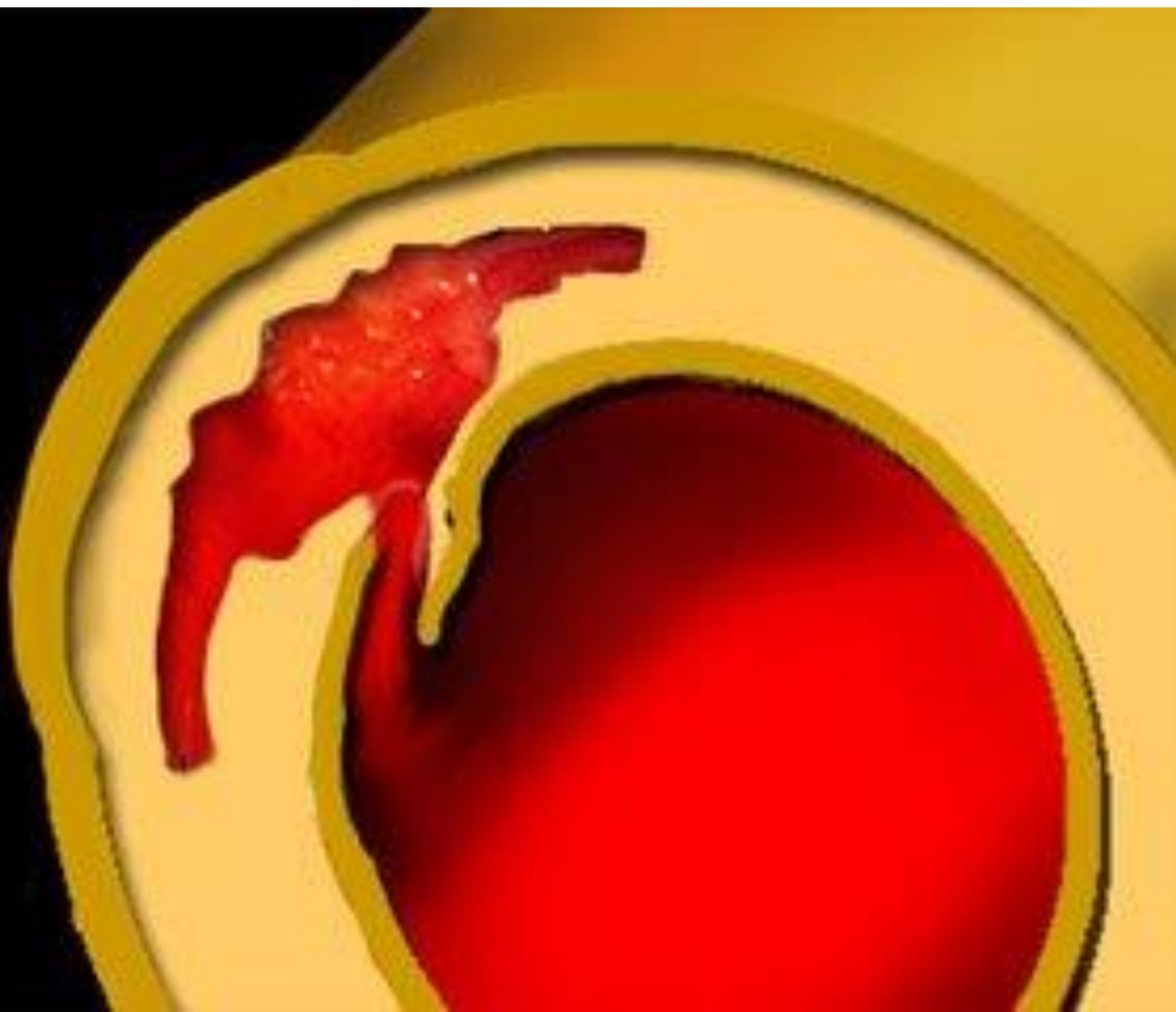
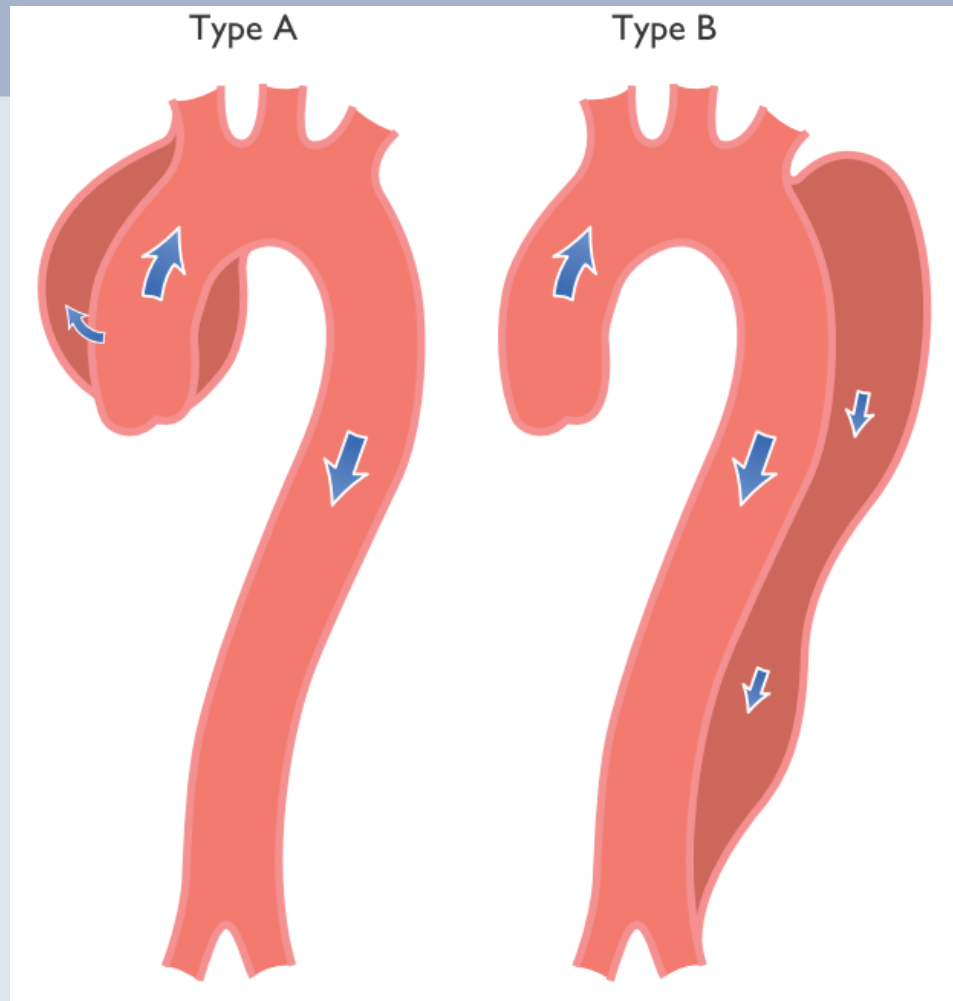


Akute Notfälle der thorakalen Aorta

Steffen Desch
Herzzentrum Leipzig



Stanford-Klassifikation



ESC-Guidelines. Eur Heart J. 2014;35(41):2873-926

Aortendissektion – Risikofaktoren

| | |
|--------------------------------------|--|
| Atherosklerose | <ul style="list-style-type: none"> ✓ Rauchen ✓ Dyslipoproteinämie ✓ Arterielle Hypertonie (bis zu 75% aller Patienten) ✓ Diabetes mellitus |
| Kongenital | <ul style="list-style-type: none"> ✓ Marfan-Syndrom (50% aller Patienten unter 40) ✓ Ehlers-Danlos-Syndrom ✓ Turner-Syndrom ✓ Loeys-Dietz-Syndrom ✓ Biskupide Aortenklappe ✓ Aortenisthmusstenose |
| Inflammatorische Erkrankungen | <ul style="list-style-type: none"> ✓ Riesenzellarteriitis ✓ Takayasu Arteriitis ✓ Syphilis ✓ Morbus Behçet ✓ Morbus Ormond |
| Traumen | <ul style="list-style-type: none"> ✓ Verkehrsunfall (meist mit dem Auto) ✓ Sturz aus größerer Höhe |
| Iatrogen | <ul style="list-style-type: none"> ✓ Herzkatheteruntersuchung ✓ Aorten chirurgischer Eingriff |
| Drogen | <ul style="list-style-type: none"> ✓ Kokain ✓ Amphetamin |

Adaptiert nach Nienaber DMW 2016(11):752-56.

Akute Aortendissektion – Schmerzen

| | Typ A (%) | Typ B (%) |
|--|-----------|-----------|
| Any pain | 94 | 98 |
| Abrupt onset | 85 | 84 |
| Chest pain | 79 | 63 |
| Anterior chest pain | 71 | 44 |
| Posterior chest pain | 33 | 41 |
| Back Pain | 47 | 64 |
| Abdominal Pain | 22 | 43 |
| Severity of pain: severe or worst ever | 90 | 90 |
| Quality of pain: sharp | 62 | 68 |
| Quality of pain: tearing or ripping | 49 | 52 |
| Radiating | 27 | 30 |
| Migrating | 15 | 19 |

Adapted from Hagan et al., JAMA 2000 Feb 16;283:897-903.

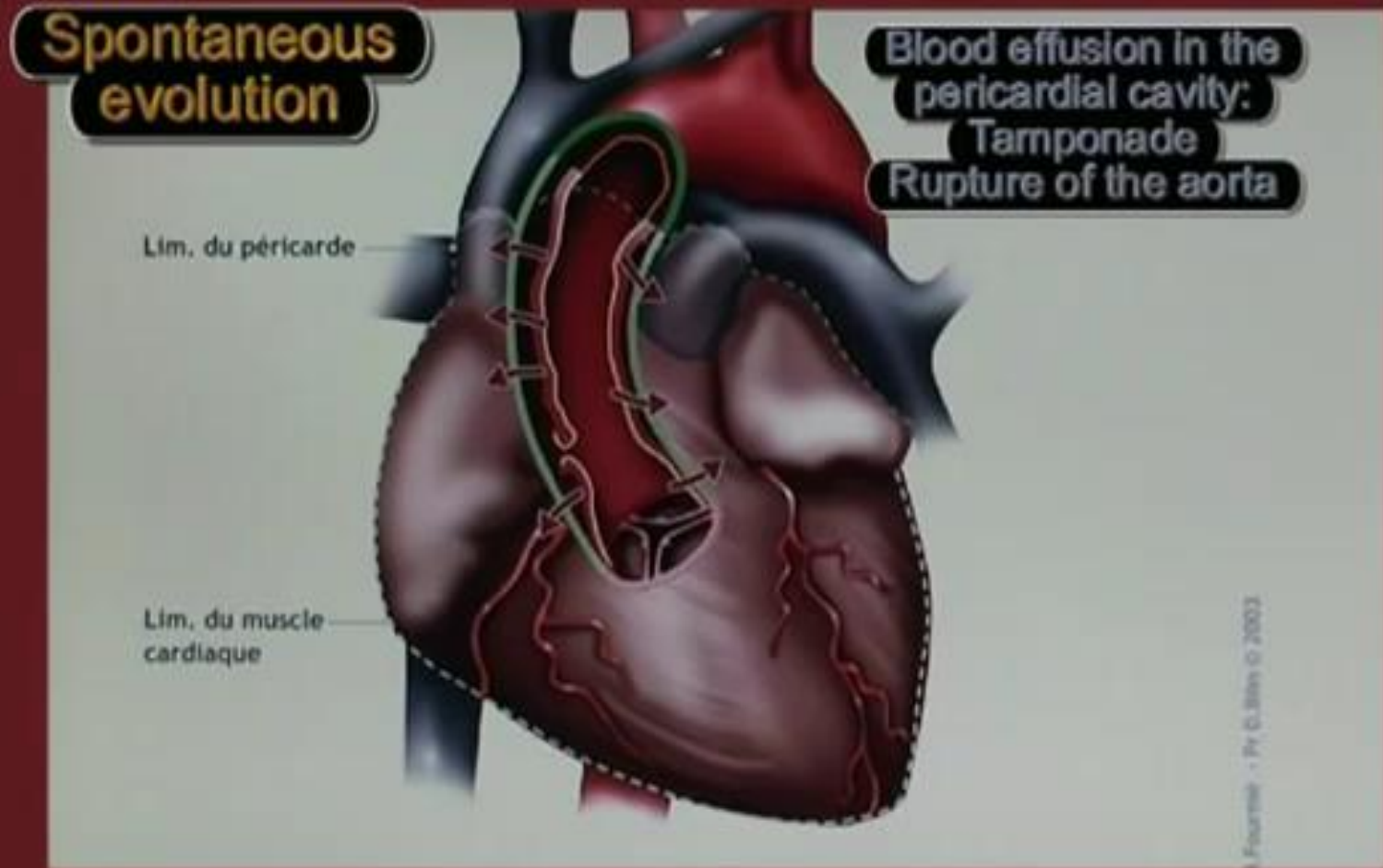
A-Dissektion: Komplikationen

| | |
|--|--------|
| Aortic regurgitation | 40-75% |
| Cardiac tamponade | <20% |
| Myocardial ischaemia or infarction | 10-15% |
| Heart failure | <10% |
| Pleural effusion | 15% |
| Syncope | 15% |
| Major neurological deficit (coma/stroke) | <10% |
| Spinal cord injury | <1% |
| Mesenteric ischaemia | <5% |
| Acute renal failure | <20% |
| Lower limb ischaemia | <10% |

Malperfusion



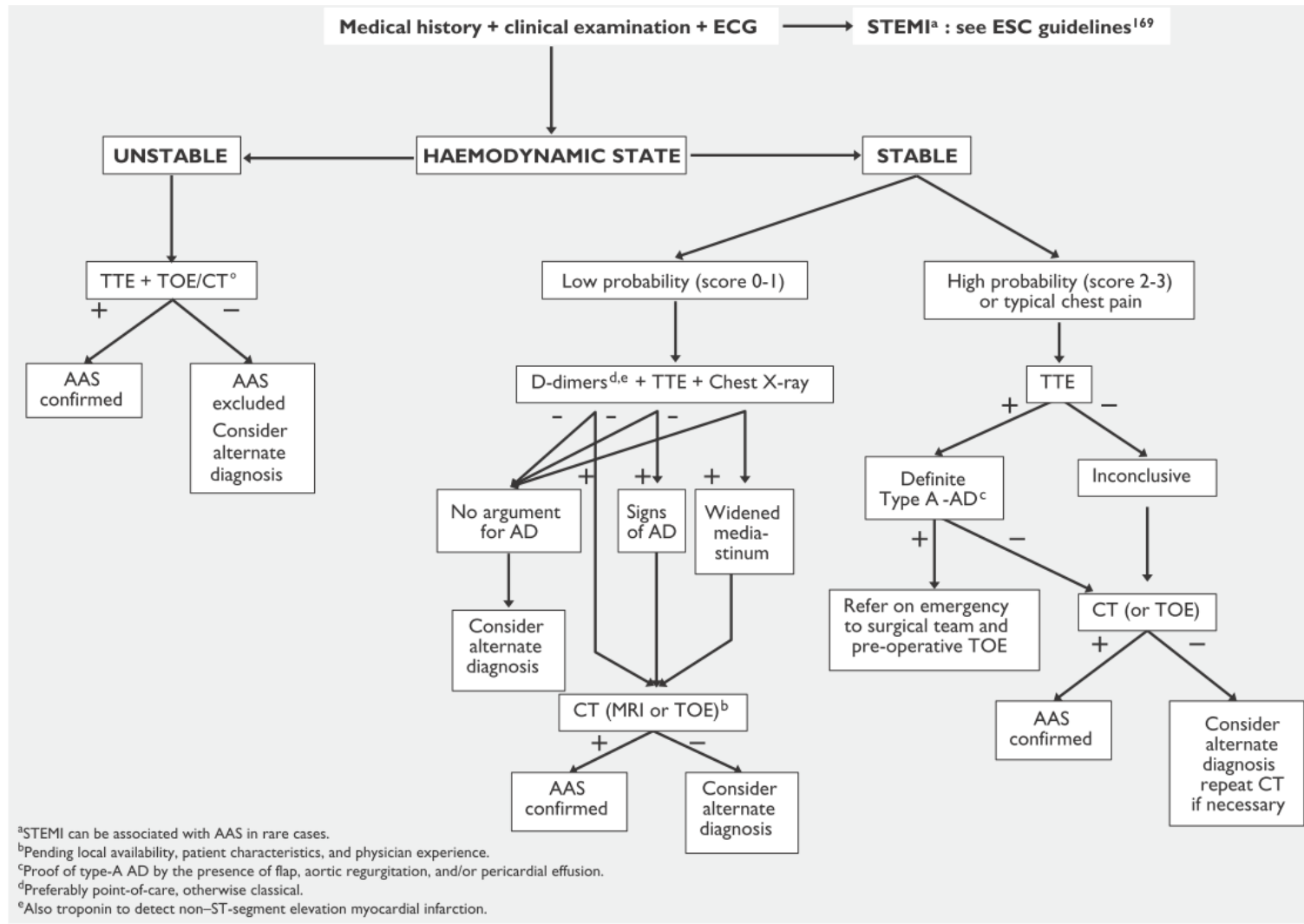
Perikardtamonade

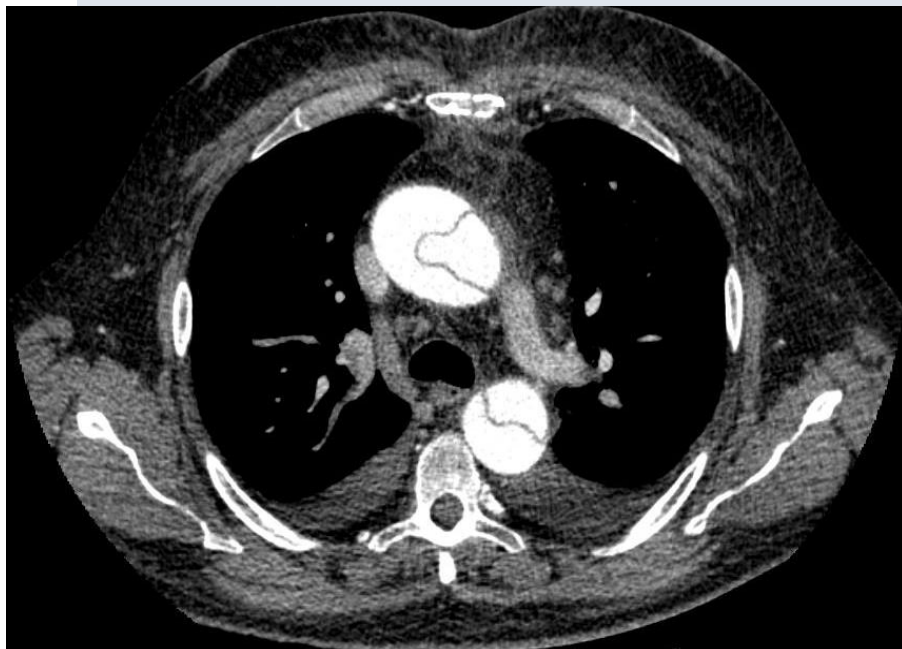


A priori Abschätzung AAS ja/nein?

| High-risk conditions | High-risk pain features | High-risk examination features |
|---|---|---|
| <ul style="list-style-type: none"> • Marfan syndrome (or other connective tissue diseases) • Family history of aortic disease • Known aortic valve disease • Known thoracic aortic aneurysm • Previous aortic manipulation (including cardiac surgery) | <ul style="list-style-type: none"> • Chest, back, or abdominal pain described as any of the following: <ul style="list-style-type: none"> – abrupt onset – severe intensity – ripping or tearing | <ul style="list-style-type: none"> • Evidence of perfusion deficit: <ul style="list-style-type: none"> – pulse deficit – systolic blood pressure difference – focal neurological deficit (in conjunction with pain) • Aortic diastolic murmur (new and with pain) • Hypotension or shock |

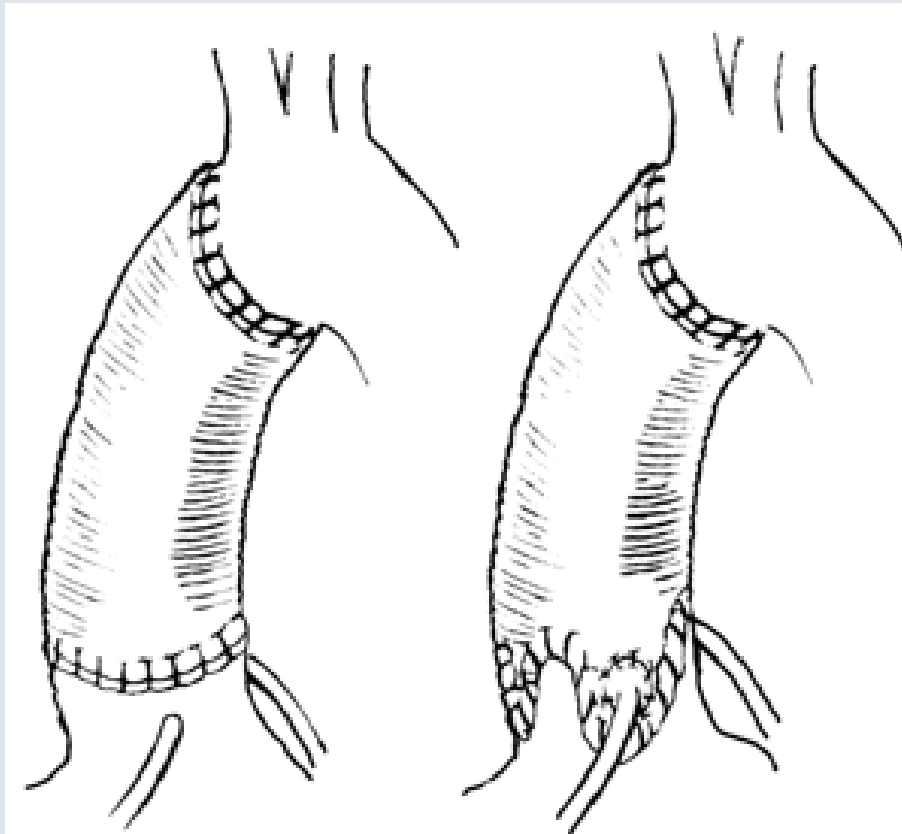
Diagnostisches Vorgehen akuter Thoraxschmerz





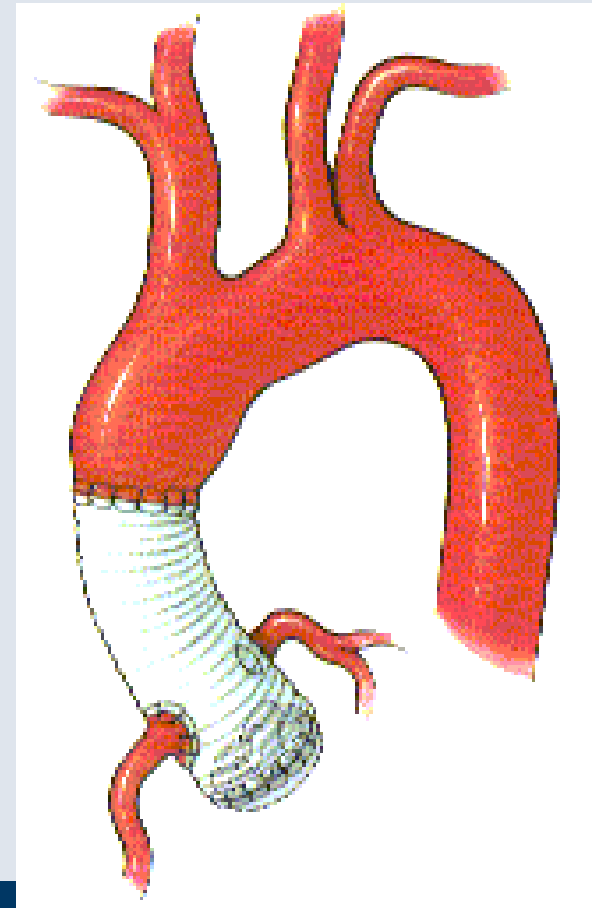
Behandlung Typ-A-Dissektion – immer chirurgisch

**Suprakommissurale
Prothese**

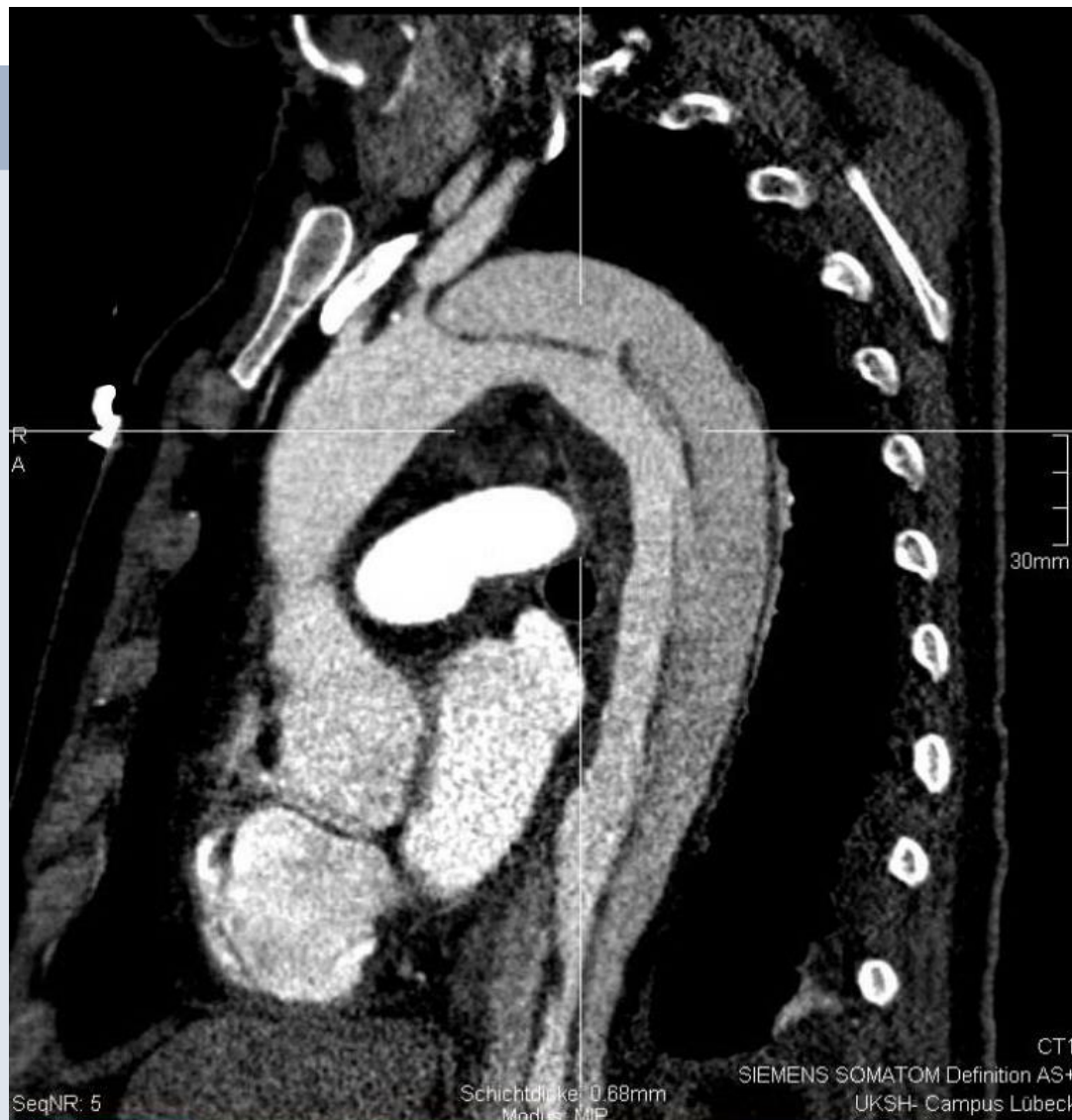


**Prothese mit
Rekonstruktion der
Aortenwurzel**

**Klappentragende
Prothese**



Klassische B-Dissektion



Therapie klassische B-Dissektion

Empfehlung

Klasse Evidenz

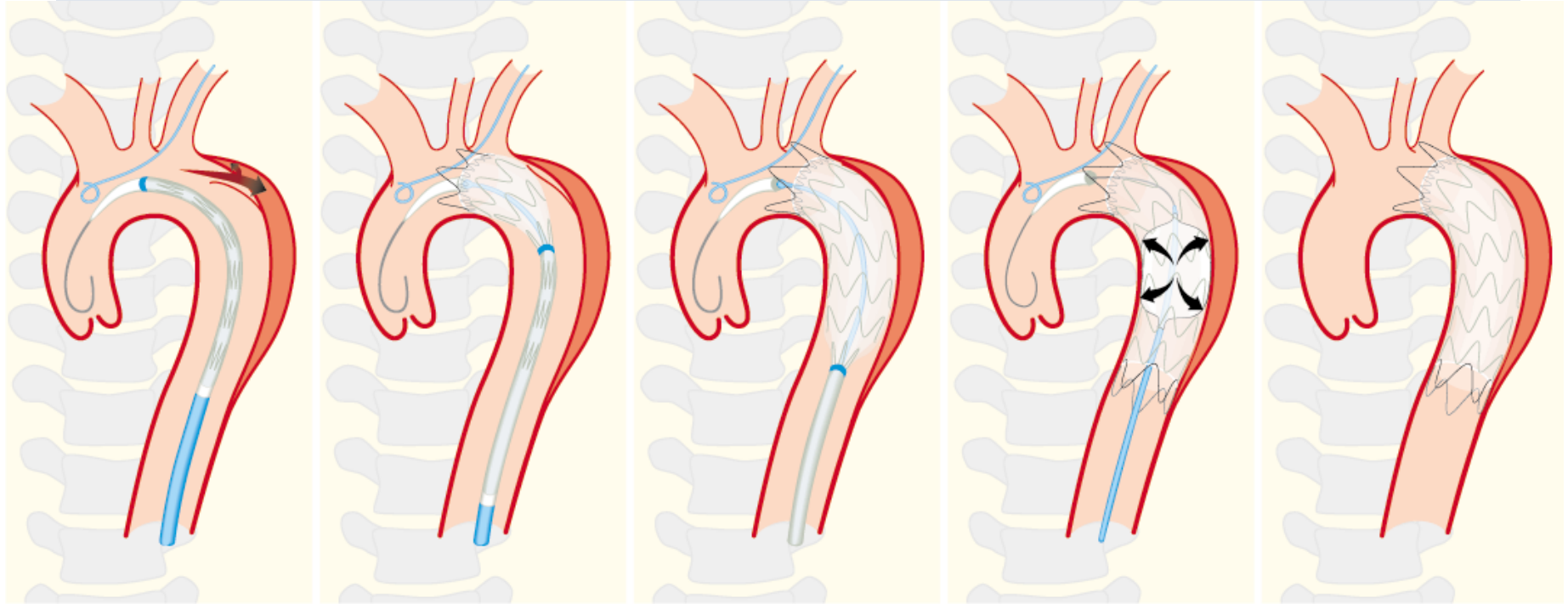
| | | |
|--|-----|---|
| Bei unkomplizierter Dissektion Typ B sollte eine medikamentöse Therapie immer empfohlen werden | I | C |
| Bei komplizierter Dissektion Typ B wird eine TEVAR empfohlen | I | C |
| Bei komplizierter Dissektion Typ B kann eine chirurgische Versorgung erwogen werden | IIb | C |

Kompliziert=

- *Persistierende oder wiederkehrende Schmerzen*
- *Medikamentös nicht kontrollierbare Hypertonie*
- *Ruptur oder drohende Ruptur (zunehmendes periaortales Hämatom, Hämatothorax, mediastinales Hämatom)*
- *Malperfusion*

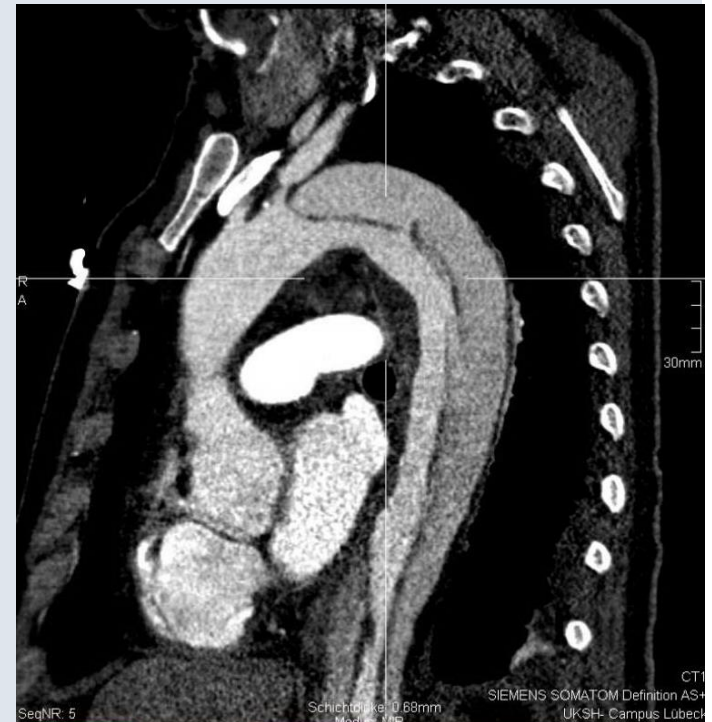
ESC-Guidelines. Eur Heart J. 2014;35(41):2873-926.

TEVAR in type B aortic dissection

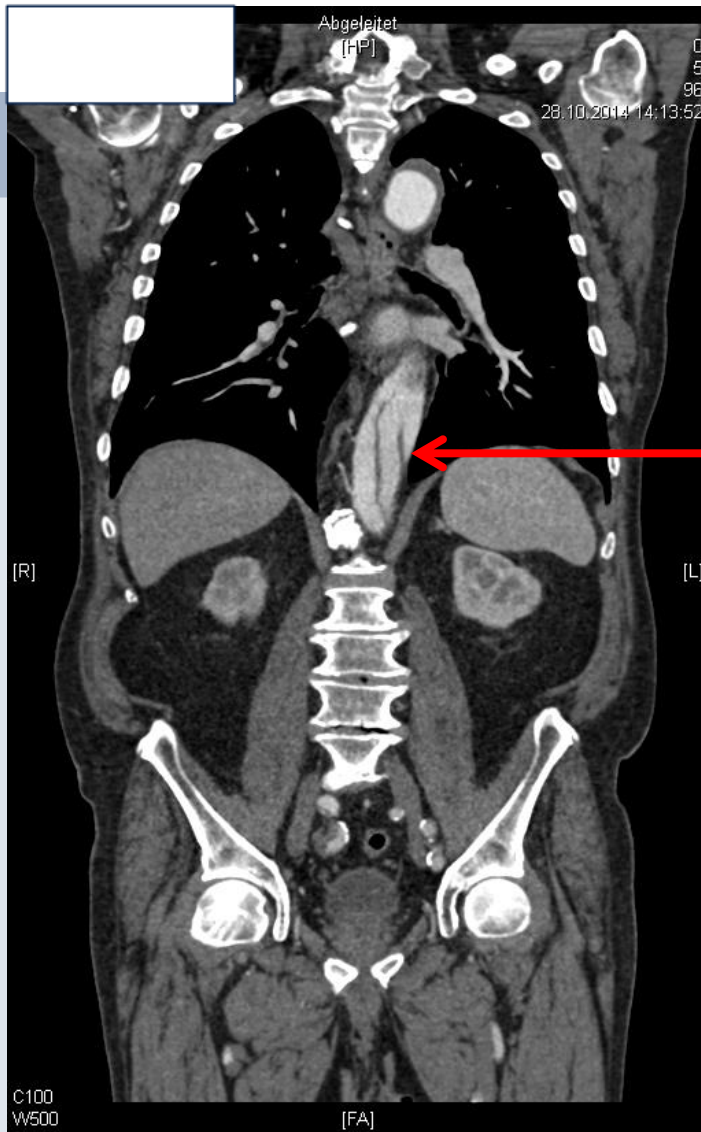


Rationale of TEVAR in type B aortic dissection

- Closure of primary entry tear
- Redirection of blood flow into the true lumen
- Decompression and expansion of true lumen
- Improved distal perfusion
- Coverage of perforations



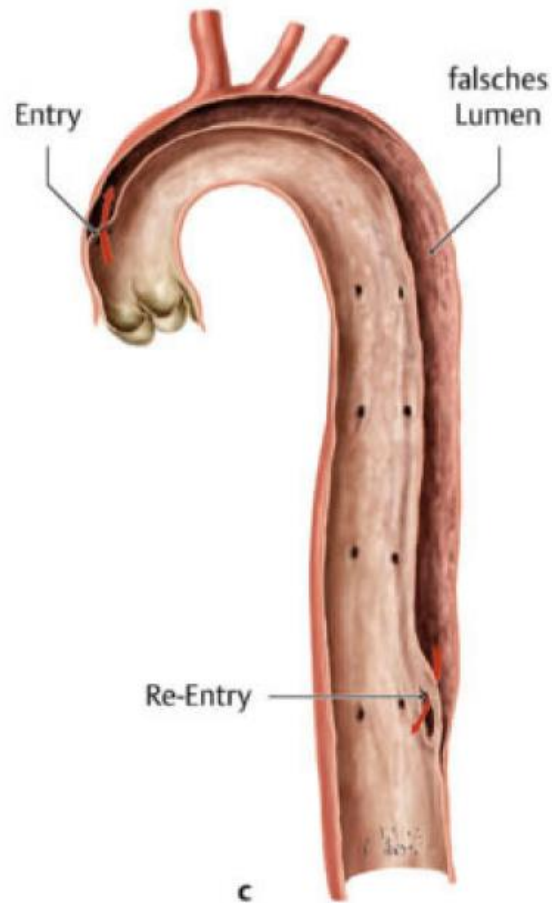


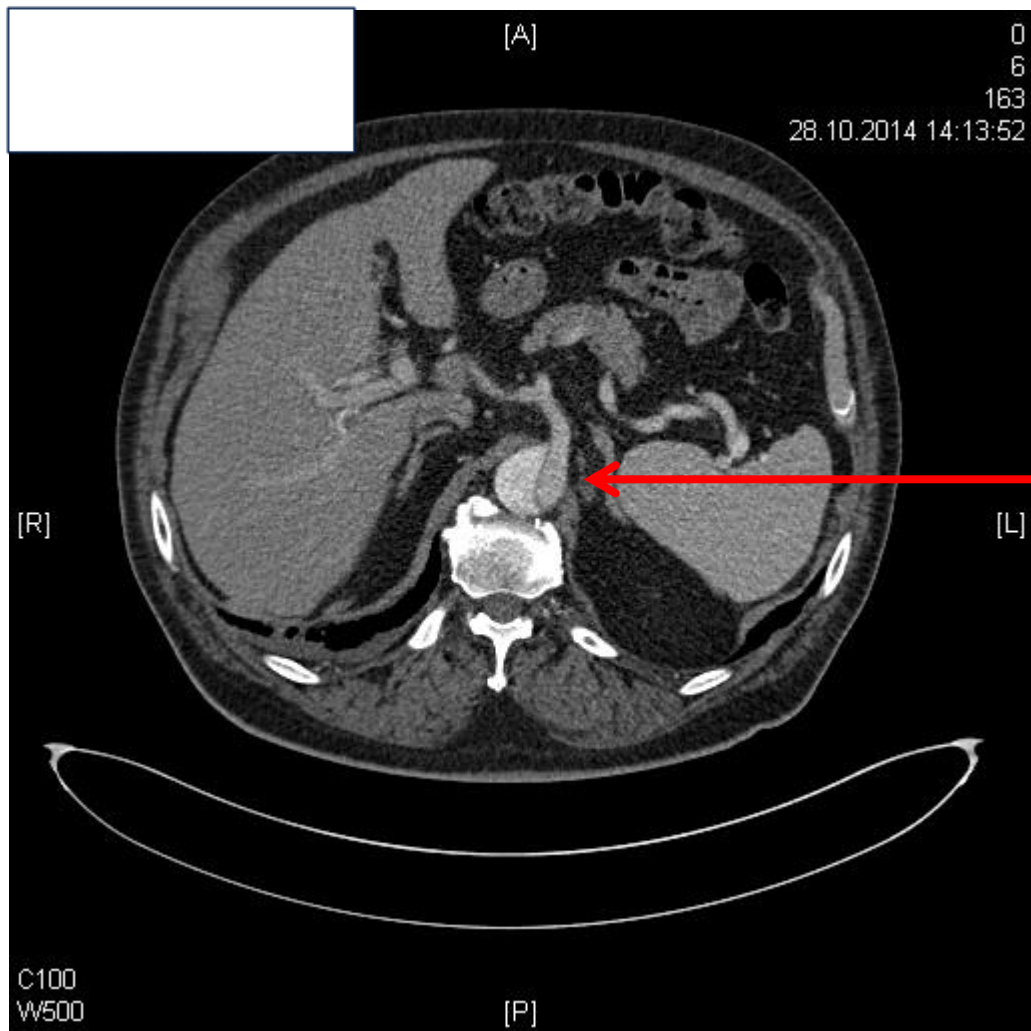


Spiral dissection

Reentry above level of diaphragm

Was ist ein Reentry?





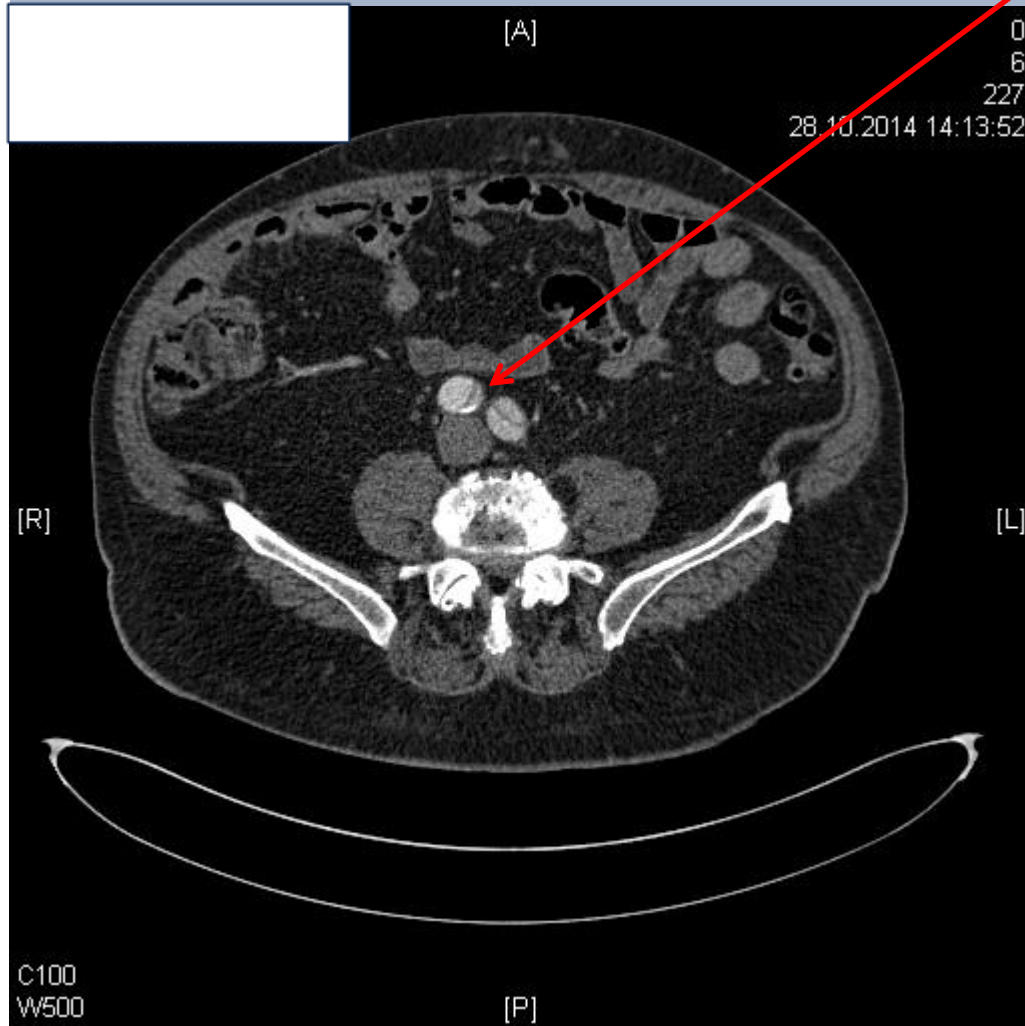
Celiac trunk perfused from true lumen



Critical ischemia of right leg

Malperfused true lumen

Malperfused true lumen -
right common iliac artery

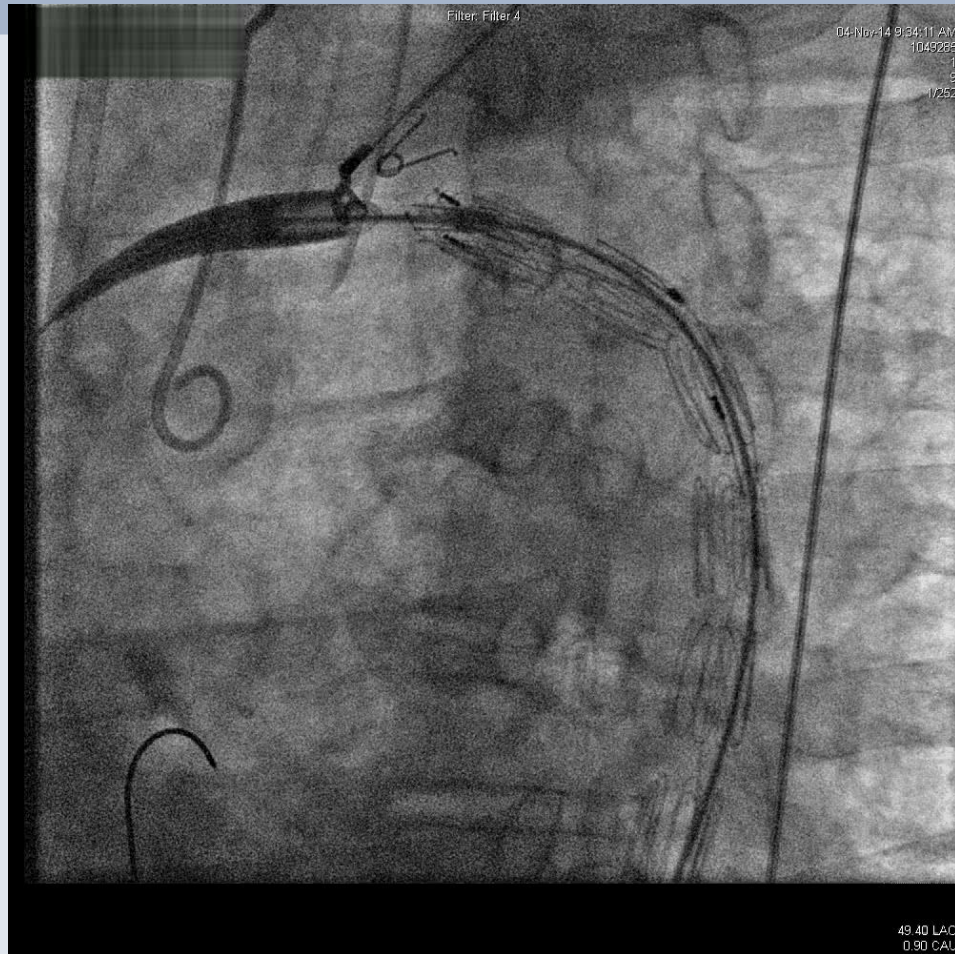


TEVAR

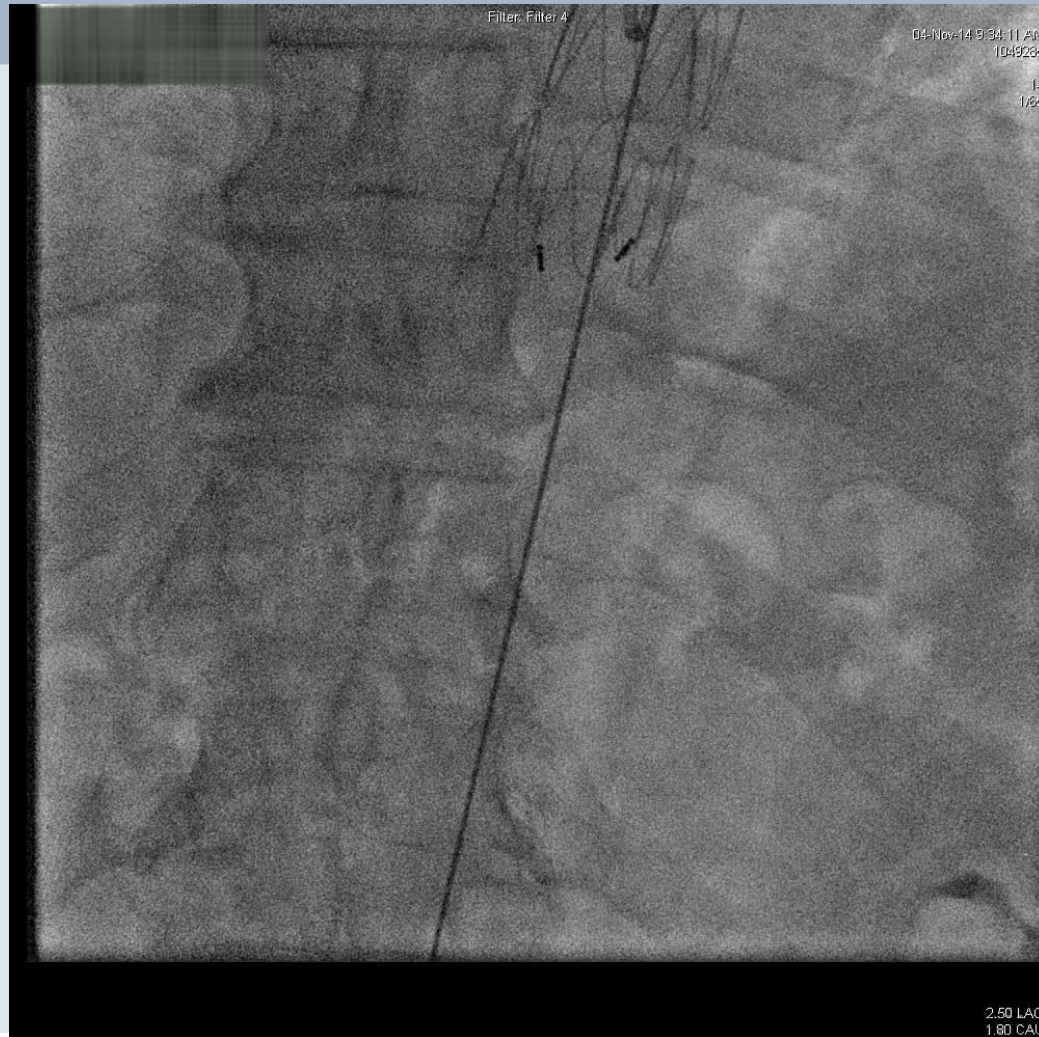


Identification of true lumen

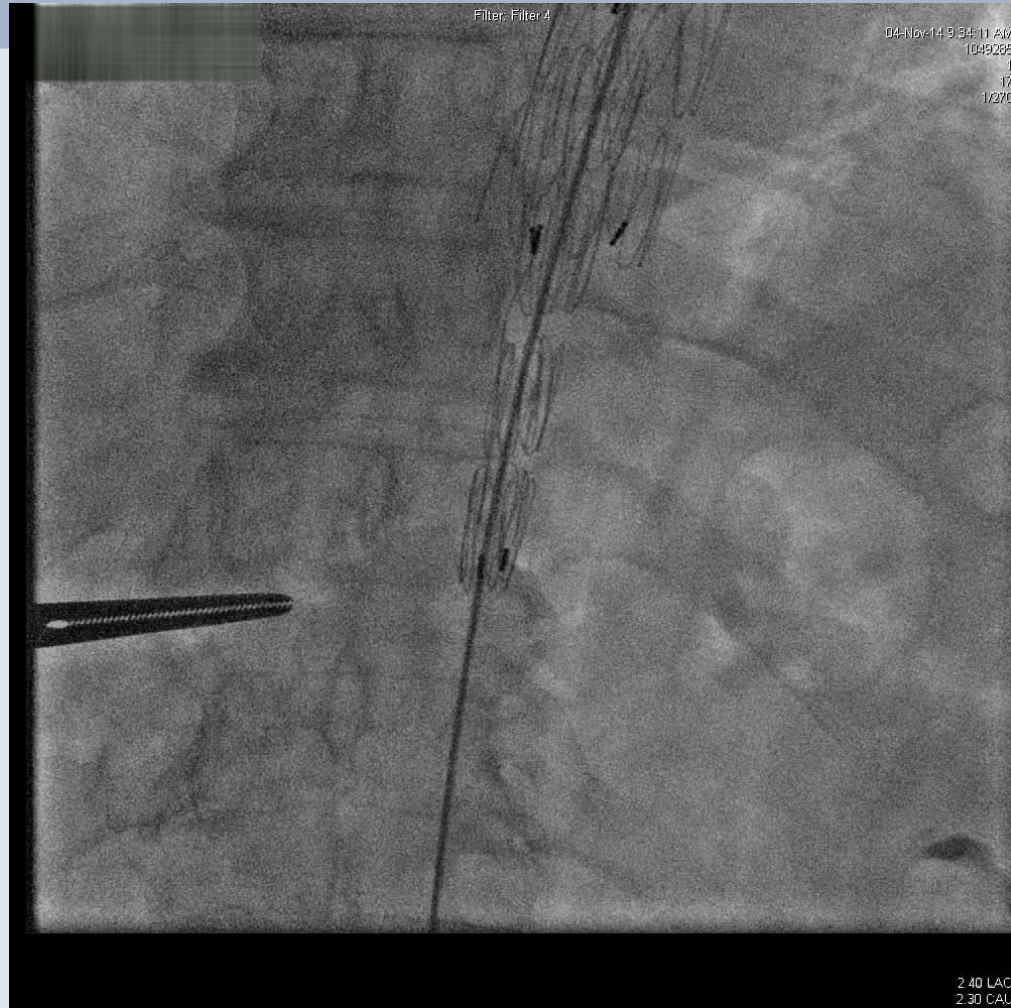
Coverage of proximal entry



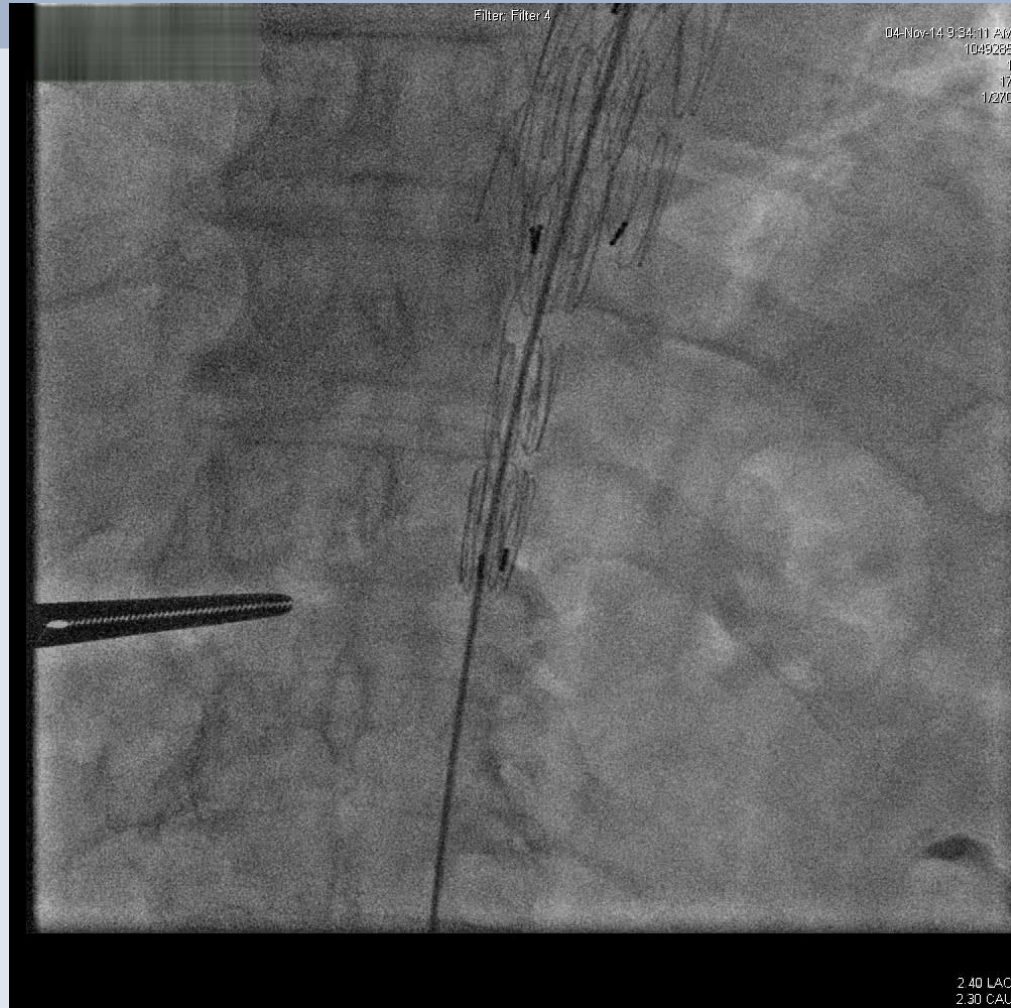
Remaining entry distal to graft



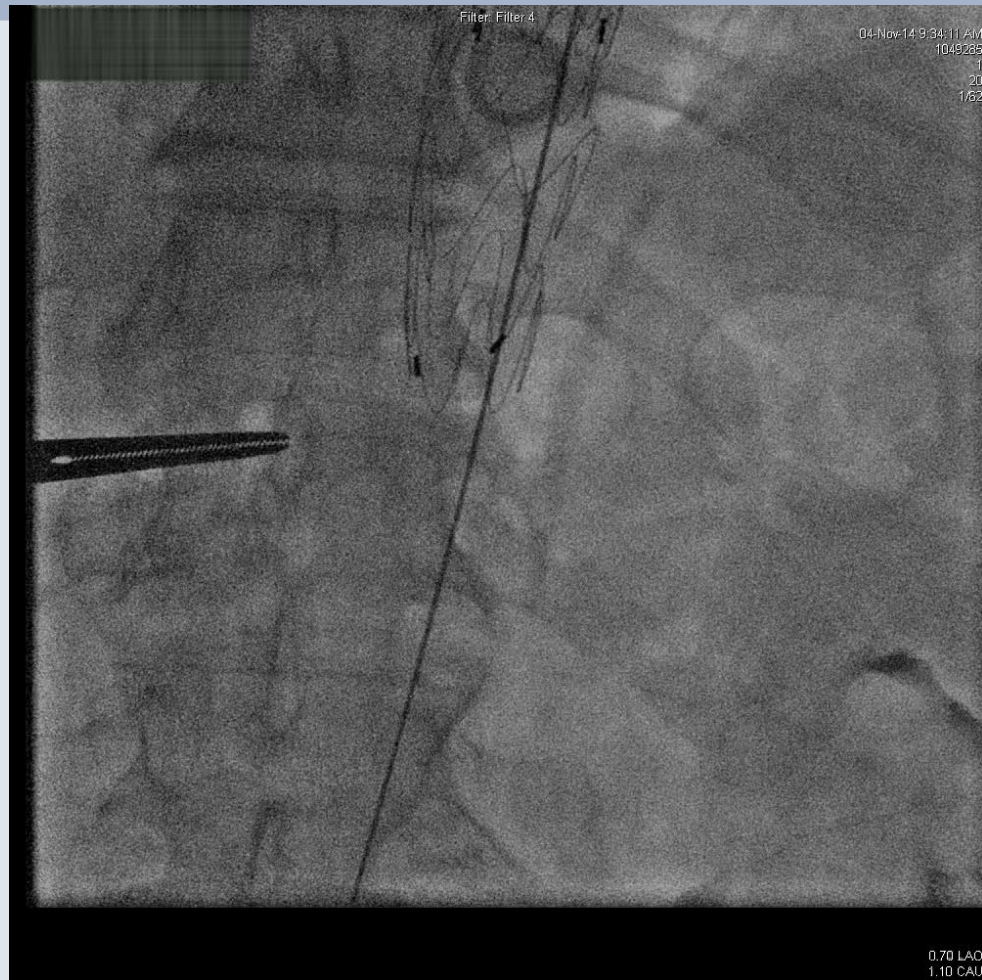
Overlapping second graft



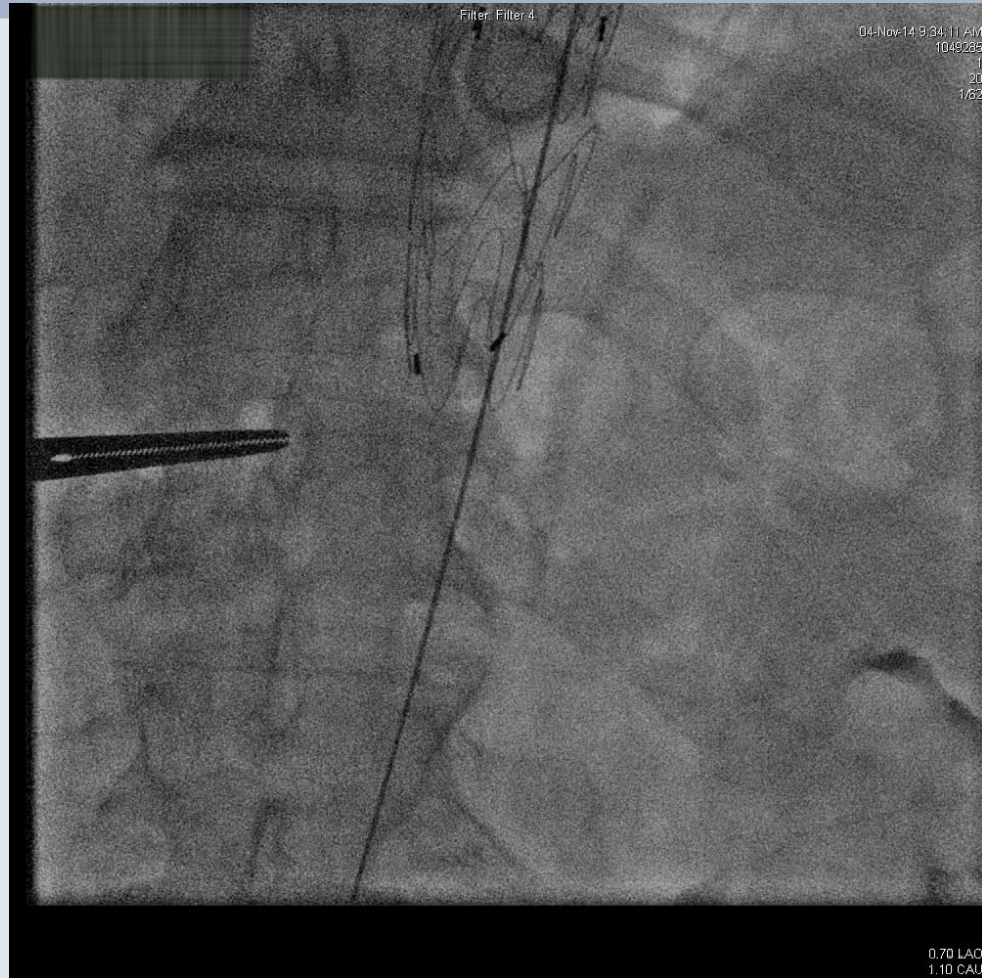
Overlapping second graft

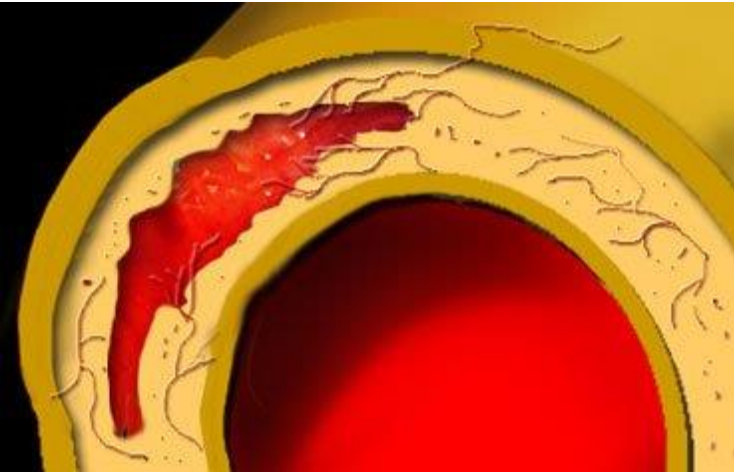


Result following second graft



Result following second graft





Intramurales Hämatom

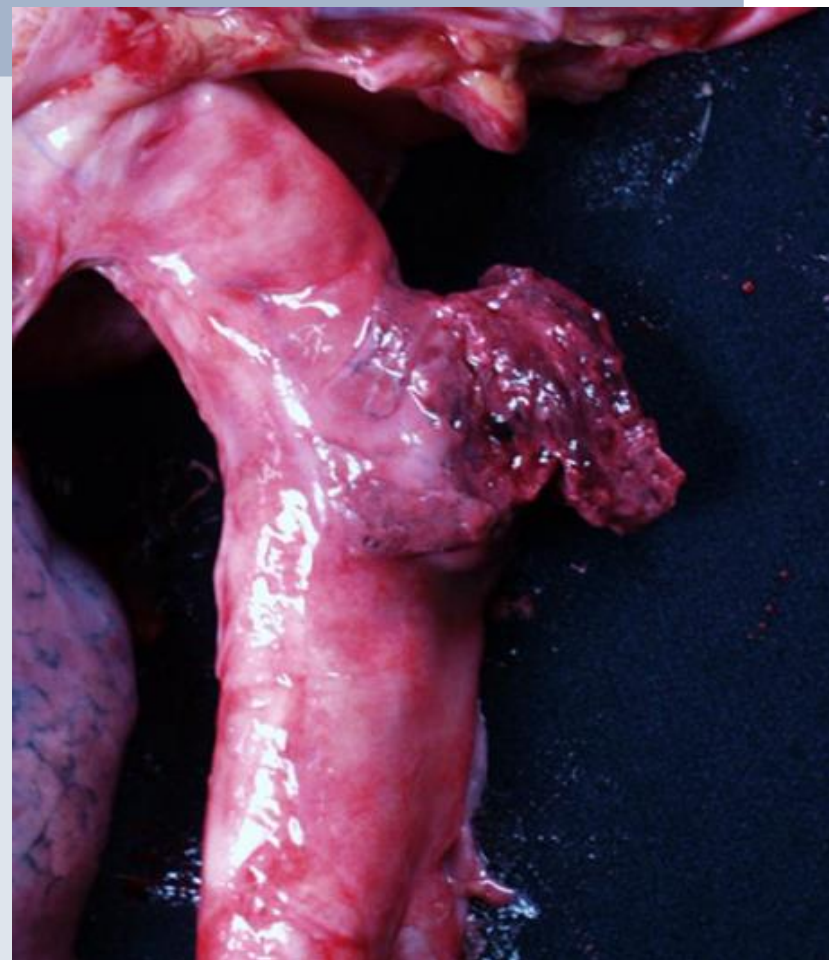


Penetrating aortic ulcer

Intramurales Hämatom



PAU



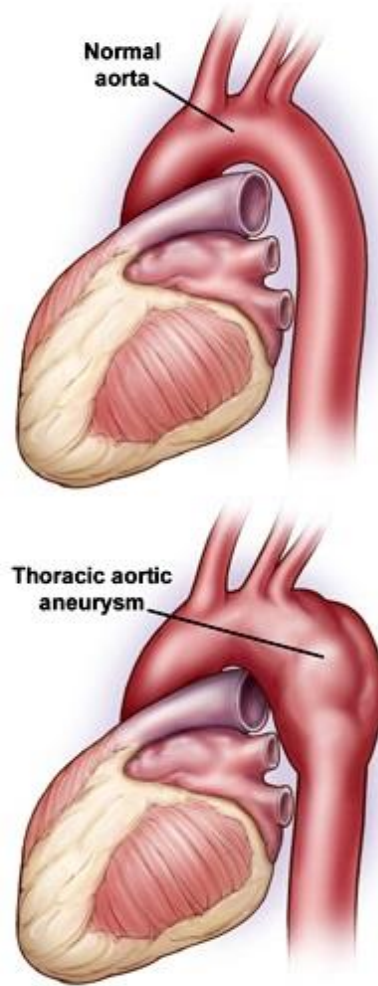
Intramurales Hämatom und PAU

| | <i>Empfehlung</i> | <i>Klasse</i> | <i>Evidenz</i> |
|--------------|---|----------------------|-----------------------|
| Alle | Bei allen Patienten mit IMH/PAU wird eine medikamentöse Therapie inkl. Schmerzmedikation und Blutdruckkontrolle empfohlen | I | C |
| Typ A | Bei intramuralem Hämatom Typ A wird eine dringliche chirurgische Versorgung empfohlen | I | C |
| | Bei PAU Typ A sollte eine chirurgische Versorgung erwogen werden | IIa | C |
| Typ B | Bei IMH/PAU Typ B wird eine initiale medikamentöse Therapie unter engmaschiger Beobachtung empfohlen | I | C |
| | Bei unkompliziertem IMH/PAU Typ B ist eine wiederholte bildgebende Diagnostik (MRT oder CT) indiziert | I | C |
| | Bei kompliziertem IMH/PAU sollte eine TEVAR erwogen werden | IIa | C |
| | Bei kompliziertem IMH/PAU Typ B kann eine chirurgische Versorgung erwogen werden | IIb | C |

Kompliziert = Wiederkehrende Schmerzen, Expansion, periaortales Hämatom, Intimaeinriss

ESC-Guidelines. Eur Heart J. 2014;35(41):2873-926.

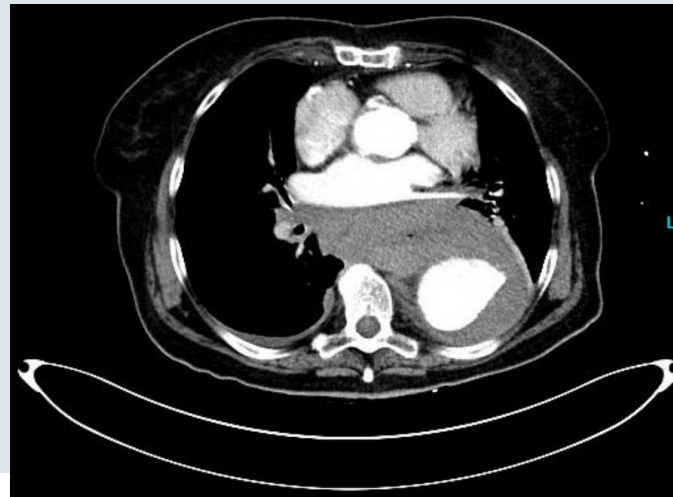
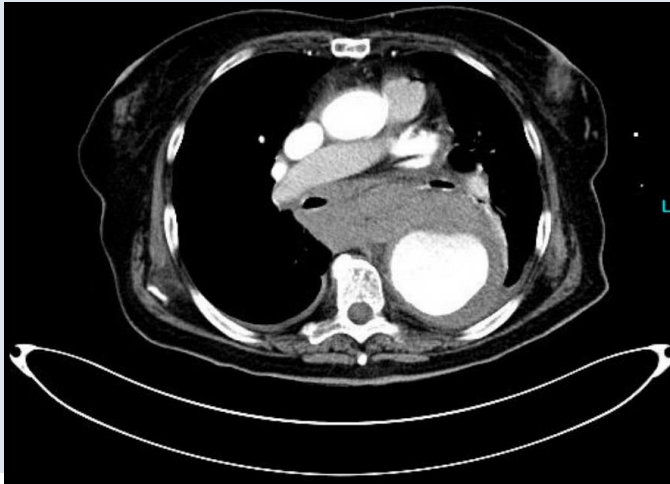
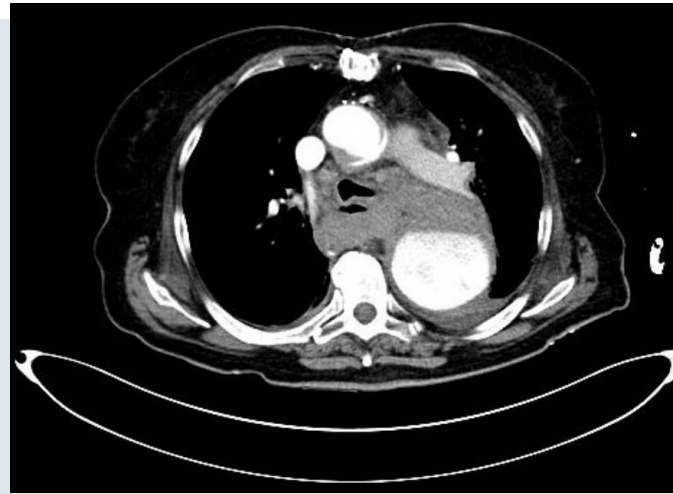
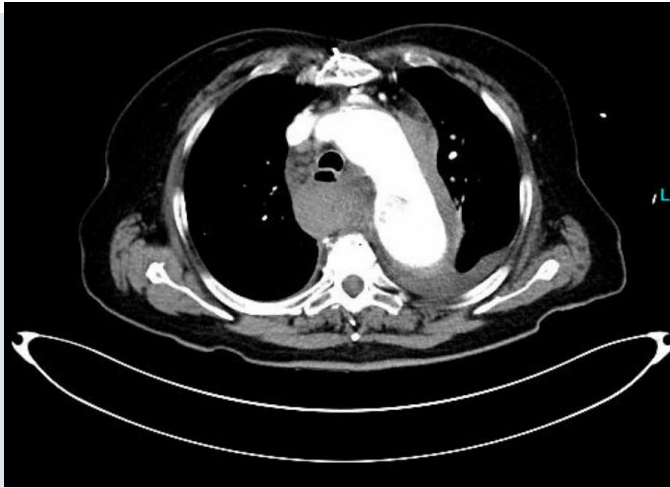
Rupturiertes Aneurysma



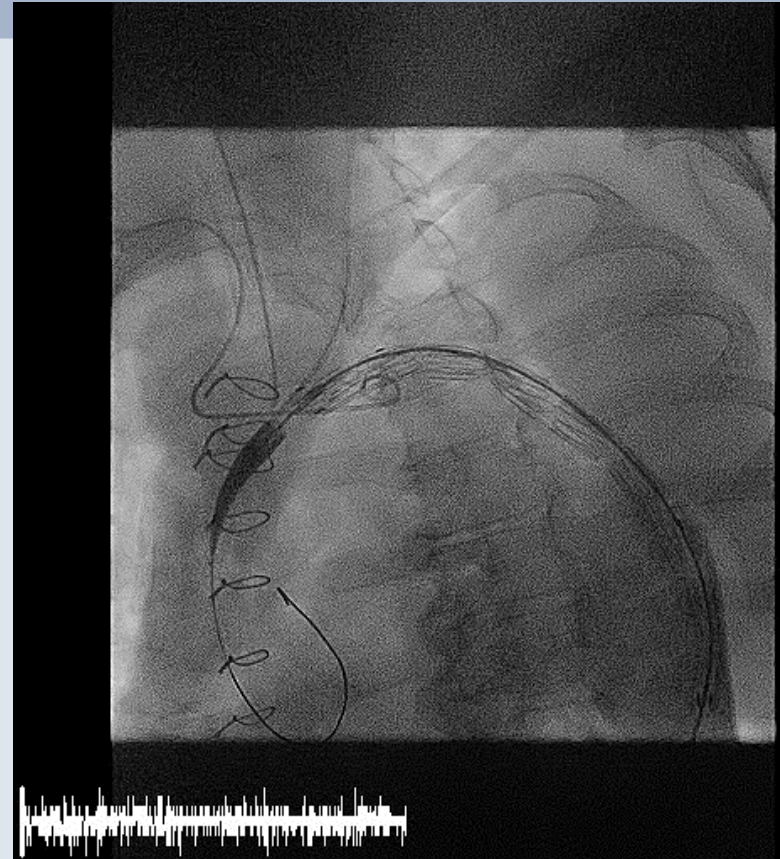
Copyright SVS 2004

Rupturiertes Aneurysma

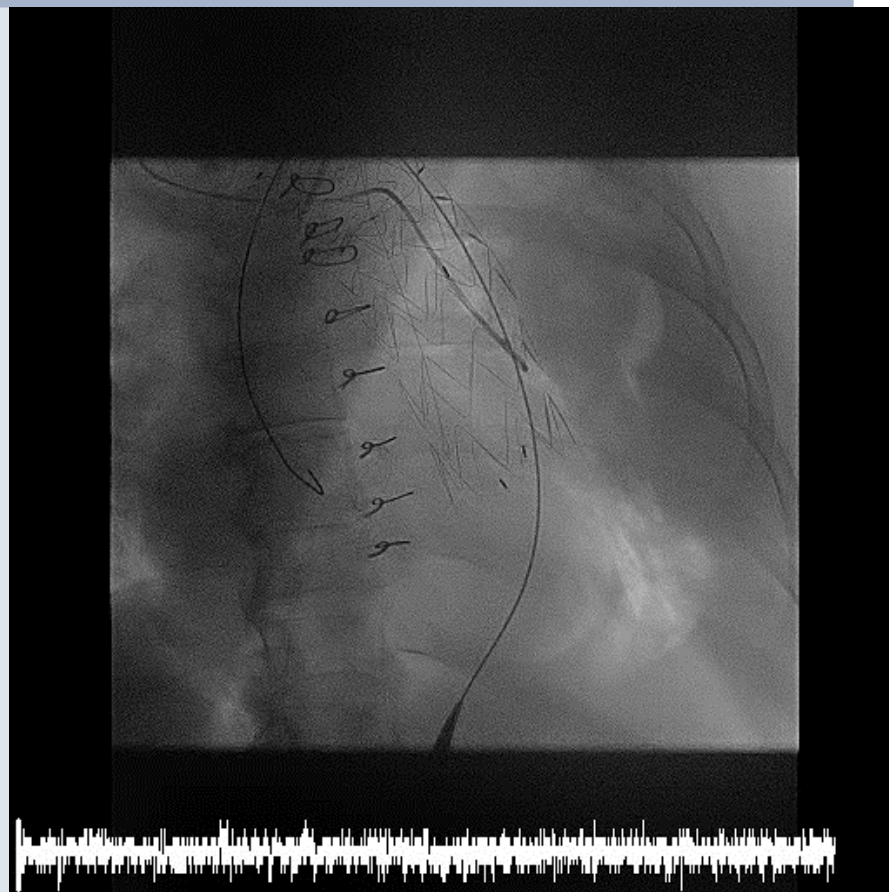
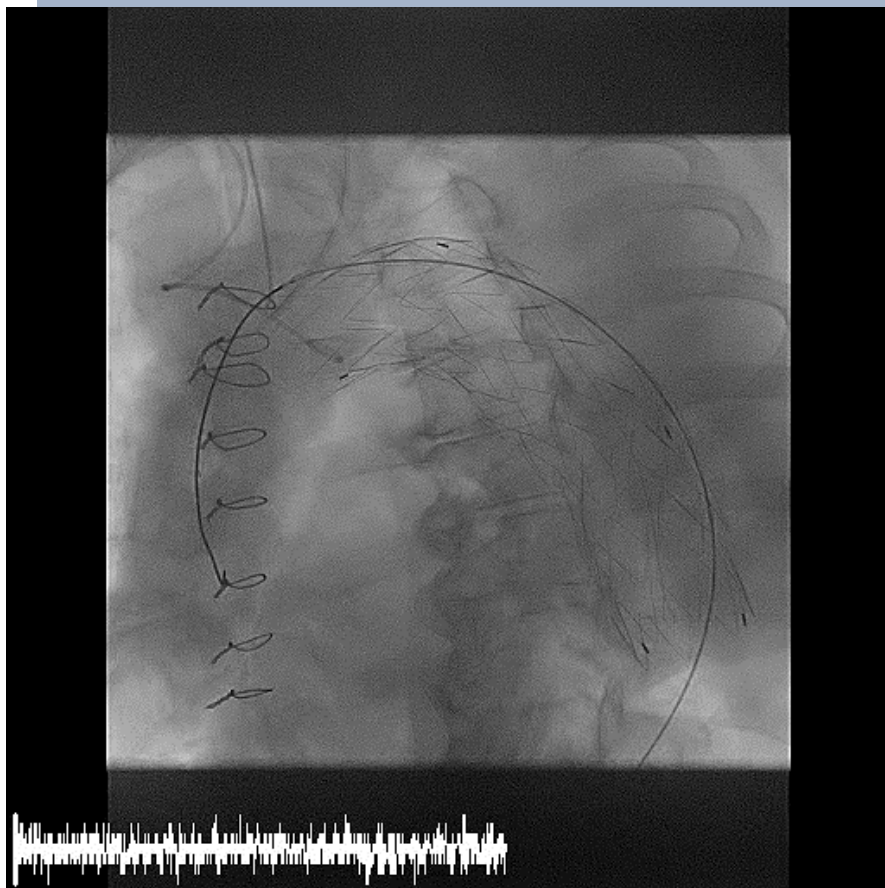
Female patient, 75 years, ruptured aneurysm of descending aorta, hemorrhagic shock, resuscitation time 30 min, stabilization after massive volume infusion



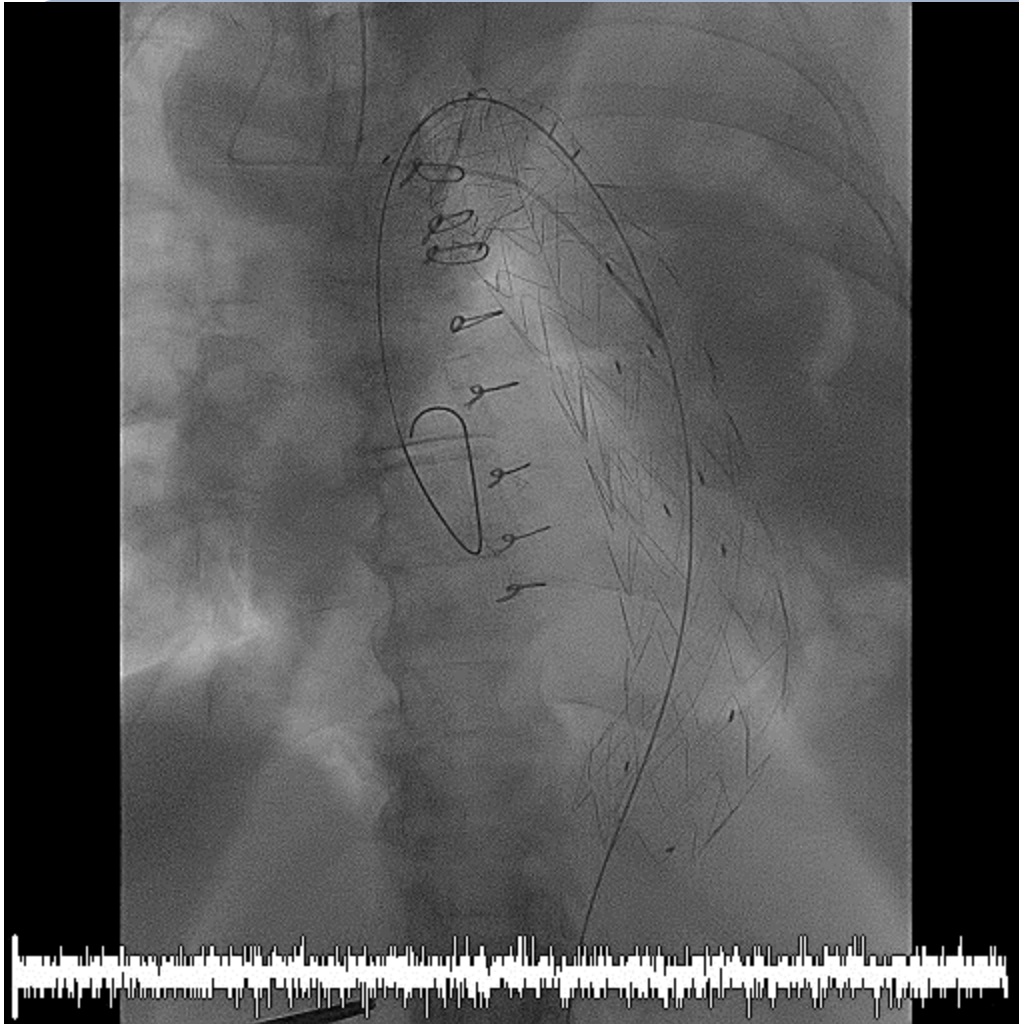
Emergency stenting with intentional coverage of left subclavian artery



First stent



Final result after second stent



Clinically silent subclavian steal

A man ... was seized with a pain of the right arm and soon after of the left, ... after these there appeared a tumour on the upper part of the sternum ... He was ordered to think seriously and piously of his departure from his mortal life, which was very near at hand and inevitable.

Giovanni Battista Morgagni, 1761

