

SITZUNG I - HÄMODIALYSESHUNT

Chronischer Shuntverschluss



PD Dr. K. Wilhelm
Radiologische Universitätsklinik Bonn

02.-03. Oktober 2009

Schloss Johannisberg
im Rheingau

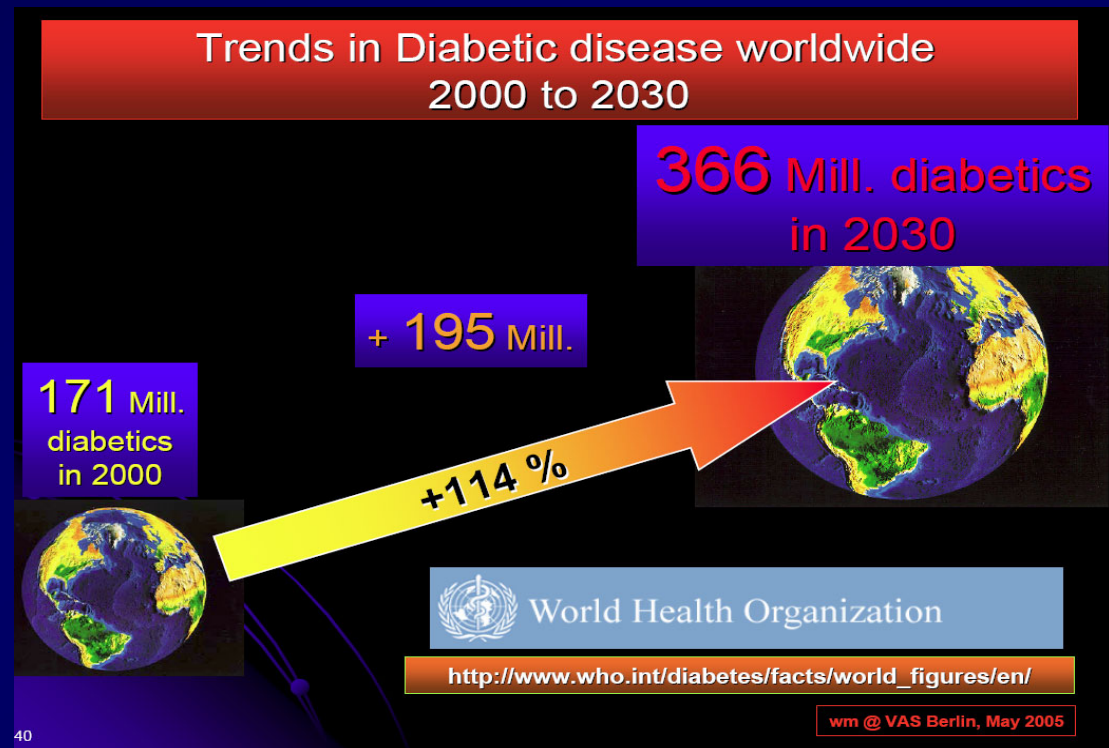
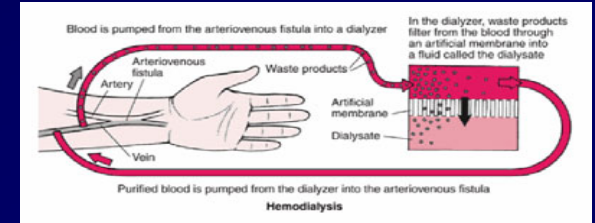


Hämodialyseshunt

Einleitung - Chronischer Shuntverschluss

steigende Erkrankungszahl

Hämodialyseshunt: 150-200 Pat. pro Mio. Einwohner



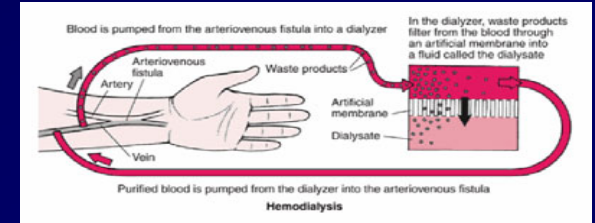


Hämodialyseshunt

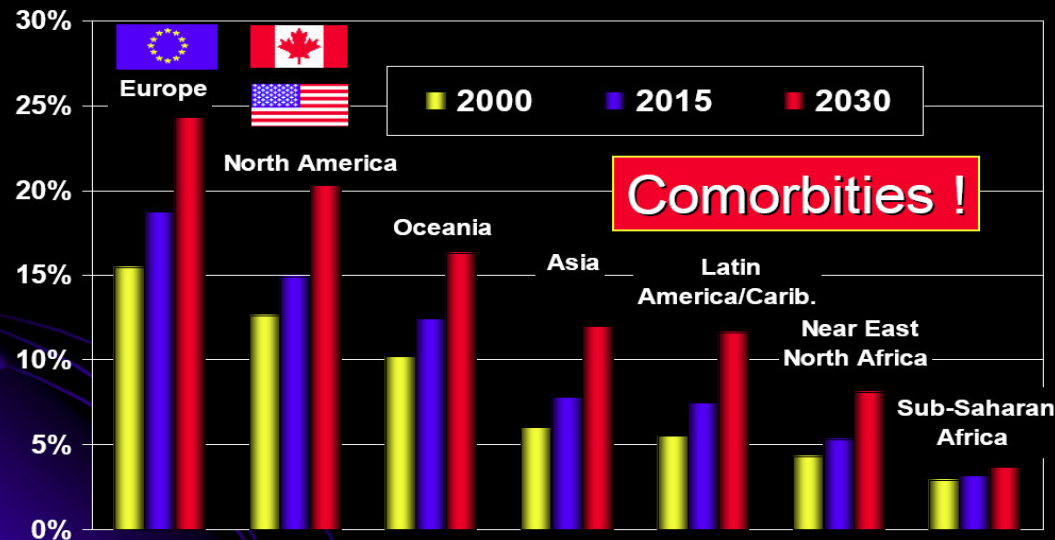
Einleitung - Chronischer Shuntverschluss

wachsende Lebenserwartung

Hämodialyseshunt: 150-200 Pat. pro Mio. Einwohner
Dauerhaft funktionierende Hämodialyseshunts ca. 15 %



% World - population over 65 years by region

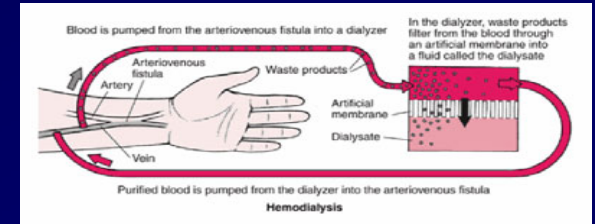


Source: U.S. Census Bureau, International Programs Center, International Data Base. March 2004



Hämodialyseshunt

Einleitung - Chronischer Shuntverschluss



Europa:



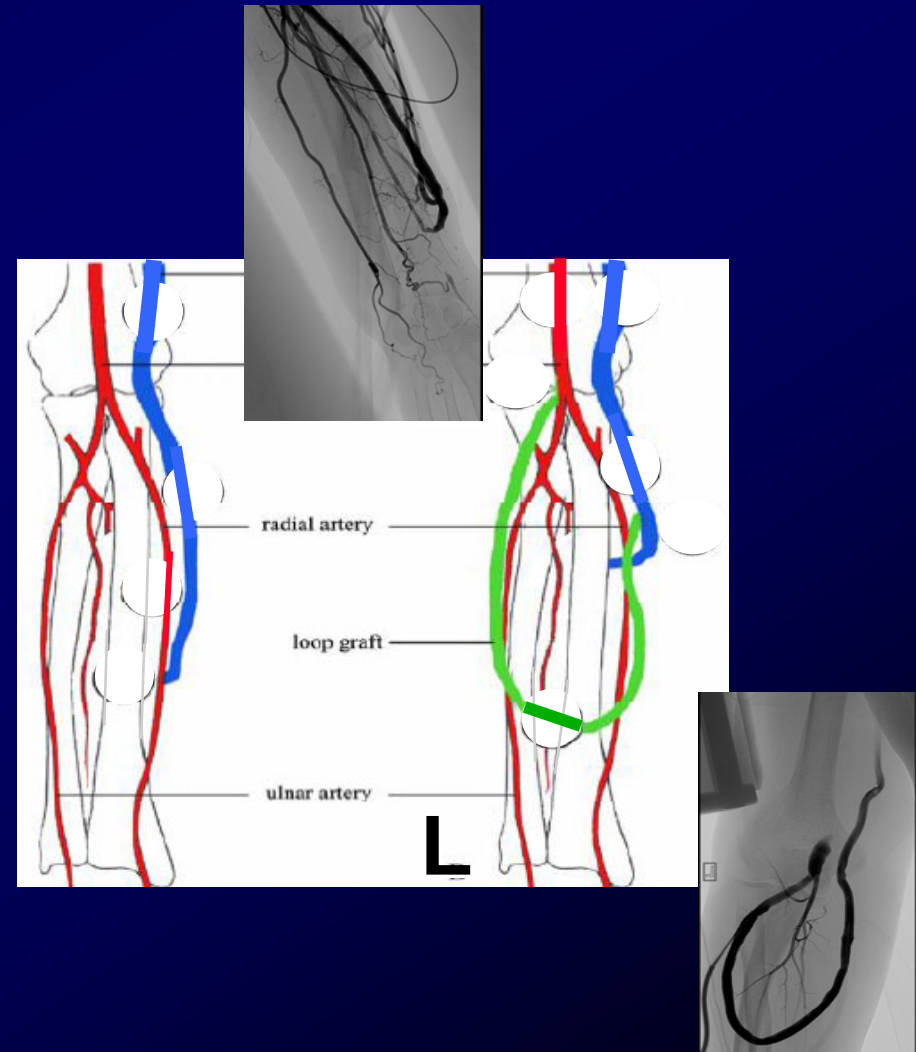
a.-v. Brescia-Cimino Fistel

Anastomose A.radialis-Unterarmvene (1965)

USA:

Goretex-Interponatshunt

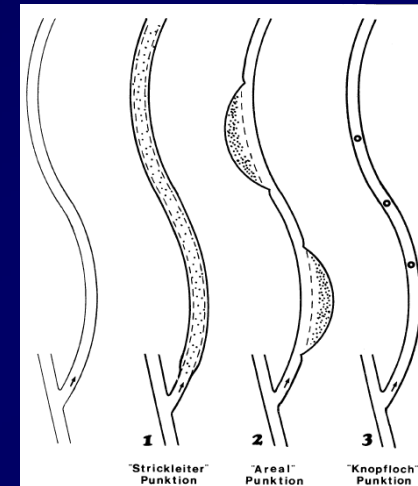
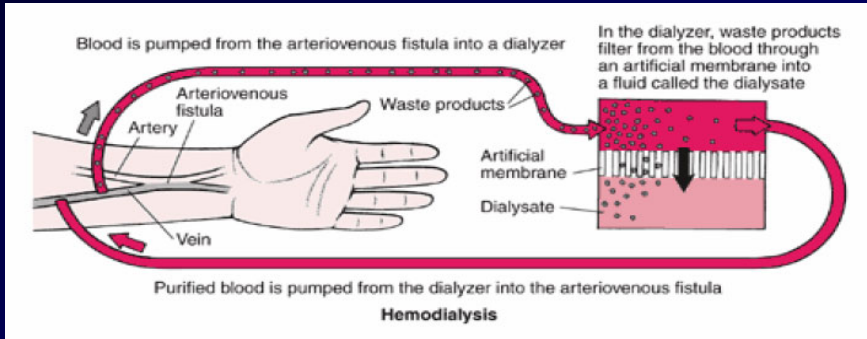
Poly-Tetra-Fluor-Ethylen, PTFE-Loop ; Baker (1976)





Hämodialyseshunt

Einleitung - Chronischer Shuntverschluss



Krönig G. Dialyse Journal (1984) 9: 2-10

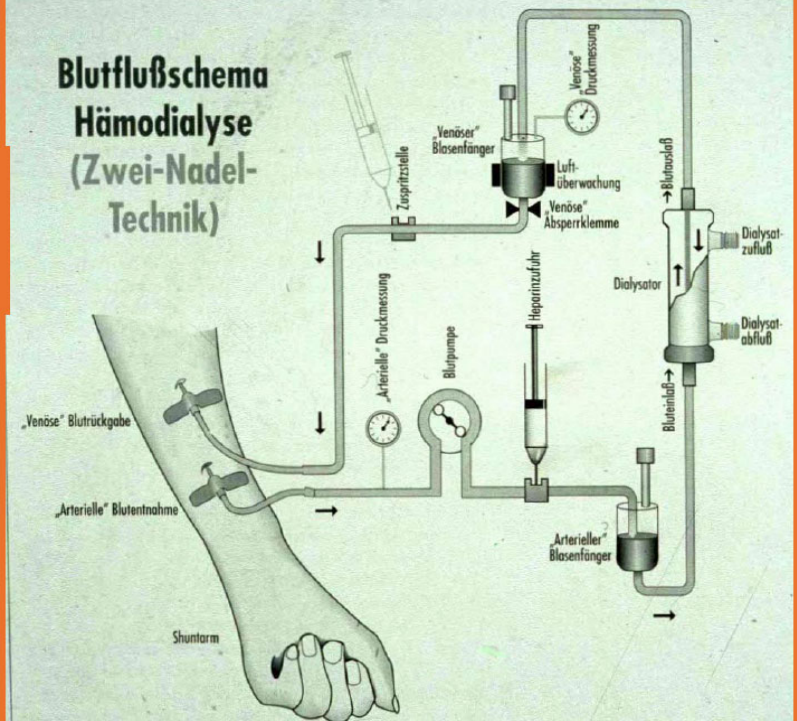
Dialyseshunt



Blutfluß
250 ml/min
=2500 / 10min



Blutflußschema Hämodialyse (Zwei-Nadel- Technik)

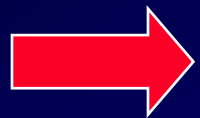




Hämodialyseshunt

Leitlinien der Deutschen Gesellschaft für Gefäßchirurgie
(*vaskuläre und endovaskuläre Chirurgie*) (DGG) 6/08

a.-v. Fistel Shunttyp der ersten Wahl !



bessere Funktionsraten

primäre Ein- bis Zwei-Jahres-Offenheitsraten

85% - bis 90%

Prothesenshunts lediglich bei 40% bis 60%





Hämodialyseshunt

Shunstenosen – Häufigkeit und Lokalisation

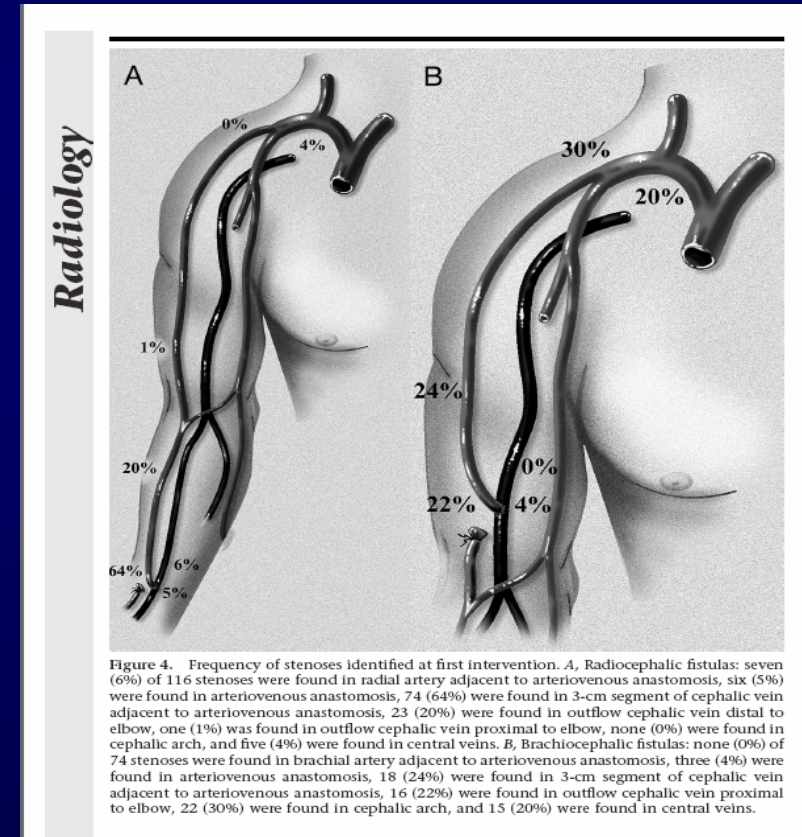
Primäre Shuntdurchgängigkeit nach 1,2 und 3 Jahren

Brescia-Cimino-Shunts

65 %; 60 %; 45 %

Goretex-Interponat-Shunt

50 %; 43 %; 10 %





Hämodialysehunt

Dysfunktion – Shunstenosen - Chronischer Shuntverschluss

Prädisposition - Stenose der nachgeschalteten Vene

Stenosen - häufig Ursache nachfolgender Shuntthrombosen

Thrombosierung häufiger bei Implantatshunts

Der Erhalt des Dialysezugangs absolute Priorität



Rechtzeitige Diagnose und Therapie

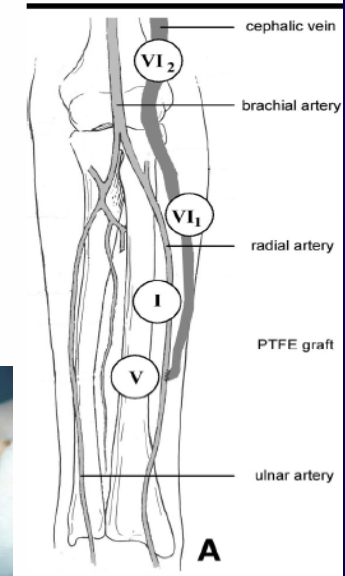


Hämodialyseshunt

Shunt-Monitoring

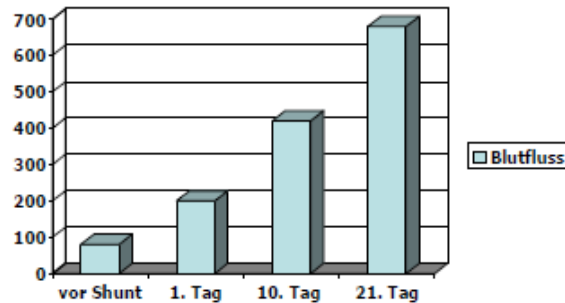
Duplex-Sonographie
zur Beurteilung des Blutflusses
ca. 10 Tage nach Shuntanlage
Shuntfluss > 400 ml/min

Radiology



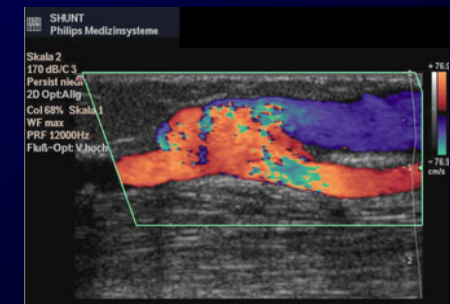
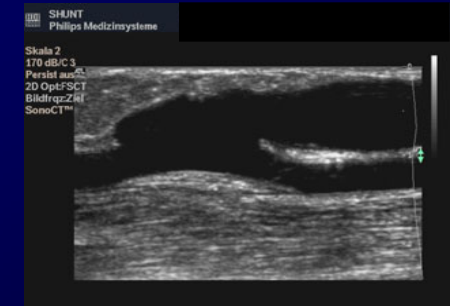
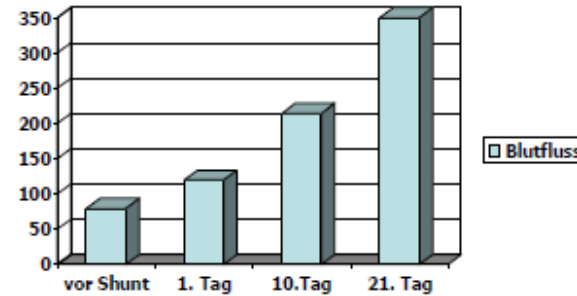
Shunt-Monitoring

Blutfluss (ml/min) bei gutem art. Gefäßstatus



Shunt-Monitoring

Blutfluss (ml/min) bei Pat. mit verkalkter A. radialis





Hämodialyseshunt

Dysfunktion – Shunstenosen - Chronischer Shuntverschluss

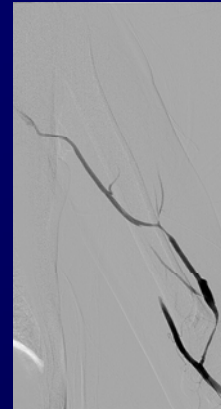
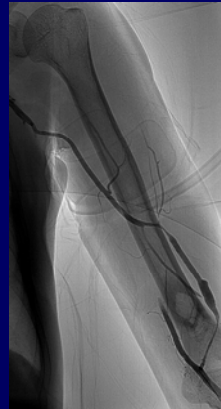
Warnsignale für chronischen Shuntverschluss → Thrombose

Abfall des Shuntvolumens um 20% (Blutflüssen unter 1000ml/min)

Reduktion des Blutflusses unter 500-600ml/min bei einer Prothese

Risikofaktoren:

- verzögerter Shuntfluß
- erhöhter Venendruck
- längere Nachblutungszeit

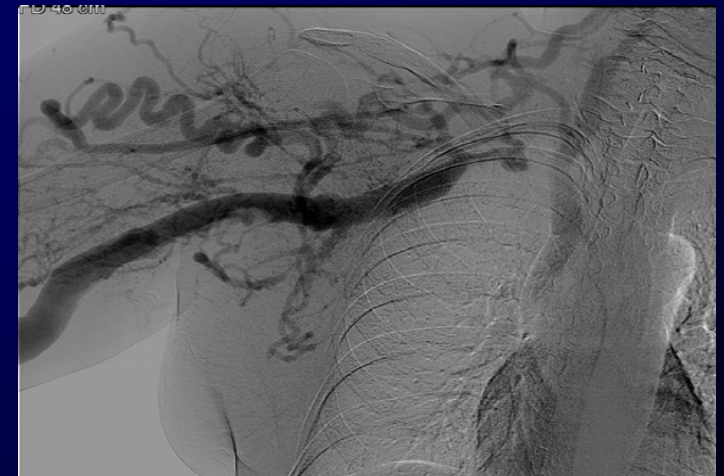
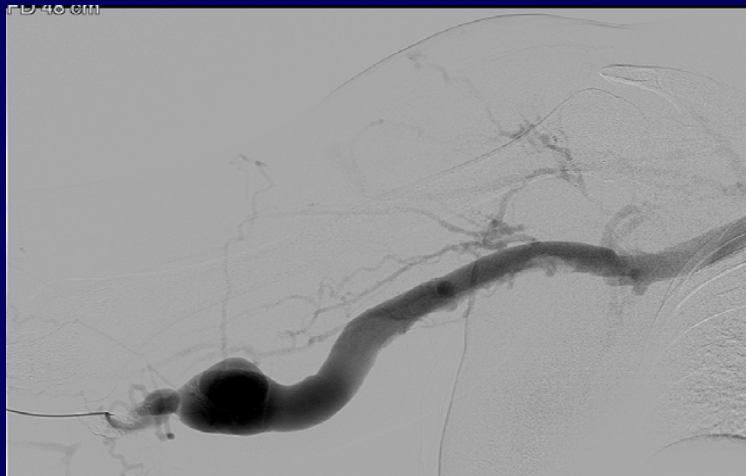
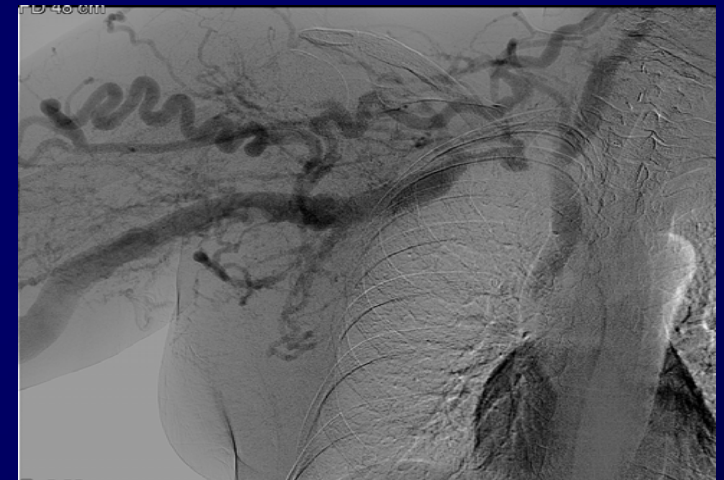
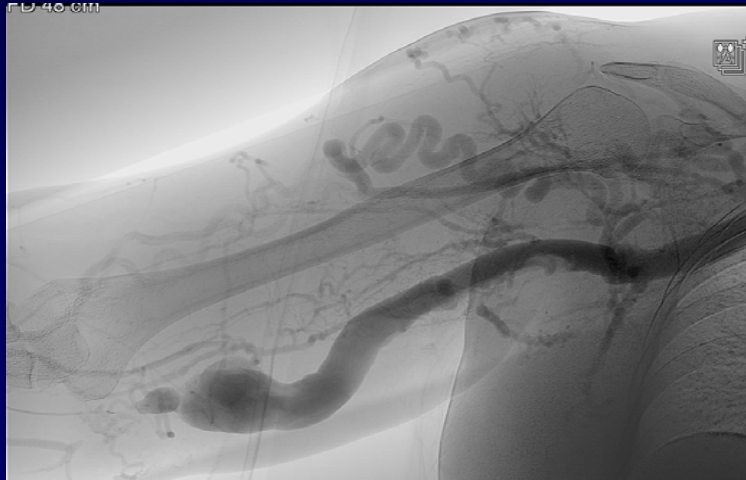
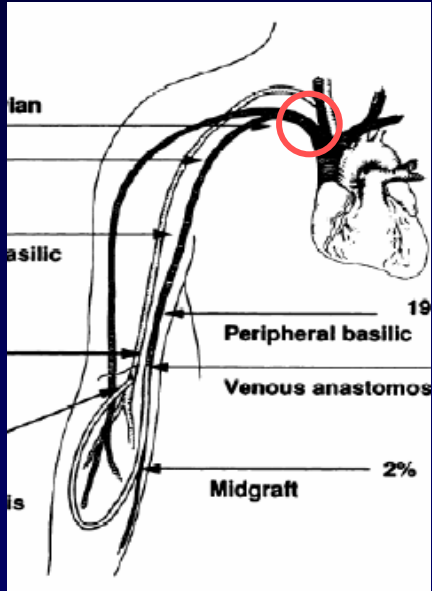


→ 60% der Grafts erleiden bei einem Blutfluss unter 500ml/min in den nächsten Monaten eine Shuntthrombose



Hämodialyseshunt

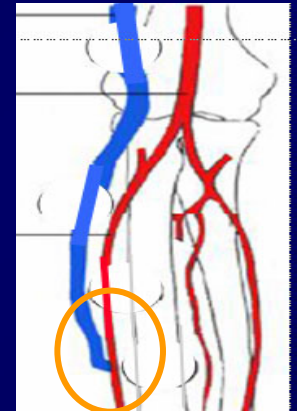
Chronisch venöser Verschluss Kompensation durch Kollateralvenen



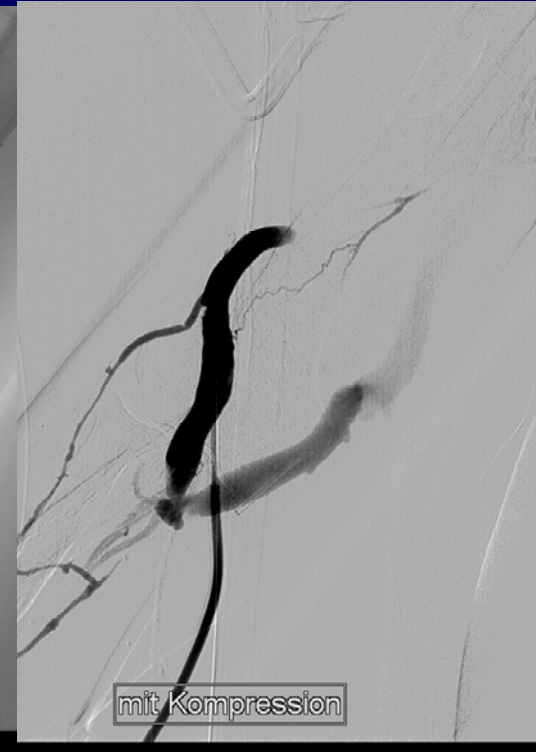
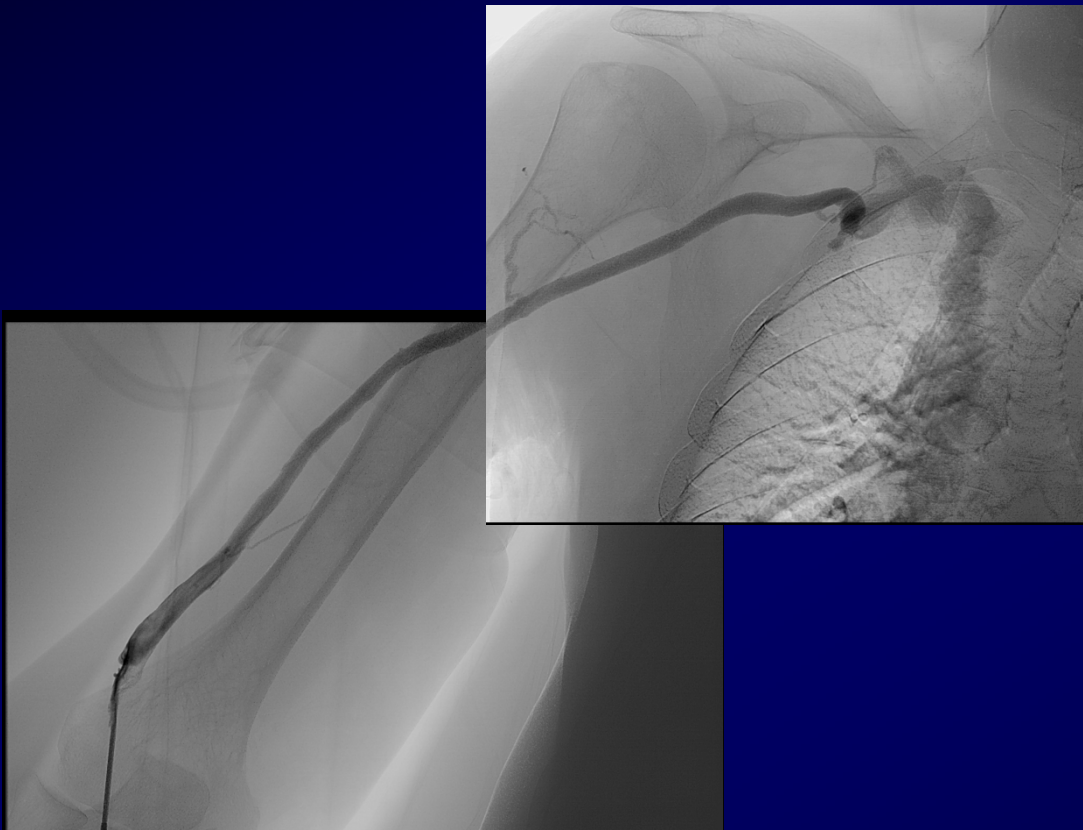


Hämodialyseshunt

Shuntographie Stenose Anastomose



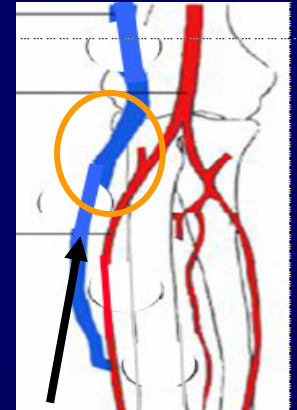
Zugangswege*





Hämodialyseshunt

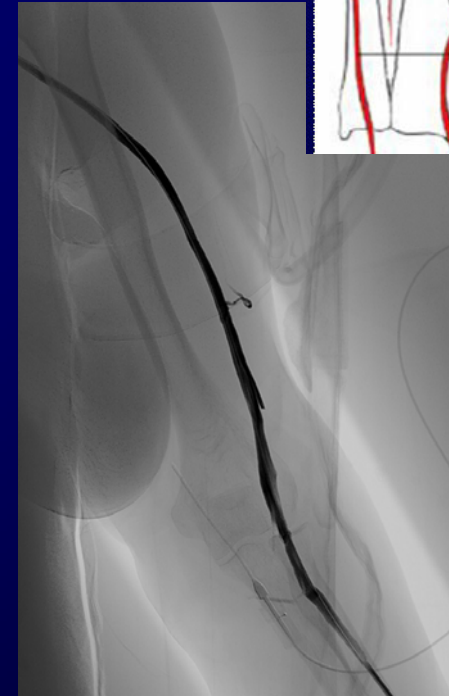
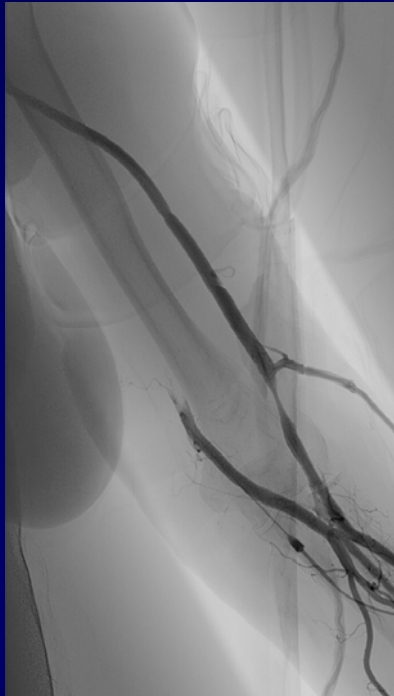
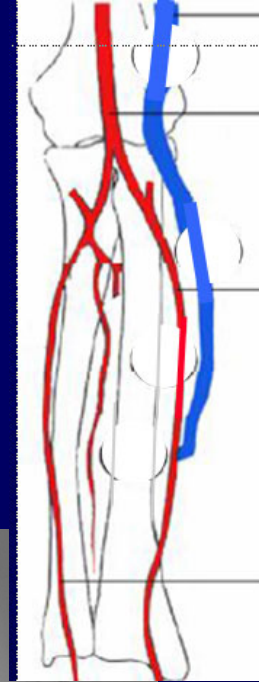
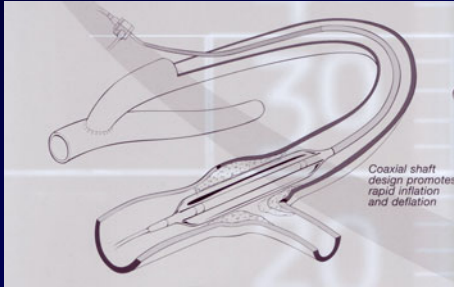
Stenose – PTA





Hämodialysesshunt

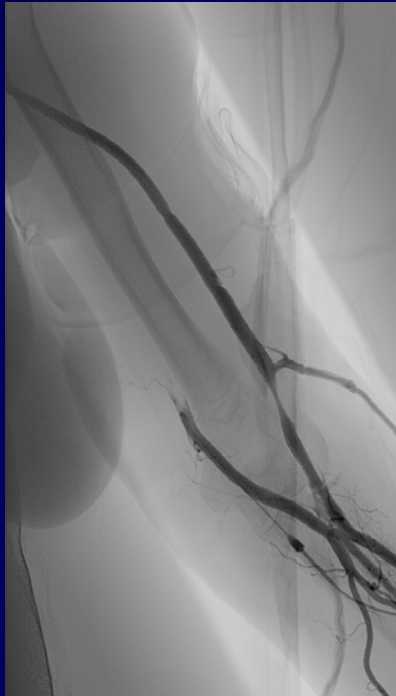
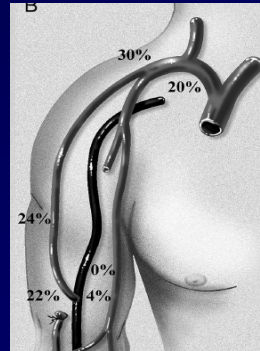
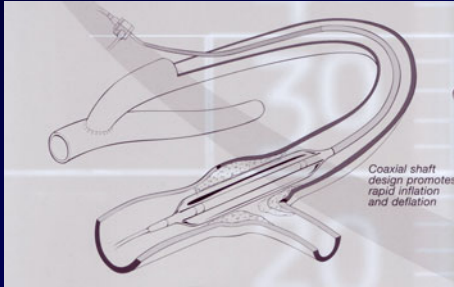
Shunt - PTA





Hämodialysesshunt

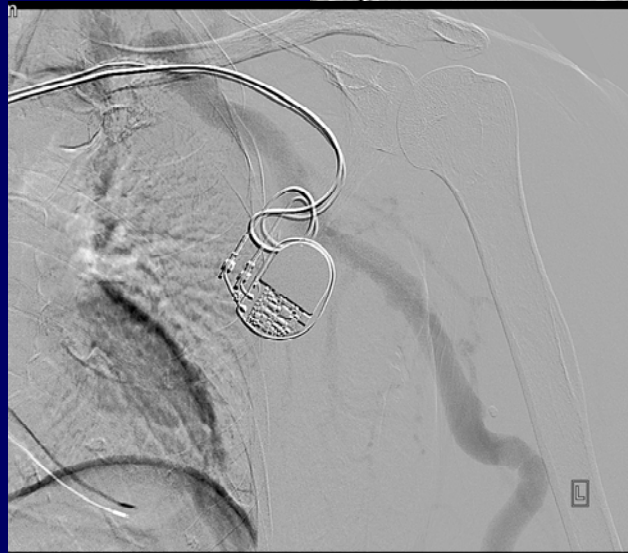
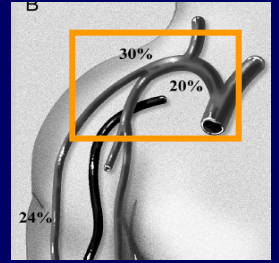
Shunt - PTA





Hämodialyseshunt

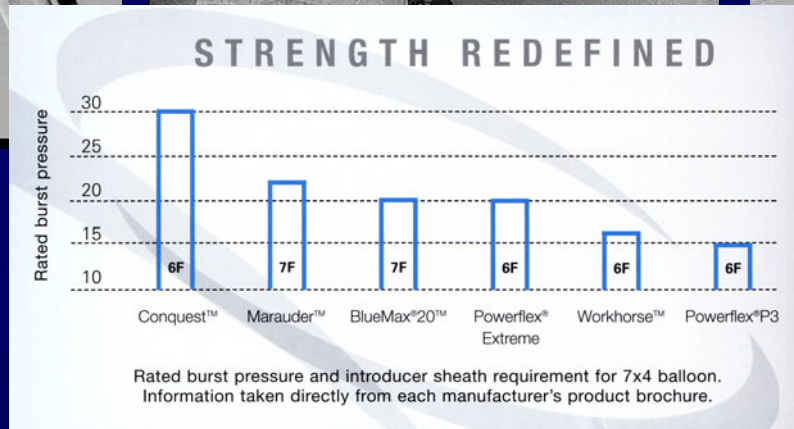
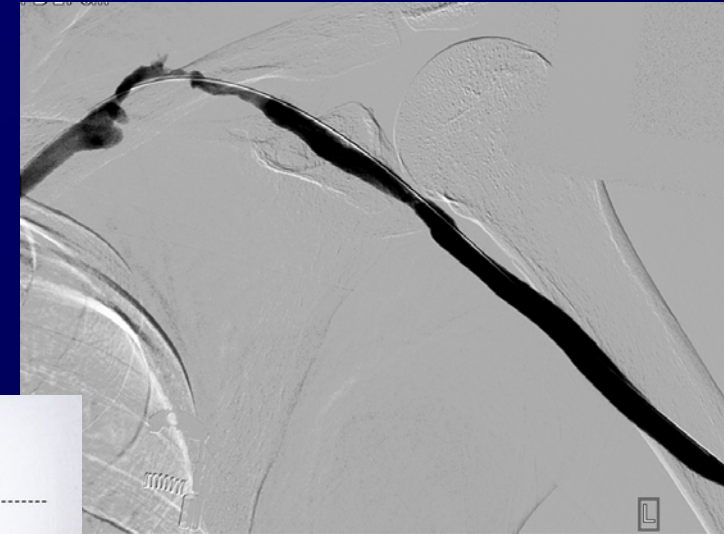
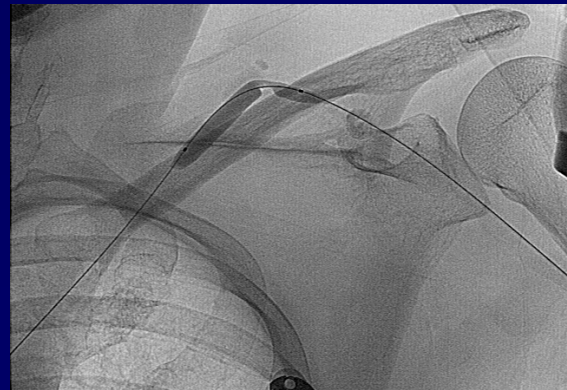
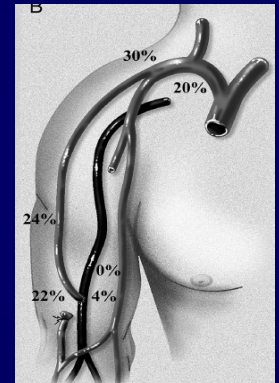
Dysfunktion – zentrale Stenose – SM Sonden





Hämodialyseshunt

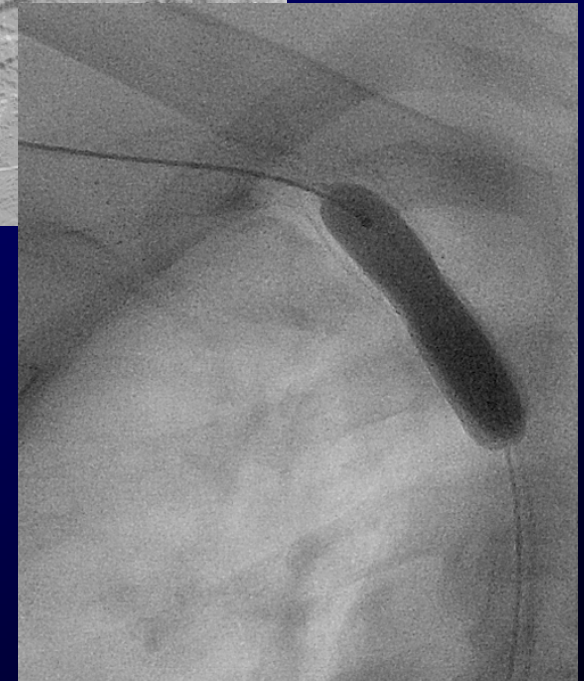
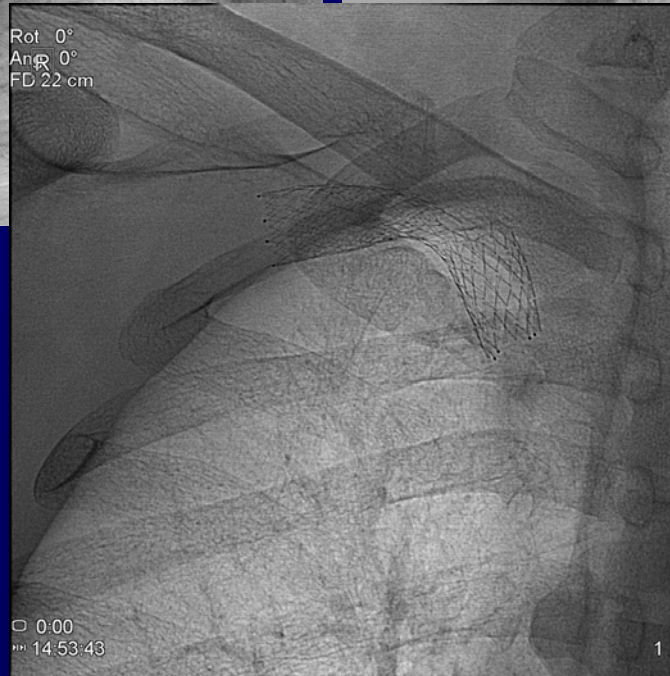
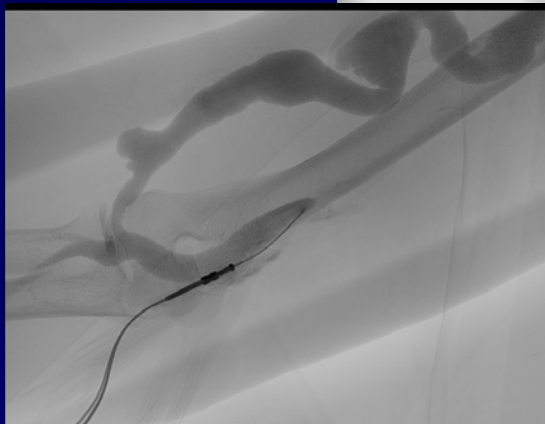
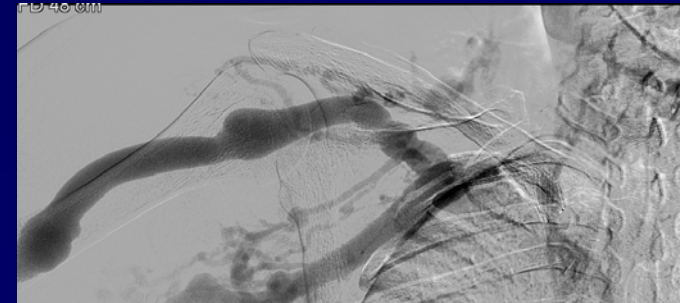
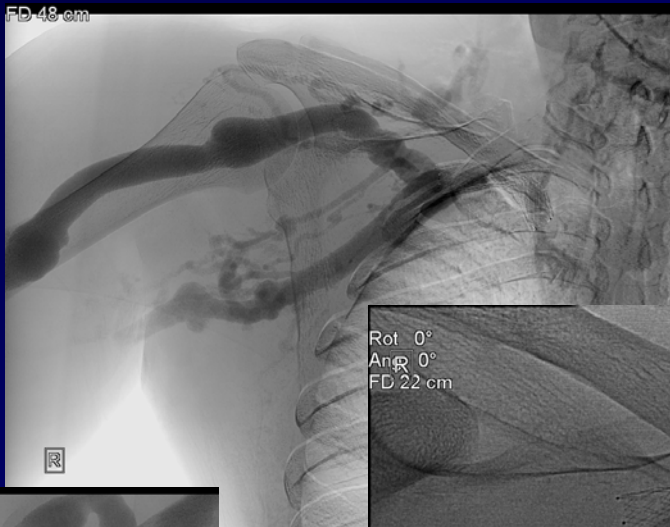
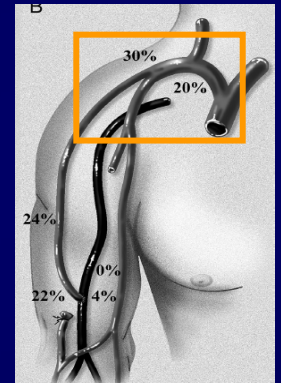
Dysfunktion – zentrale Stenose





Hämodialyseshunt

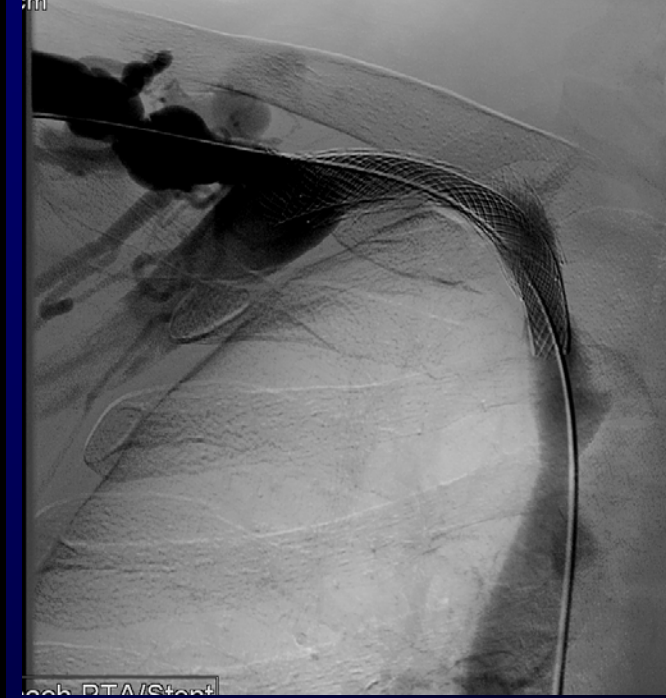
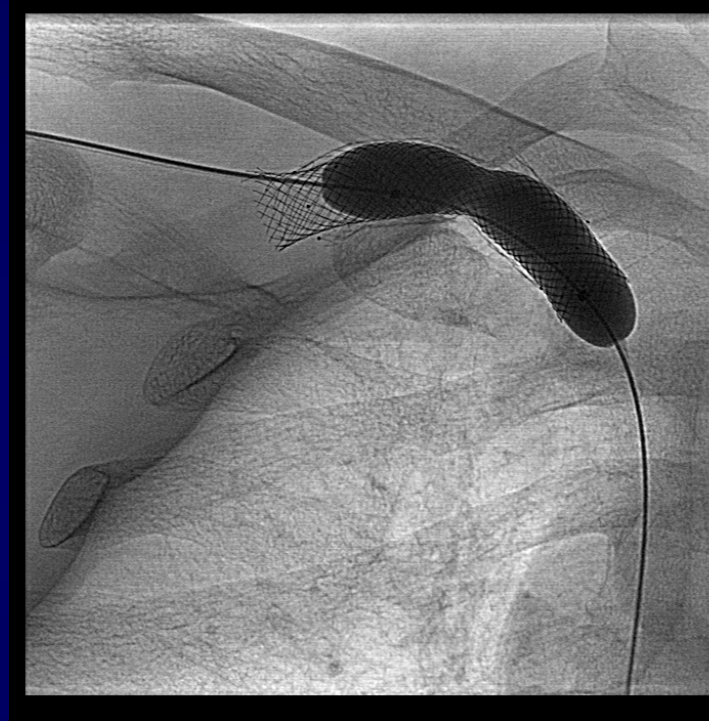
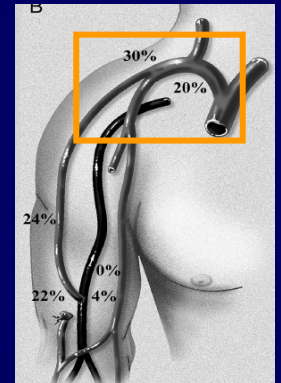
Dysfunktion – zentrale Stenose – Stentbruch





Hämodialyseshunt

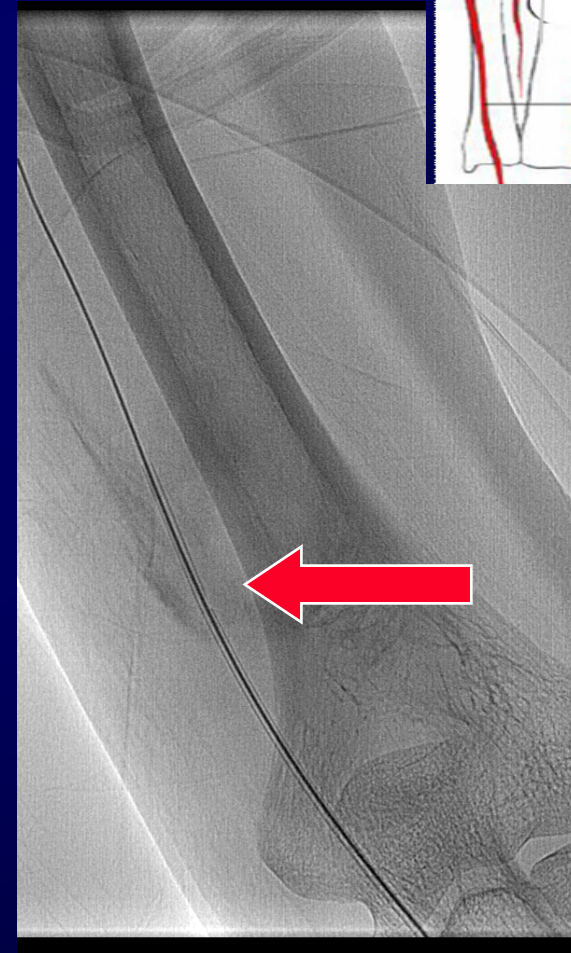
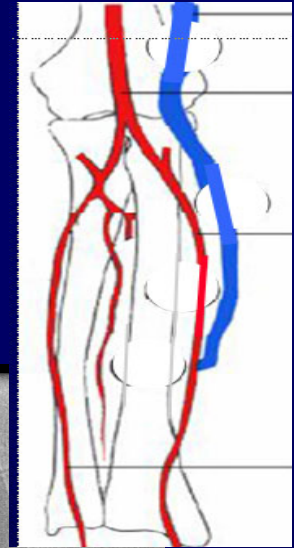
Dysfunktion – zentrale Stenose – Stentbruch





Hämodialyseshunt

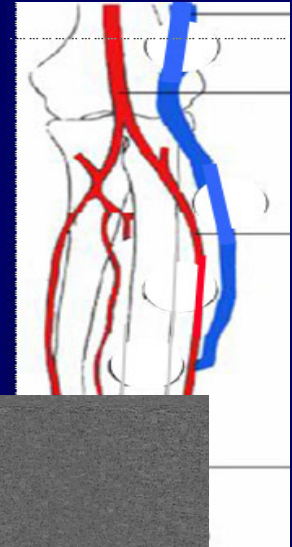
Stenose – PTA Zugang





Hämodialyseshunt

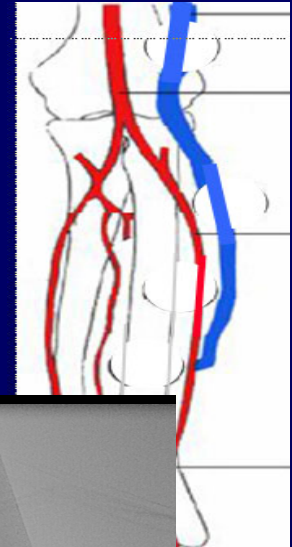
Stenose – PTA Zugang





Hämodialyseshunt

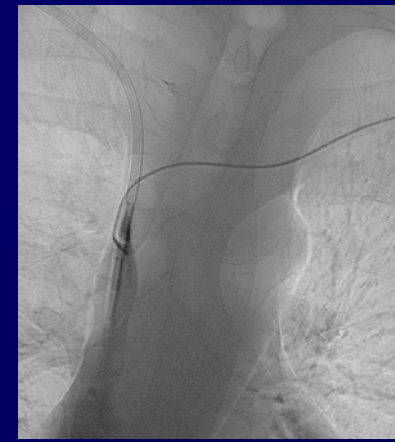
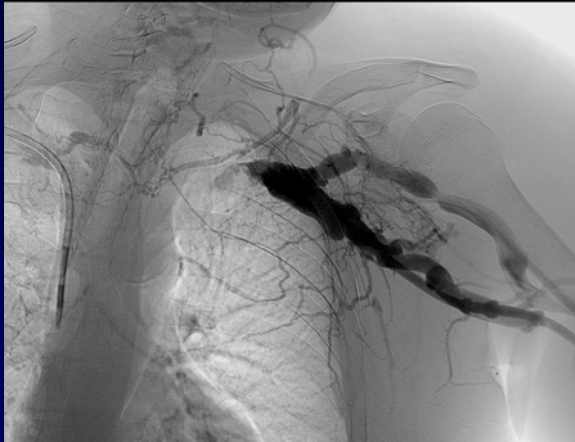
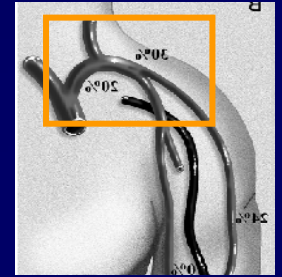
Stenose – PTA Zugang





Hämodialyseshunt

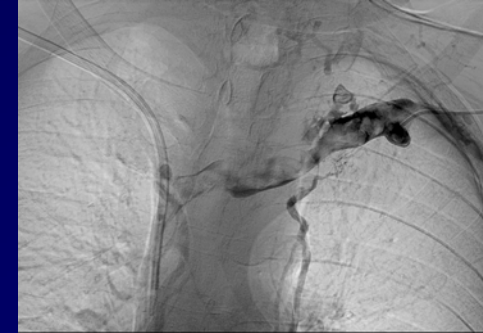
zentrale Trombose – Thrombolyse PTA Stent





Hämodialyseshunt

Lyseprotokolle bei Thrombose



Katheterlyse

Urokinase initial 25 000 IE - 150 000 IE

Zusätzlich Ballondilatation



Thrombus mechanisch fragmentieren
ggf. gegenläufige Katheter



Sprühlysetechnik

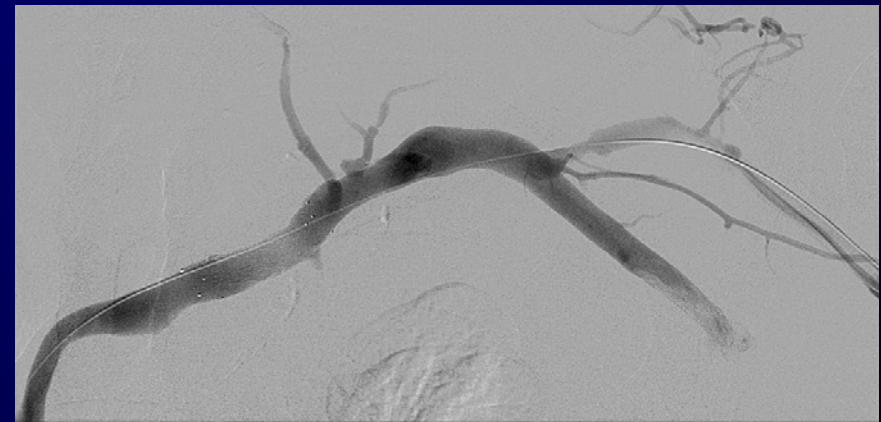
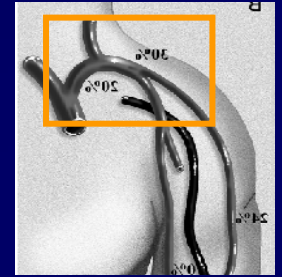
150 000 IE Urokinase innerhalb von 15 – 20 Minuten

2000 IE/min - Gesamtdosis 300 000 IE



Hämodialyseshunt

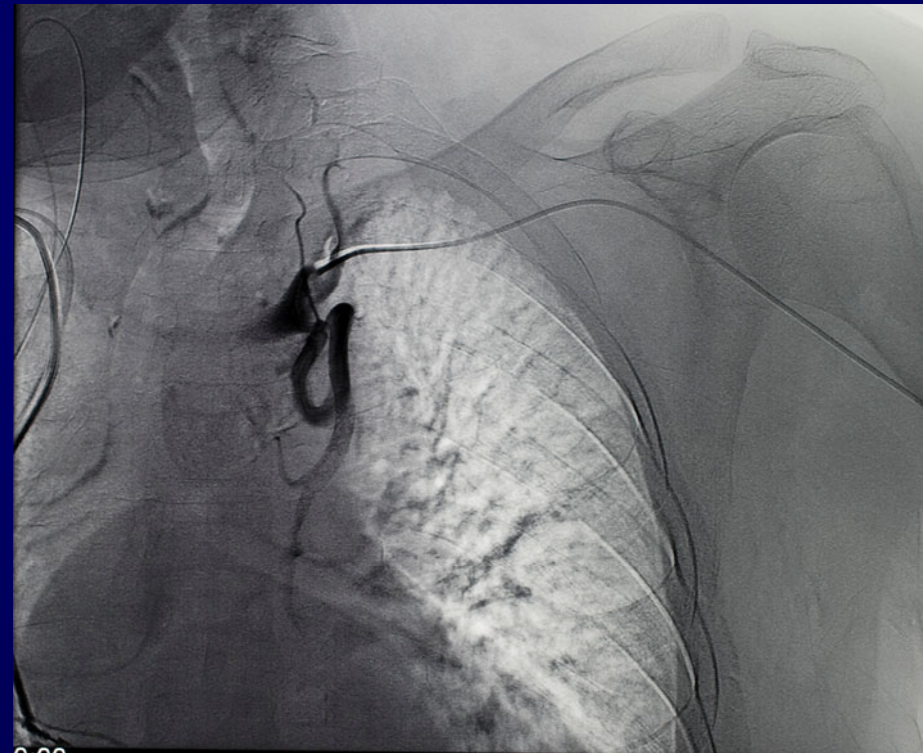
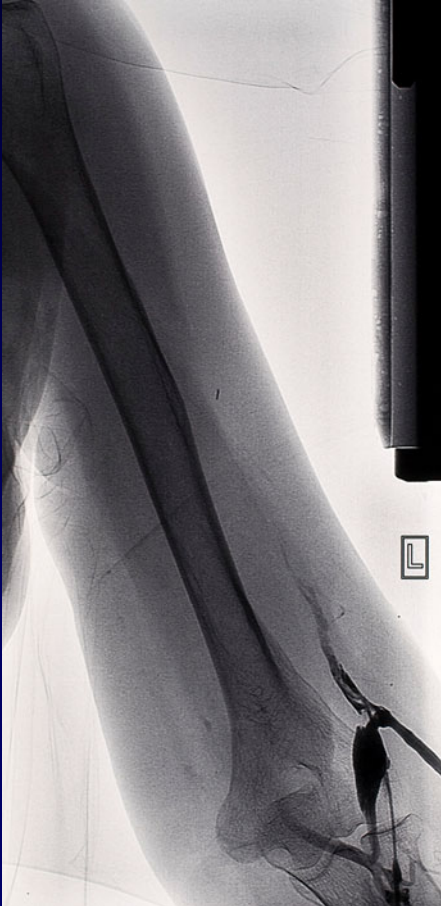
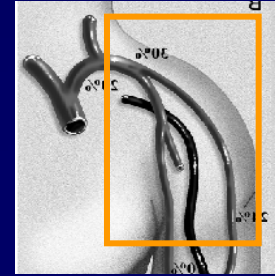
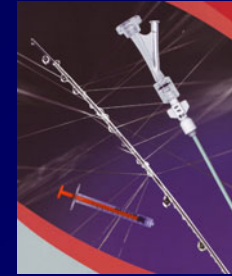
nach Lyse - zentrale Stenose – PTA Stent





Hämodialysehunt

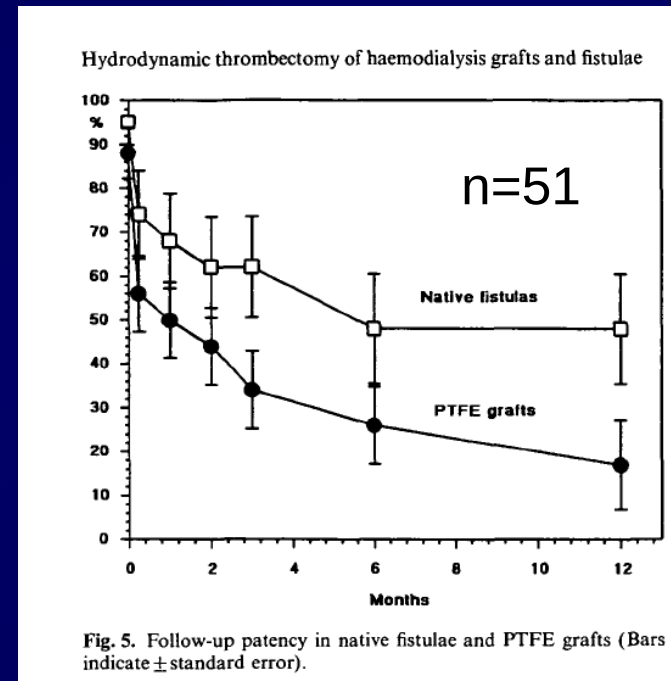
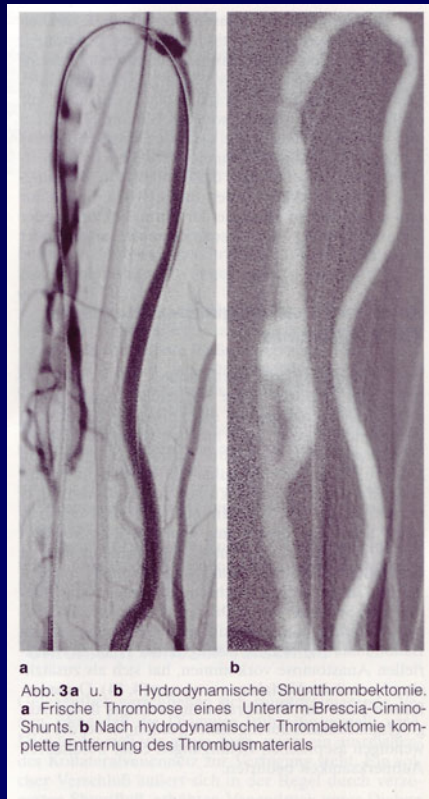
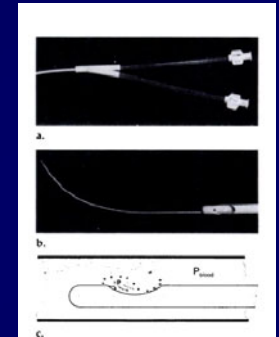
chronisch venöser Shuntverschluss





Hämodialyseshunt

Shuntthrombose – Thrombolyse Hydrolyser





Hämodialyseshunt

Shuntthrombose – Thrombolyse Hydrolyser

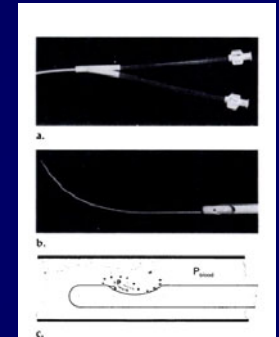


Table 1. Treatment results for mechanical thrombectomy devices ($N = 58$)

Device	No. of procedures	Technical success	3 month patency rate
		%	
Amplatz TD	23	82.6	67.3
Hydrolyser catheter	24	83.3	64.1
Device combination	11	91.0	62.2

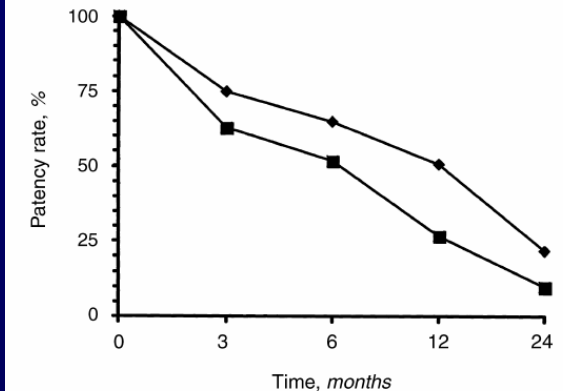
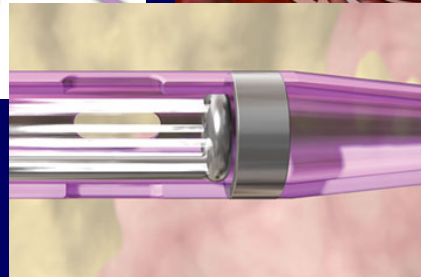
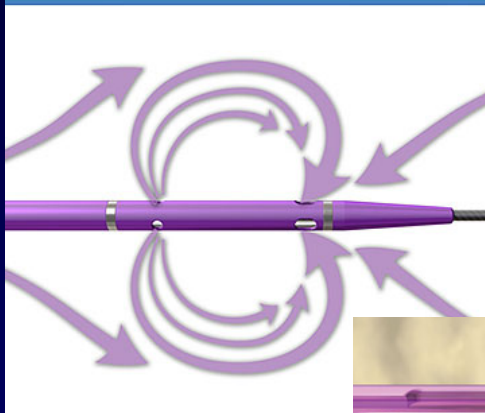
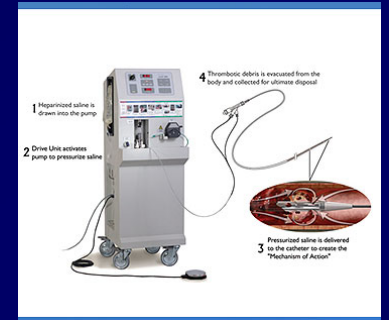


Fig. 3. Follow-up findings of the life-table analysis depicting the primary (□) and overall (◆) patency rates.

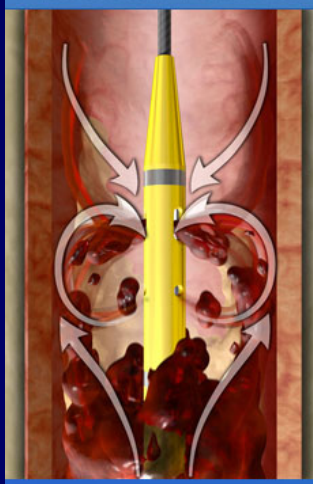


Hämodialyseshunt

Shuntthrombose – Thrombolyse Angiojet



Mechanical
Thrombectomy
Preserves AV Access



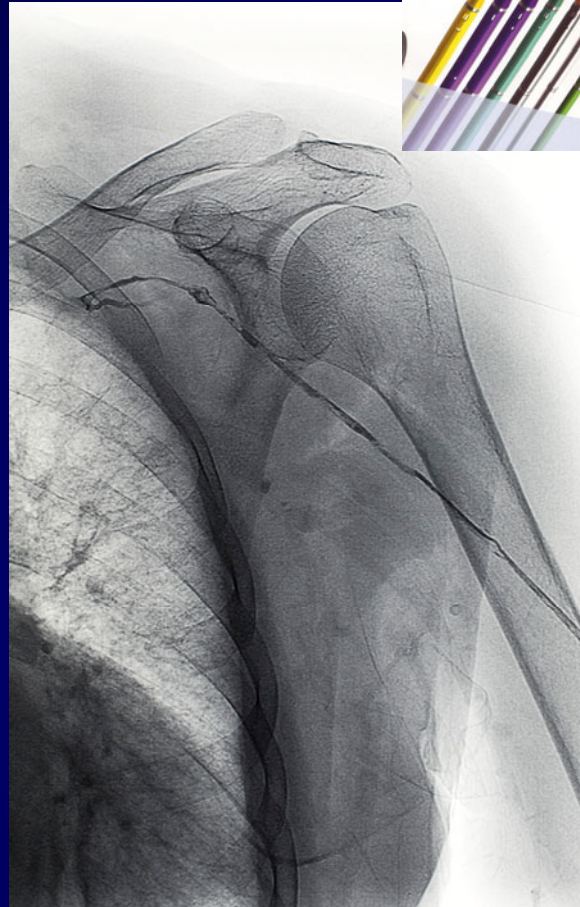
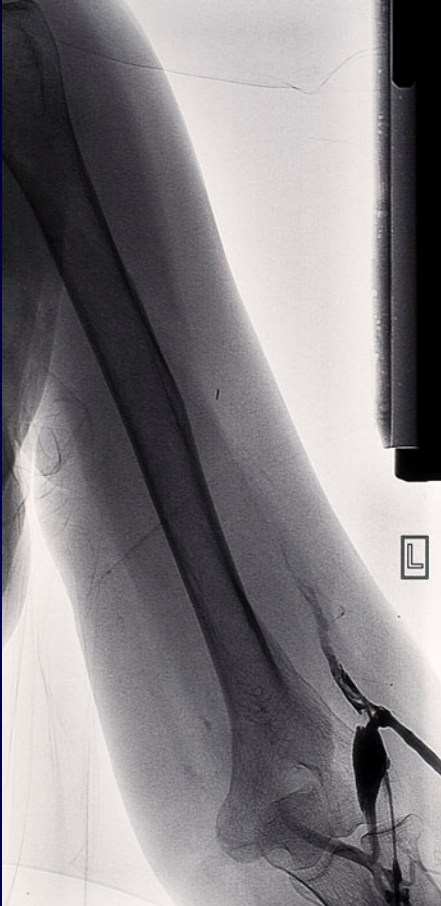
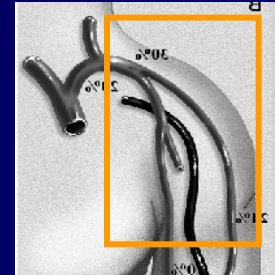
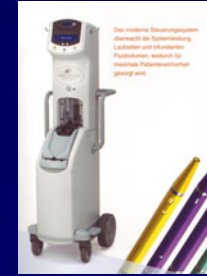
Power Pulse™
Delivery with the
Xpeditior Catheter





Hämodialyseshunt

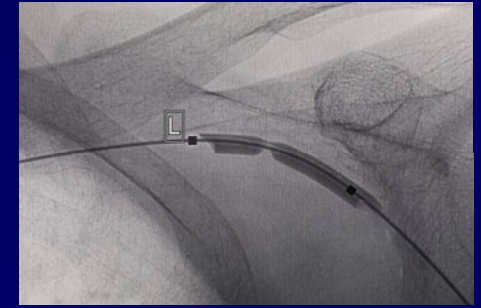
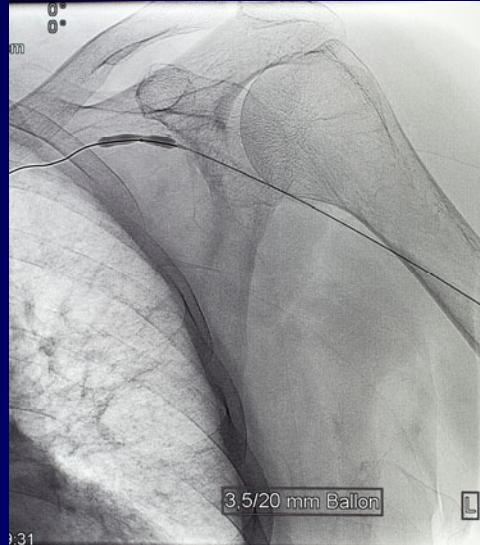
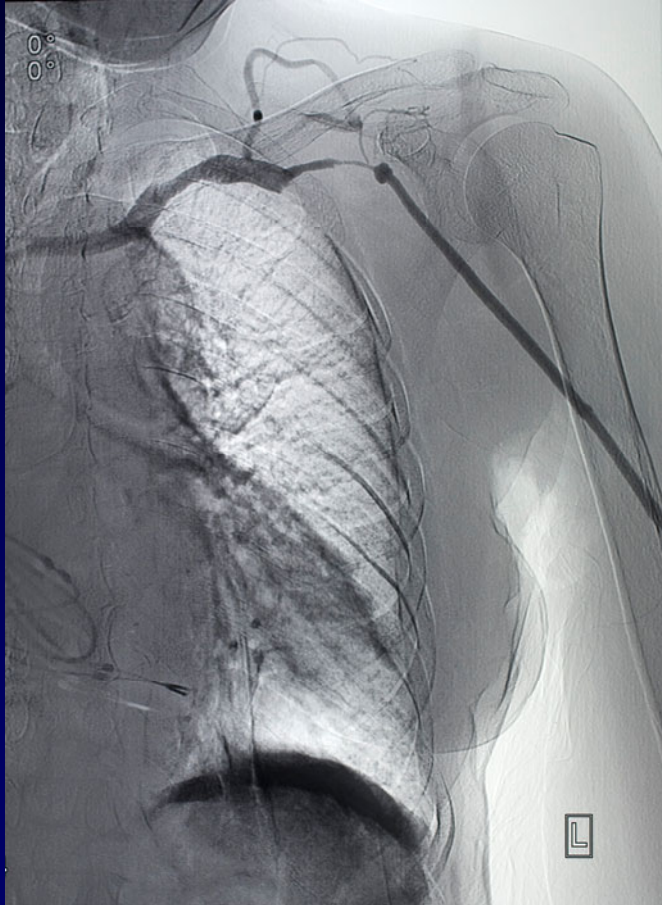
Shuntthrombose –Thrombolyse Angiojet





Hämodialyseshunt

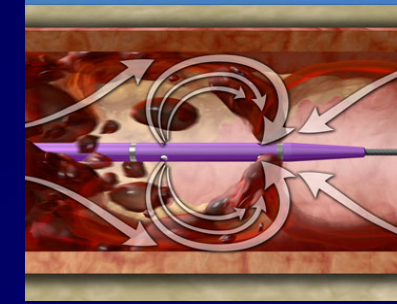
Shuntthrombose – Thrombolyse - PTA





Hämodialyseshunt

Shuntthrombose – Thrombolyse Angiojet

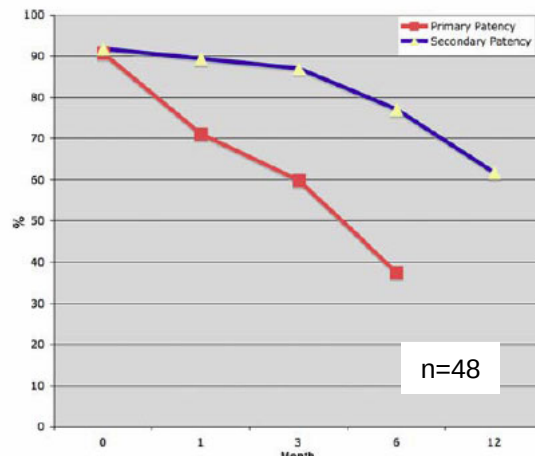


Cardiovasc Intervent Radiol (2009) 32:265–270
DOI 10.1007/s00270-008-9478-2

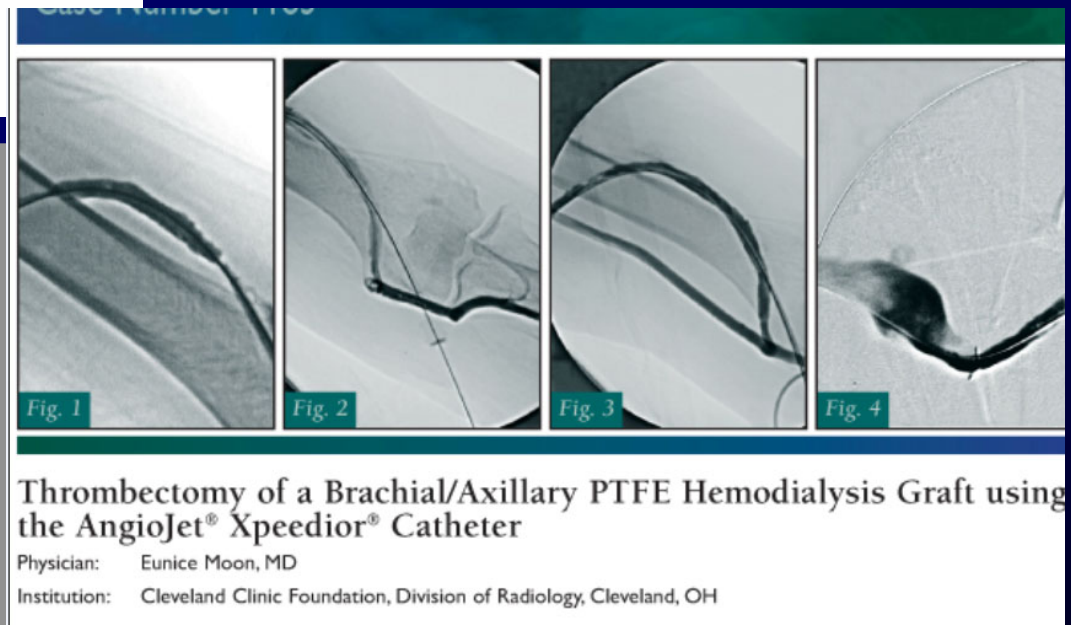
CLINICAL INVESTIGATION

AngioJet Thrombectomy for Occluded Dialysis Fistulae: Outcome Data

Peter Littler · Nicola Cullen · Derek Gould ·
Ali Bakran · Steven Powell



Primary and secondary patency





Hämodialyseshunt

Chronischer Shuntverschluss



- Steigende Inzidenz an Hämodialysepatienten
- Dauerhaft funktionierende Hämodialyseshunts ca. 15 %
- Steigende Anzahl chronischer Shuntverschlüsse
- Stenosen - häufig Ursache nachfolgender Shuntthrombosen
- Shuntkontrolle und Pflege erforderlich
- Der Erhalt des Dialysezugangs hat absolute Priorität
- Kombination perkutane Techniken zur Therapie