

BLOODPOOLAGENTS

CLINICAL EXAMPLES

**Post-Radiation Changes
in Blood Flow of the Arm**

Post-Radiation Changes in Blood Flow of the Arm

MR phlebography of the proximal arm vessels

Clinical details

Duplex sonography arouses suspicion of left subclavian vein thrombosis with arm edema, 2 years after adjuvant radio-chemotherapy for a mamma carcinoma.

MR Equipment		
Type	Siemens MAGNETOM	
Field Strength (T)	1.5	
Gradient Amplitude (mT/m)	45	
Gradient Rise Time (ms)	0.2	
Coil(s)	Body Matrix + Spine Matrix	
MR Sequence Parameters	Dynamic	Steady State
Sequence	FLASH 3D	FLASH 3D
Repetition Time (ms)	3.39	3.39
Echo Time (ms)	1.36	1.36
Flip Angle (°)	12	12
Bandwidth (Hz/Pixel)	475	475
Slice Thickness (mm)	2	2
Number of Slices	72	72
FOV (mm)	320	320
Phase Field of View (%)	100	100
Acquisition Matrix (Pixel)	320 x 289	320 x 289
Resolution (mm ²)	1 x 1.1	1 x 1.1
Image Matrix (Pixel)	512 x 512	512 x 512
Acquisition Time (s)	24	24
Fat Saturation (yes/no)	yes	yes
Parallel Imaging (Factor)	no	no
Contrast Agent Application (all i.v.)	Dynamic	Steady State
Test Bolus Contrast Media	no test bolus	
Application Type		
Volume @ Flow Rate		
Testbolus NaCl	no test bolus	
Application Type		
Volume @ Flow Rate		
MR Angiography		
Application Type	automated	
Volume @ Flow Rate	10 ml @ 2 ml/s	
Time of Delay Injection to Sequence Start (s)	bolus tracking	
NaCl		
Application Type	automated	
Volume @ Flow Rate	20 ml @ 2 ml/s	

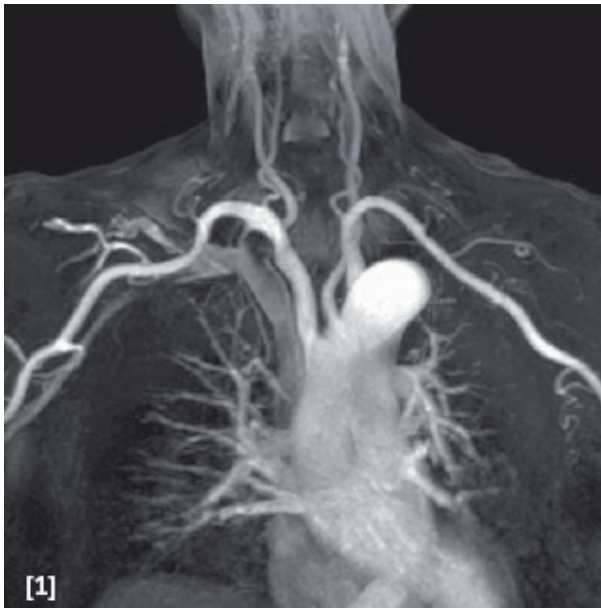
With kind permission of
 PD Dr. J. Lotz, Dr. A. Vafa, Diagnostische Radiologie, MHH Hannover
 Prof. Dr. Galanski

Summary of findings

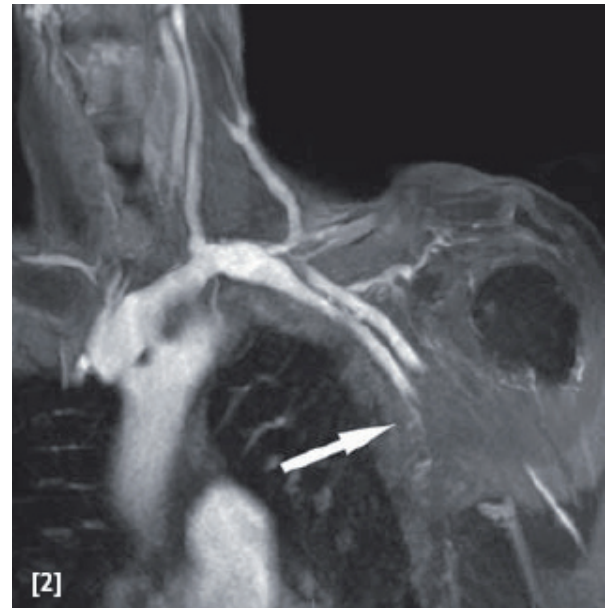
6 cm lower contrasted section of left brachial vein without recognizable thrombus or external compression. No free-floating thrombus, no external compression.

Diagnosis

Scarring residuum following radiation or a recanalized thrombosis. Since no floating thrombus could be detected, the interrupted lymph drainage could be continued.



[1] Good arterial contrast in the first-pass acquisition to exclude arterial stenoses of the supraaortal branches (MIP reformation).



[2] Transverse reformation to show the left brachiocephalic vein, left subclavian and axillar vein in the steady-state phase. A partial occlusion can already be differentiated in the distal axillar vein (arrow).



[3] Transverse reformation of the constricted vein segment where the axillar vein joins the brachial vein in the steady-state phase (arrows). The proximal and distal vein sections display high contrast.