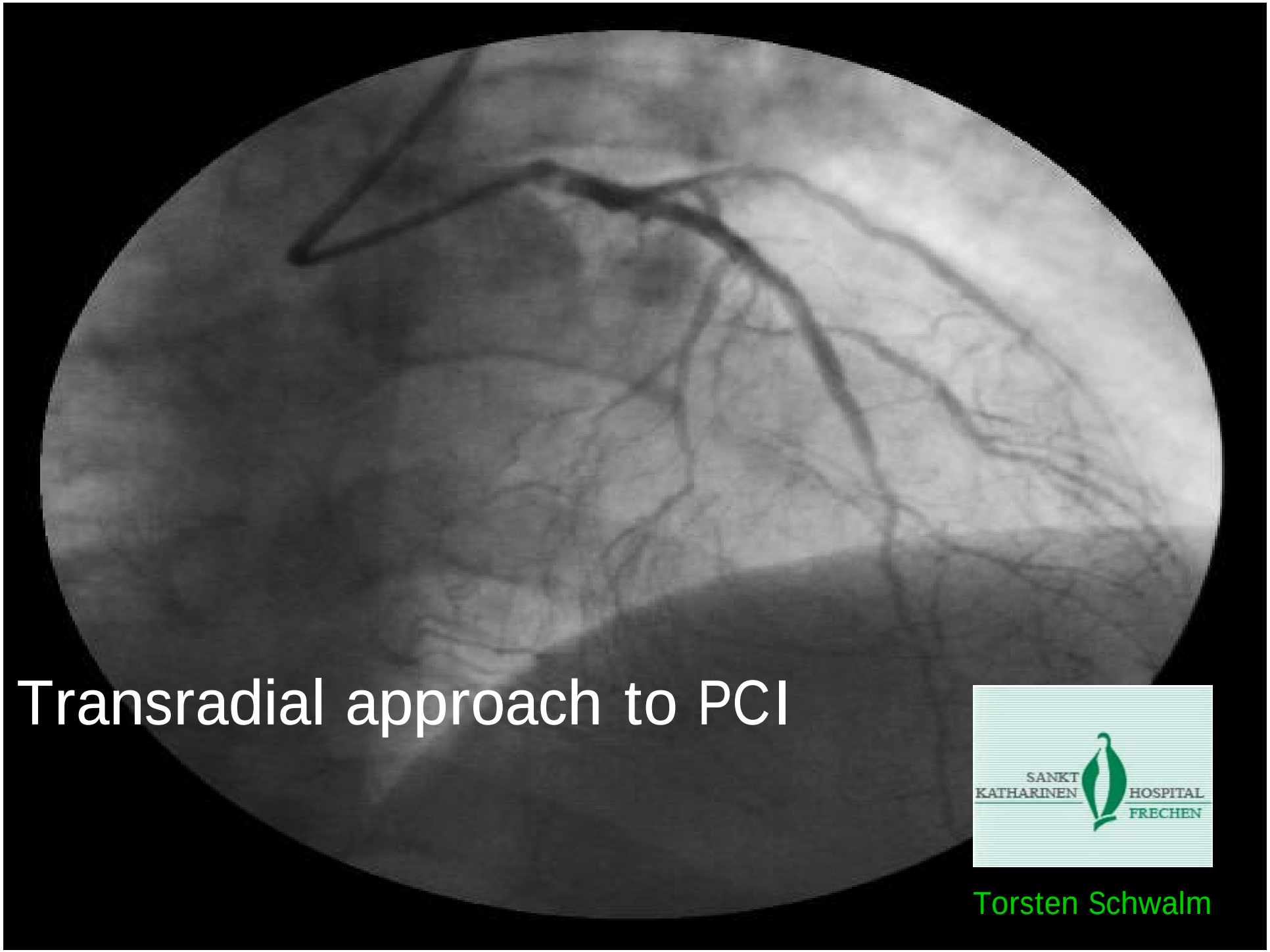


Transradial approach to PCI

SANKT KATHARINEN HOSPITAL FRECHEN

Torsten Schwalm

Why transradial approach to PCI ?

- Almost no puncture site bleeding complications
- More aggressive antithrombotic regime possible
- Offers the utmost best patient comfort
- Easy to compress with compression bandage
- Offers almost all possibilities of transfemoral approach

- Because it is the better aproach !

literature 1

1 Chase AJ et al. Association of the arterial access site at angioplasty with transfusion and mortality: the M.O.R.T.A.L study (Mortality benefit Of Reduced Transfusion after percutaneous coronary intervention via the Arm or Leg). Heart. 2008 Aug;94 (8):1019-25
CONCLUSIONS: In a registry of all comers to PCI, transradial access was associated with a halving of the transfusion rate and a reduction in 30-day and 1-year mortality.

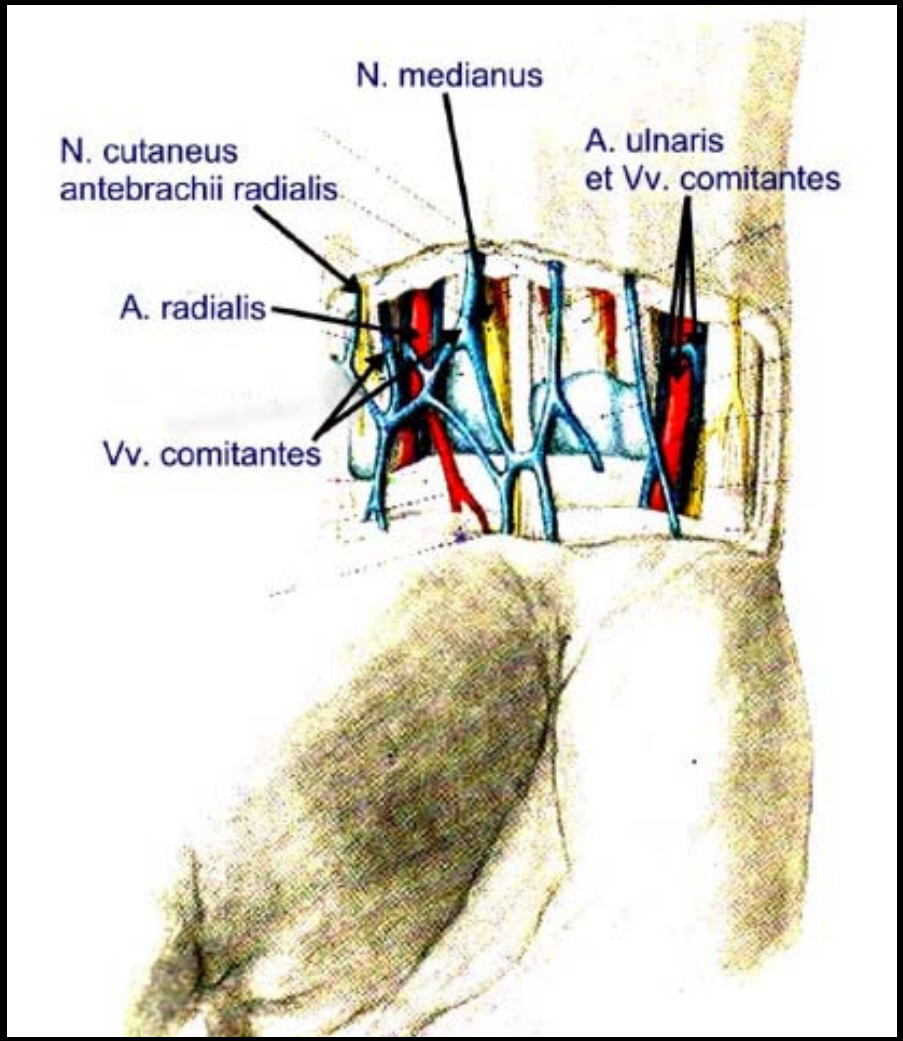
2 Philippe F et al. Comparison of transradial vs. transfemoral approach in the treatment of acute myocardial infarction with primary angioplasty and abciximab. Catheter Cardiovasc Interv. 2004 Jan;61(1):67-73
CONCLUSIONS: In patients with acute myocardial infarction treated with primary angioplasty and abciximab, the transradial access is efficacious with fewer major access site complications than transfemoral access. Transradial approach produces a shorter length of stay, as compared to the transfemoral approach, although with longer times of radiation and higher dose-area product.

literature 2

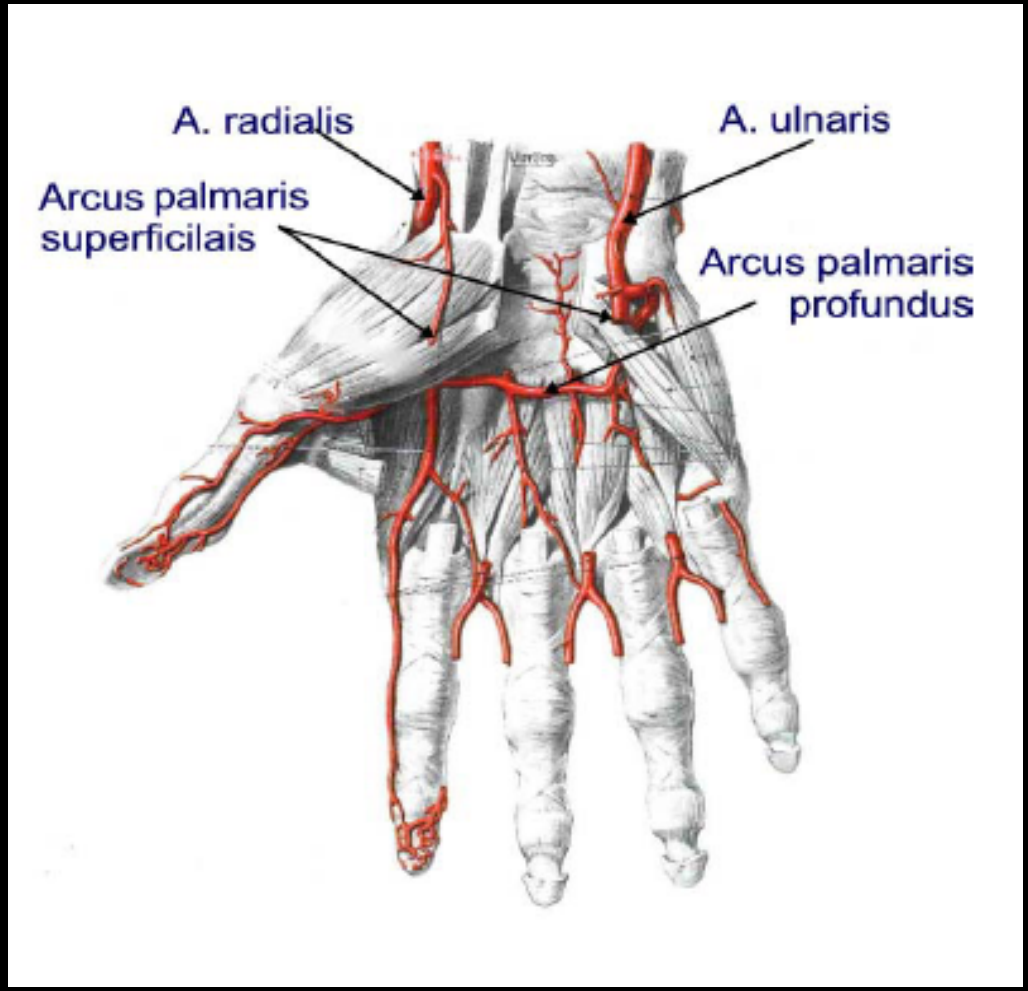
3 Small A et al. Day procedure intervention is safe and complication free in higher risk patients undergoing transradial angioplasty and stenting. The discharge study. Catheter Cardiovasc Interv. 2007 Dec 1;70(7):907-12.

CONCLUSIONS: Day case transradial percutaneous intervention with a 6-hr period of post procedure observation is a safe and feasible practice. The presence of higher-risk features should not be considered an absolute indication for overnight admission in patients considered clinically appropriate for discharge.

anatomy 1

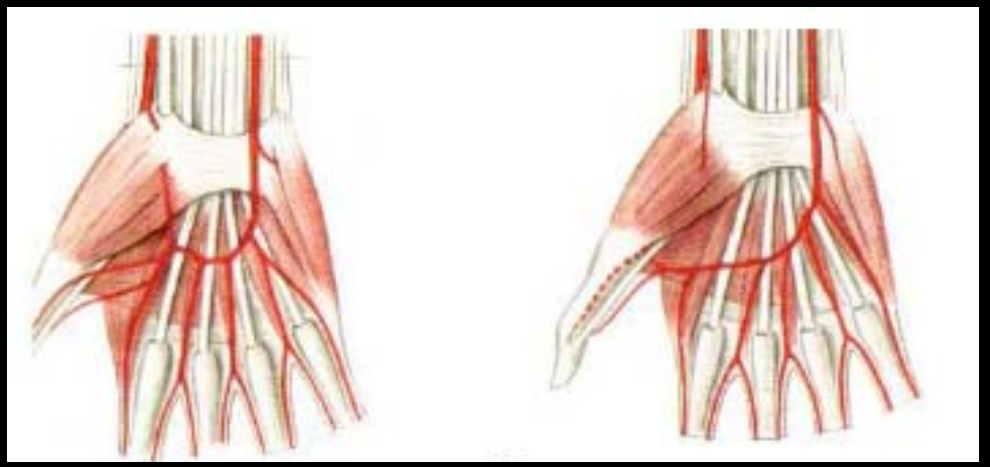

N. medianus
N. cutaneus
antebrachii radialis
A. ulnaris
et Vv. comitantes
A. radialis
Vv. comitantes

anatomy 2

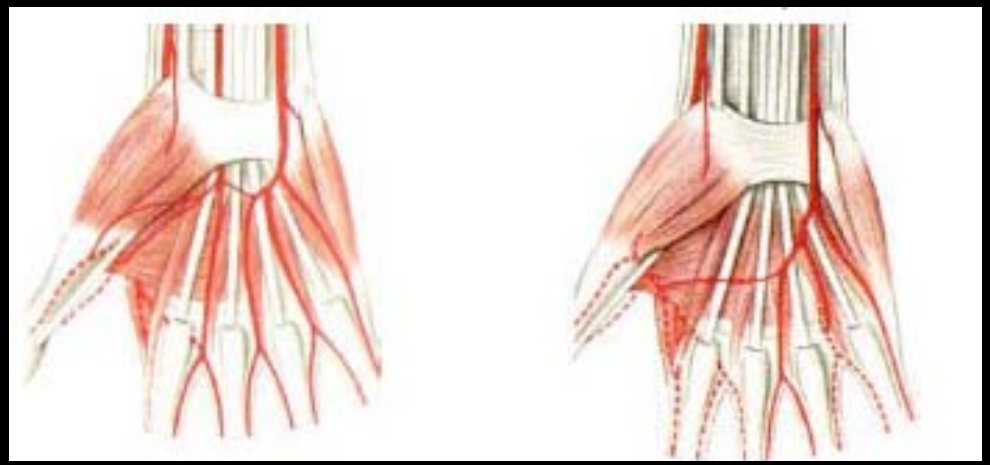

A. radialis
A. ulnaris
Arcus palmaris superficilais
Arcus palmaris profundus

anatomy 3

variation of arterial perfusion to the hand



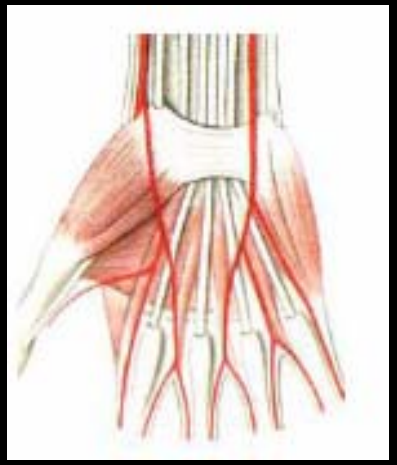
a) radio-ulnar type 27% b) ulnar type 27%



c) mediano-ulnar type 3% d) ulnar type without APS 6%

anatomy 4

variation of arterial perfusion to the hand



e) No palmar arc 16,5%

Patient preparation

- Allen-test
- Comfortable placement of arm and wrist on a table extension
- Light overstretching of the wrist
- 0 – 2,5 – 5 mg midazolame, depending on the patients vegetative state

Choice of material

- 1-3 ml xylocaine s.c.
- Terumo®-introducer sheath 7 – 10 cm, no incision is needed, 5 French, for e.g. expected bifurcation treatment 6 French
- Preferable curves: JR4 and JL 3.5 5F offer access to the ostium in > 90%, preferable guiding catheters: JR4 or Ikari right 1.5 and extra-backup-catheter 5 or 6 F left
- Treatment with 0,2 mg nitro + 5000 units heparine i.a. via the sheath, if (not necessarily) verapamile is used mix with blood because of low ph-value and pain !
- Terumo® compression bandage for easy and dosable compression within seconds

after treatment

- Patient can immediately walk back to his chair or bed
- No rest recommended
- Compression force just until bleeding stops and gradual decrease of compression by the nurse. If examination during the morning bandage can be removed in the afternoon, otherwise the day after (comfortable decompression over night)
- Ambulatory treatment possible even in complex interventions (PCI lounge)
- Patient can observe puncture site by himself through transparent bandage

pitfalls

Radial artery spasm:

Occurs often, after pre-treatment with 2.5 – 5 mg midazolame seldom. Dose depends on the individual vegetative state, seldom supplementary treatment with morphine needed

Narrowing or tortuosity of radial artery:

X-ray guidance during passage of the forearm / arm (which is usually not needed)
Choice of Terumo® -hydrophilic coated wire

Tortuosity of subclavian artery:

Easy to reach the ascendend aorta by inspiration when the angle gets less steep
Once reached the ascendend aorta change catheters over a long (> 170 cm) wire

Steerability into the ostium:

Keep wire in the catheter until ostium or ostium-near position is reached

complications

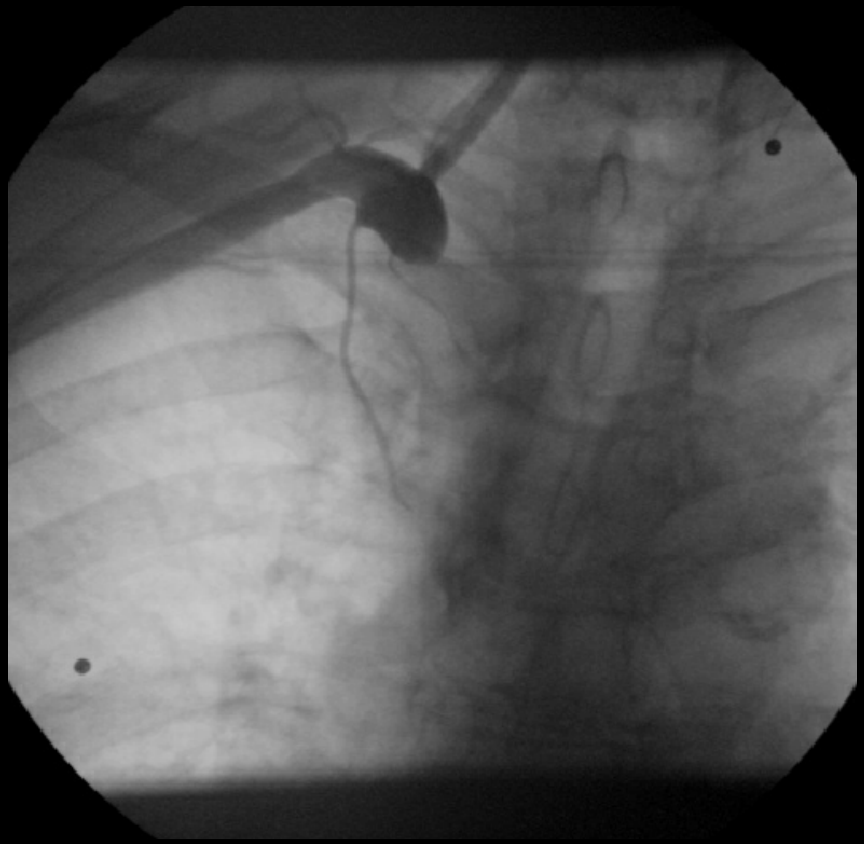
Skin necrosis after overpowered
and prolonged compression

complications

Turtuosity of brachial artery

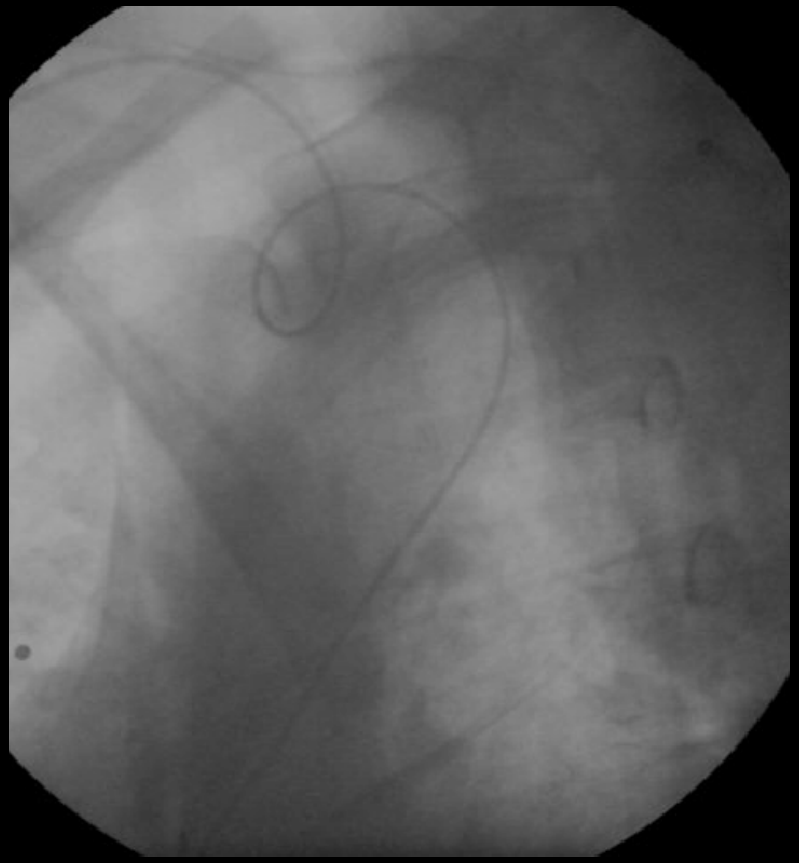
perforation sings after manipulation with hydrophilic wire

difficulties



Occlusion of subclavian artery (before manipulation)

difficulties



kinking of subclavian artery

difficulties

severe spasm of radial artery

disadvantages

- Additional puncture site when introducing intraaortic balloon counter pulsation or transvenous pacing leads or unexpected right heart catheterism
- Left radial access offers some discomfort to the physician (but easy access to the LIMA-graft)
- Renal arteries are more difficult to reach, but feasible in case of suspected renal artery stenosis (MP-catheter)
- Unfavorable use of the right radial artery for cardiac surgery
- If negative Allen-Test not useable, but perhaps ulnar artery !

Own experience

- > 500 transradial pci, > 1000 diagnostic procedures
- 2 minor bleeding complication into the forearm
- No ischemic complication
- Asymptomatic radial artery occlussion depending on size of introducing sheath and force of compression in about 5 – 8 %
- Switch to transfemoral approach with a learning curve, now ~ 5 % in case of spasm, arterial tortuosity or arterial occlusion
- Very satisfied, pleased patients

Bilateral simultaneous transradial approach

for right coronary CTO-treatment guided by LCA-injection