

Gratian Dragoslav Miclaus  
Horia Ples

# Atlas of CT Angiography



Normal and Pathologic  
Findings

 Springer

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Normal and Pathologic Findings

 Springer

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## Preface

Permanent research in the field of medical radio-imaging concerning the non-invasive exploration of the circulatory system has led to the appearance and increasing use of the CT multislice for diagnostic purposes.

The acquisition by Neuromed Timisoara of the first computed tomography 64 multislice has placed Romania among the countries using state-of-the-art non-invasive technologies for diagnostic purposes. It is used not only for routine investigations but also in the diagnosis of cardiovascular pathology.

Worldwide the existence and use of this technique avoids almost entirely the use of invasive methods for diagnostic purposes, which takes place only in exceptional circumstances. The invasive part of the diagnosis, which is extremely unpleasant to the patient, is thus eliminated from the diagnostic process, and patients now have the possibility of the diagnosis of vascular pathology without hospitalization.

The technique is also beneficial to the doctors, as it enables them to identify and visualize the exact location of the damaged area, the anatomic details, the severity of lesions leading to a more appropriate planning of the operating techniques by the use of 3D reconstruction.

The present atlas aims to present some of the more challenging cases explored in our clinic during a period of 7 years. During this period, we explored more than 3,500 CT coronary angiographies and more than 18,000 CT angiographies of other anatomic segments.

While the imagistic radiographs presented in this paper do not fully cover the vascular pathology, we consider it useful to present them in the hope that a great number of doctors will become familiar with the exploration possibilities given by this non-invasive method.

The present paper is subject to constant improvement, as our acquired experience and inventory of cases studied, provides us with new and interesting insight to be presented in order to discover more the possibilities of non-invasive exploration of the circulatory system.

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## Technical Principles

Computed tomography is a diagnostic technique which utilizes X-rays, in which a small fascicle of X-rays axially traverses the patient's body from different angles. Parallel collimation is used to model the fascicle of rays into a small slot, which defines the width of the scanning plan. Detectors measure

the intensity of the reduction of emerging radiation from the patient's body. A mathematical algorithm is used (inverse radon transformation) to calculate the reduction in each part of the CT section. These local reduction coefficients are then transformed into "CT numbers" and are finally converted into shades of grey which are then, in turn, shown as images.

Multislice tomographs allow the acquisition during a single rotation of the tube of a variable number of images (2-6-4), respectively, of a larger volume. The width of the slice is variable, with the spatial resolution growing in reverse proportion with the width. Therefore, for obtaining isotropy, the use of sub-millimetric widths is necessary. Isotopic acquisition allows us to reconstruct images in all three dimensions without modifying the spatial resolution. Thus, diagnostic accuracy in the case of isotopic acquisition is the same, indifferent of the spatial dimension in which the images are later reconstructed.

In the case of Somatom Sensation 64, the spatial resolution of an image is lower than 0.4 mm, and the acquired volume unit (voxel) has the same size for all 3 dimensions (under 0.4 mm for the *x*, *y* and *z* axes).

Obtaining such a resolution is possible due to the technical parameters offered by this machine and, particularly, the high rotation speed of the tube (330 ms) and the technical ability of the STRATON tube to generate two fascicles of X-rays which intertwine, generating the spatial resolution of 0.3 mm.

The length which may be scanned is also important; this machine permits the acquiring of images for a length of up to 1,540 mm, which makes its use possible in peripheral angiographic studies.

All of these technical details, the high scanning speed and high temporal and spatial resolution, allow the use of the computed tomograph in coronary angiographic studies, where the investigation of small arteries belonging to a continually moving organ is necessary.

The study does not aim to become a technical treaty or one of the CT exam protocols, but we consider it necessary to present a couple of technical possibilities for examination as well as a couple of advantages offered by the use of this type of computed tomograph, in relation to the investigated area.

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## Cerebral CT Angiography

In our clinic, we use a scanning protocol which includes a native scan and a scan which follows the injection of intravenous contrast substance. We apply this protocol in order to obtain the subtraction of the bone, which allows the evaluation of the circulation in the cerebral arteries, without the presence of the bone structures of the neurocranium.

Following the bone subtraction, 3D MIP and 3D VRT reconstructions are used to visualize aneurysms as well as artery-vein malformations (MAV). Coming to the aid of neurosurgeons, we also use 3D VRT reconstructions without bone subtraction, which allows the planning of craniotomies in such a way that the remaining bone defect is at a minimum.

The method is also used to check post-operative evolution in the case of applying metal clips or for selective arterial embolising procedures of the MAV.

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## **CT Angiography of the Cervical Region**

This is used to visualize arterial circulation at the level of the cervical region as well as arterial pathology at this level. Thus, we are able to identify stenoses of the common carotid arteries, internal and external; of other arteries at the base of the neck; and of vertebral arteries, as well as perform post-operative or post-interventional checks at the level of the before-mentioned arteries. Thus, one can check the patency of carotid stenting, showing the presence or absence of restenosis in the stent.

Pre-operative details regarding the parietal calcification at the level of the carotid arteries may be given.

As an examination protocol, we use  $64 \times 0.6$  mm acquisition, with 1 mm reconstruction, and the optimization of the presence of contrast in the carotid arteries is performed through bolus tests.

Post-processing consists of 3D MIP, 3D VRT and 3D MPR reconstructions.

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## **Thoracoabdominal CT Angiography**

This is used for visualizing the pathology of the ascending aorta, of the aortic arch and the descending aorta, of the thoracic and abdominal portions and of the branches emerging from these, as well as for studying pulmonary arteries for pulmonary thromboembolism or for malformative pathology.

As a scanning protocol, we use  $64 \times 0.6$  mm scanning, with a variable rotation of the tube, according to the pathology, with 1 mm reconstructions; in order to find SDC presence in the arterial circulation, we use bolus tests.

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## **Peripheral CT Angiography**

This is used for discerning arterial pathology at the level of the lower and upper limbs. It shows the presence of arterial stenoses in obliterating arteriopathy, allows the evaluation of the venous or synthetic graphs used in bypass interventions, as well as the evaluation of the patency of the stents placed at different levels.

It may identify arthero-venous fistulas as well as malformative lesions at the level of the limbs' circulatory bed.

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## **CT Coronary Angiography**

CT coronary angiography currently represents one of the most important non-invasive diagnostic possibilities offered by computed tomography.

In our clinic, over the course of 1 year, over 500 patients were investigated with the purpose of detecting coronary affections, as well as patients with stents and aorto-coronary bypasses with the purpose of determining their patency.



In our CT coronary angiography examining protocol, we use native scanning in order to detect and quantify coronary calcifications (Agatston calcium score), followed, if the calcifications are not severe, by the proper angiographic phase. Optimization of the presence of the contrast substance at the coronary level is done through bolus tests, with the quantity of contrast substance administered depending on the scanned surface. In order to reduce the dose administered to the patient, we use CareDOSE 4D and modulated ECG acquisition with pulsed ECG.

The images are acquired in the format  $64 \times 0.6$  mm, with the reconstruction of axial images at 0.75 mm. Post-processing consists of 3D VRT, 3D MPR and 3D MIP reconstructions. The software of the post-processing unit allows the quantification of the degree of stenosis, expressing the result either as an area or percentage.

Timisoara, Romania

Gratian Dragoslav Miclaus

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# Contents

<b>1</b>	<b>Cerebral Angiography</b> . . . . .	1
1.1	Normal Cerebral Angiography . . . . .	2
1.2	Arteriovenous Malformation at the Level of Pars Precentralis Dextra . . . . .	4
1.3	Arteria Basilaris Aneurysm at the Level of Pars Proximalis . . . . .	6
1.4	Arteria Cerebri Media Sinistra Aneurysm . . . . .	9
1.5	Arteria Cerebri Media Dextra Aneurysm . . . . .	11
1.6	Aneurysm of Arteria Pericallosa. . . . .	13
1.7	Aneurysm of Persistent Primitive Hypoglossal Artery. . . . .	15
1.8	Aneurysm of Arteria Communicans Posterior . . . . .	17
<b>2</b>	<b>Carotid Angiography</b> . . . . .	19
2.1	Normal Carotid Angiography . . . . .	20
2.2	Anomalous Origin of Arteria Carotis Communis . . . . .	22
2.3	Calcified Atheromatous Plaques at the Level of Arteria Carotis. . . . .	24
2.4	Carotid Angiography: Nonobstructive Calcified Atheromatous Plaques. . . . .	26
2.5	Carotid Angiography: Calcified Atheromatous Lesions and Kinking of Arteria Carotis Interna Sinistra. . . . .	29
2.6	Short Lesion, Moderate Stenosis of Arteria Carotis Interna Sinistra . . . . .	32
2.7	Carotid Angiography Emphasising a Severe Stenotic Lesion (Subocclusive) at the Level of Arteria Carotis Interna Dextra . . . . .	35
2.8	Carotid Angiography Emphasising a Subocclusive Lesion at the Level of the Emerging Arteria Carotis Interna Sinistra . . . . .	38
2.9	Carotid Angiography Ostial Occlusive Lesion at the Level of Arteria Carotis Interna Sinistra. . . . .	40
2.10	Carotid Angiography: Complete Occlusion of the Arteria Carotis Interna Dextra. . . . .	43

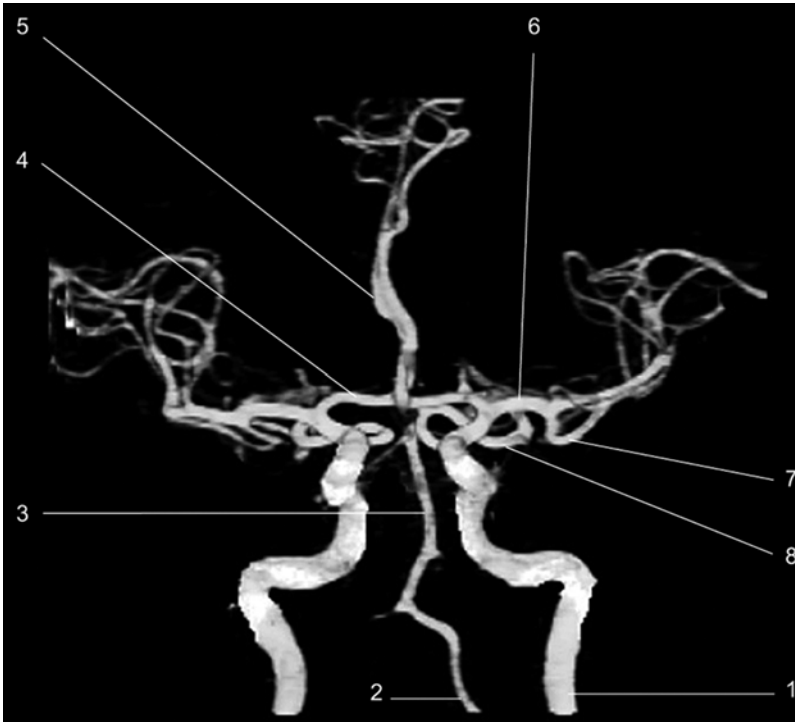
2.11	Carotid Angiography: Severe Stenotic Lesion at the Level of the Pars Proximalis of Arteria Subclavia Sinistra . . . . .	45
2.12	Carotid Angiography: Stent Occlusion at the Level of Arteria Subclavia Sinistra . . . . .	47
<b>3</b>	<b>Thoracic Angiography</b> . . . . .	49
3.1	Aneurysm of the Aorta Ascendens . . . . .	50
3.2	Supravalvular Aortic Stenosis . . . . .	53
3.3	Aneurysm of the Aorta Ascendens: Isthmic Stenosis . . . . .	56
3.4	Aneurysm of the Arcus Aortae . . . . .	58
3.5	Aneurysm of the Aorta Ascendens: Chronic Dissection of the Aorta . . . . .	60
3.6	Post-traumatic Aneurysm of the Aorta Descendens . . . . .	63
3.7	Gigantic Aneurysm at the Level of the Aorta Descendens . . . . .	65
3.8	Chronic Dissection of the Aorta Descendens . . . . .	68
3.9	Stenosis of A. Pulmonalis Dextra . . . . .	71
3.10	Aneurysm and Dissection of the Aorta ascendens After Valvular Aortic Replacement. . . . .	73
3.11	Pulmonary Thromboembolism . . . . .	75
3.12	Right Partially Anomalous Venous Drainage . . . . .	77
3.13	Partially Aberrant Venous Drainage . . . . .	79
3.14	Interrupted Arcus Aortae. . . . .	82
<b>4</b>	<b>Coronary Angiography</b> . . . . .	85
4.1	Normal Arteriae Coronariae . . . . .	86
4.2	Abnormal Emergence of the R. Circumflexus . . . . .	89
4.3	Abnormal Emergence of the A. Coronaria Dextra Placed on the Posterior Aortic Wall . . . . .	91
4.4	Emergence Through Separate Ostium of the Three A. Coronariae . . . . .	93
4.5	Abnormal A. Coronaria dextra emergence from the Truncus A. Pulmonalis . . . . .	95
4.6	Coronary and Aortopulmonary Fistulas . . . . .	98
4.7	Coronary Calcification . . . . .	101
4.8	Monovascular Coronary Disease: A. Coronaria Dextra Occlusion. . . . .	103
4.9	Occlusive Lesion at the Middle Segment of the R. Interventricularis Anterior – Collateral Circulation A. Coronaria Dextra – R. Interventricularis Anterior . . . . .	105
4.10	Bivascular Coronary Disease . . . . .	107
4.11	Trivascular Coronary Disease . . . . .	110
4.12	Aneurysm of the Left Ventricle and R. Interventricularis Anterior Occlusion . . . . .	113
4.13	Monovascular Coronary Disease Patent Stent in the Middle Segment of R. Interventricularis Anterior . . . . .	116

4.14	Restenosis at Stent Level. . . . .	119
4.15	Occlusion of R. Interventricularis Anterior . . . . .	122
4.16	Coronary Bypass Evaluation. . . . .	124
4.17	Fallot Tetralogy. . . . .	126
4.18	Fallot Tetralogy in an Adult Patient . . . . .	128
<b>5</b>	<b>Abdominal Angiography</b> . . . . .	<b>131</b>
5.1	Normal Abdominal Angiography . . . . .	132
5.2	Aneurysm of Truncus Coeliacus and Stenotic Lesion of A. Hepatica Communis. . . . .	135
5.3	Left Renal Arteriovenous Fistula . . . . .	137
5.4	Aorta Abdominalis Aneurysm with Aortoduodenal Fistula . . . . .	140
5.5	Operated Aorta Abdominalis Aneurysm: Post-operative Complications. . . . .	143
5.6	Stenosis of A. Renalis Sinistra . . . . .	145
5.7	Right A. Renalis Dexter Occlusion Collateral Circulation for Renal Parenchyma . . . . .	148
5.8	Dissection of Aorta Abdominalis . . . . .	151
5.9	Separate Emergence of A. Hepatica Communis and A. Splenica Additional Polar Left Superior A. Renalis Sinistra. . . . .	153
5.10	Multiple Aneurysms of A. Splenica Associated with Aneurysm of A. Renalis Dexter . . . . .	156
<b>6</b>	<b>Peripheral Angiography</b> . . . . .	<b>159</b>
6.1	Normal Peripheral Angiography. . . . .	160
6.2	Leriche Syndrome . . . . .	165
6.3	Leriche Syndrome Axillobifemoral Bypass . . . . .	167
6.4	Leriche Syndrome Aortobifemoral and Femoropopliteal Graft . . . . .	170
6.5	Aortobifemoral Graft and Aneurysms at the Level of Anastomosis . . . . .	174
6.6	Right Arm Occlusion of the Aortobifemoral Graft . . . . .	177
6.7	Right Femoro-fibular Graft: Occlusion of the Left Lower Limb Arteries. . . . .	179
6.8	Iliac and Femoral Stents: In-Stent Restenosis. . . . .	182
6.9	Iliac and Femoral Stents: Occluded Iliac Stents . . . . .	185
6.10	Autoimmune Vasculitis. . . . .	187
6.11	Tumour of the Leg. . . . .	190
6.12	Giant Tumour of the Thigh . . . . .	192
6.13	CT Angiography of the Right Upper Limb: Occlusion of the Arteria Radialis Dexter . . . . .	194
6.14	Arteriovenous Malformation in Deltoid Region. . . . .	196
6.15	CTA Run-Off: Incidental Finding . . . . .	198

## Contents

1.1 Normal Cerebral Angiography .....	2
1.2 Arteriovenous Malformation at the Level of Pars Precentralis Dextra . . .	4
1.3 Arteria Basilaris Aneurysm at the Level of Pars Proximalis .....	6
1.4 Arteria Cerebri Media Sinistra Aneurysm .....	9
1.5 Arteria Cerebri Media Dextra Aneurysm .....	11
1.6 Aneurysm of Arteria Pericallosa .....	13
1.7 Aneurysm of Persistent Primitive Hypoglossal Artery .....	15
1.8 Aneurysm of Arteria Communicans Posterior .....	17

## 1.1 Normal Cerebral Angiography



**Fig. 1.1** Neuro DSA – VRT

1. A. carotis interna
2. A. vertebralis
3. A. basilaris
4. A. cerebri anterior
5. A. cerebri anterior – segmentum A2
6. A. cerebri media – segmentum M1
7. A. cerebri media – segmentum M2
8. A. cerebri posterior



**Fig. 1.2** Neuro DSA – MIP



**Fig. 1.3** Neuro DSA – VRT



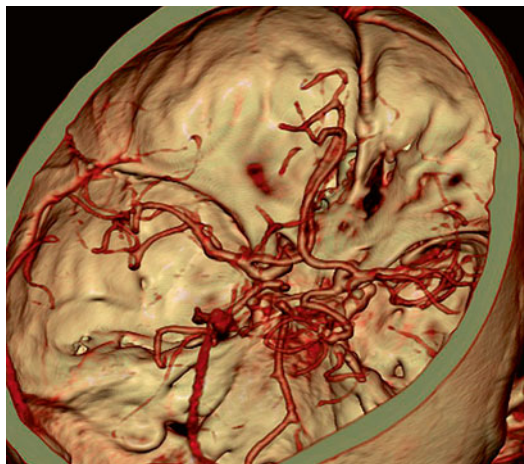
**Fig. 1.4** Neuro DSA – VRT colour



**Fig. 1.6** Cerebral angiography 3D VRT reconstruction

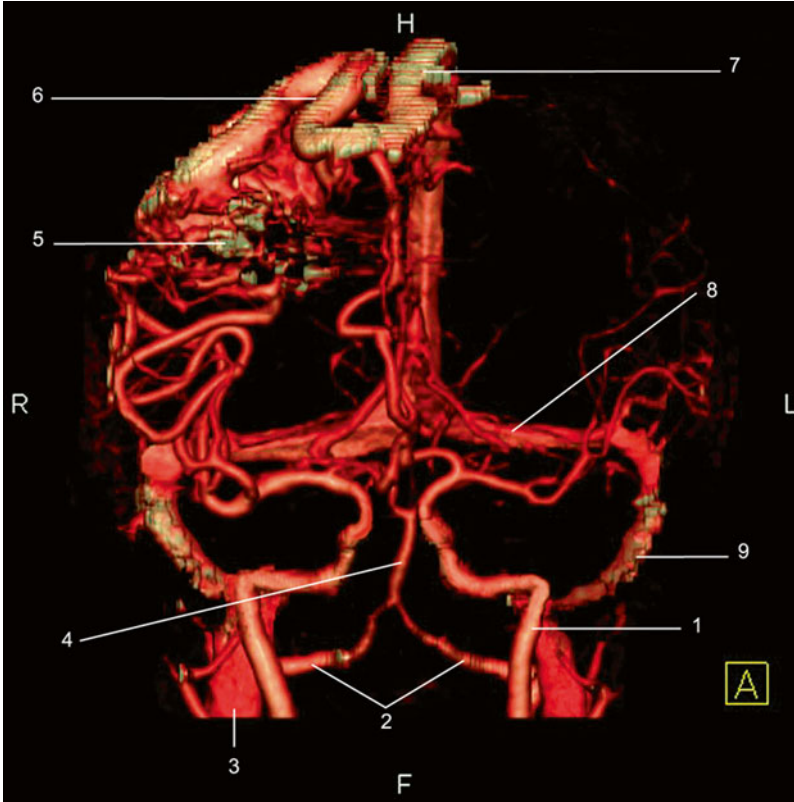


**Fig. 1.5** Neuro DSA – VRT colour

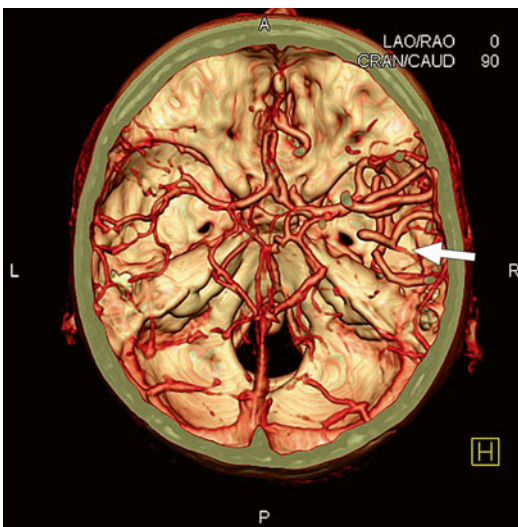


**Fig. 1.7** Cerebral angiography 3D VRT reconstruction

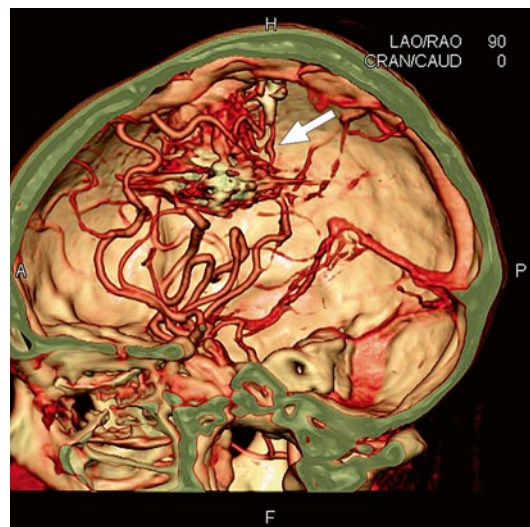
## 1.2 Arteriovenous Malformation at the Level of Pars Precentralis Dextra



**Fig. 1.8** Arteriovenous malformation at the level of pars precentralis dextra  
 1. A. carotis interna  
 2. A. vertebralis  
 3. V. jugularis interna  
 4. A. basilaris  
 5. Partially embolised arteriovenous malformation  
 6. Drainage vein  
 7. Sinus sagittalis superior  
 8. Sinus transversalis  
 9. Sinus sigmoideus

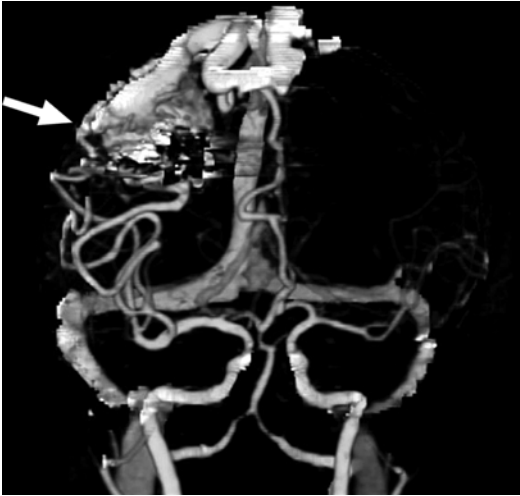


**Fig. 1.9** Cerebral angiography in the case of an arteriovenous malformation (*arrow*) (a. cerebra media) with accentuation of the vascularisation at the level of a. cerebra media (3D axial reconstruction)

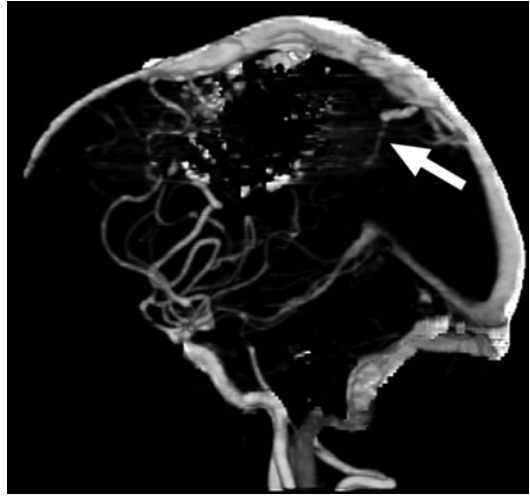


**Fig. 1.10** Cerebral angiography of a partially embolised arteriovenous malformation (*arrow*)





**Fig. 1.11** Neuro DSA 3D MIP reconstruction, anterior plan. The *arrow* indicates the arteriovenous malformation

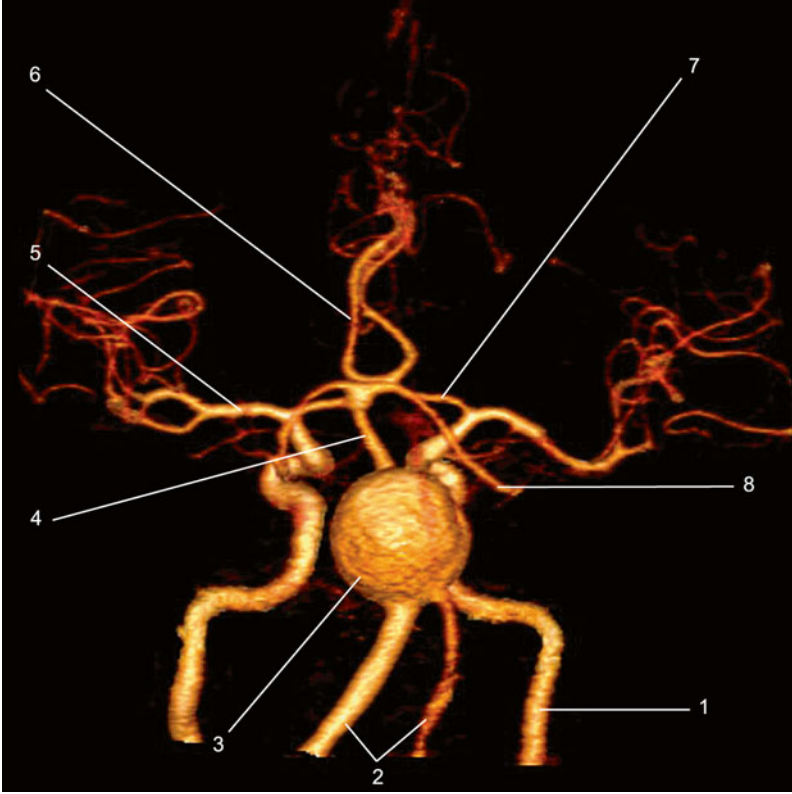


**Fig. 1.13** Neuro DSA 3D MIP reconstruction, lateral right plan. The *arrow* indicates the arteriovenous malformation



**Fig. 1.12** Neuro DSA 3D MIP reconstruction, posterior view

### 1.3 Arteria Basilaris Aneurysm at the Level of Pars Proximalis



**Fig. 1.14** Neuro DSA 3D VRT colour reconstruction

1. A. carotis interna
2. A. vertebralis
3. Giant aneurysm
4. A. basilaris
5. A. cerebri media – segmentum M1
6. A. cerebri anterior – segmentum A2
7. A. cerebri anterior – segmentum A1
8. A. cerebri posterior



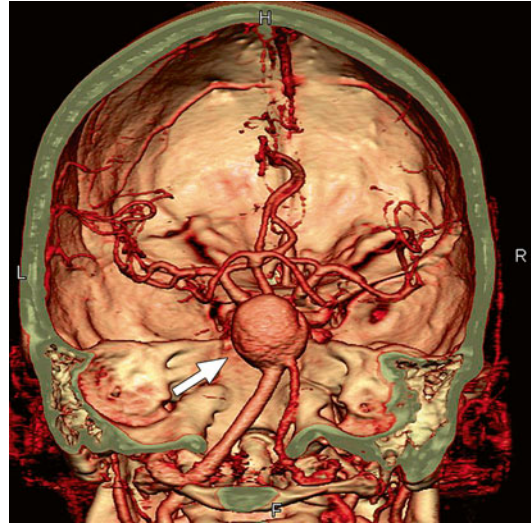
**Fig. 1.15** Neuro DSA 3D MIP reconstruction



**Fig. 1.16** Neuro DSA 3D MIP reconstruction



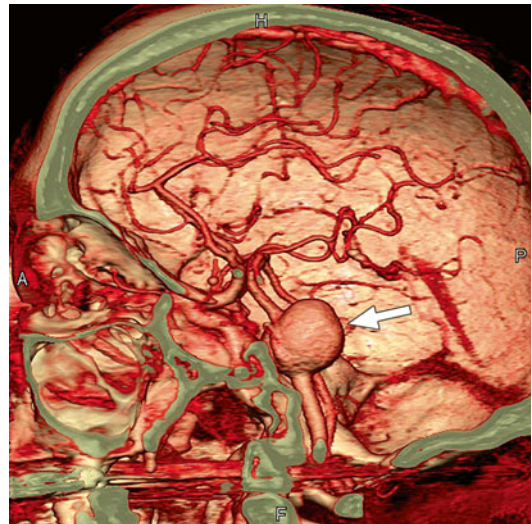
**Fig. 1.17** Neuro DSA 3D VRT colour reconstruction



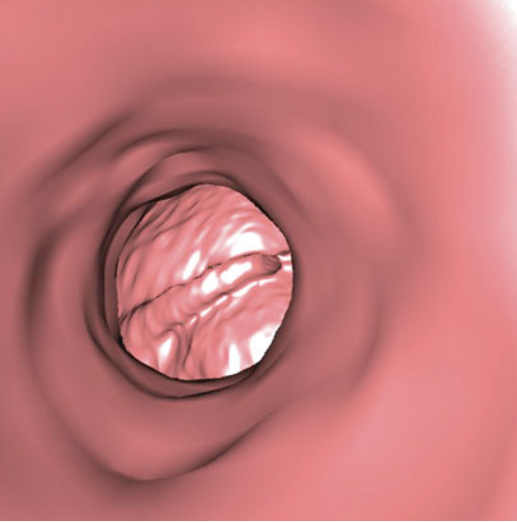
**Fig. 1.19** Cerebral angiography 3D VRT reconstruction in posterior coronal plan. The *arrow* indicates the aneurysm



**Fig. 1.18** Cerebral angiography axial 3D VRT reconstruction. The *arrow* indicates the aneurysm



**Fig. 1.20** Cerebral angiography 3D VRT reconstruction, sagittal plan. The *arrow* indicates the aneurysm



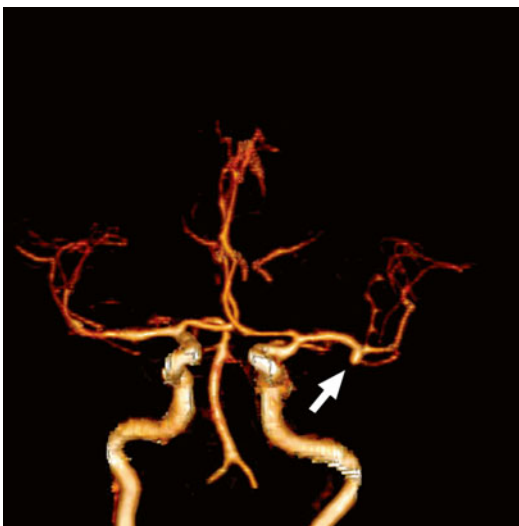
**Fig. 1.21** Endoluminal navigation

### 1.4 Arteria Cerebri Media Sinistra Aneurysm



**Fig. 1.22** Neuro DSA 3D VRT reconstruction

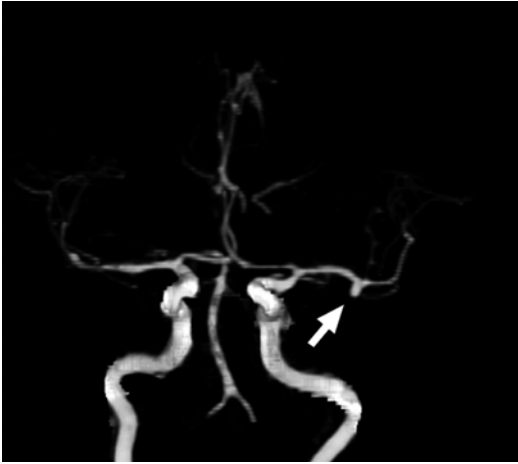
1. A. carotis interna
2. A. vertebralis
3. A. cerebri anterior – segmentum A1
4. A. cerebri anterior – segmentum A2
5. A. cerebri media – segmentum M1
6. A. cerebri media – segmentum M2
7. Aneurysm
8. A. basilaris



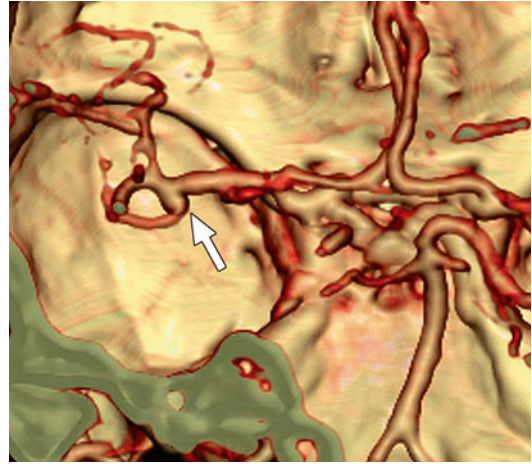
**Fig. 1.23** Neuro DSA 3D VRT colour reconstruction. The *arrow* indicates the aneurysm



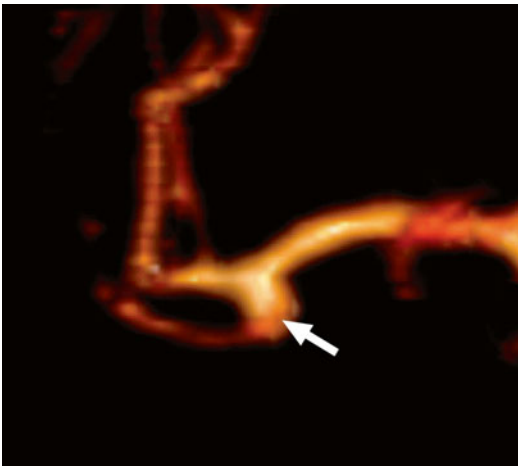
**Fig. 1.24** Neuro DSA 3D VRT colour reconstruction. The *arrow* indicates the aneurysm



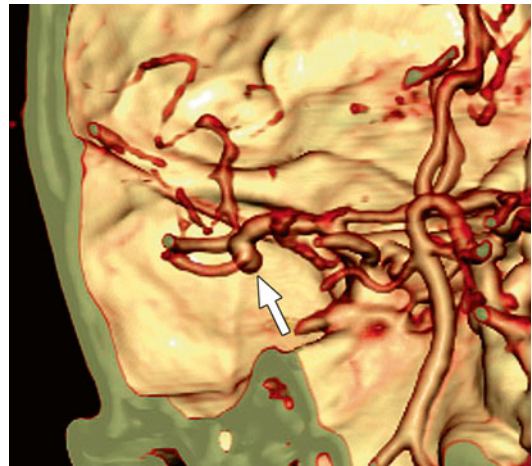
**Fig. 1.25** Neuro DSA 3D VRT reconstruction. The *arrow* indicates the aneurysm



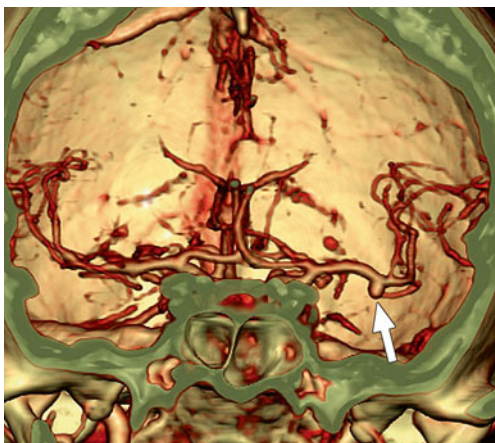
**Fig. 1.28** Neuro DSA 3D VRT colour reconstruction, enlarged image. The *arrow* indicates the aneurysm



**Fig. 1.26** Neuro DSA 3D VRT colour reconstruction, enlarged image. The *arrow* indicates the aneurysm

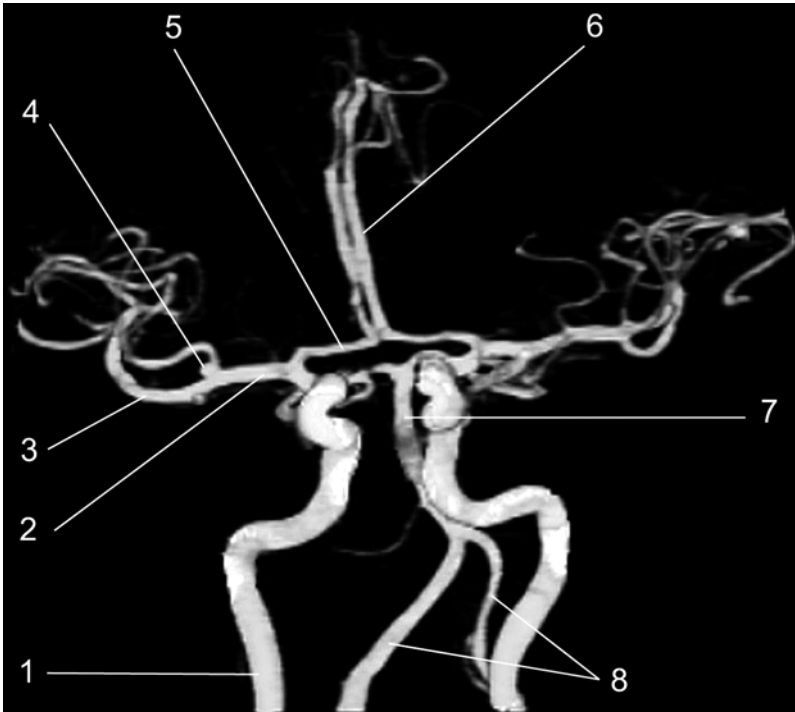


**Fig. 1.29** Neuro DSA 3D VRT colour reconstruction, enlarged image. The *arrow* indicates the aneurysm

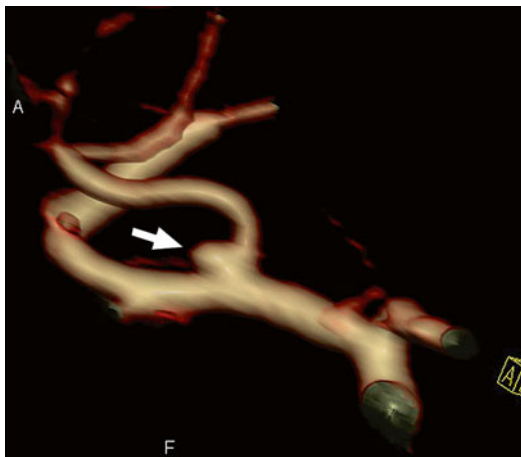


**Fig. 1.27** Cerebral angiography 3D VRT colour reconstruction, enlarged image. The *arrow* indicates the aneurysm

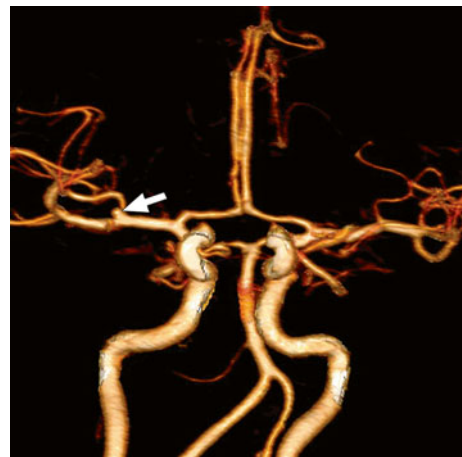
### 1.5 Arteria Cerebri Media Dextra Aneurysm



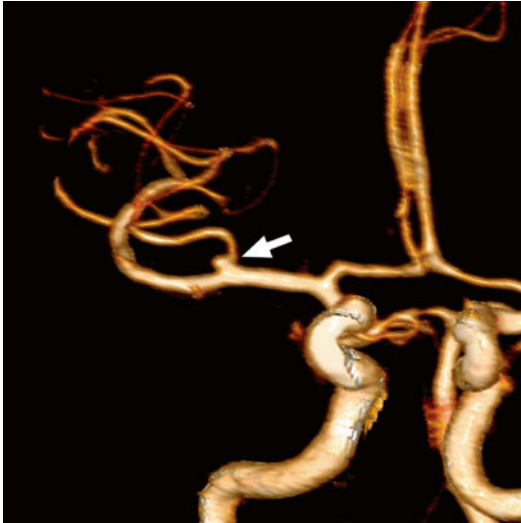
**Fig. 1.30** Neuro DSA 3D VRT reconstruction  
 1. Arteria carotis interna  
 2. Arteria cerebri media – segmentum M1  
 3. Arteria cerebri media – segmentum M2  
 4. Aneurysm  
 5. Arteria cerebri anterior – segmentum A1  
 6. Arteria cerebri anterior – segmentum A2  
 7. Arteria basilaris  
 8. Arteria vertebralis



**Fig. 1.31** Neuro DSA 3D VRT colour reconstruction, enlarged image. The *arrow* indicates the aneurysm



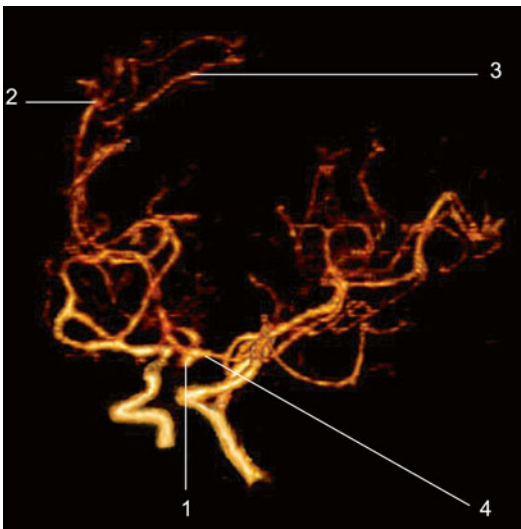
**Fig. 1.32** Neuro DSA 3D VRT colour reconstruction. The *arrow* indicates the aneurysm



**Fig. 1.33** Neuro DSA 3D VRT colour reconstruction. The *arrow* indicates the aneurysm



**Fig. 1.35** Cerebral angiography, 3D VRT colour reconstruction, intraventricular catheter for external drainage. The *arrow* indicates the aneurysm



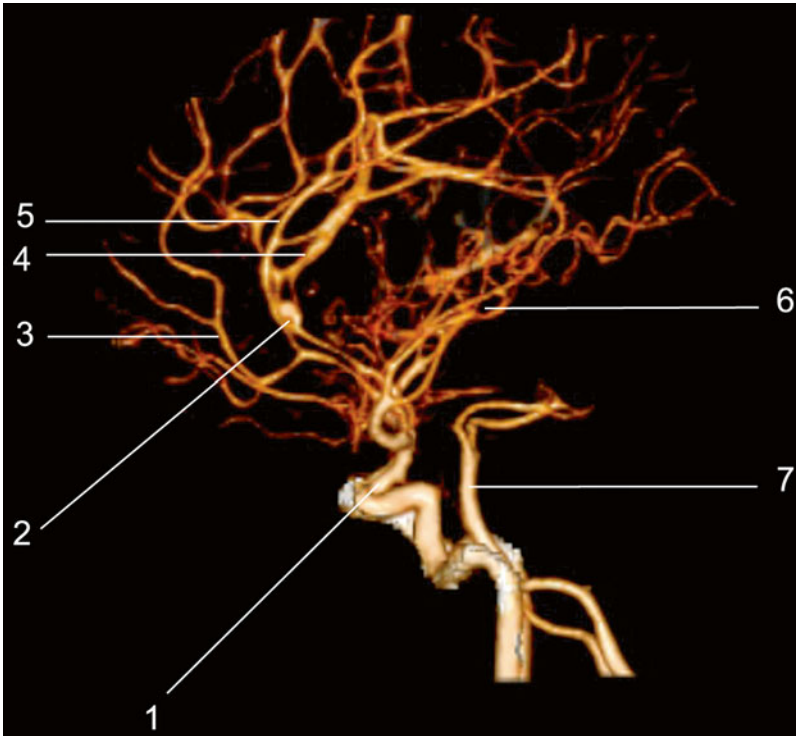
**Fig. 1.34** Arteria comunicans anterior aneurysm  
1. Aneurysm  
2. Arteria callosomarginalis  
3. Arteria pericallosa  
4. Arteria cerebri anterior – segmentum (A1)



**Fig. 1.36** Cerebral angiography, 3D VRT colour reconstruction, intraventricular catheter for external drainage. The *arrow* indicates the aneurysm

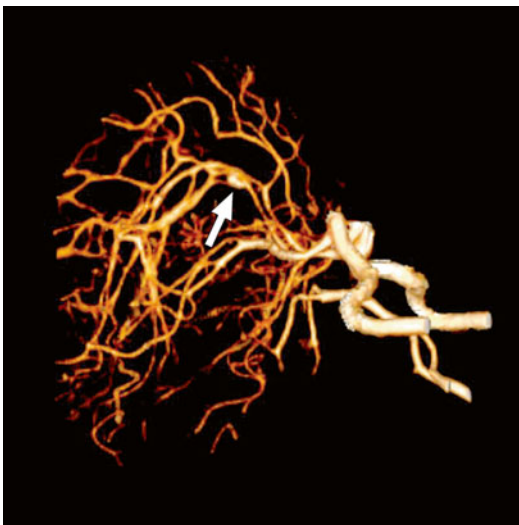


### 1.6 Aneurysm of Arteria Pericallosa



**Fig. 1.37** Neuro DSA, 3D VRT colour reconstruction

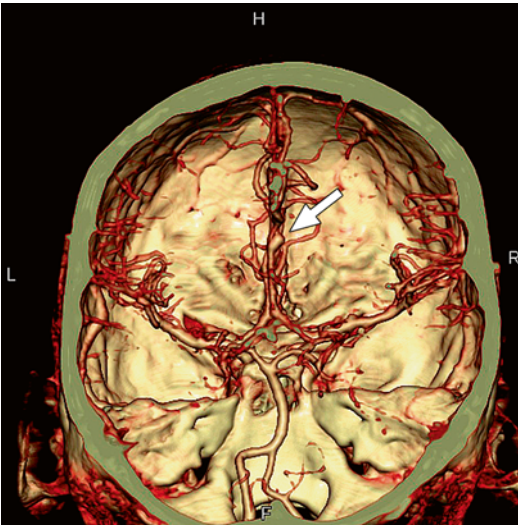
1. Arteria carotis interna
2. Aneurysm
3. Arteria frontobasalis medialis
4. Arteria pericallosa
5. Arteria callosomarginalis
6. Arteria cerebri media
7. Arteria basilaris



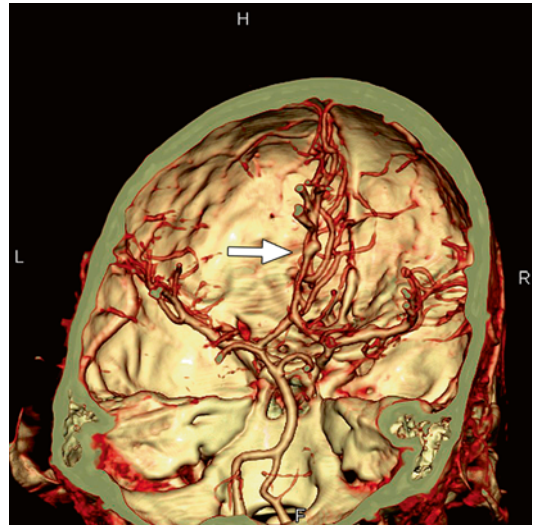
**Fig. 1.38** Neuro DSA, 3D VRT colour reconstruction. The *arrow* indicates the aneurysm



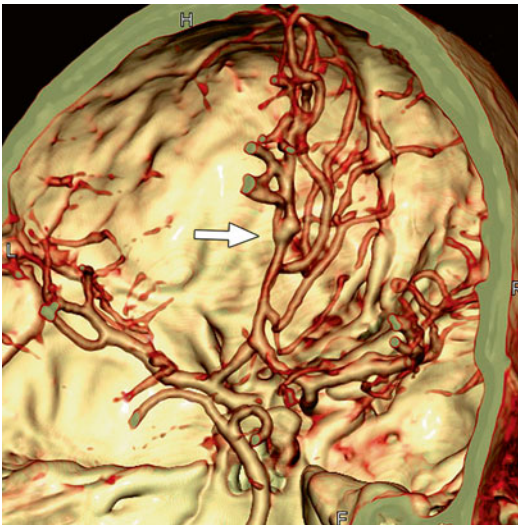
**Fig. 1.39** Neuro DSA, 3D MIP reconstruction. The *arrow* indicates the aneurysm



**Fig. 1.40** Cerebral angiography 3D VRT colour reconstruction, aneurysm (*arrow*) of arteria pericallosa



**Fig. 1.42** Cerebral angiography 3D VRT colour reconstruction, aneurysm (*arrow*) of arteria pericallosa

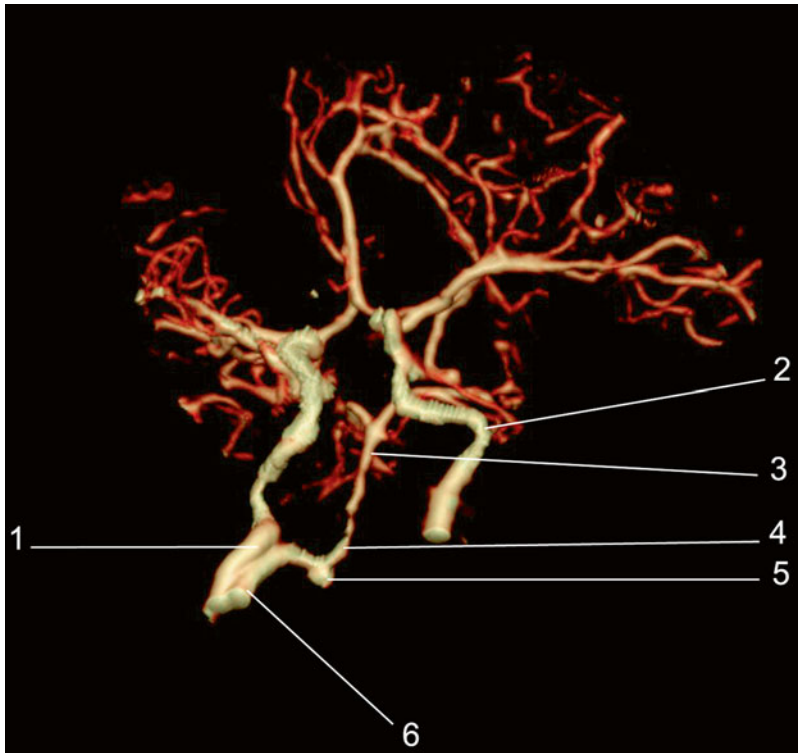


**Fig. 1.41** Cerebral angiography 3D VRT colour reconstruction, aneurysm (*arrow*) of arteria pericallosa



**Fig. 1.43** Cerebral angiography 3D VRT colour reconstruction, aneurysm (*arrow*) of arteria pericallosa

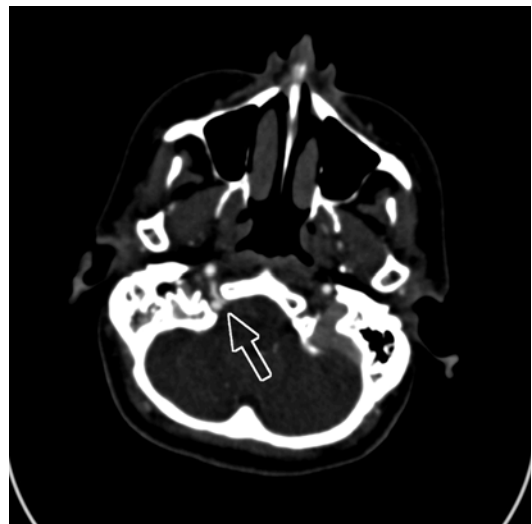
### 1.7 Aneurysm of Persistent Primitive Hypoglossal Artery



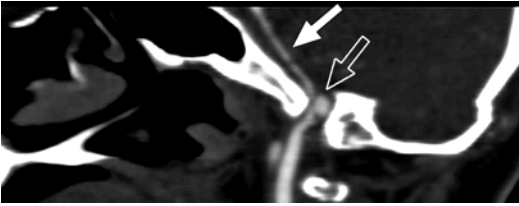
**Fig. 1.44** Arteria hypoglossi primitiva persistent aneurysm  
 1. Arteria carotis interna dextra  
 2. Arteria carotis interna sinistra  
 3. Arteria basilaris  
 4. Persistent arteria hypoglossi primitiva  
 5. Aneurysm  
 6. Doubled internal carotid artery which is tributary to the posterior circulation



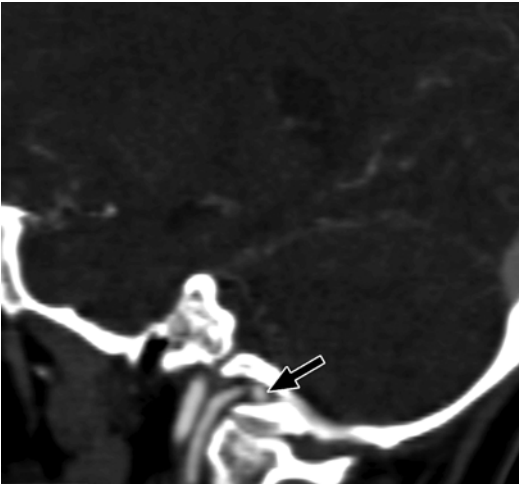
**Fig. 1.45** Neuro DSA 3D MIP reconstruction with the visualisation of the aneurysm. The *full arrow* indicates aneurysm



**Fig. 1.46** Axial image with the visualisation of the persistent a. hypoglossi primitiva in the canalis nervi hypoglossi and presence of the aneurysm. The *arrow* with contour indicates a. hypoglossi+aneurysm



**Fig. 1.47** The trajectory of a. hypoglossi in the canalis nervi hypoglossi with the visualisation of the aneurysm  
*Full arrow* = arteria basilaris  
*Arrow with contour* = aneurysm

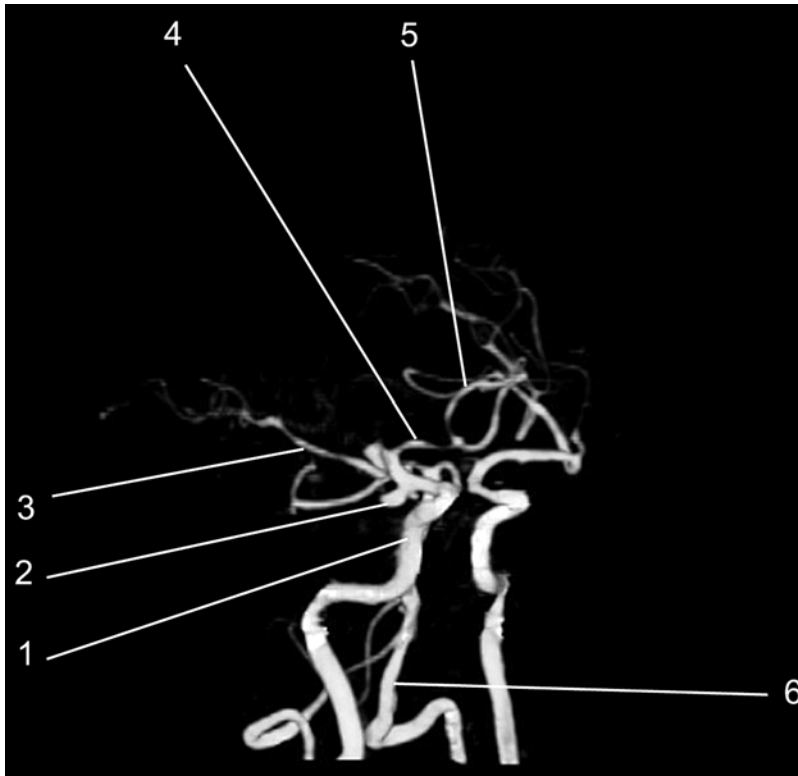


**Fig. 1.48** The trajectory of a. hypoglossi in the canalis nervi hypoglossi with visualisation of the aneurysm  
*Arrow with contour* = aneurysm



**Fig. 1.49** The trajectory of a. hypoglossi in the canalis nervi hypoglossi with the visualisation of the aneurysm  
*Arrow with contour* = aneurysm

### 1.8 Aneurysm of Arteria Communicans Posterior



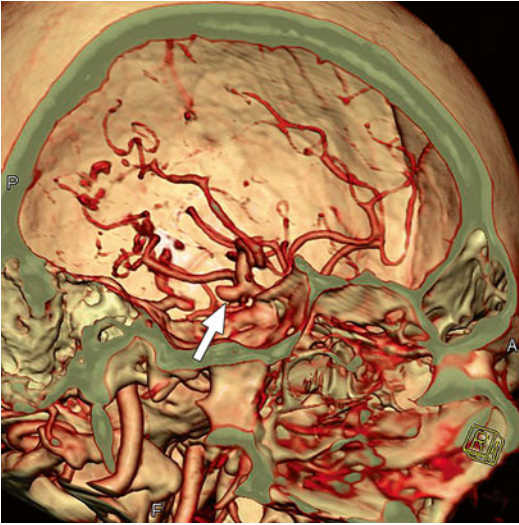
**Fig. 1.50** Neuro DSA, 3D VRT reconstruction  
1. A. carotis interna  
2. Aneurysm  
3. A. cerebri media  
4. A. cerebri anterior – segmentum A1  
5. A. cerebri anterior – segmentum A2  
6. A. vertebralis



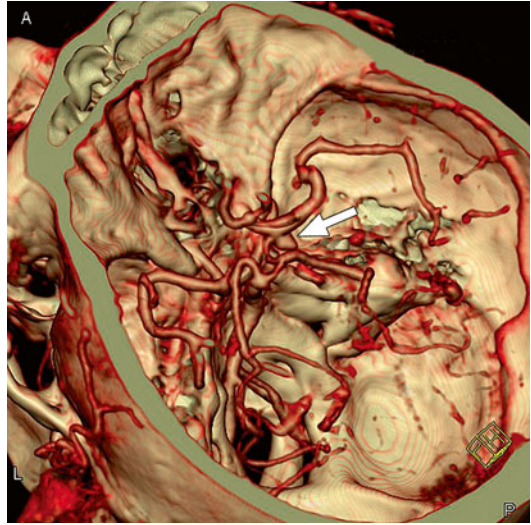
**Fig. 1.51** Neuro DSA, 3D VRT reconstruction. The *arrow* indicates the aneurysm



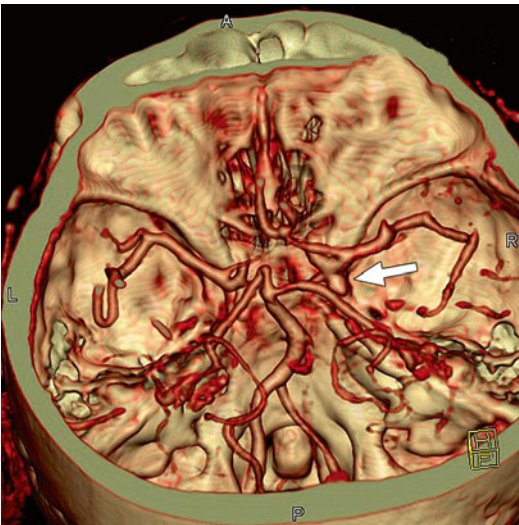
**Fig. 1.52** Neuro DSA, 3D VRT reconstruction. The *arrow* indicates the aneurysm



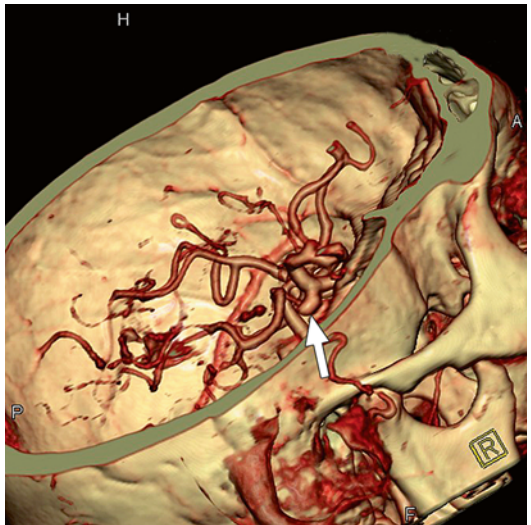
**Fig. 1.53** Cerebral angiography 3D VRT colour reconstruction. The *arrow* indicates the aneurysm



**Fig. 1.55** Cerebral angiography 3D VRT colour reconstruction. The *arrow* indicates the aneurysm



**Fig. 1.54** Cerebral angiography 3D VRT colour reconstruction. The *arrow* indicates the aneurysm

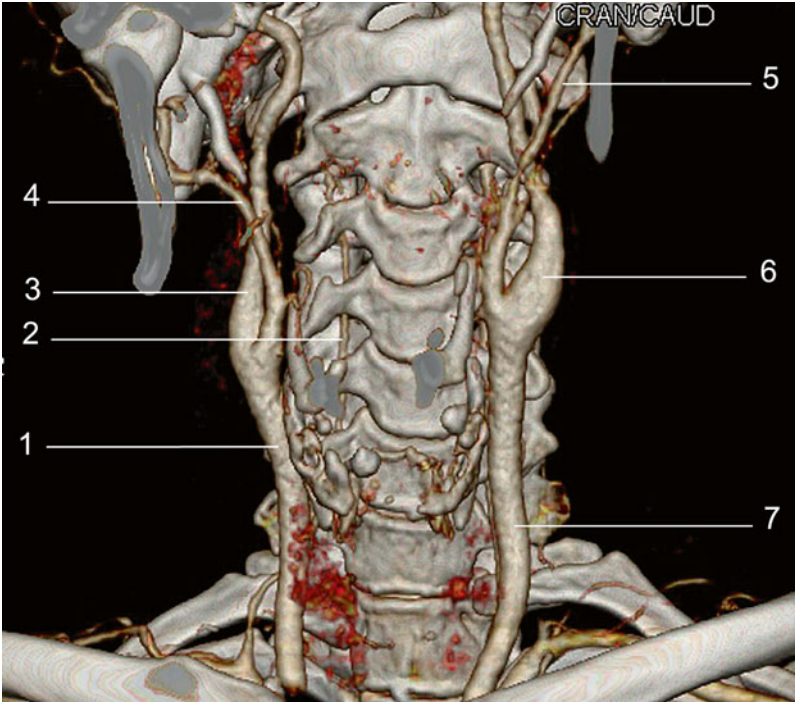


**Fig. 1.56** Cerebral angiography 3D VRT colour reconstruction. The *arrow* indicates the aneurysm

## Contents

2.1	Normal Carotid Angiography . . . . .	20
2.2	Anomalous Origin of Arteria Carotis Communis . . . . .	22
2.3	Calcified Atheromatous Plaques at the Level of Arteria Carotis . . . . .	24
2.4	Carotid Angiography: Nonobstructive Calcified Atheromatous Plaques . . . . .	26
2.5	Carotid Angiography: Calcified Atheromatous Lesions and Kinking of Arteria Carotis Interna Sinistra . . . . .	29
2.6	Short Lesion, Moderate Stenosis of Arteria Carotis Interna Sinistra . . . . .	32
2.7	Carotid Angiography Emphasising a Severe Stenotic Lesion (Subocclusive) at the Level of Arteria Carotis Interna Dextra . . . . .	35
2.8	Carotid Angiography Emphasising a Subocclusive Lesion at the Level of the Emerging Arteria Carotis Interna Sinistra . . . . .	38
2.9	Carotid Angiography Ostial Occlusive Lesion at the Level of Arteria Carotis Interna Sinistra . . . . .	40
2.10	Carotid Angiography: Complete Occlusion of the Arteria Carotis Interna Dextra . . . . .	43
2.11	Carotid Angiography: Severe Stenotic Lesion at the Level of the Pars Proximalis of Arteria Subclavia Sinistra . . . . .	45
2.12	Carotid Angiography: Stent Occlusion at the Level of Arteria Subclavia Sinistra . . . . .	47

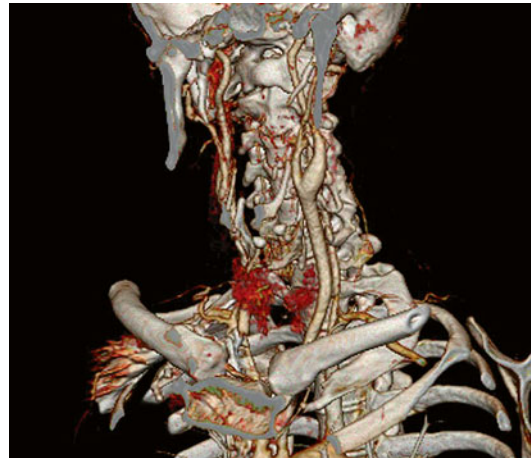
### 2.1 Normal Carotid Angiography



**Fig. 2.1** Normal carotid angiography  
1. A. carotis communis dextra  
2. A. vertebralis dextra  
3. A. carotis interna dextra  
4. A. carotis externa dextra  
5. A. carotis externa sinistra  
6. A. carotis interna sinistra  
7. A. carotis communis sinistra

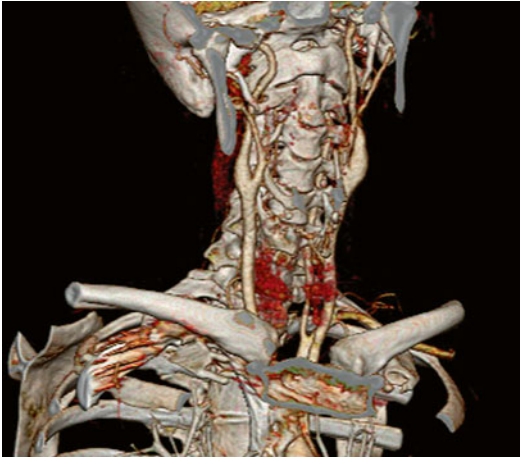


**Fig. 2.2** Normal carotid angiography 3D VRT colour reconstruction anterior coronal plane



**Fig. 2.3** Normal carotid angiography 3D VRT colour reconstruction oblique anterior plane





**Fig. 2.4** Normal carotid angiography 3D VRT colour reconstruction left anterior oblique plane

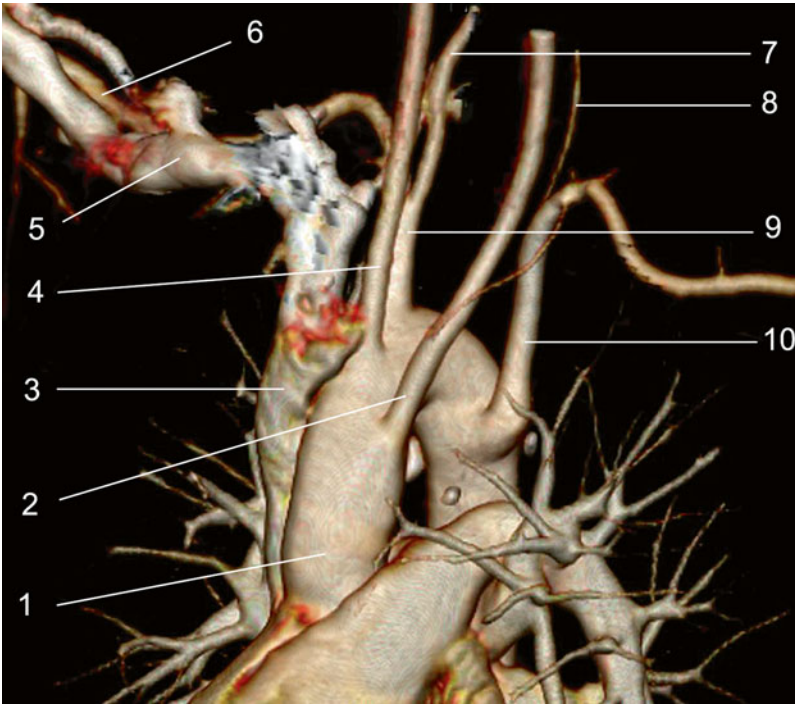


**Fig. 2.6** Normal carotid angiography 3D MIP reconstruction with visualisation of a. carotis communis dextra and a. carotis interna dextra



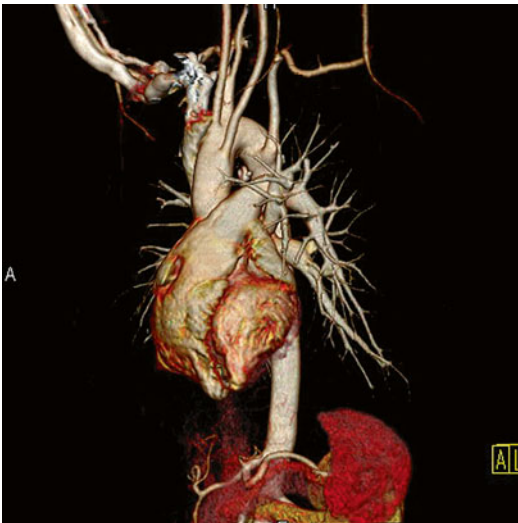
**Fig. 2.5** Normal carotid angiography 3D MIP reconstruction with visualisation of a. carotis communis sinistra and a. carotis interna sinistra

## 2.2 Anomalous Origin of Arteria Carotis Communis

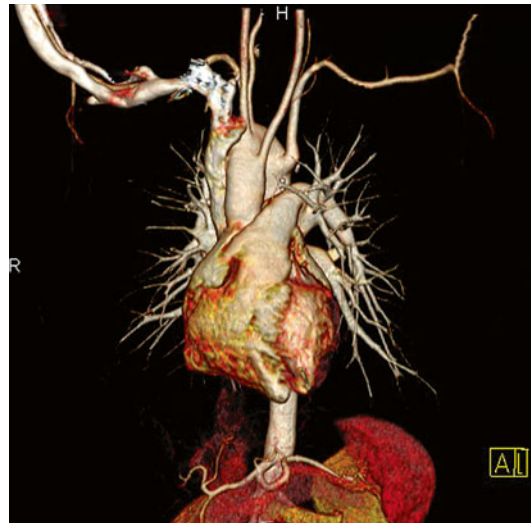


**Fig. 2.7** Anomalous origin of common carotid arteries

- 1. Aorta ascendens
- 2. A. carotis communis sinistra
- 3. Vena cava superior
- 4. A. carotis communis dextra
- 5. V. subclavia dextra
- 6. A. subclavia dextra
- 7. A. vertebralis dextra
- 8. A. vertebralis sinistra
- 9. Truncus brachiocephalicus
- 10. A. subclavia sinistra



**Fig. 2.8** Colour reconstruction 3D VRT



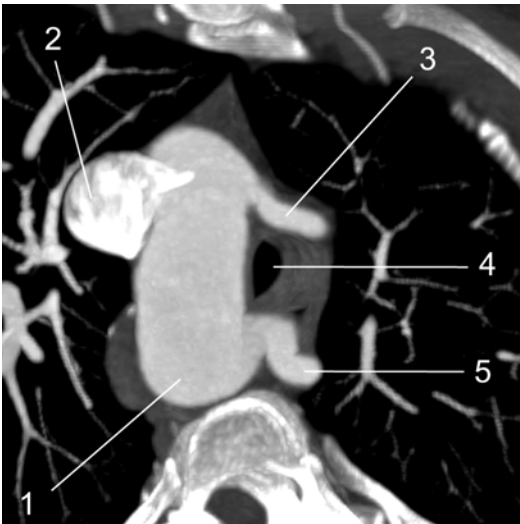
**Fig. 2.9** Colour reconstruction 3D VRT



**Fig. 2.10** Colour reconstruction 3D VRT, enlarged image, anterior plane



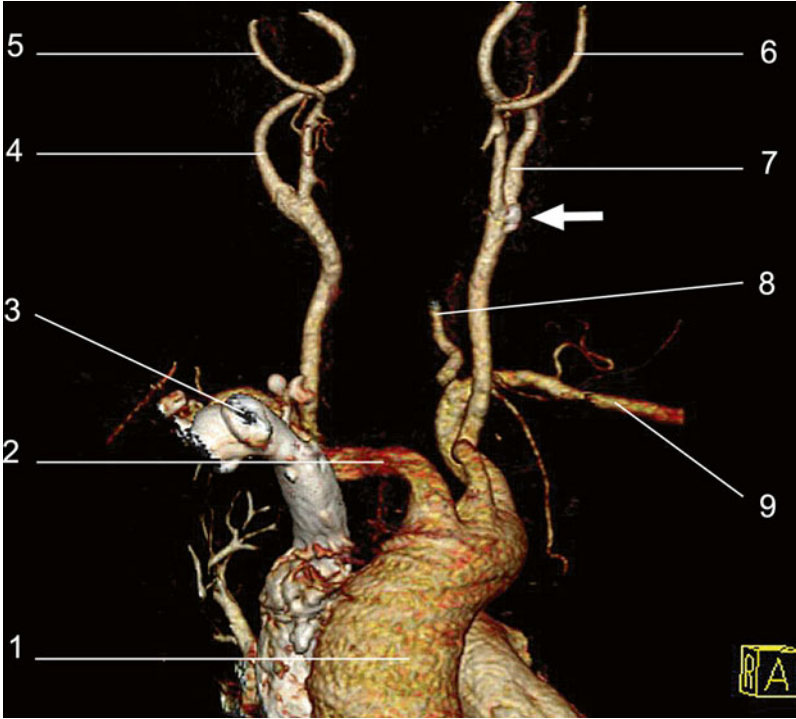
**Fig. 2.12** 3D VRT reconstruction, posterior plane



**Fig. 2.11** Axial image, 3D MIP

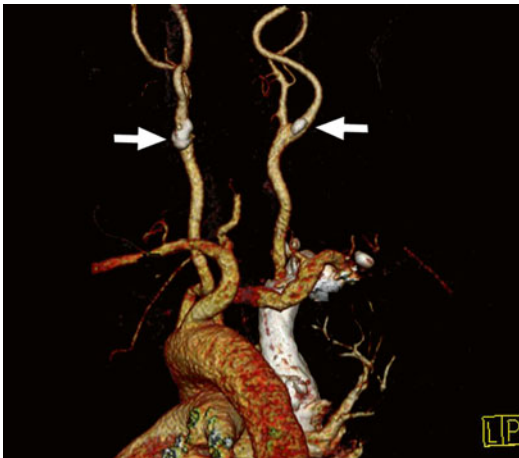
1. Arcus aortae
2. Vena cava superior
3. A. carotis communis sinistra
4. Trachea
5. A. subclavia sinistra with retrotracheal and retrooesophageal trajectory

### 2.3 Calcified Atheromatous Plaques at the Level of Arteria Carotis



**Fig. 2.13** Normal carotid angiography. The *arrow* indicate calcified plaques

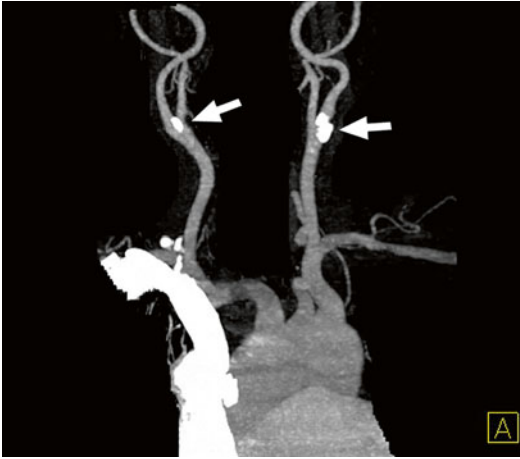
1. Aorta ascendens
2. Truncus brachiocephalicus
3. V. cava superior
4. A. carotis communis dextra
5. A. carotis externa dextra
6. A. carotis externa sinistra
7. A. carotis interna sinistra
8. A. vertebralis sinistra
9. A. subclavia sinistra
10. A. carotis communis sinistra



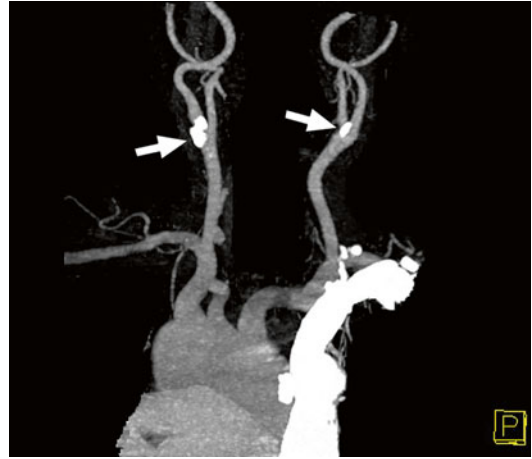
**Fig. 2.14** 3D VRT colour reconstruction, posterior plane. The *arrow* indicate calcified plaques



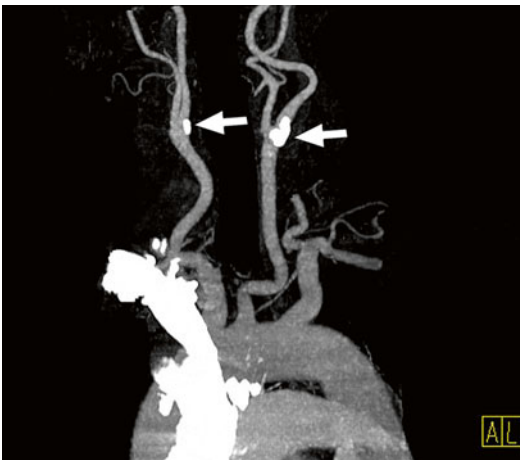
**Fig. 2.15** 3D VRT colour reconstruction, posterior plane. The *arrows* indicate calcified atheromatous plaques



**Fig. 2.16** 3D VRT reconstruction  
The *arrows* indicate calcified atheromatous plaques placed at the level of the emerging a. carotis interna

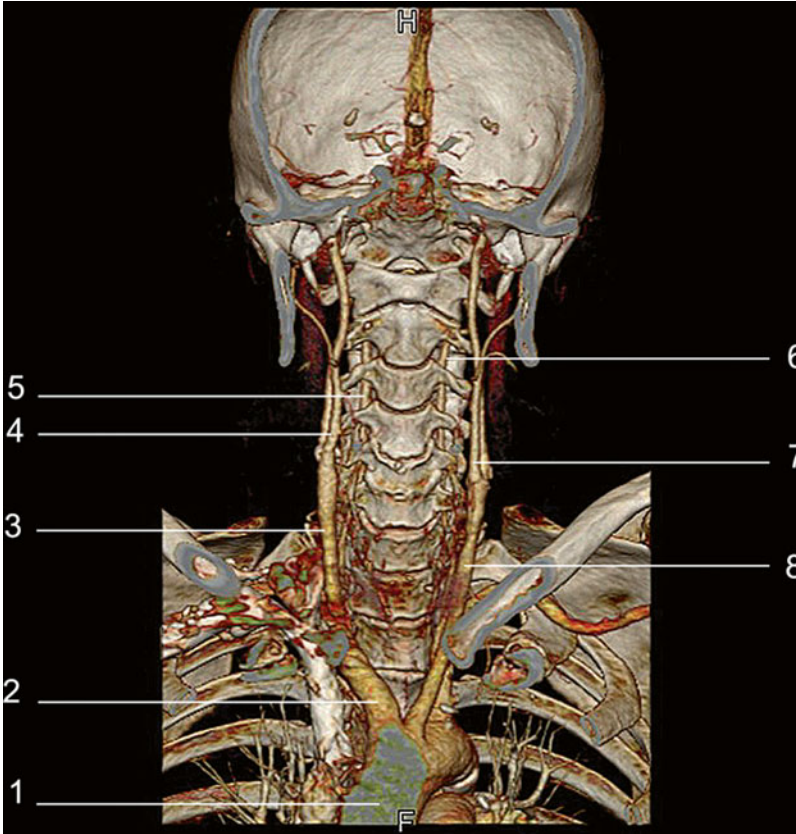


**Fig. 2.18** 3D VRT reconstruction  
The *arrows* indicate calcified atheromatous plaques placed at the level of the emerging a. carotis interna



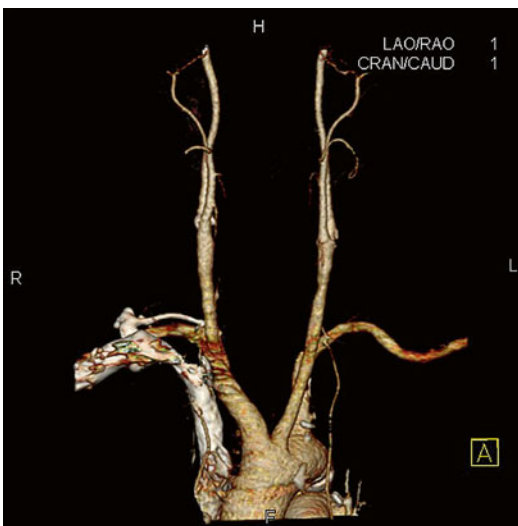
**Fig. 2.17** 3D VRT reconstruction  
The *arrows* indicate calcified atheromatous plaques placed at the level of the emerging a. carotis interna

### 2.4 Carotid Angiography: Nonobstructive Calcified Atheromatous Plaques

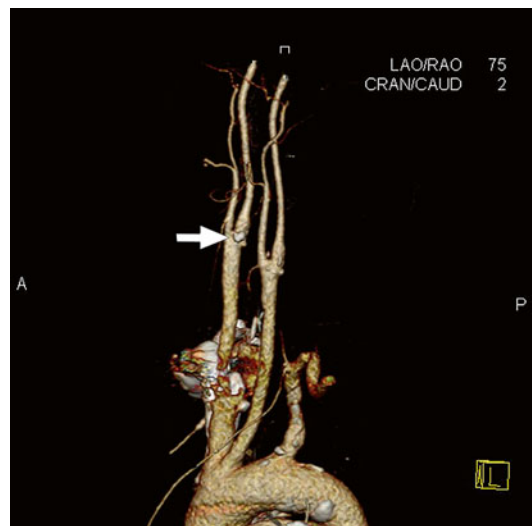


**Fig. 2.19** Reconstruction 3D VRT colour, frontal plane

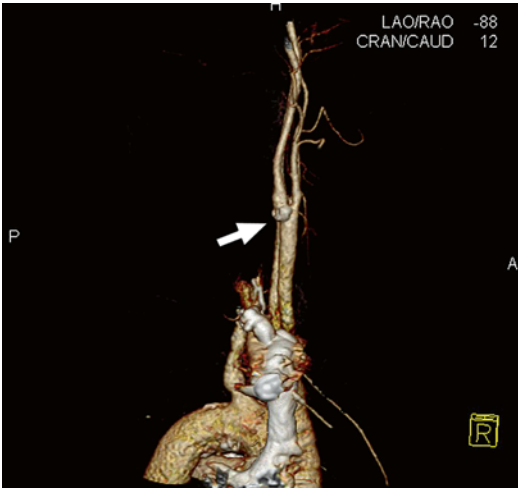
1. Aorta ascendens
2. Truncus brachiocephalicus
3. A. carotis communis dextra
4. A. carotis interna dextra
5. A. vertebralis dextra
6. A. vertebralis sinistra
7. A. carotis interna sinistra
8. A. vertebralis sinistra



**Fig. 2.20** 3D VRT colour reconstruction, after removal of the bone structure



**Fig. 2.21** 3D VRT colour reconstruction, oblique and sagittal planes  
The *arrows* indicate calcified atheromatous plaques



**Fig. 2.22** 3D VRT colour reconstruction, oblique and sagittal planes  
The *arrows* indicate calcified atheromatous plaques



**Fig. 2.24** 3D MPR reconstruction  
*Full arrow*=a. carotis communis sinistra  
*Arrow with contour*=a. carotis interna sinistra  
*Tip of the arrow*=atheromatous calcified plaque



**Fig. 2.23** 3D MIP reconstruction  
*Full arrow*=a. carotis communis sinistra  
*Arrow with contour*=a. carotis interna sinistra  
*Tip of the arrow*=atheromatous calcified plaque



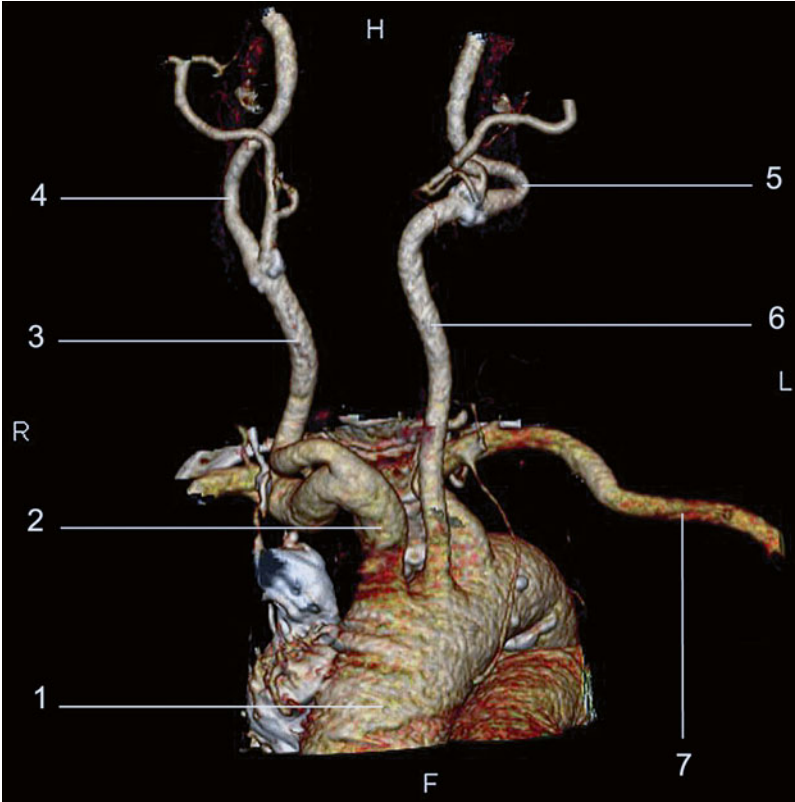
**Fig. 2.25** 3D MIP reconstruction  
*Full arrow*=a. carotis communis dextra  
*Arrow with contour*=a. carotis interna dextra  
*Tip of the arrow*=atheromatous calcified plaque



**Fig. 2.26** 3D MPR reconstruction  
*Full arrow* = a. carotis communis dextra  
*Arrow with contour* = a. carotis interna dextra  
*Tip of the arrow* = atheromatous calcified plaque

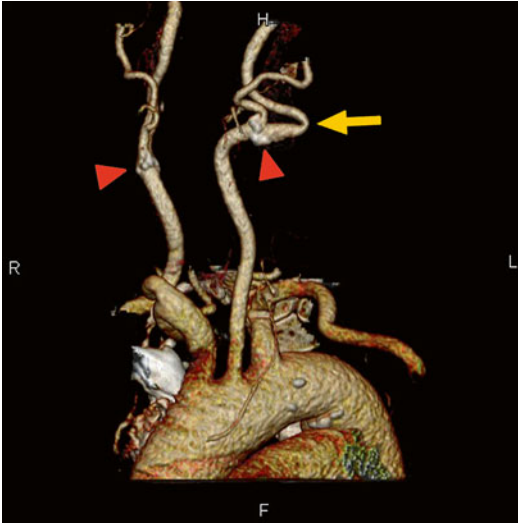


### 2.5 Carotid Angiography: Calcified Atheromatous Lesions and Kinking of Arteria Carotis Interna Sinistra

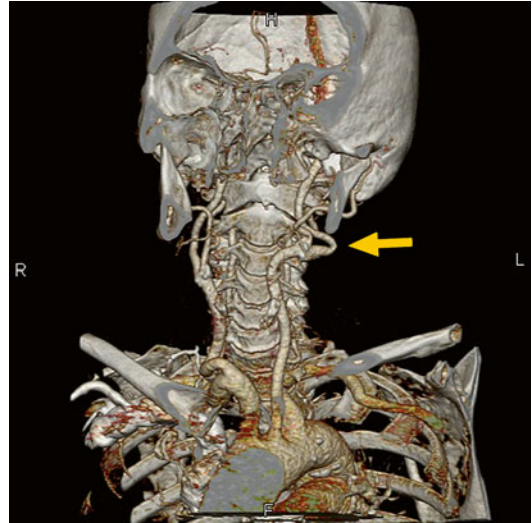


**Fig. 2.27** 3D VRT colour reconstruction, after removal of the bone structure

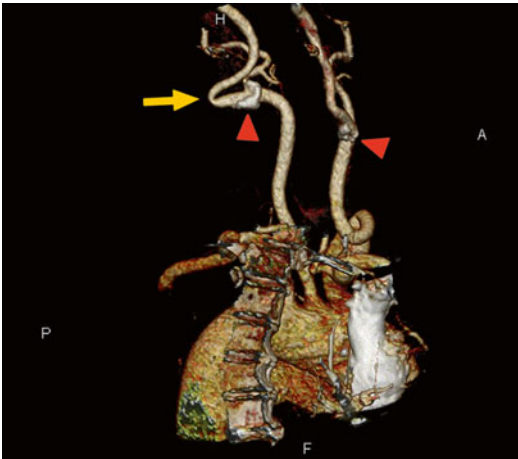
1. Aorta ascendens
2. Truncus brachiocephalicus
3. A. carotis communis dextra
4. A. carotis interna dextra
5. A. carotis interna sinistra
6. A. carotis communis sinistra
7. A. subclavia sinistra



**Fig. 2.28** 3D VRT colour reconstruction, anterior plane  
*Yellow arrow*=kinking of a. carotis interna sinistra  
 Tip of the *arrow*=calcified atheromatous plaques



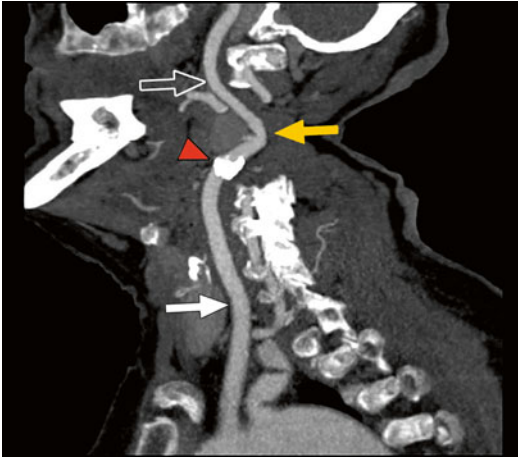
**Fig. 2.30** 3D VRT colour reconstruction, with bone structure, frontal plane  
*Yellow arrow*=kinking of a. carotis interna sinistra  
 Tip of the *arrow*=calcified atheromatous plaques



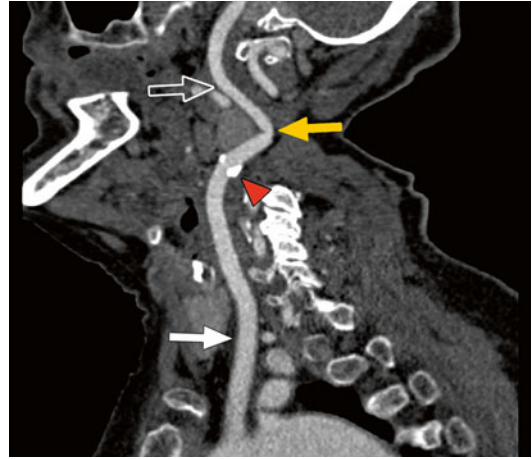
**Fig. 2.29** 3D VRT colour reconstruction, posterior plane  
*Yellow arrow*=kinking of a. carotis interna sinistra  
 Tip of the *arrow*=calcified atheromatous plaques



**Fig. 2.31** Reconstruction 3D MIP  
*Full arrow*=a. carotis communis sinistra  
*Arrow with contour*=a. carotis interna sinistra  
 Tip of the *arrow*=calcified atheromatous plaques  
*Yellow arrow*=kinking of a. carotis interna sinistra



**Fig. 2.32** Reconstruction 3D MIP  
*Full arrow*=a. carotis communis sinistra  
*Arrow with contour*=a. carotis interna sinistra  
*Tip of the arrow*=calcified atheromatous plaques  
*Yellow arrow*=kinking of a. carotis interna sinistra

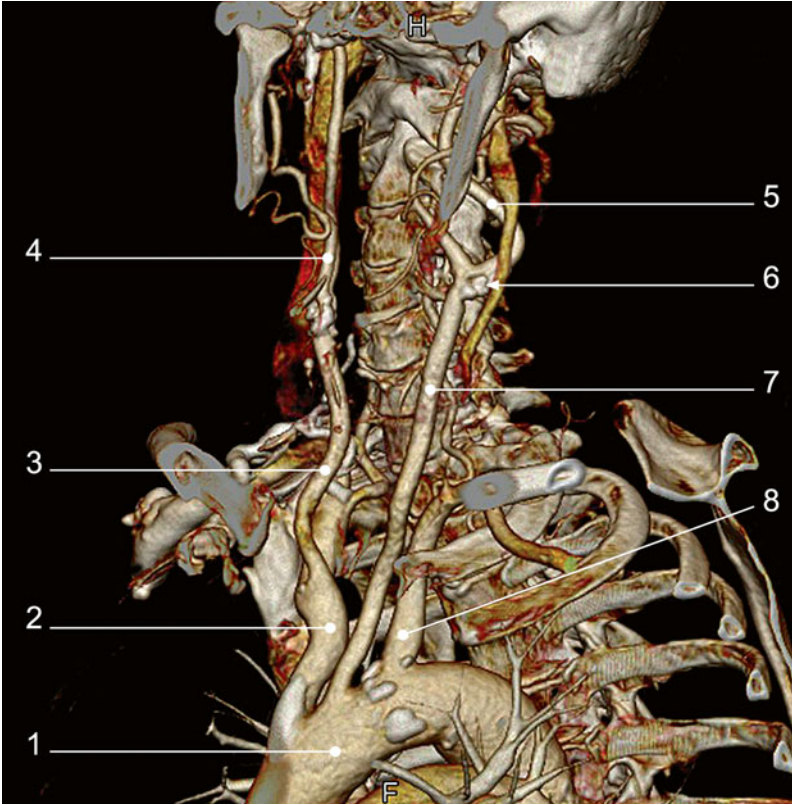


**Fig. 2.34** Reconstruction 3D MPR  
*Full arrow*=a. carotis communis sinistra  
*Arrow with contour*=a. carotis interna sinistra  
*Tip of the arrow*=calcified atheromatous plaques  
*Yellow arrow*=kinking of a. carotis interna sinistra



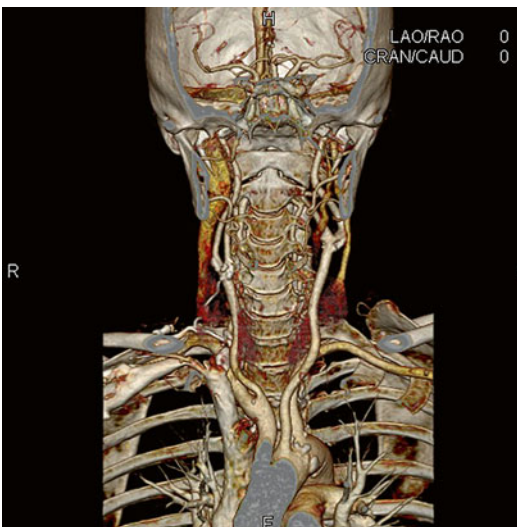
**Fig. 2.33** Reconstruction 3D MPR  
*Full arrow*=a. carotis communis dextra  
*Arrow with contour*=a. carotis interna dextra  
*Tip of the arrow*=calcified atheromatous plaques

## 2.6 Short Lesion, Moderate Stenosis of Arteria Carotis Interna Sinistra

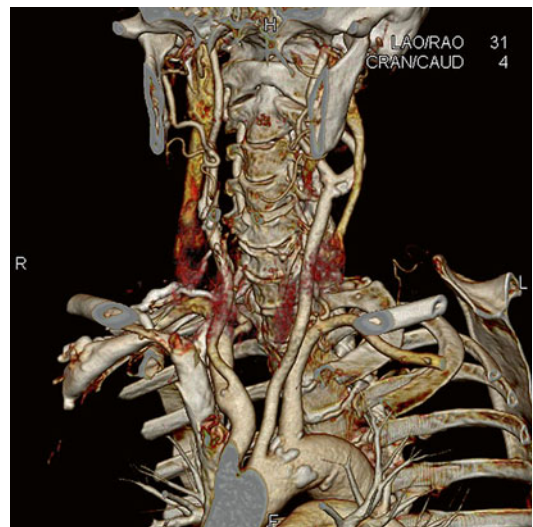


**Fig. 2.35** Colour reconstruction 3D VRT oblique plane

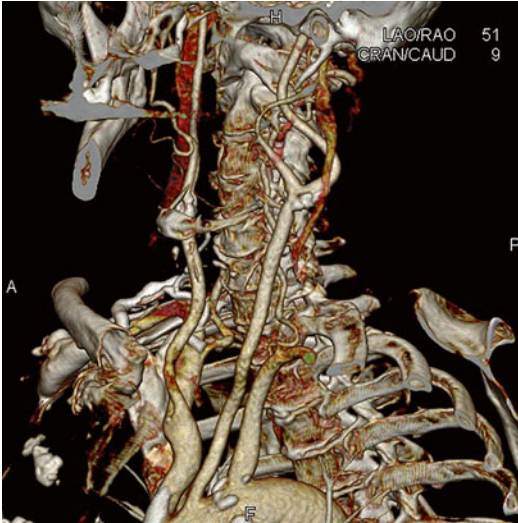
1. Arcus aortae
2. Truncus brachiocephalicus
3. A. carotis communis dextra
4. A. carotis interna dextra
5. A. carotis interna sinistra
6. Moderate stenosis of a. carotis interna sinistra by mixed atheromatous plaques
7. A. carotis communis sinistra
8. A. subclavia sinistra



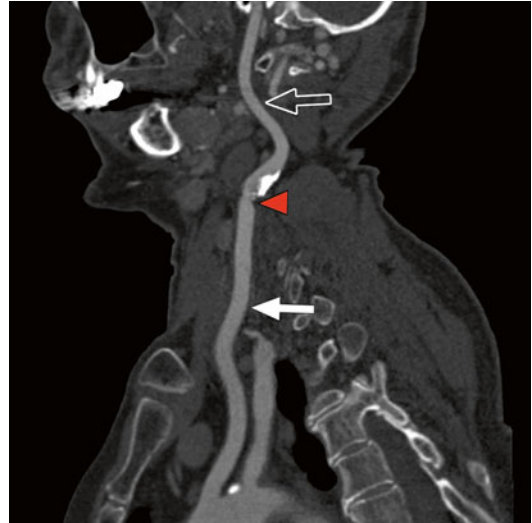
**Fig. 2.36** Colour reconstruction 3D VRT, frontal plane



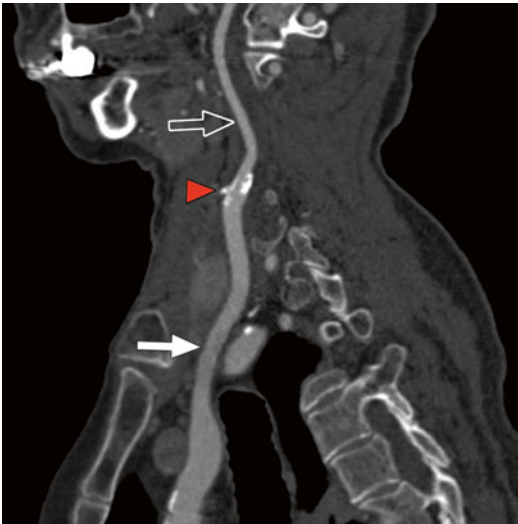
**Fig. 2.37** 3D VRT colour reconstruction, left oblique plane



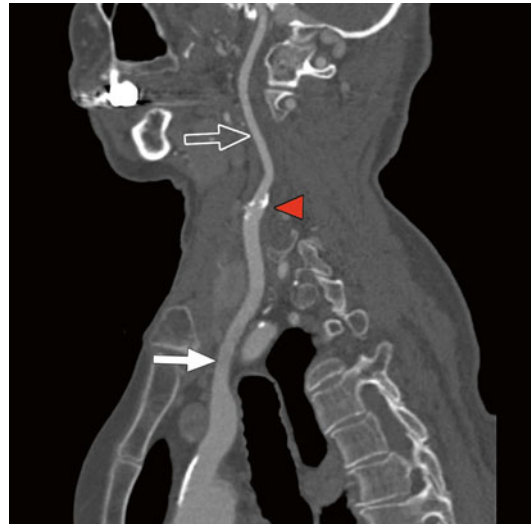
**Fig. 2.38** 3D VRT colour reconstruction, left oblique plane



**Fig. 2.40** 3D MIP reconstruction  
*Full arrow*=a. carotis communis sinistra  
*Arrow with contour*=a. carotis interna sinistra  
*Tip of the arrow*=left calcified lesion moderate stenosis



**Fig. 2.39** 3D MIP reconstruction  
*Full arrow*=a. carotis communis sinistra  
*Arrow with contour*=a. carotis interna sinistra  
*Tip of the arrow*=left calcified lesion moderate stenosis



**Fig. 2.41** 3D MPR reconstruction  
*Full arrow*=a. carotis communis dextra  
*Arrow with contour*=a. carotis interna dextra  
*Tip of the arrow*=left moderate stenosis



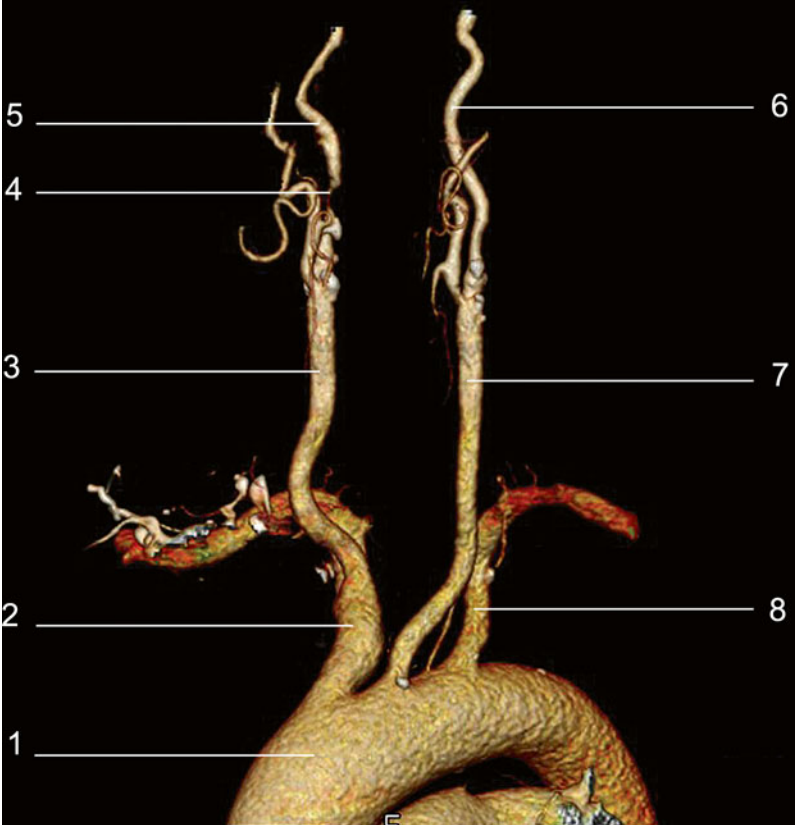
**Fig. 2.42** 3D MPR reconstruction

*Full arrow* = a. carotis communis dextra

*Arrow with contour* = a. carotis interna dextra

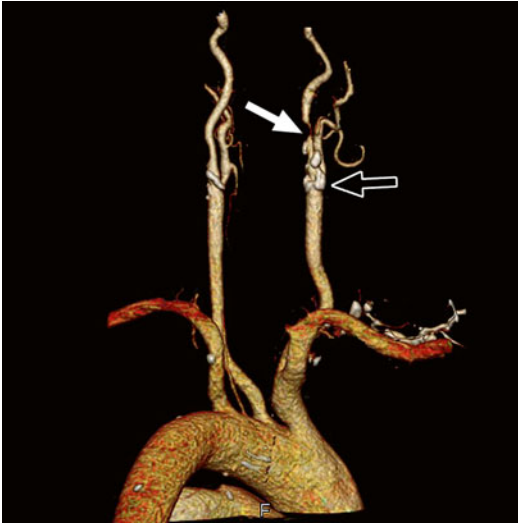
*Tip of the arrow* = left moderate stenosis

## 2.7 Carotid Angiography Emphasising a Severe Stenotic Lesion (Subocclusive) at the Level of Arteria Carotis Interna Dextra

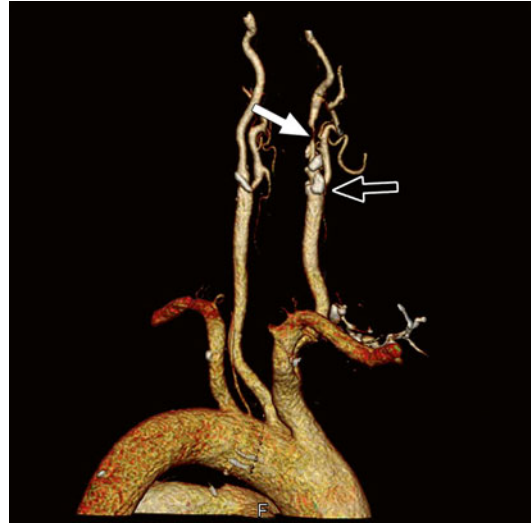


**Fig. 2.43** 3D VRT colour reconstruction after removal of the bone structure

1. Aorta
2. Truncus brachiocephalicus
3. A. carotis communis dextra
4. Subocclusive lesion
5. A. carotis interna dextra
6. A. carotis interna sinistra
7. A. carotis communis sinistra
8. A. subclavia sinistra



**Fig. 2.44** 3D VRT colour reconstruction after removal of the bone structure, posterior plane  
*Full arrow* = subocclusive lesion  
*Arrow with contour* = calcified plaques



**Fig. 2.45** 3D VRT colour reconstruction after removal of the bone structure, posterior oblique plane  
*Full arrow* = subocclusive lesion  
*Arrow with contour* = calcified plaques

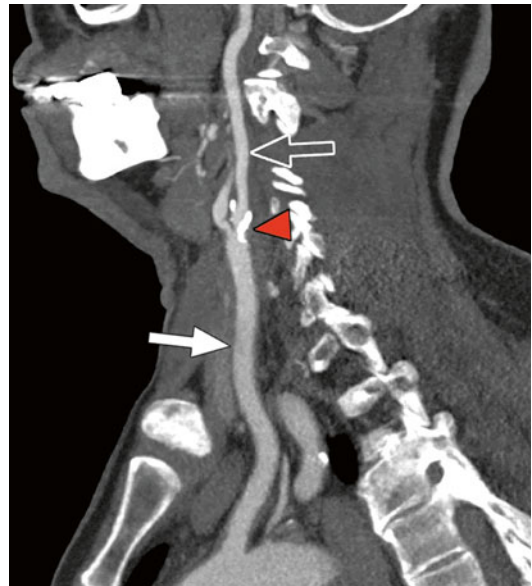
**Fig. 2.46** 3D VRT colour reconstruction after removal of the bone structure anterior oblique plane  
*Full arrow* = subocclusive lesion  
*Arrow with contour* = calcified plaques



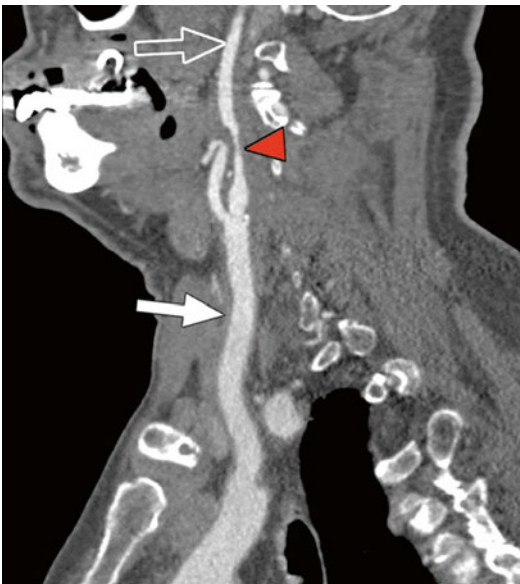




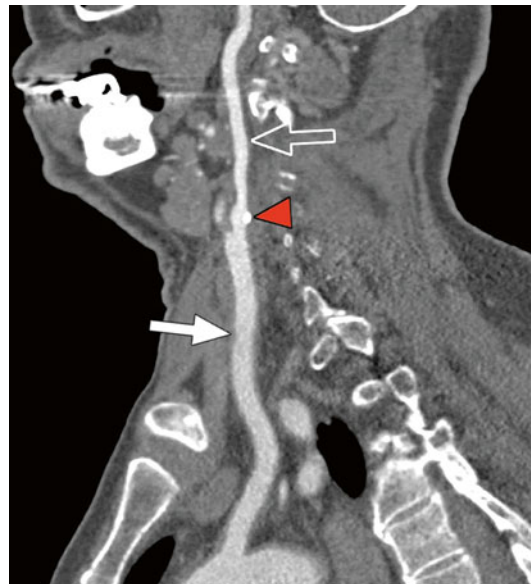
**Fig. 2.47** 3D MIP reconstruction  
*Full arrow*=a. carotis interna dextra  
*Arrow with contour*=a. carotis communis dextra  
*Tip of the arrow*=subocclusive lesion a. carotis interna dextra



**Fig. 2.49** 3D MIP reconstruction  
*Full arrow*=a. carotis communis sinistra  
*Arrow with contour*=a. carotis interna sinistra  
*Tip of the arrow*=calcified plaques

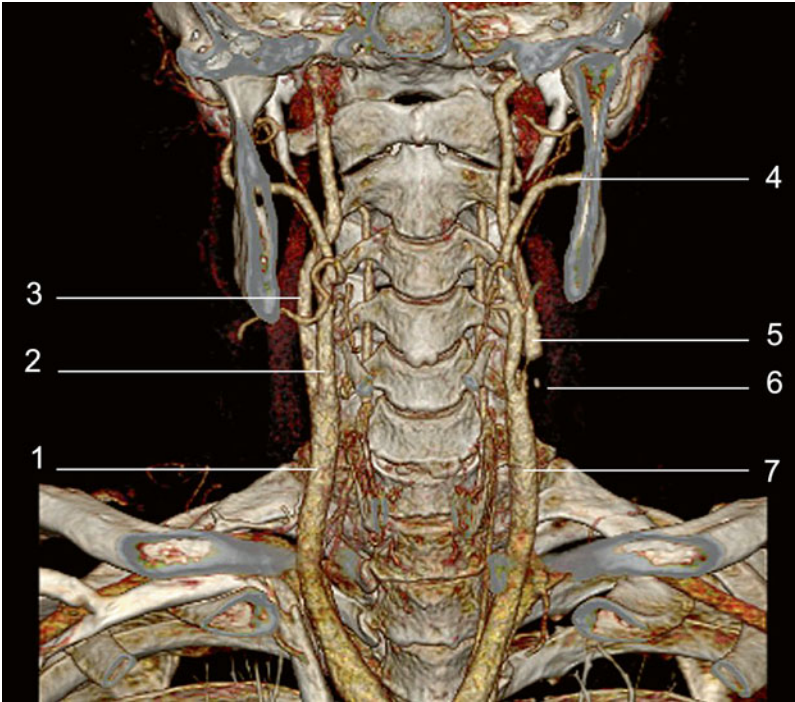


**Fig. 2.48** 3D MPR reconstruction  
*Full arrow*=a. carotis interna dextra  
*Arrow with contour*=a. carotis communis dextra  
*Tip of the arrow*=subocclusive lesion a. carotis interna dextra



**Fig. 2.50** 3D MPR reconstruction  
*Full arrow*=a. carotis communis sinistra  
*Arrow with contour*=a. carotis interna sinistra  
*Tip of the arrow*=calcified plaques

**2.8 Carotid Angiography  
Emphasising a Subocclusive  
Lesion at the Level of the  
Emerging Arteria Carotis  
Interna Sinistra**



**Fig. 2.51** 3D VRT colour reconstruction frontal plane  
 1. A. carotis communis dextra  
 2. A. carotis externa dextra  
 3. A. carotis interna dextra  
 4. A. carotis externa sinistra  
 5. A. carotis interna sinistra  
 6. Subocclusive lesion  
 7. A. carotis communis sinistra



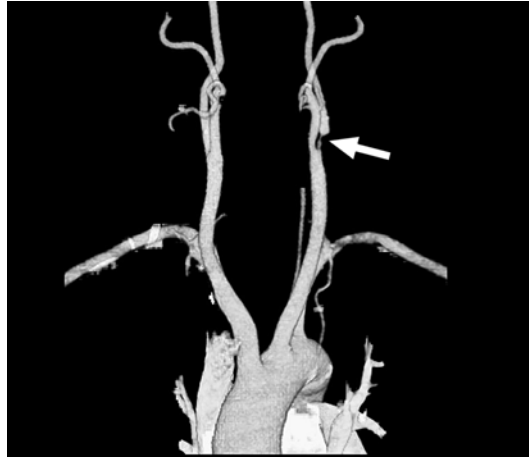
**Fig. 2.52** 3D VRT colour reconstruction after removal of the bone structure, posterior plane  
*Full arrow*=subocclusive lesion a. carotis interna sinistra



**Fig. 2.53** 3D VRT colour reconstruction after removal of the bone structure, posterior oblique plane  
*Full arrow*=subocclusive lesion a. carotis interna sinistra



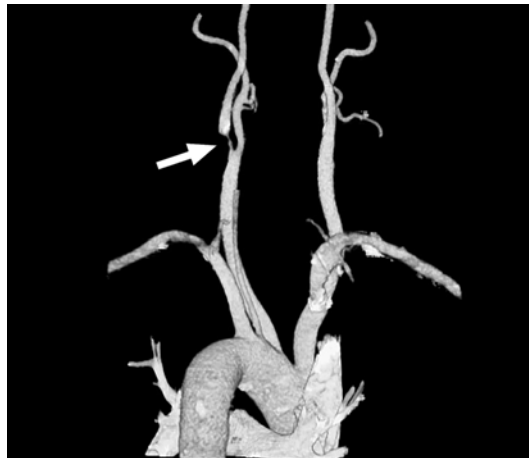
**Fig. 2.54** 3D VRT colour reconstruction after removal of the bone structure, sagittal plane  
*Full arrow*=subocclusive lesion a. carotis interna sinistra



**Fig. 2.55** 3D VRT colour reconstruction after removal of the bone structure, anterior plane  
*Full arrow*=subocclusive lesion at the level of a. carotis interna sinistra

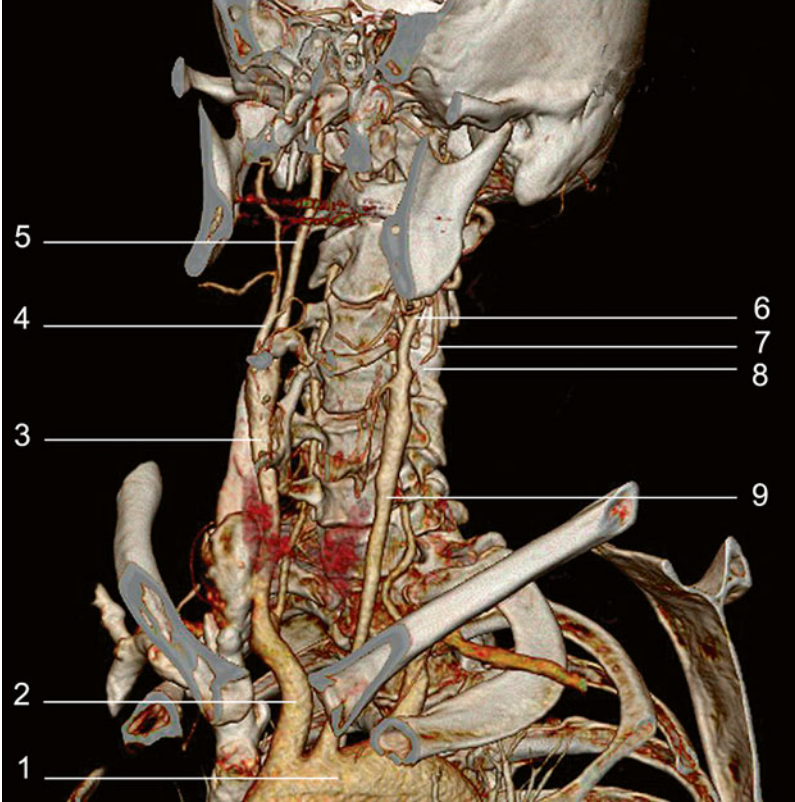


**Fig. 2.56** 3D VRT colour reconstruction after removal of the bone structure, anterior oblique plane  
*Full arrow*=subocclusive lesion at the level of a. carotis interna sinistra



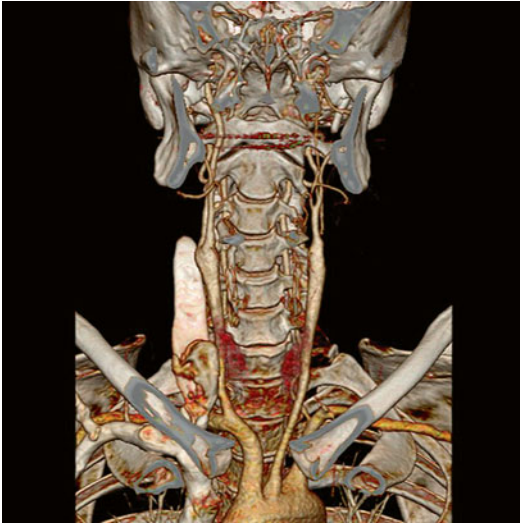
**Fig. 2.57** 3D VRT colour reconstruction after removal of the bone structure, posterior plane  
*Full arrow*=subocclusive lesion at the level of a. carotis interna sinistra

### 2.9 Carotid Angiography Ostial Occlusive Lesion at the Level of Arteria Carotis Interna Sinistra

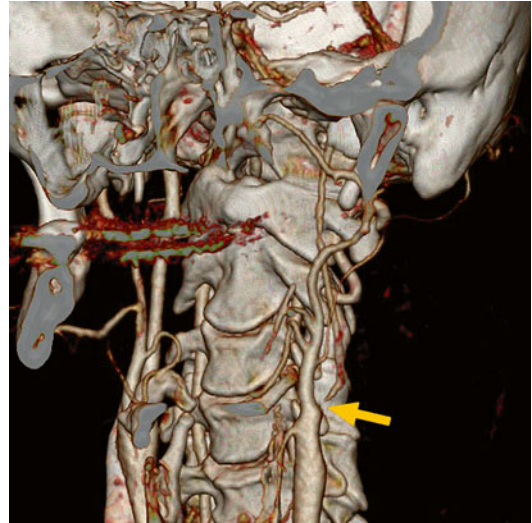


**Fig. 2.58** 3D VRT colour reconstruction, oblique plane

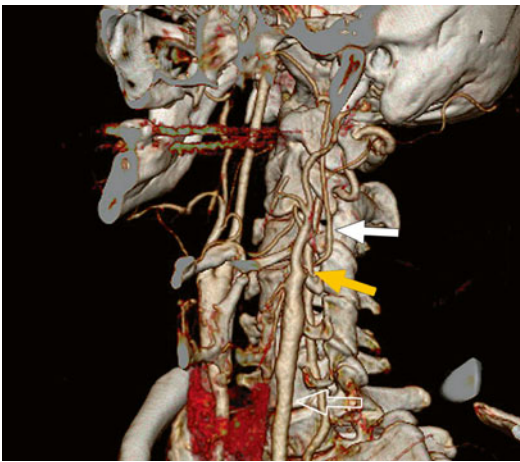
1. Aorta
2. Truncus brachiocephalicus
3. A. carotis communis dextra
4. A. carotis externa dextra
5. A. carotis interna dextra
6. A. carotis externa sinistra
7. A. carotis interna sinistra
8. Occlusive lesion
9. A. carotis communis sinistra



**Fig. 2.59** 3D VRT colour reconstruction frontal plane



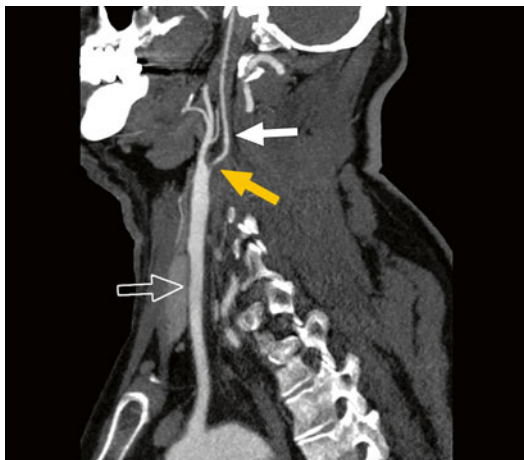
**Fig. 2.61** 3D VRT colour reconstruction, oblique plane  
The *yellow arrow* indicates ostial occlusive lesion



**Fig. 2.60** 3D VRT colour reconstruction enlarged image  
*Arrow with contour*=a. carotis communis sinistra  
*Full arrow*=a. carotis interna sinistra  
*Yellow arrow*=ostial occlusive lesion

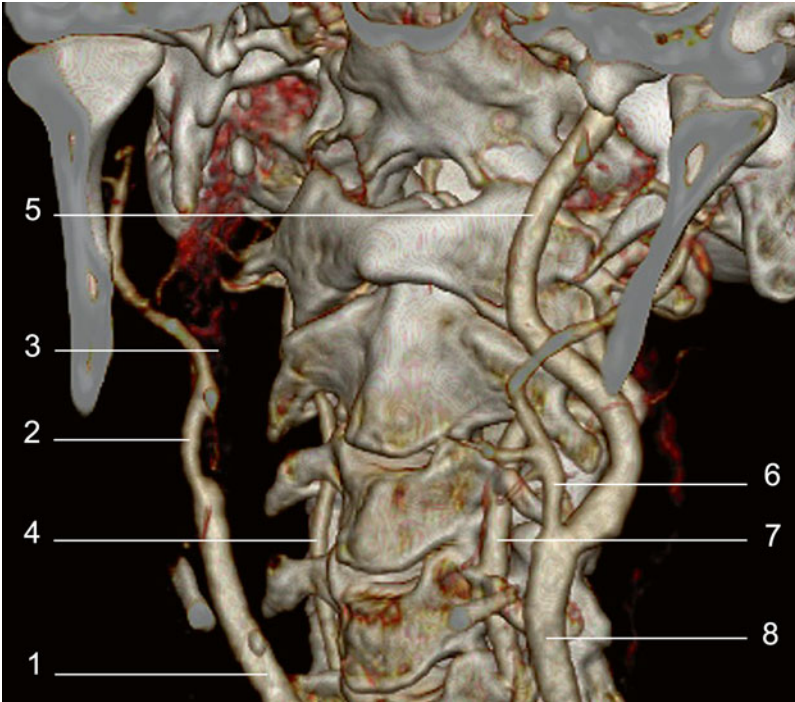


**Fig. 2.62** 3D MIP colour reconstruction  
*Arrow with contour*=a. carotis communis dextra  
*Full arrow*=a. carotis interna dextra

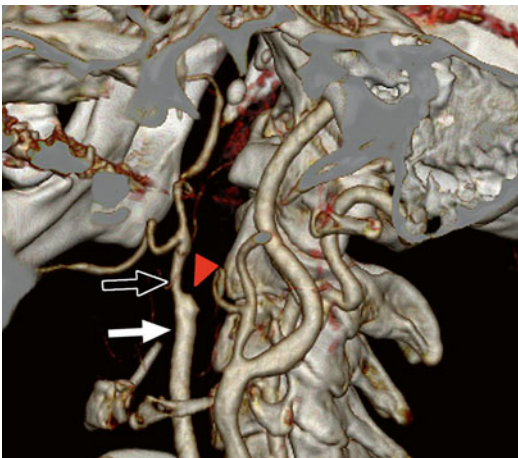


**Fig. 2.63** 3D MIP colour reconstruction  
*Arrow with contour*=a. carotis communis sinistra  
*Full arrow*=a. carotis interna sinistra  
*Yellow arrow*=ostial occlusive lesion

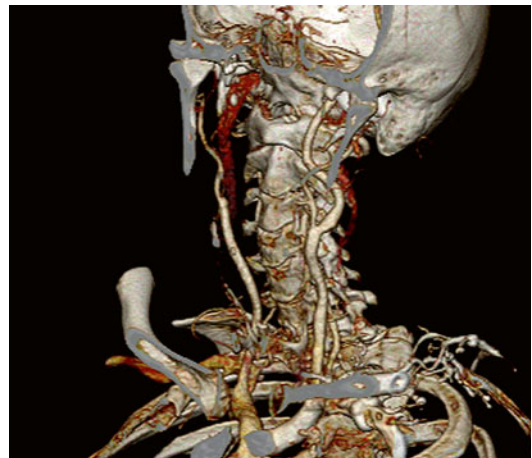
**2.10 Carotid Angiography:  
Complete Occlusion of the  
Arteria Carotis Interna  
Dextra**



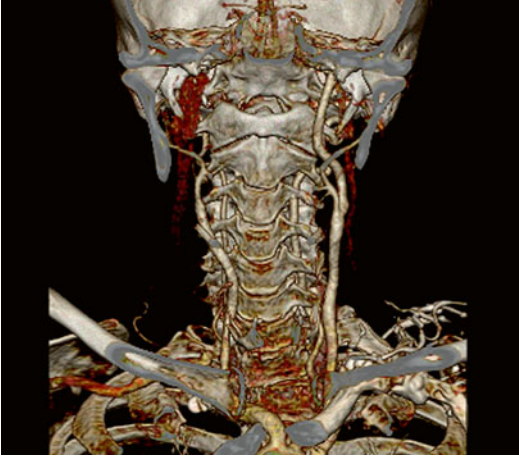
**Fig. 2.64** 3D VRT colour reconstruction, enlarged image, oblique plane  
 1. A. carotis communis dextra  
 2. A. carotis externa dextra  
 3. Occluded a. carotis interna  
 4. A. vertebralis dextra  
 5. A. carotis interna sinistra  
 6. A. carotis externa sinistra  
 7. A. vertebralis sinistra  
 8. A. carotis communis sinistra



**Fig. 2.65** 3D VRT colour reconstruction, sagittal plane, enlarged image  
 Full arrow = a. carotis communis dextra  
 Arrow with contour = a. carotis externa dextra  
 At the tip of the arrow = a. carotis interna dextra, chronic occlusion



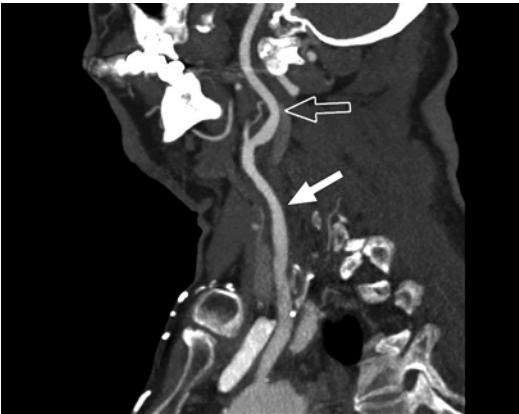
**Fig. 2.66** 3D VRT colour reconstruction, oblique plane



**Fig. 2.67** 3D VRT colour reconstruction, frontal plane



**Fig. 2.69** 3D MIP reconstruction  
*Full arrow*=a. carotis communis dextra  
*Arrow with contour*=a. carotis interna dextra  
*Tip of the arrow*=ostium of a. carotis interna dextra with chronic occlusion



**Fig. 2.68** 3D MIP reconstruction  
*Full arrow*=a. carotis communis sinistra  
*Arrow with contour*=a. carotis interna sinistra



**2.11 Carotid Angiography: Severe Stenotic Lesion at the Level of the Pars Proximalis of Arteria Subclavia Sinistra**

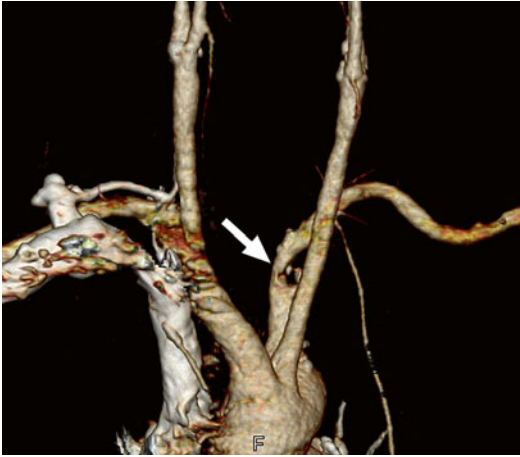


**Fig. 2.70** 3D VRT colour reconstruction, after removal of the bone structure

1. Aorta
2. Truncus brachiocephalicus
3. Vena cava superior
4. A. carotis communis dextra
5. A. carotis externa dextra
6. A. carotis interna dextra
7. A. carotis interna sinistra
8. A. carotis externa sinistra
9. A. subclavia sinistra
10. Severe stenotic lesion



**Fig. 2.71** 3D VRT colour reconstruction, after removal of the bone structure, posterior plane  
The *full arrow* indicates stenotic lesion



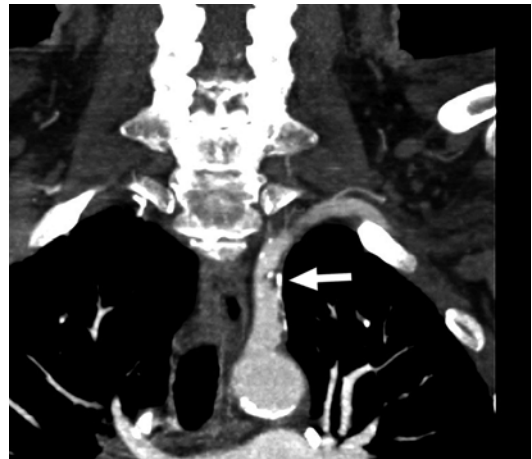
**Fig. 2.72** 3D VRT colour reconstruction, after removal of the bone structure, enlarged image, anterior plane  
The *full arrow* indicates stenotic lesion



**Fig. 2.74** 3D MPR reconstruction, frontal plane  
*Full arrow* = stenotic lesion

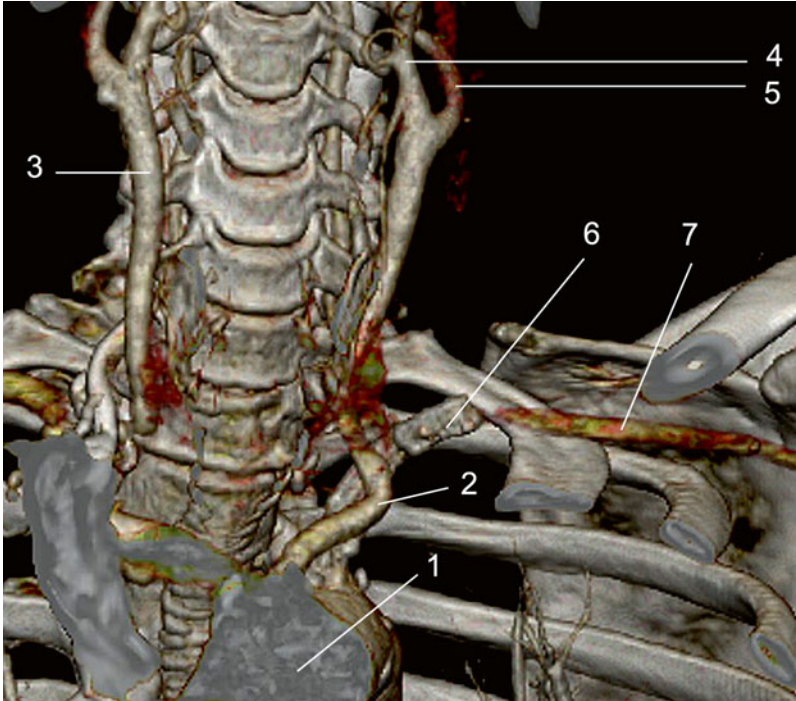


**Fig. 2.73** 3D VRT colour reconstruction, after removal of the bone structure, enlarged image, posterior plane  
The *full arrow* indicates stenotic lesion

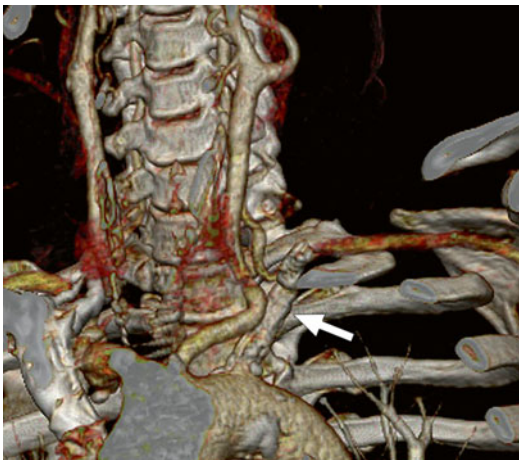


**Fig. 2.75** 3D MIP reconstruction, frontal plane  
*Full arrow* = stenotic lesion

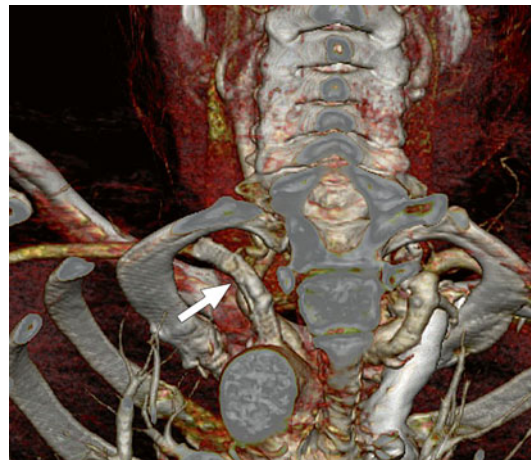
**2.12 Carotid Angiography: Stent Occlusion at the Level of Arteria Subclavia Sinistra**



**Fig. 2.76** 3D VRT colour reconstruction, frontal plane, enlarged image  
 1. Aorta  
 2. A. carotis communis sinistra  
 3. A. carotis communis dextra  
 4. A. carotis interna sinistra  
 5. A. carotis externa sinistra  
 6. Stent  
 7. A. subclavia sinister



**Fig. 2.77** 3D VRT colour reconstruction, oblique plane, enlarged image. The *full arrow* indicates stent



**Fig. 2.78** 3D VRT colour reconstruction, posterior plane, enlarged image. The *full arrow* indicates stent



**Fig. 2.79** 3D curved MPR reconstruction

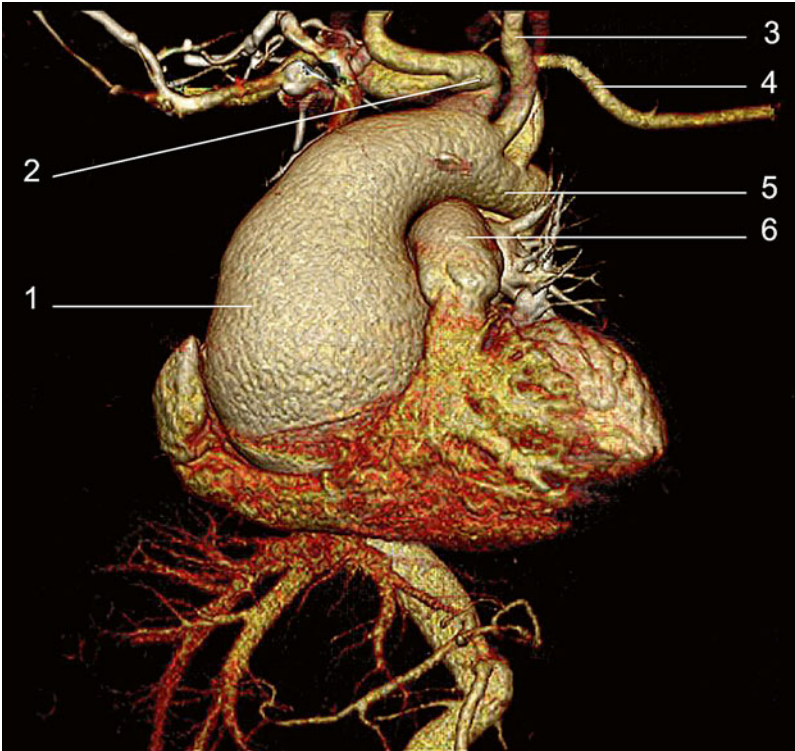
*Full arrow* = stent occlusion

*Arrow with contour* = a. subclavia sinistra

## Contents

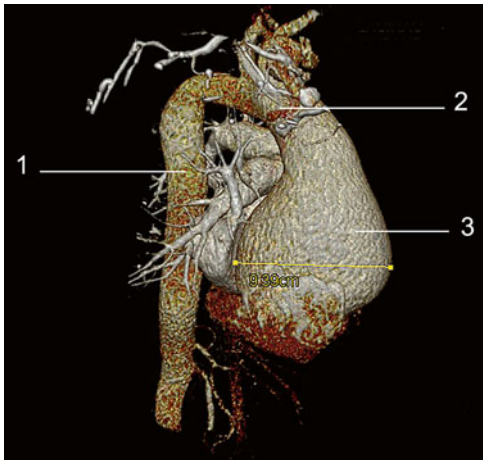
3.1	<b>Aneurysm of the Aorta Ascendens</b> .....	50
3.2	<b>Supravalvular Aortic Stenosis</b> .....	53
3.3	<b>Aneurysm of the Aorta Ascendens: Isthmic Stenosis</b> .....	56
3.4	<b>Aneurysm of the Arcus Aortae</b> .....	58
3.5	<b>Aneurysm of the Aorta Ascendens: Chronic Dissection of the Aorta</b> .....	60
3.6	<b>Post-traumatic Aneurysm of the Aorta Descendens</b> .....	63
3.7	<b>Gigantic Aneurysm at the Level of the Aorta Descendens</b> .....	65
3.8	<b>Chronic Dissection of the Aorta Descendens</b> .....	68
3.9	<b>Stenosis of A. Pulmonalis Dextra</b> .....	71
3.10	<b>Aneurysm and Dissection of the Aorta ascendens After Valvular Aortic Replacement</b> .....	73
3.11	<b>Pulmonary Thromboembolism</b> .....	75
3.12	<b>Right Partially Anomalous Venous Drainage</b> .....	77
3.13	<b>Partially Aberrant Venous Drainage</b> .....	79
3.14	<b>Interrupted Arcus Aortae</b> .....	82

### 3.1 Aneurysm of the Aorta Ascendens



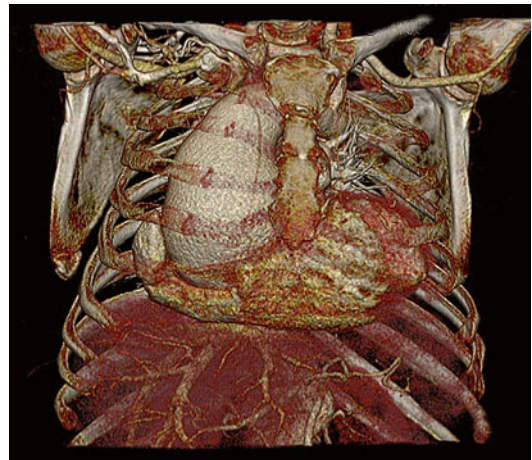
**Fig. 3.1** 3D VRT colour reconstruction, after removal of the thoracic cage

1. Aorta ascendens. Aneurysmal dilatation
2. Truncus brachiocephalicus
3. A. carotis communis sinistra
4. A. subclavia sinistra
5. Arcus aortae
6. Truncus a. pulmonalis

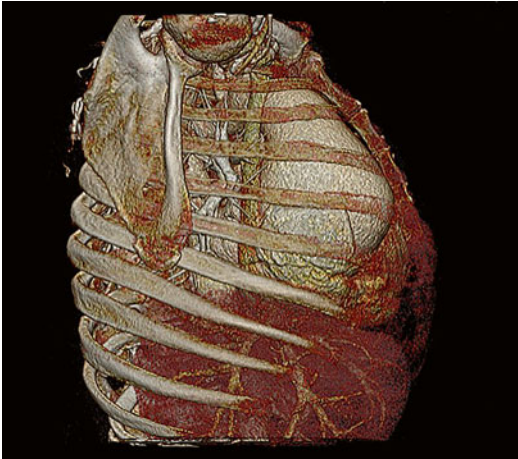


**Fig. 3.2** 3D VRT colour reconstruction, after removal of the thoracic cage

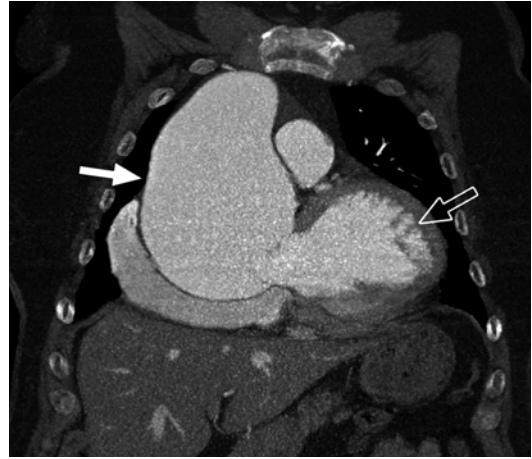
1. Aorta descendens thoracica
2. Arcus aortae
3. Aneurysm



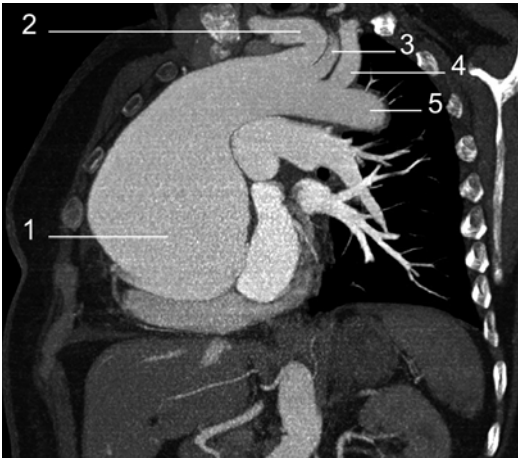
**Fig. 3.3** 3D VRT colour reconstruction, anterior plane



**Fig. 3.4** 3D VRT colour reconstruction, right sagittal plane



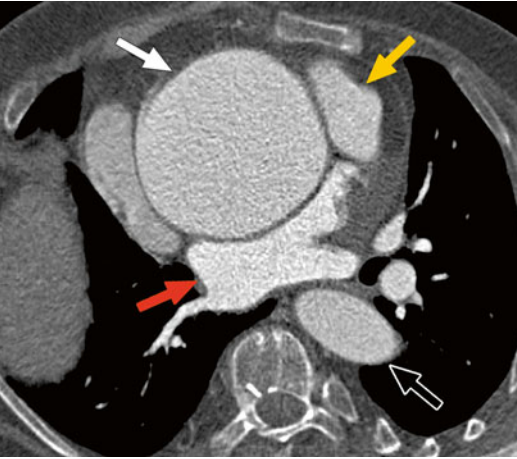
**Fig. 3.6** 3D MIP reconstruction, coronal plane  
*Full arrow* = aneurysm  
*Arrow with contour* = ventriculus sinister



**Fig. 3.5** 3D MIP reconstruction, coronal plane  
1. Aneurysm  
2. Truncus brachiocephalicus  
3. A. carotis communis sinistra  
4. A. subclavia sinistra  
5. A. aorta descendens



**Fig. 3.7** 3D MIP reconstruction, coronal plane



**Fig. 3.8** 3D MIP reconstruction, axial plane

*Full arrow* = aneurysm

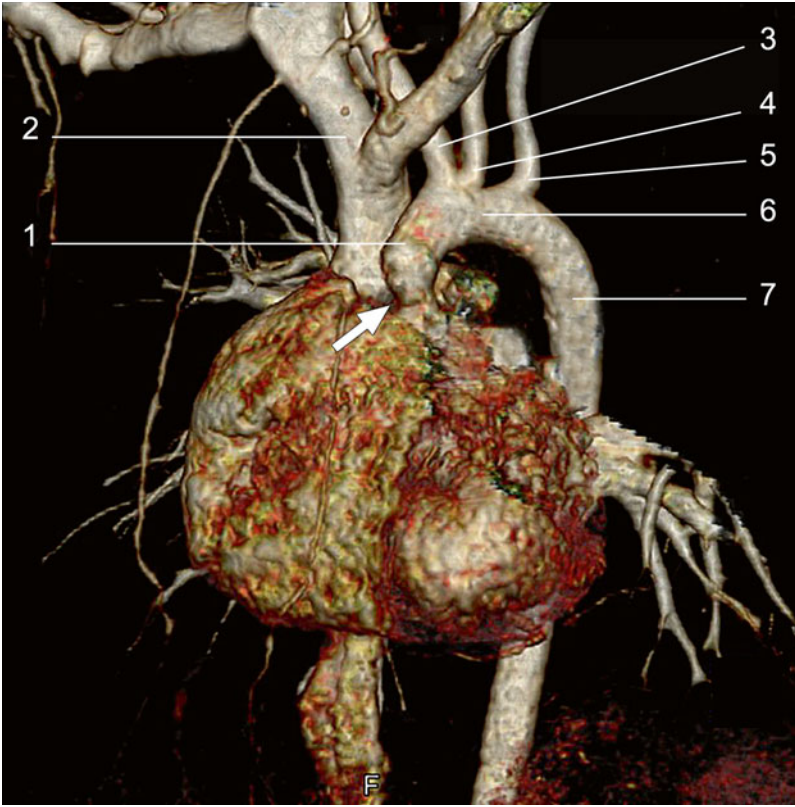
*Arrow with contour* = aorta descendens

*Yellow arrow* = ventriculus sinister

*Red arrow* = atrium sinister



### 3.2 Supravalvular Aortic Stenosis



**Fig. 3.9** 3D VRT colour reconstruction, after removal of the bone structure

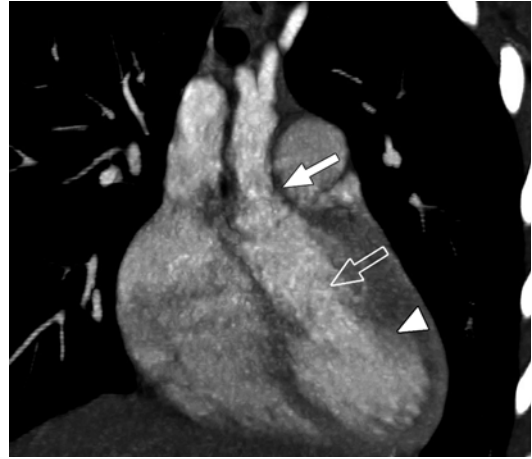
1. A. ascendens
  2. V. brachiocephalica dextra
  3. Truncus brachiocephalicus
  4. A. carotis communis sinistra
  5. A. subclavia sinistra
  6. Arcus aortae
  7. Aorta descendens
- The *full arrow* indicates stenotic area



**Fig. 3.10** 3D VRT colour reconstruction, after removal of the bone structure, oblique anterior plane  
*Full arrow* = supravalvular stenotic area



**Fig. 3.11** 3D VRT colour reconstruction, after removal of the bone structure, posterior oblique plane  
*Full arrow*=supralvalvular stenotic area



**Fig. 3.13** 3D MIP reconstruction, tract of ejection ventriculus sinister  
*Full arrow*=supralvalvular stenotic area  
*Arrow with contour*=tract of ejection ventriculus sinister  
 Tip of the *arrow*=ventriculus sinister



**Fig. 3.12** 3D VRT colour reconstruction, enlarged image



**Fig. 3.14** 3D MIP reconstruction  
*Full arrow*=supralvalvular stenotic area  
*Arrow with contour*=atrium sinistrum  
 Tip of the *arrow*=tract of ejection ventriculus sinister



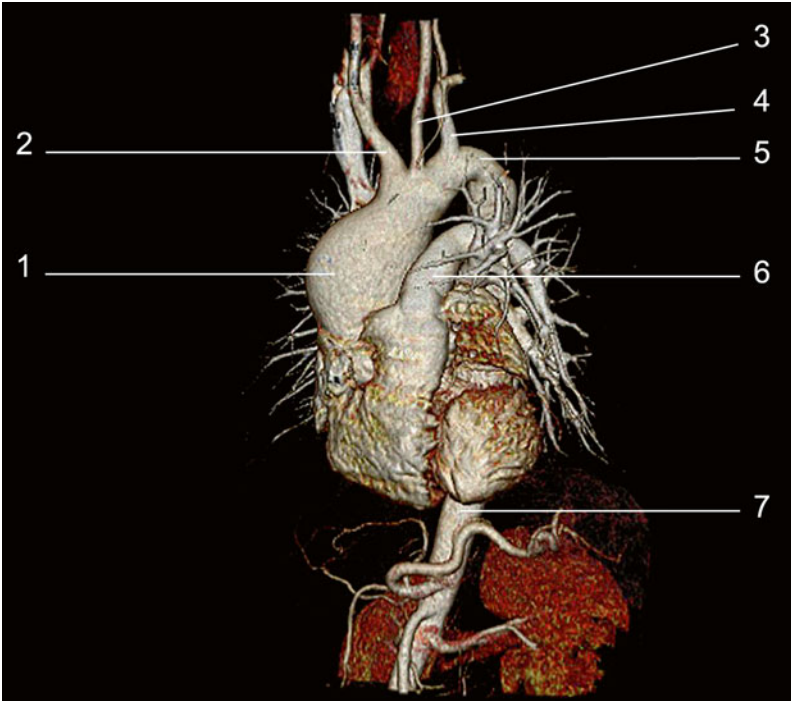
**Fig. 3.15** 3D MIP reconstruction, axial plane

*Full arrow* = aorta ascendens

*Arrow with contour* = aorta descendens

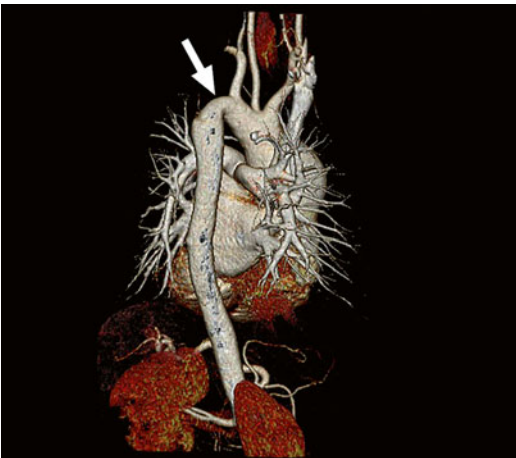
Tip of the *arrow* = truncus a. pulmonalis

### 3.3 Aneurysm of the Aorta Ascendens: Isthmic Stenosis

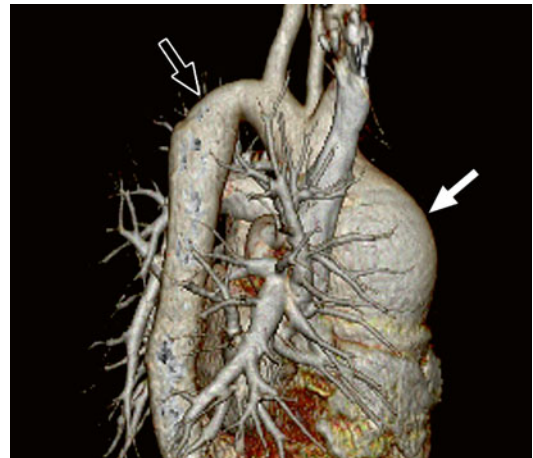


**Fig. 3.16** 3D VRT colour reconstruction, after removal of the bone structure, left anterior oblique plane

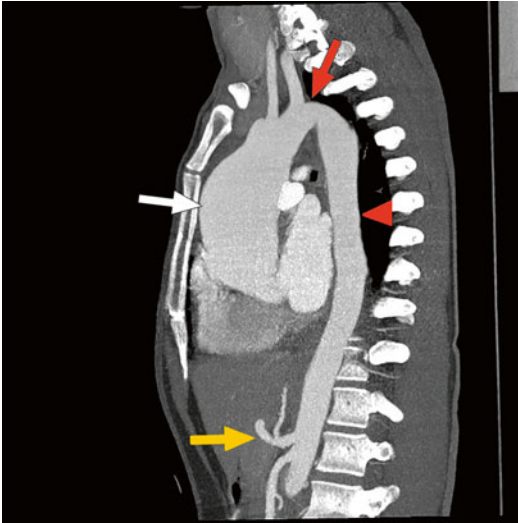
1. Aorta ascendens
2. Truncus brachiocephalicus
3. A. carotis communis sinistra
4. A. subclavia sinistra
5. Area of isthmic stenosis
6. Truncus a. pulmonalis
7. Aorta descendens



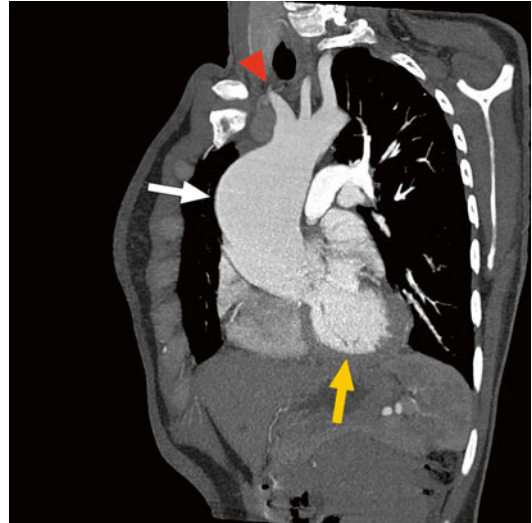
**Fig. 3.17** 3D VRT colour reconstruction, after removal of the bone structure, posterior oblique plane  
*Full arrow*=area of isthmic stenosis



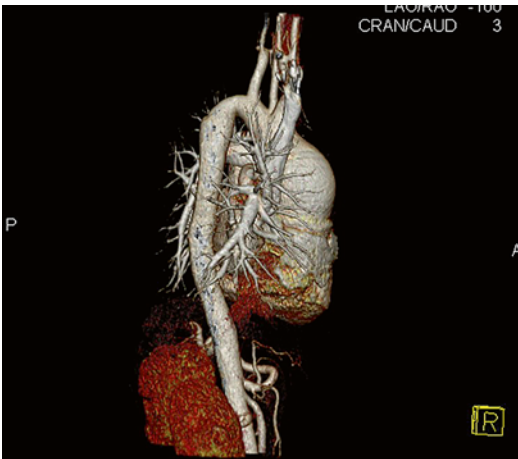
**Fig. 3.18** 3D VRT colour reconstruction, after removal of the bone structure, posterior oblique plane  
*Full arrow*=dilated aneurysm at the aorta ascendens  
*Arrow with contour*=area of isthmic stenosis



**Fig. 3.19** 3D MIP reconstruction, sagittal plane  
*Full arrow*=aneurysm of the aorta ascendens  
*Full red arrow*=isthmic stenotic area  
 At the tip of the *red arrow*=aorta thoracica  
*Yellow arrow*=truncus coeliacus and arteria mesenterica superior

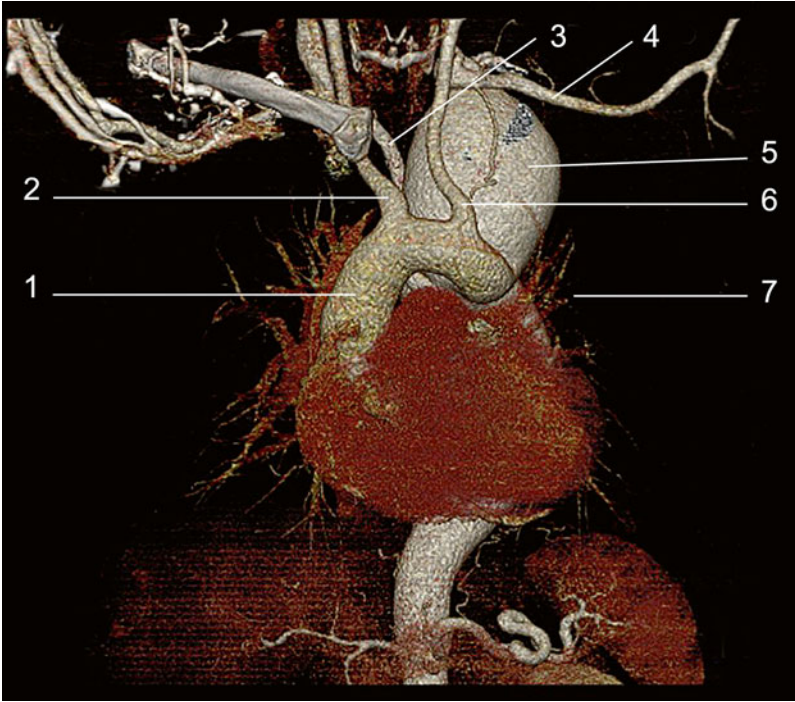


**Fig. 3.21** 3D MIP reconstruction, sagittal plane  
*Full arrow*=aneurysm of the aorta ascendens  
*Yellow arrow*=ventriculus sinister  
 At the tip of the *red arrow*=emerging vessels from the arcus aortae



**Fig. 3.20** 3D VRT colour reconstruction, right sagittal plane

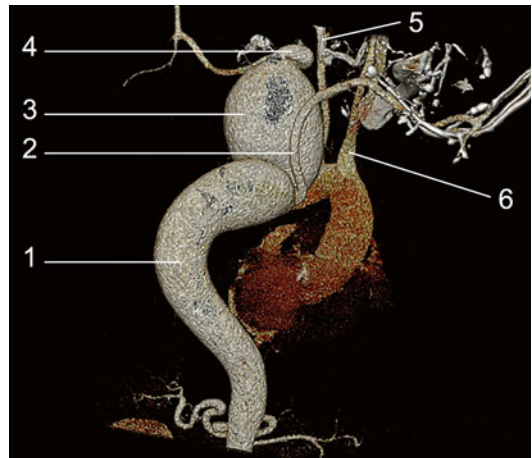
### 3.4 Aneurysm of the Arcus Aortae



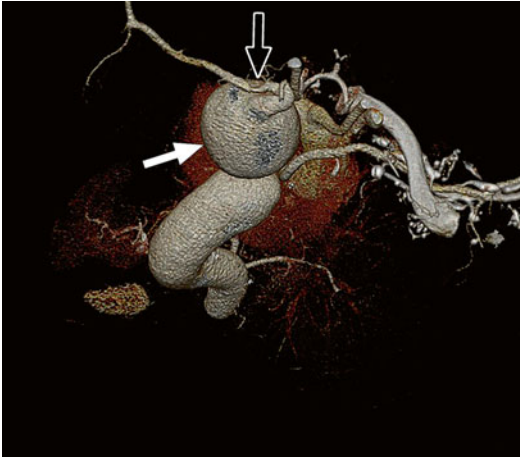
**Fig. 3.22** 3D VRT colour reconstruction, after removal of the bone structure, anterior view  
 1. Aorta ascendens  
 2. A. carotis communis dextra  
 3. A. subclavia dextra  
 4. A. subclavia sinistra  
 5. Aneurysm of arcus aortae  
 6. A. carotis communis sinistra  
 7. Aorta descendens



**Fig. 3.23** 3D VRT colour reconstruction, after removal of the bone structure, left anterior oblique view  
*Full arrow*=aneurysm of the arcus aortae  
 At the tip of the *arrow*=abnormal emergence of the a. subclavia sinister from the level of the superior pole of the aneurysm



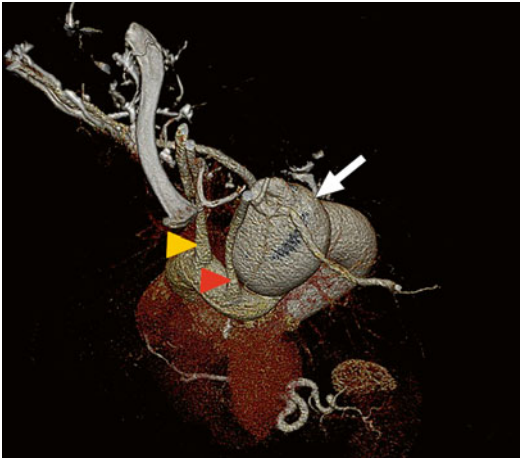
**Fig. 3.24** 3D VRT colour reconstruction, after removal of the bone structure, posterior view  
 1. Aorta thoracica  
 2. A. subclavia dextra  
 3. Aneurysm  
 4. A. subclavia sinistra  
 5. A. carotis communis sinistra  
 6. A. carotis communis dextra



**Fig. 3.25** 3D VRT colour reconstruction, after removal of the bone structure, posterior cranial view  
*Full arrow*=aneurysm  
*Arrow with contour*=emergence of a. subclavia sinistra from the cranial extremity of the aneurysm

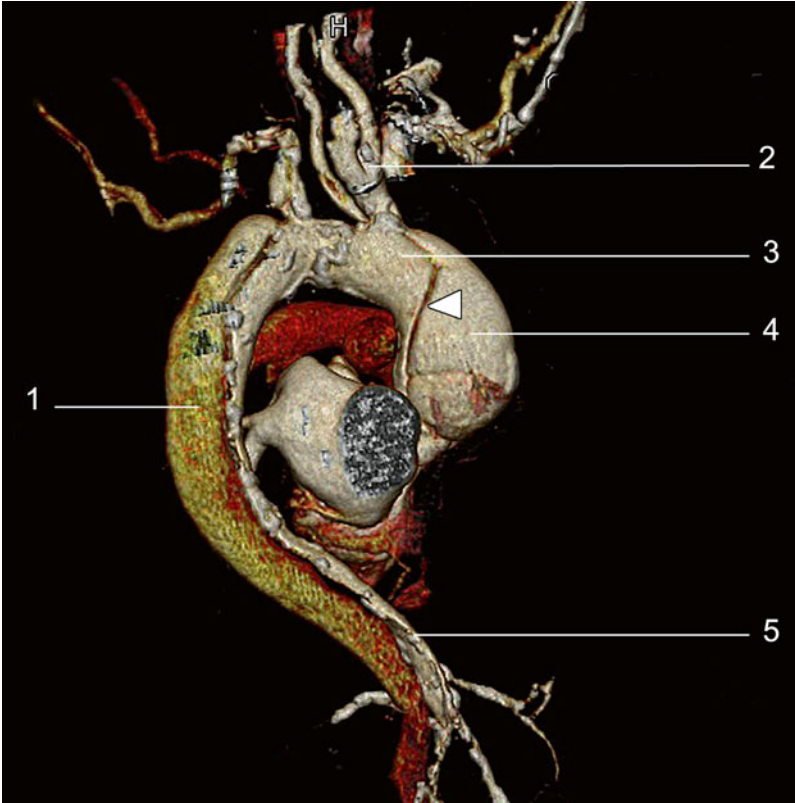


**Fig. 3.27** 3D VRT colour reconstruction, after removal of the bone structure, posterior view  
The *full arrow* indicates aneurysm



**Fig. 3.26** 3D VRT colour reconstruction, after removal of the bone structure, anterior cranial view  
*Full arrow*=aneurysm  
Tip of the *yellow arrow*=a. carotis communis dextra  
Tip of the *red arrow*=a. carotis communis sinistra

### 3.5 Aneurysm of the Aorta Ascendens: Chronic Dissection of the Aorta



**Fig. 3.28** 3D VRT colour reconstruction, right oblique view

1. Aorta ascendens
2. Truncus brachiocephalicus
3. Aorta ascendens
4. Dissected aortic aneurysm
5. "True" lumen of aorta descendens

Tip of the *arrow* = fold dissection

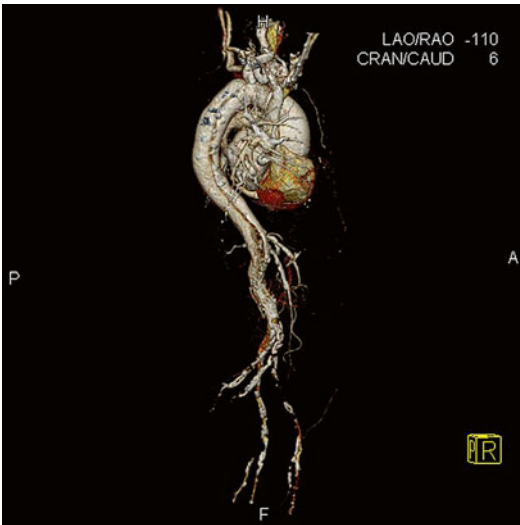




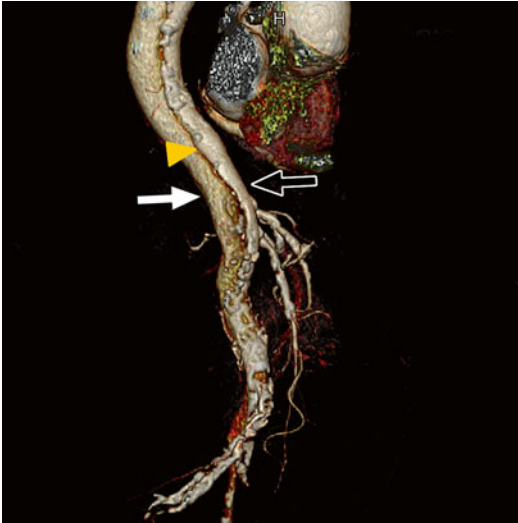
**Fig. 3.29** 3D VRT colour reconstruction, right oblique view  
The *full arrow* indicates fold dissection



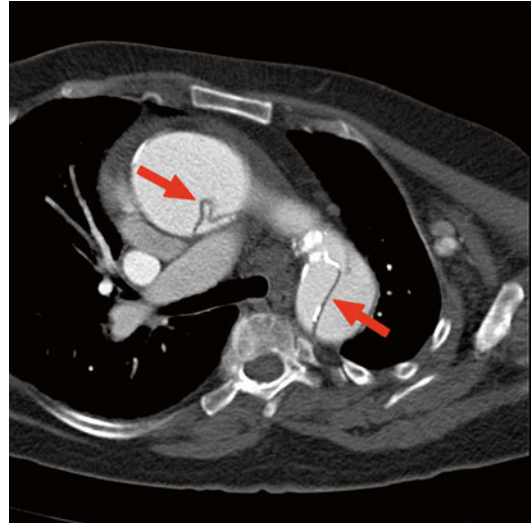
**Fig. 3.31** 3D VRT colour reconstruction, enlarged image of the aorta descendens  
*Full arrow* = false lumen  
*Arrow with contour* = true lumen  
Tip of the *yellow arrow* = dissection fold



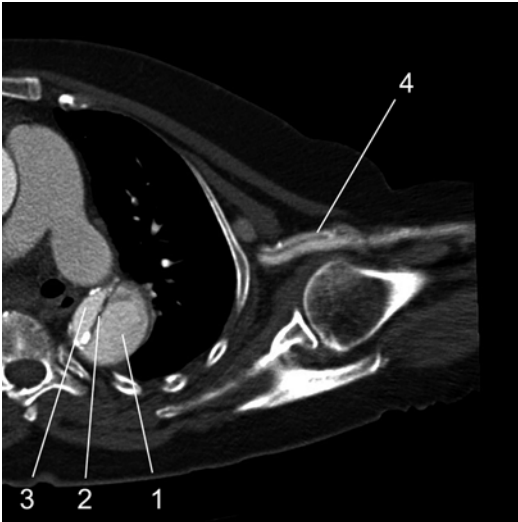
**Fig. 3.30** 3D VRT colour reconstruction, lateral view with visualisation of the abdominal aorta



**Fig. 3.32** 3D VRT colour reconstruction, enlarged image of the aorta descendens  
*Full arrow* = false lumen  
*Arrow with contour* = true lumen  
 Tip of the *yellow arrow* = dissection fold

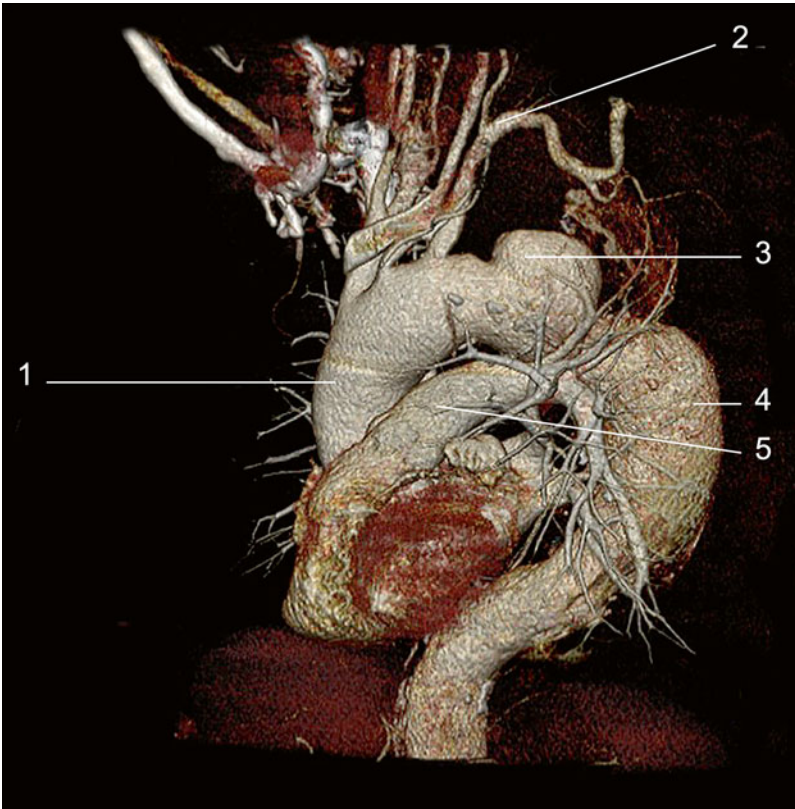


**Fig. 3.33** 3D MIP reconstruction, axial plane  
*Red arrow* = dissection fold



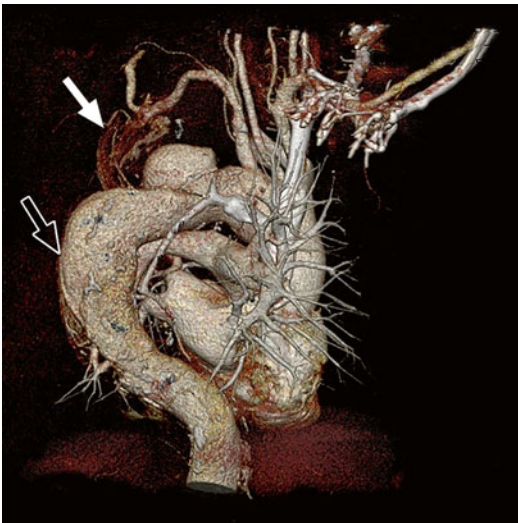
**Fig. 3.34** 3D MIP reconstruction, axial plane  
 1. False lumen  
 2. Dissection fold  
 3. True lumen of the aorta descendens  
 4. A. subclavia sinister with dissection

### 3.6 Post-traumatic Aneurysm of the Aorta Descendens

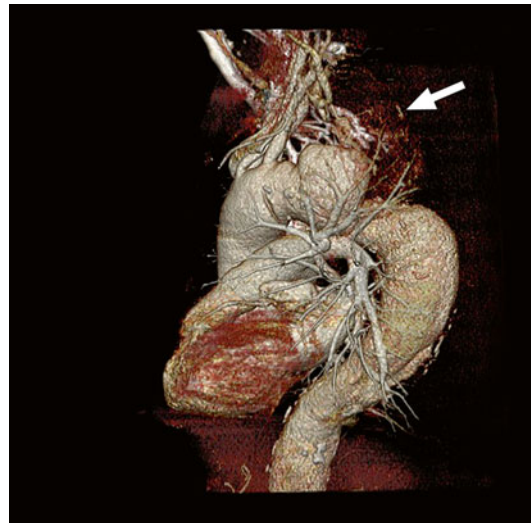


**Fig. 3.35** 3D VRT colour reconstruction, after removal of the bone structure, left anterior oblique view

1. Aorta ascendens
2. A. subclavia sinistra
3. Aneurysm of isthmic area
4. Aneurysmal dilatation of the aorta descendens
5. Truncus a. pulmonalis



**Fig. 3.36** 3D VRT colour reconstruction, after removal of the bone structure, right posterior oblique view  
*Full arrow*=dissection fold  
*Arrow with contour*=aneurysmal dilatation of the aorta descendens

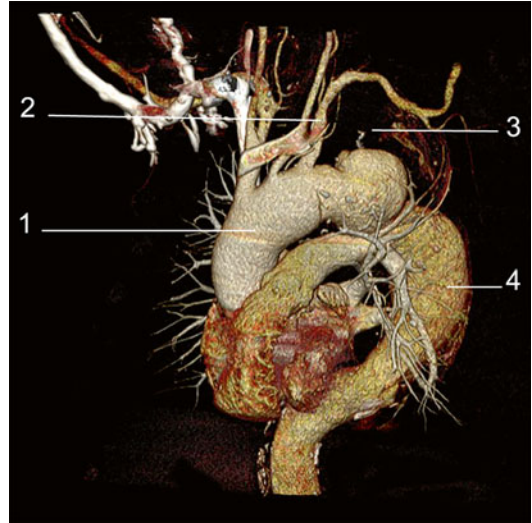


**Fig. 3.37** 3D VRT colour reconstruction; left lateral view  
*Full arrow*=aneurysm



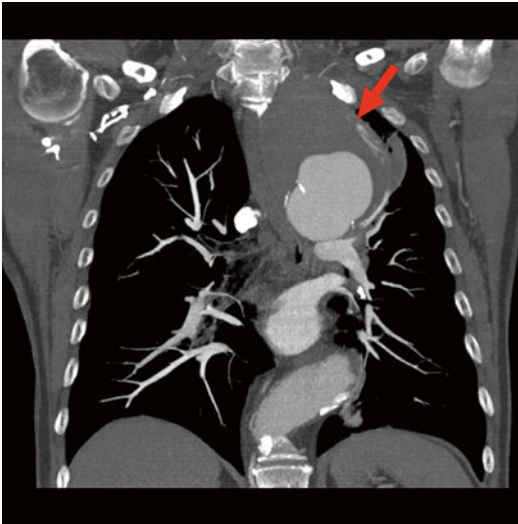
**Fig. 3.38** 3D MIP reconstruction, sagittal plane

1. Aorta ascendens
2. A. subclavia sinistra
3. Aneurysm with parietal thrombosis
4. Aneurysm of the aorta descendens with thrombosis and mural calcifications



**Fig. 3.40** 3D VRT reconstruction

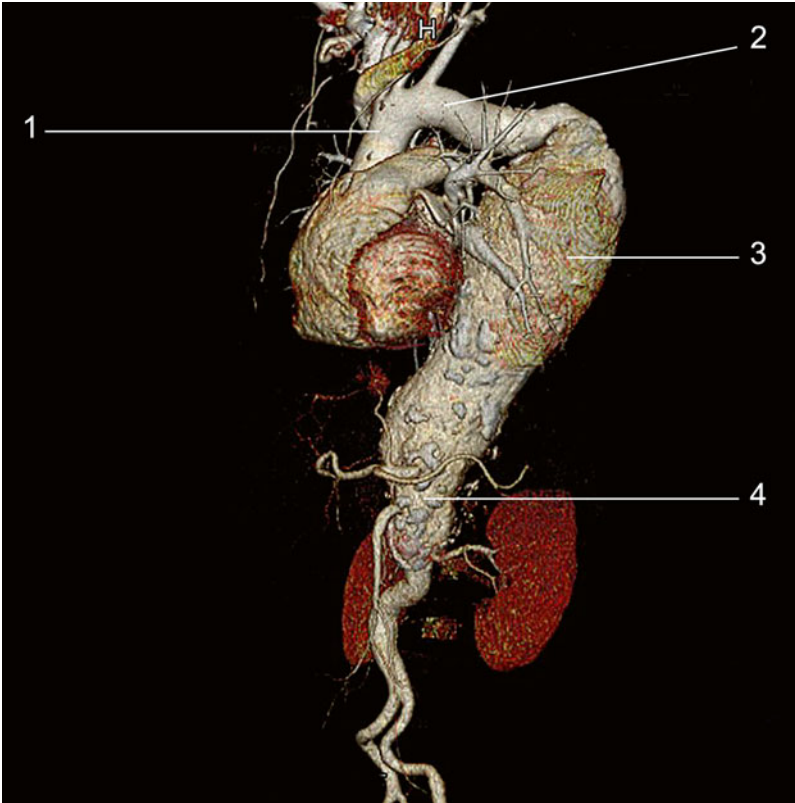
1. Aorta ascendens
2. A. subclavia sinistra
3. Aneurysm with parietal thrombosis
4. Aneurysm of the aorta descendens with thrombosis and mural calcifications



**Fig. 3.39** 3D MIP reconstruction, frontal plane

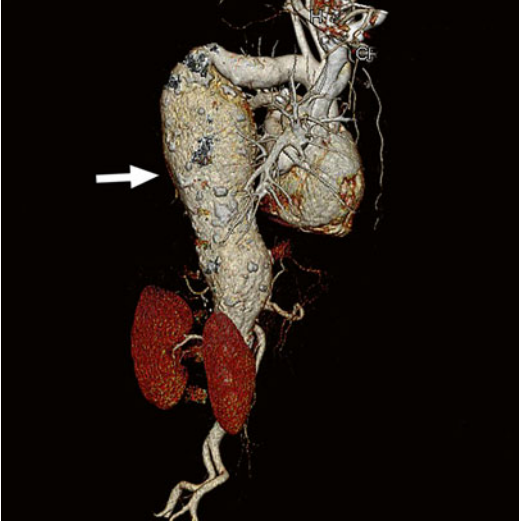
*Red arrow* = thrombosed aneurysm

### 3.7 Gigantic Aneurysm at the Level of the Aorta Descendens

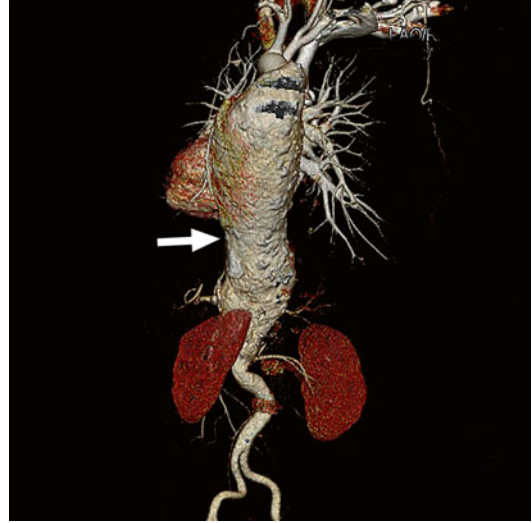


**Fig. 3.41** 3D VRT colour reconstruction, left anterior oblique view

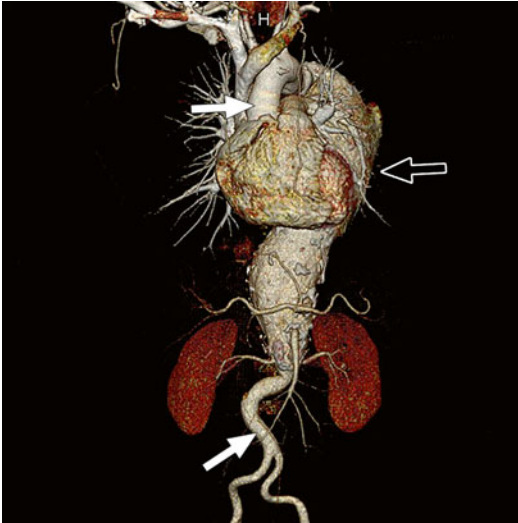
1. Aorta ascendens
2. Arcus aortae
3. Aorta thoracica
4. Aorta abdominalis



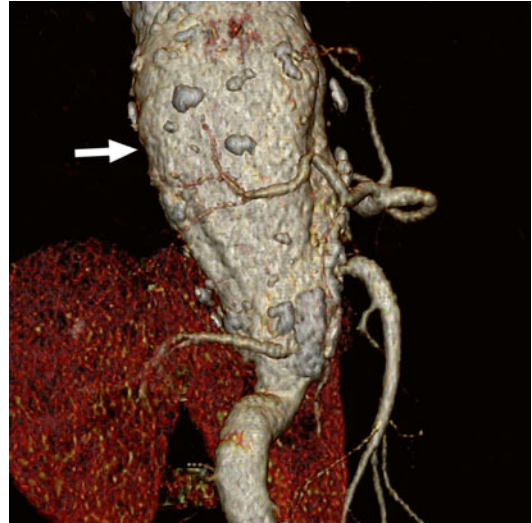
**Fig. 3.42** 3D VRT colour reconstruction, right posterior oblique view  
The *full arrow* indicates gigantic aneurysm of aorta descendens



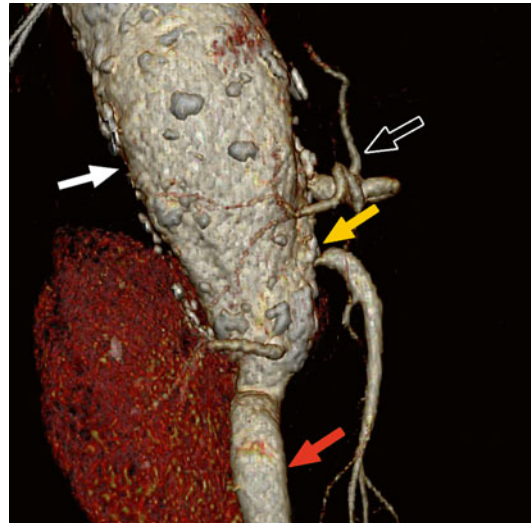
**Fig. 3.43** 3D VRT colour reconstruction, posterior view  
The *full arrow* indicates aorta descendens with a gigantic aneurysm



**Fig. 3.44** 3D VRT colour reconstruction, anterior view  
*Full arrows*=normal calibre of aorta ascendens and aorta abdominalis  
*Arrow with contour*=gigantic aneurysm

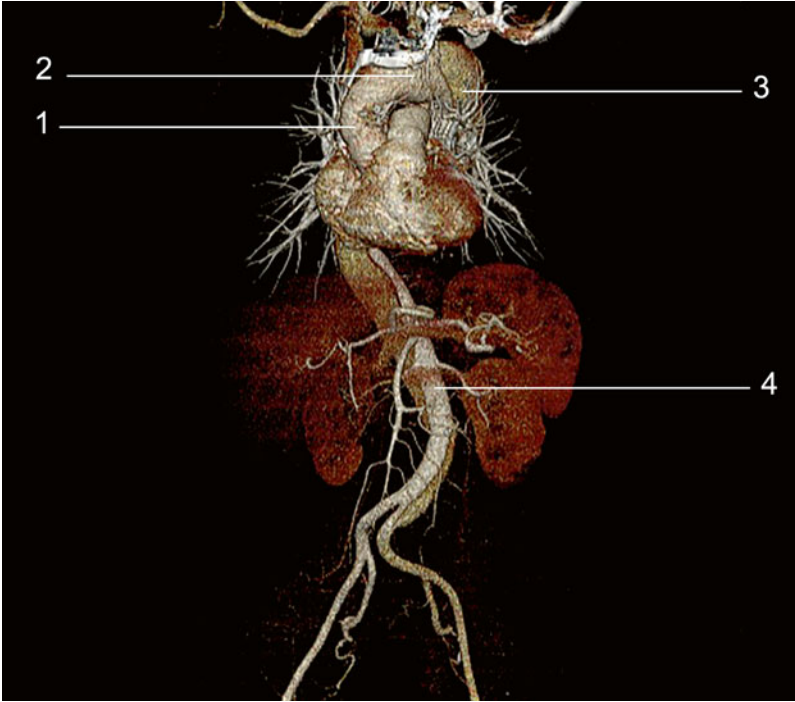


**Fig. 3.45** 3D VRT colour reconstruction, enlarged image  
 The *full arrow* indicates aneurysm of aorta abdominalis with calcified parietal plaques



**Fig. 3.46** 3D VRT colour reconstruction, enlarged image  
*Full arrow*=aneurysm  
*Arrow with contour*=truncus coeliacus  
*Yellow arrow*=a. mesenterica superior with a severe ostial stenotic lesion  
*Red arrow*=normal calibre of aorta abdominalis

### 3.8 Chronic Dissection of the Aorta Descendens



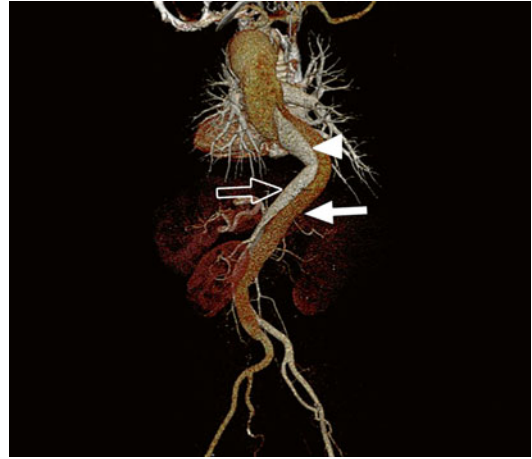
**Fig. 3.47** 3D VRT colour reconstruction, frontal plane

- 1. Aorta ascendens
- 2. Arcus aortae
- 3. Aorta thoracica dissected
- 4. Aorta abdominalis dissected

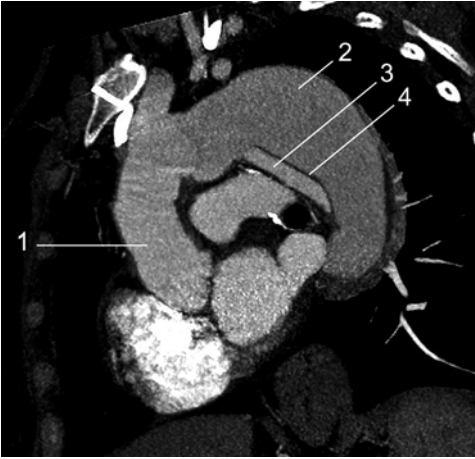




**Fig. 3.48** 3D VRT colour reconstruction, left anterior oblique plane  
*Full arrow* = false lumen  
*Arrow with contour* = true lumen

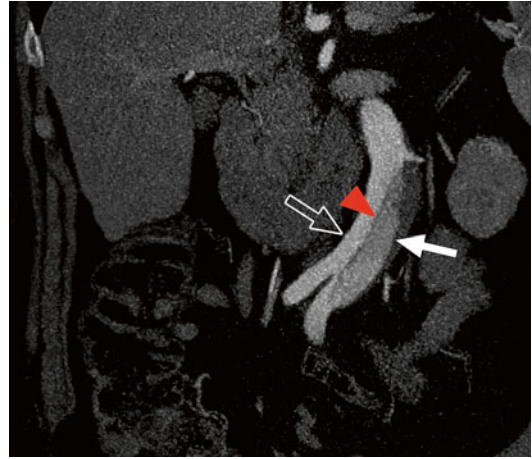


**Fig. 3.49** 3D VRT colour reconstruction, posterior plane  
*Full arrow* = false lumen  
*Arrow with contour* = true lumen  
Tip of the *arrow* = dissection fold



**Fig. 3.50** 3D MIP reconstruction

1. Aorta ascendens
2. False lumen
3. True lumen
4. Dissection fold

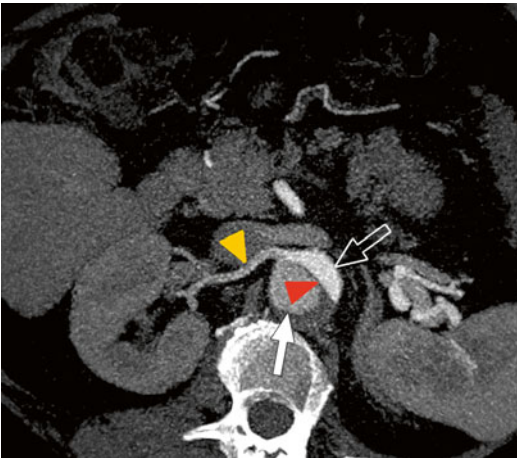


**Fig. 3.52** 3D MIP reconstruction, frontal plane at the level of aorta abdominalis, pars distalis

*Full arrow* = false lumen

*Arrow with contour* = true lumen

At the tip of the *red arrow* = dissection fold



**Fig. 3.51** 3D MIP reconstruction, axial plane

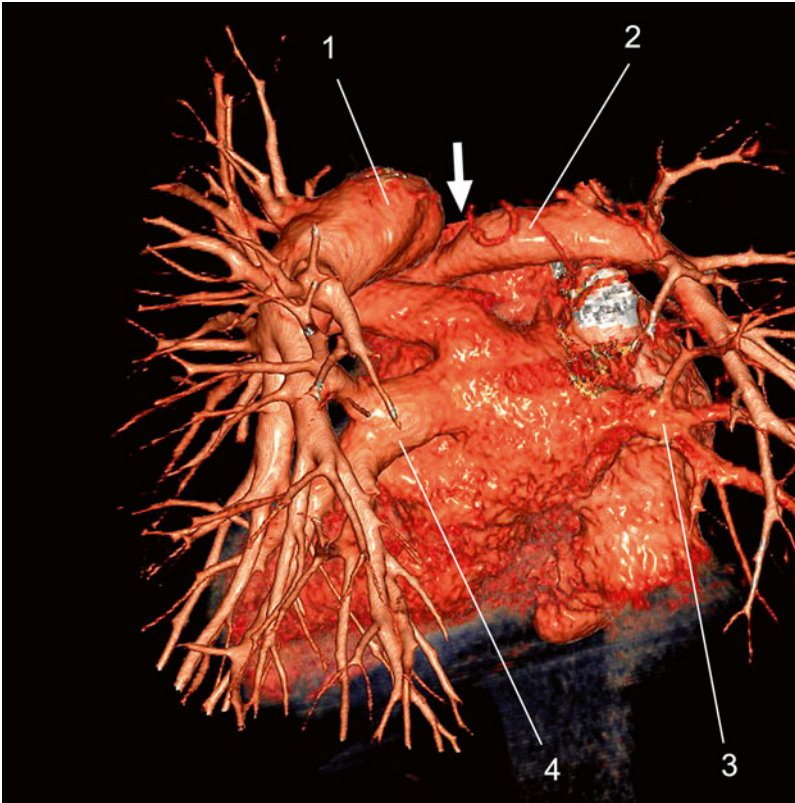
*Full arrow* = false lumen

*Arrow with contour* = true lumen

Tip of the *red arrow* = dissection fold

Tip of the *yellow arrow* = a. renalis dextra with proximal dissection

### 3.9 Stenosis of A. Pulmonalis Dextra

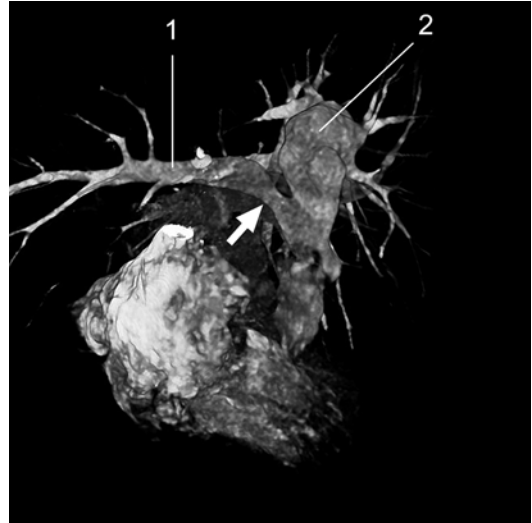


**Fig. 3.53** 3D VRT colour reconstruction, after removal of the thoracic cage

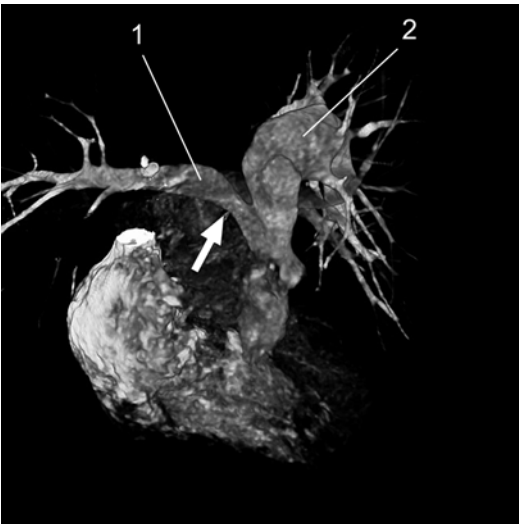
1. A. pulmonalis sinistra  
2. A. pulmonalis dextra  
3. V. pulmonalis dextra  
4. V. pulmonalis sinistra  
The *full arrow* indicates stenotic area at the emergence of the a. pulmonalis dextra



**Fig. 3.54** 3D VRT colour reconstruction, after removal of the thoracic cage, cranial view  
The *full arrow* indicates stenotic area

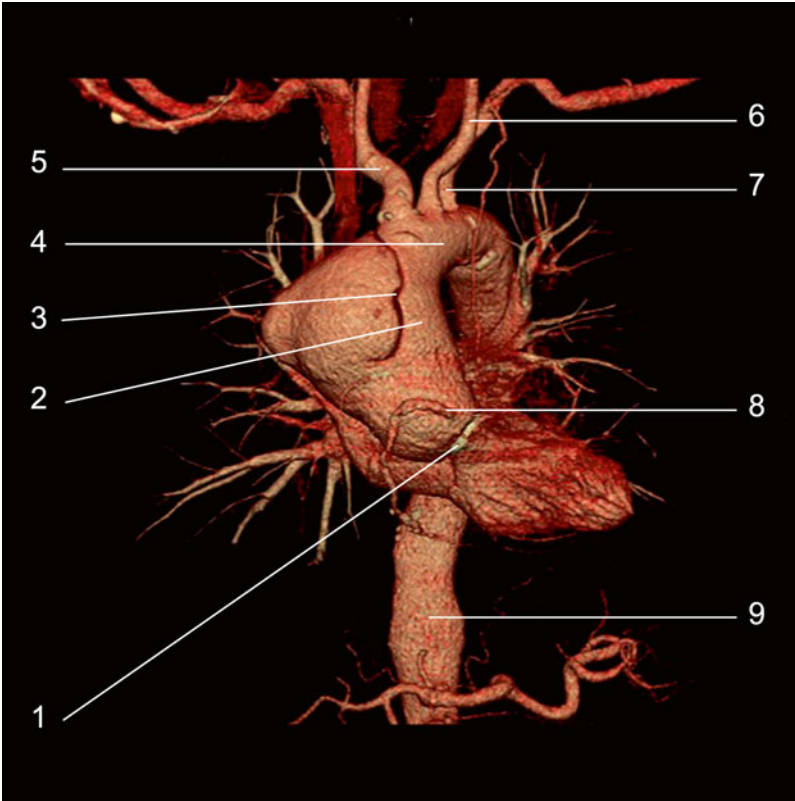


**Fig. 3.56** 3D VRT reconstruction, anterior view  
1. A. pulmonalis dextra  
2. A. pulmonalis sinistra  
The *full arrow* indicates stenotic area



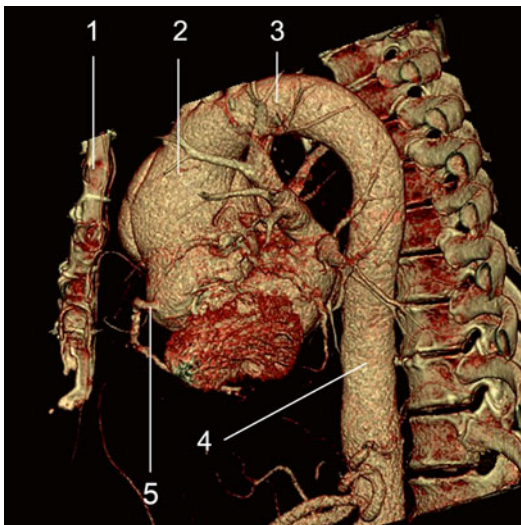
**Fig. 3.55** 3D VRT reconstruction, anterior view  
1. A. pulmonalis dextra  
2. A. pulmonalis sinistra  
The *full arrow* indicates stenotic area

### 3.10 Aneurysm and Dissection of the Aorta ascendens After Valvular Aortic Replacement



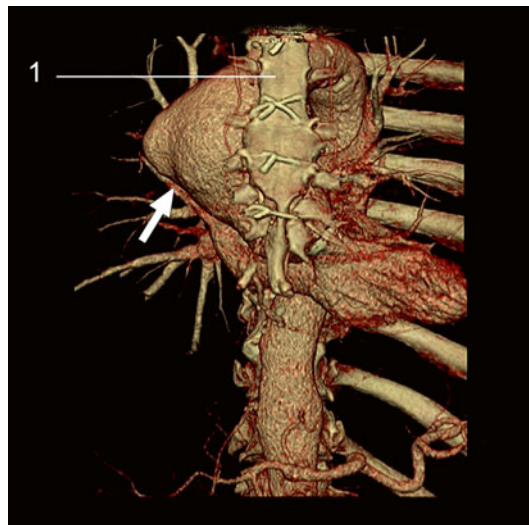
**Fig. 3.57** 3D VRT colour reconstruction, after removal of the thoracic cage, frontal plane

1. Valvular aortic prosthesis
2. Aorta ascendens dilated
3. Dissection fold
4. Arcus aortae
5. Truncus brachiocephalicus
6. A. carotis communis sinistra
7. A. subclavia sinistra
8. A. coronaria dextra
9. Aorta descendens



**Fig. 3.58** 3D VRT colour reconstruction, lateral plane

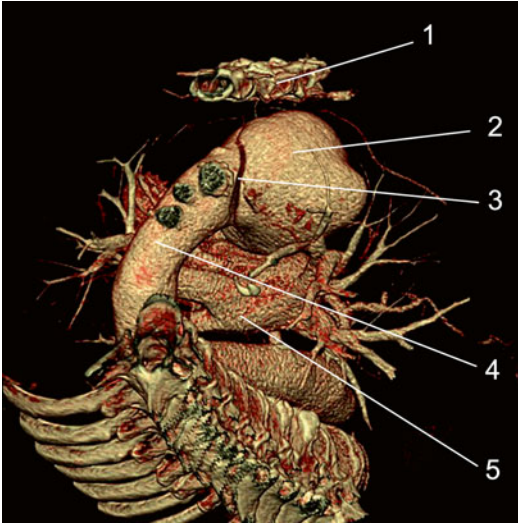
1. Sternum
2. Aorta ascendens with aneurysm
3. Arcus aortae
4. Aorta descendens
5. A. coronaria dextra



**Fig. 3.59** 3D VRT colour reconstruction, frontal plane

1. Sternum with metallic suture

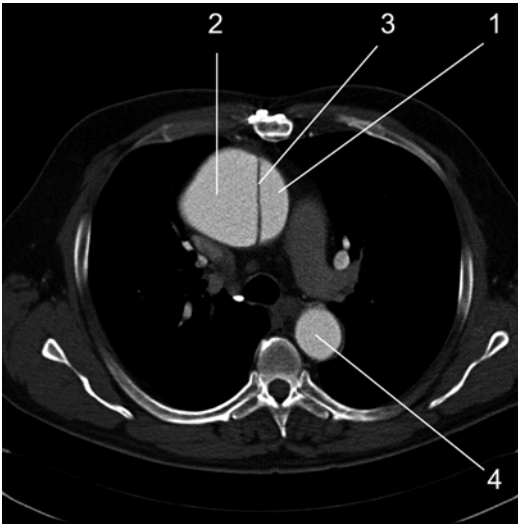
*Full arrow* = aneurysm



**Fig. 3.60** 3D VRT colour reconstruction, cranial plane  
 1. Sternum  
 2. Aneurysm  
 3. Dissection fold  
 4. Arcus aortae  
 5. Atrium sinistrum

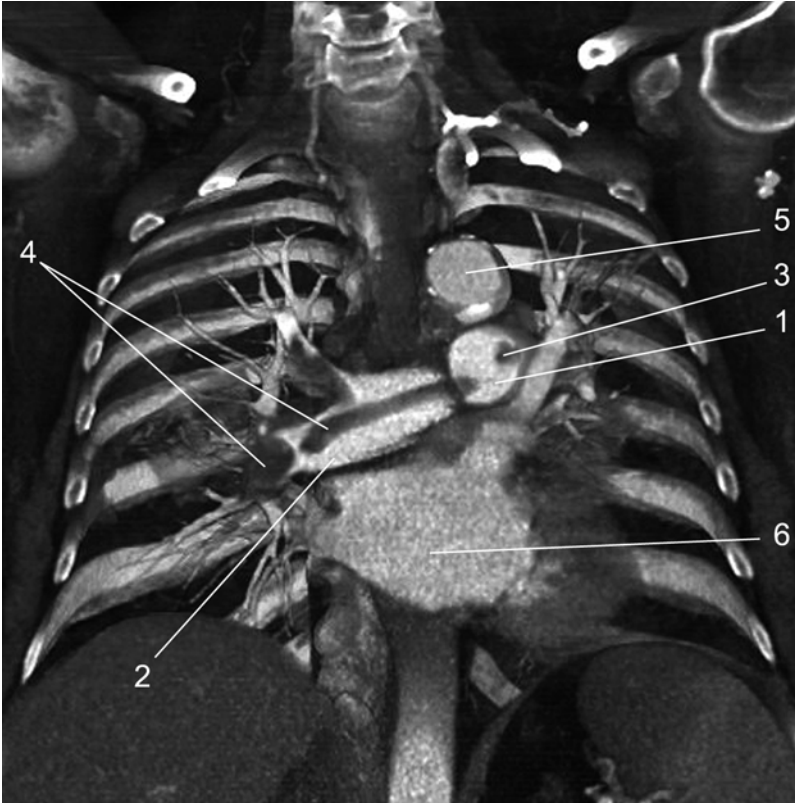


**Fig. 3.62** 3D MIP reconstruction, transversal plane  
 1. True lumen of the aorta ascendens  
 2. Dissection fold  
 2. False lumen of the aorta ascendens  
 4. Aorta descendens

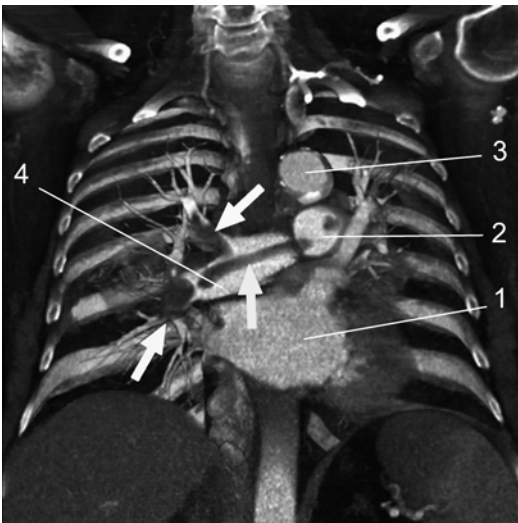


**Fig. 3.61** 3D VRT colour reconstruction, transversal plane  
 1. True lumen of the aorta ascendens  
 2. False lumen of the aorta ascendens  
 3. Dissection fold  
 4. Aorta descendens

### 3.11 Pulmonary Thromboembolism



**Fig. 3.63** 3D MIP reconstruction, frontal plane  
 1. A. pulmonalis sinistra  
 2. A. pulmonalis dextra  
 3. Thrombus in a. pulmonalis sinistra  
 4. Thrombus in a. pulmonalis dextra  
 5. Aorta  
 6. Atrium sinistrum



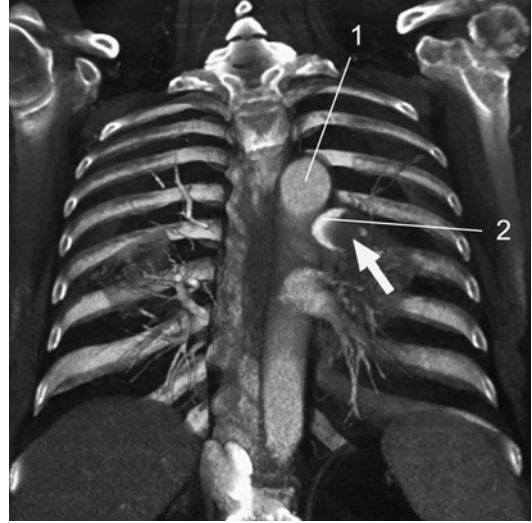
**Fig. 3.64** 3D MIP reconstruction, frontal plane  
 1. Atrium sinistrum  
 2. A. pulmonalis sinistra  
 3. Aorta  
 4. A. pulmonalis dextra  
 The *full arrow* indicates thrombus



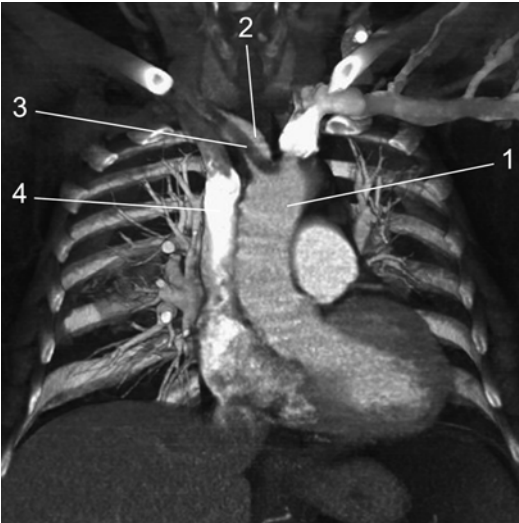
**Fig. 3.65** 3D MIP reconstruction, frontal plane  
 The *full arrow* indicates thrombus



**Fig. 3.66** 3D MIP reconstruction, frontal plane  
The *full arrow* indicates thrombus



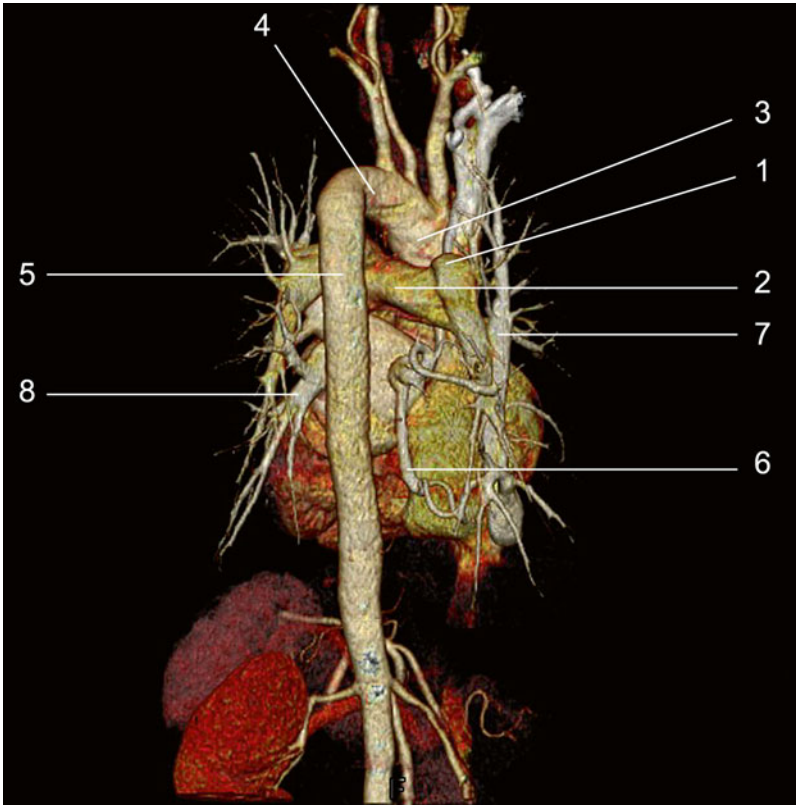
**Fig. 3.68** 3D MIP reconstruction, frontal plane  
1. Aorta  
2. A. pulmonalis sinistra  
*Full arrow* indicates voluminous thrombus



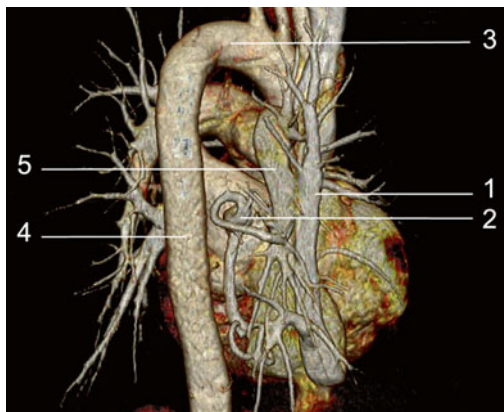
**Fig. 3.67** 3D MIP reconstruction, frontal plane  
1. Aorta ascendens  
2. Truncus brachiocephalicus  
3. Thrombus at the level of the truncus brachiocephalicus  
4. V. cava superior



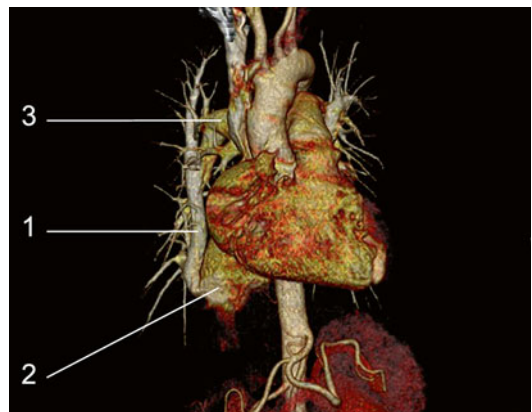
### 3.12 Right Partially Anomalous Venous Drainage



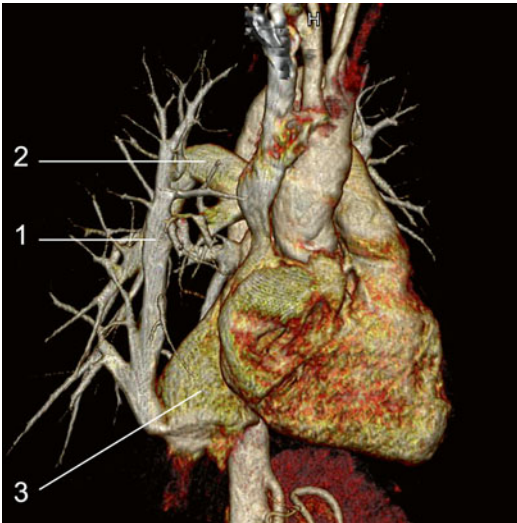
**Fig. 3.69** 3D VRT colour reconstruction, after removal of the thoracic cage, posterior plane  
 1. A. pulmonalis dextra  
 2. A. pulmonalis sinistra  
 3. Aorta ascendens  
 4. Arcus aortae  
 5. Aorta descendens  
 6. V. pulmonalis dextra superior  
 7. Aberrant collector with drainage in v. cava inferior  
 8. V. pulmonalis sinistra



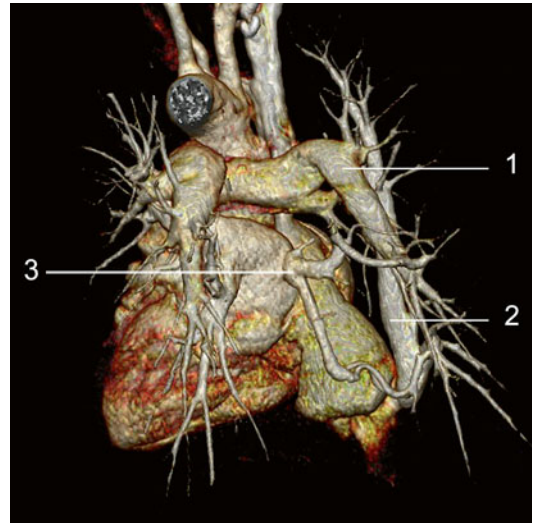
**Fig. 3.70** 3D VRT colour reconstruction, after removal of the thoracic cage, right posterior oblique plane  
 1. Aberrant venous collector  
 2. V. pulmonalis dextra  
 3. Arcus aortae  
 4. Aorta descendens  
 5. A. pulmonalis dextra



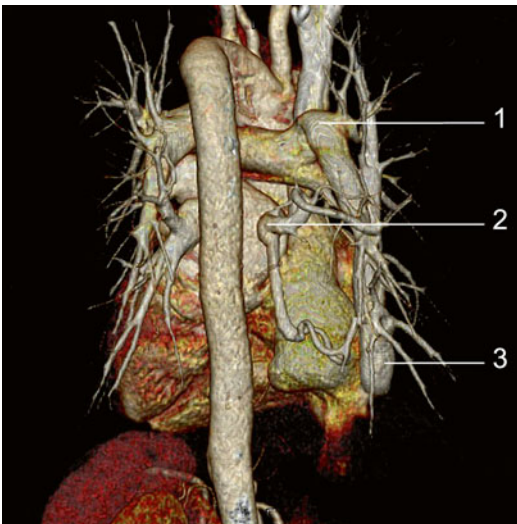
**Fig. 3.71** 3D VRT colour reconstruction, frontal plane  
 1. Pulmonary aberrant venous collector  
 2. V. cava superior  
 3. A. pulmonalis dextra



**Fig. 3.72** 3D VRT colour reconstruction, right anterior oblique plane  
 1. Pulmonary aberrant venous collector  
 2. A. pulmonalis dextra  
 3. V. cava inferior

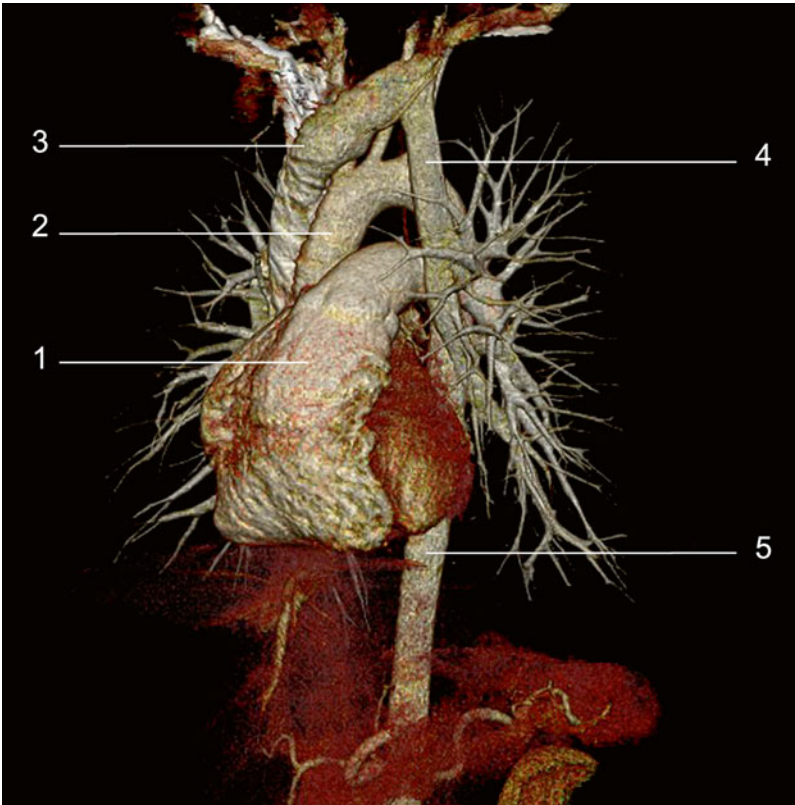


**Fig. 3.74** 3D VRT colour reconstruction, posterior plane  
 1. A. pulmonalis dextra  
 2. Pulmonary aberrant venous collector  
 3. V. pulmonalis dextra

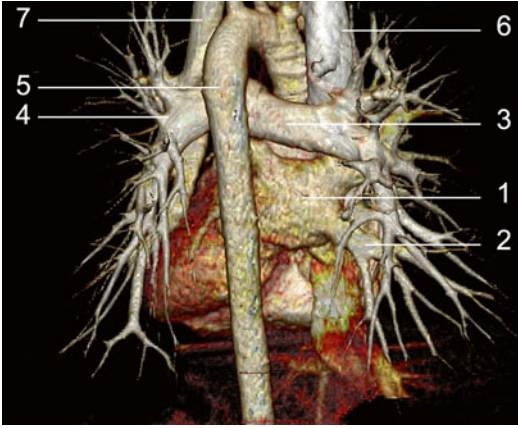


**Fig. 3.73** 3D VRT colour reconstruction, posterior plane  
 1. A. pulmonalis dextra  
 2. V. pulmonalis dextra  
 3. Pulmonary aberrant venous collector

### 3.13 Partially Aberrant Venous Drainage

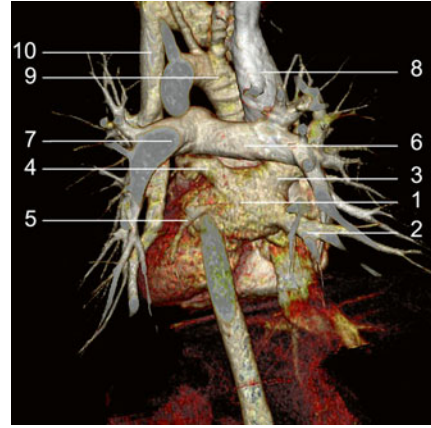


**Fig. 3.75** 3D VRT colour reconstruction, after removal of the thoracic cage, posterior plane  
1. Truncus a. pulmonalis  
2. Aorta ascendens  
3. Vena cava superior  
4. Aberrant venous collector  
5. Aorta descendens



**Fig. 3.76** 3D VRT colour reconstruction, after removal of the thoracic cage, posterior plane

1. Atrium sinistrum
2. V. pulmonalis dextra inferior
3. A. pulmonalis dextra
4. A. pulmonalis sinistra
5. Aorta descendens
6. V. cava superior
7. Aberrant venous collector



**Fig. 3.78** 3D VRT colour reconstruction, after removal of the thoracic cage, posterior plane

1. Atrium sinistrum
2. V. pulmonalis dextra inferior
3. V. pulmonalis dextra superior
4. V. pulmonalis sinistra superior
5. V. pulmonalis sinistra inferior
6. A. pulmonalis dextra
7. A. pulmonalis sinistra
8. V. cava superior
9. Arcus aortae
10. Aberrant venous collector



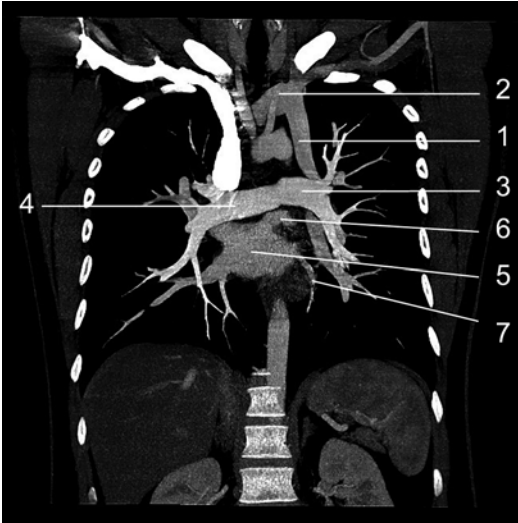
**Fig. 3.77** 3D VRT colour reconstruction, after removal of the thoracic cage, posterior oblique plane

1. Atrium sinistrum
2. V. pulmonalis sinistra superior
3. A. pulmonalis dextra
4. Arcus aortae
5. Aorta thoracica



**Fig. 3.79** 3D MIP reconstruction

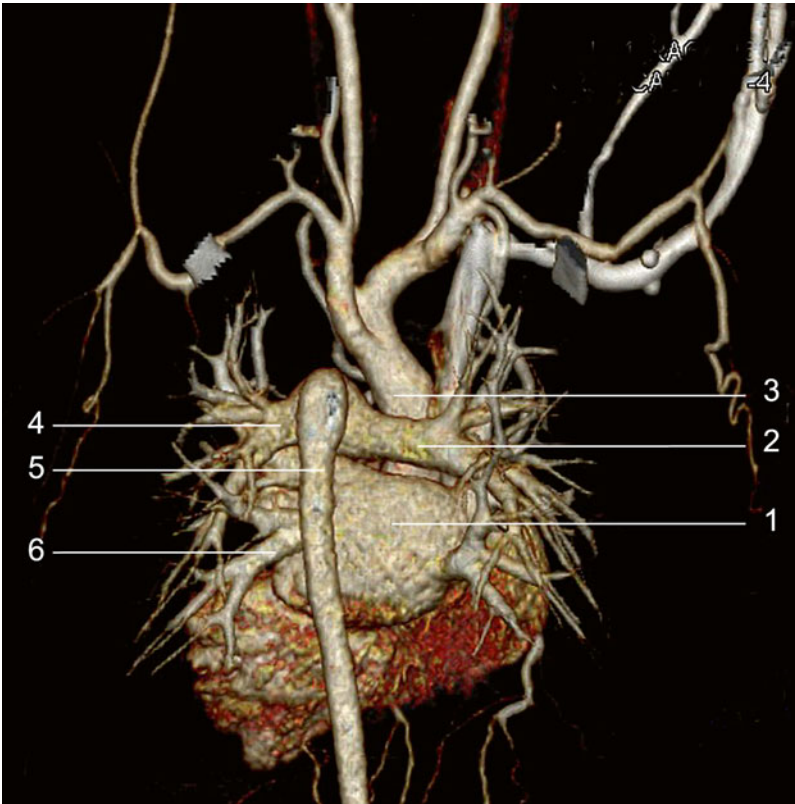
1. Aberrant venous collector
2. Truncus brachiocephalicus dexter
3. V. cava superior
4. Aorta ascendens



**Fig. 3.80** 3D MIP reconstruction

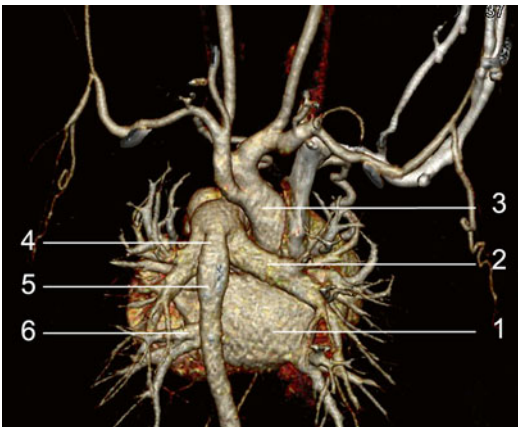
1. Aberrant venous collector
2. V. brachiocephalica sinistra
3. A. pulmonalis sinistra
4. A. pulmonalis dextra
5. Atrium sinistrum
6. V. pulmonalis sinistra superior
7. V. pulmonalis sinistra inferior

### 3.14 Interrupted Arcus Aortae



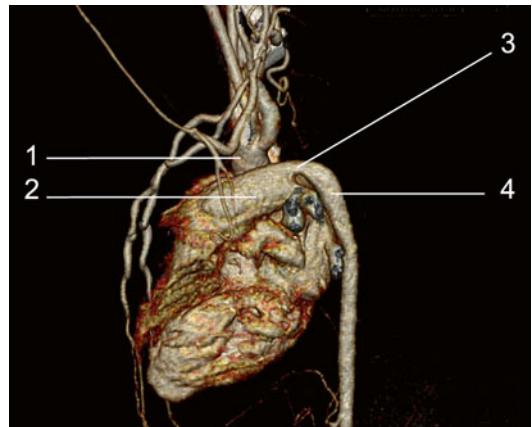
**Fig. 3.81** 3D VRT colour reconstruction, after removal of the thoracic cage

1. Atrium sinistrum
2. A. pulmonalis dextra
3. Aorta ascendens
4. A. pulmonalis sinistra
5. Aorta descendens
6. V. pulmonalis sinistra



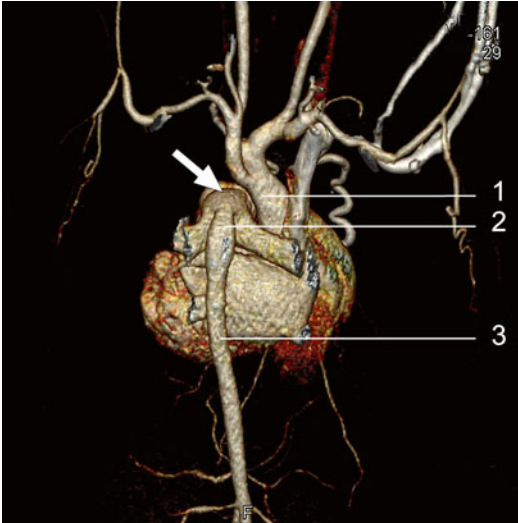
**Fig. 3.82** 3D VRT colour reconstruction, after removal of the thoracic cage

1. Atrium sinistrum
2. A. pulmonalis dextra
3. Aorta ascendens
4. Persistent arterial channel
5. Aorta descendens
6. V. pulmonalis sinistra



**Fig. 3.83** 3D VRT colour reconstruction, after removal of the thoracic cage

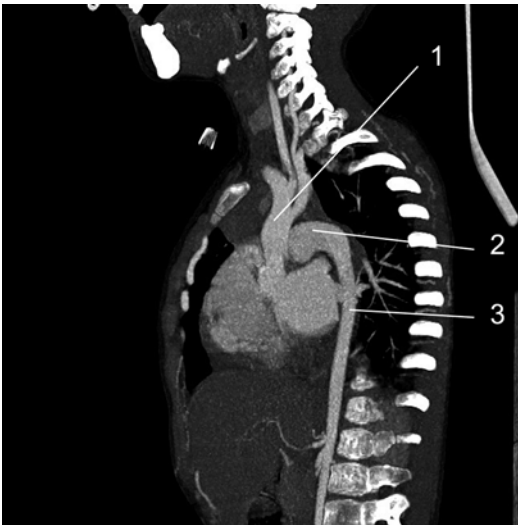
1. Aorta ascendens
2. Truncus a. pulmonalis
3. Persistent arterial channel
4. Aorta descendens



**Fig. 3.84** 3D VRT colour reconstruction, after removal of the thoracic cage  
 1. Aorta ascendens  
 2. Persistent arterial channel  
 3. Aorta descendens  
 The *full arrow* indicates the area in which the arcus aortae is not visualised



**Fig. 3.86** 3D MIP reconstruction, sagittal plane  
 1. Aorta ascendens  
 2. Persistent arterial channel  
 3. Aorta descendens



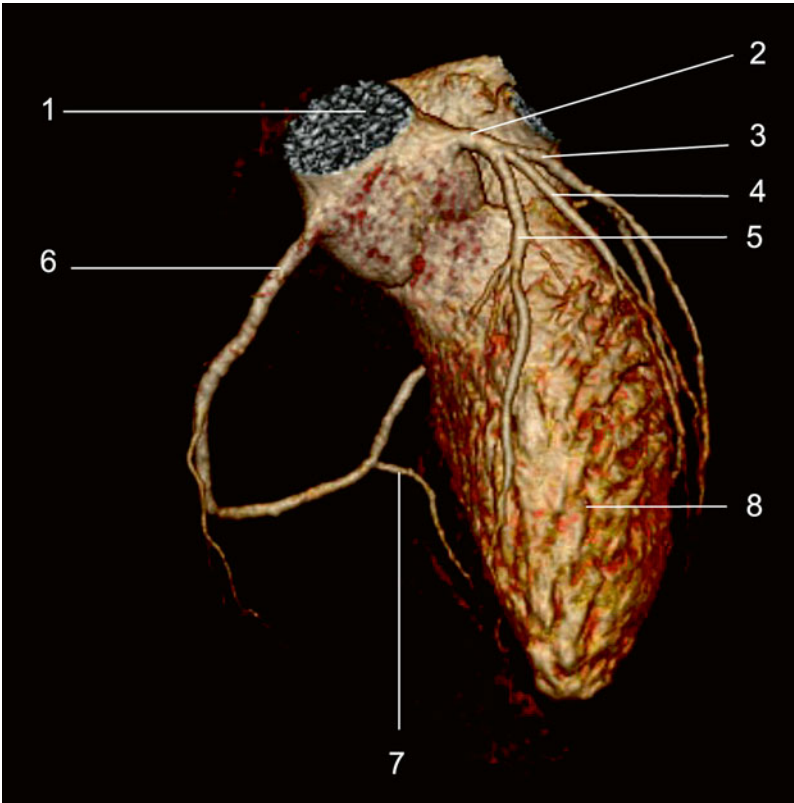
**Fig. 3.85** 3D MIP reconstruction, sagittal plane  
 1. Aorta ascendens  
 2. Persistent arterial channel  
 3. Aorta descendens

**Contents**

4.1	Normal Arteriae Coronariae . . . . .	86
4.2	Abnormal Emergence of the R. Circumflexus . . . . .	89
4.3	Abnormal Emergence of the A. Coronaria Dextra Placed on the Posterior Aortic Wall . . . . .	91
4.4	Emergence Through Separate Ostium of the Three A. Coronariae . . . . .	93
4.5	Abnormal A. Coronaria dextra emergence from the Truncus A. Pulmonalis . . . . .	95
4.6	Coronary and Aortopulmonary Fistulas . . . . .	98
4.7	Coronary Calcification . . . . .	101
4.8	Monovascular Coronary Disease: A. Coronaria Dextra Occlusion . . . . .	103
4.9	Occlusive Lesion at the Middle Segment of the R. Interventricularis Anterior – Collateral Circulation A. Coronaria Dextra – R. Interventricularis Anterior . . . . .	105
4.10	Bivascular Coronary Disease . . . . .	107
4.11	Trivascular Coronary Disease . . . . .	110
4.12	Aneurysm of the Left Ventricle and R. Interventricularis Anterior Occlusion . . . . .	113
4.13	Monovascular Coronary Disease Patent Stent in the Middle Segment of R. Interventricularis Anterior . . . . .	116
4.14	Restenosis at Stent Level . . . . .	119
4.15	Occlusion of R. Interventricularis Anterior . . . . .	122
4.16	Coronary Bypass Evaluation . . . . .	124
4.17	Fallot Tetralogy . . . . .	126
4.18	Fallot Tetralogy in an Adult Patient . . . . .	128

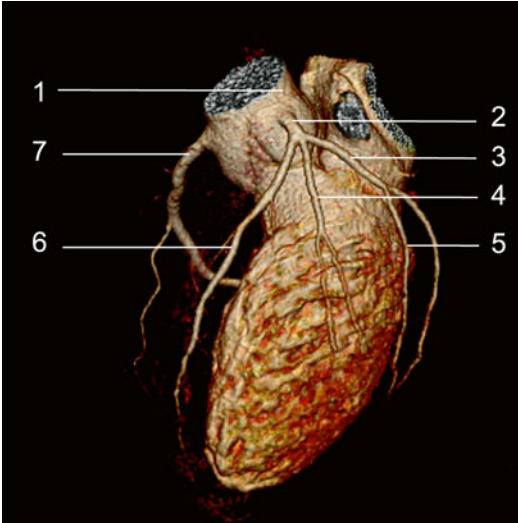


## 4.1 Normal Arteriae Coronariae

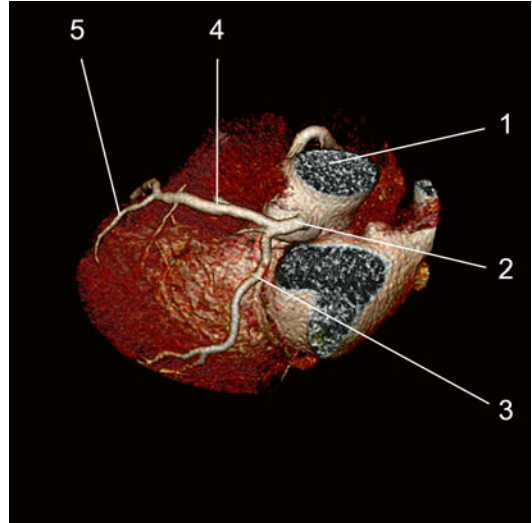


**Fig. 4.1** Coronary CT angiography – 3D VRT colour reconstruction

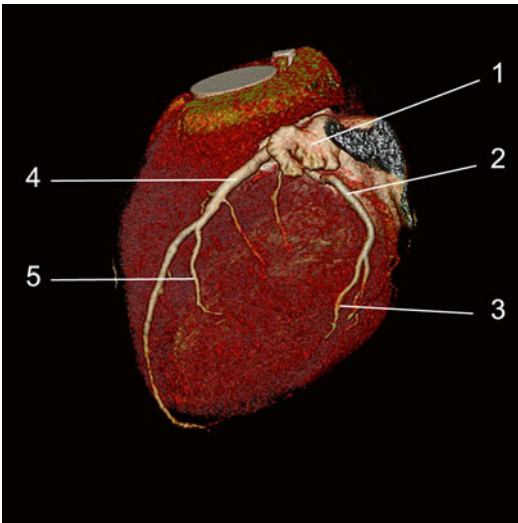
1. Aorta
2. A. coronaria sinistra
3. R. circumflexus
4. R. atrialis intermedius
5. A. interventricularis anterior
6. A. coronaria dextra
7. A. interventricularis posterior
8. Ventriculus sinister



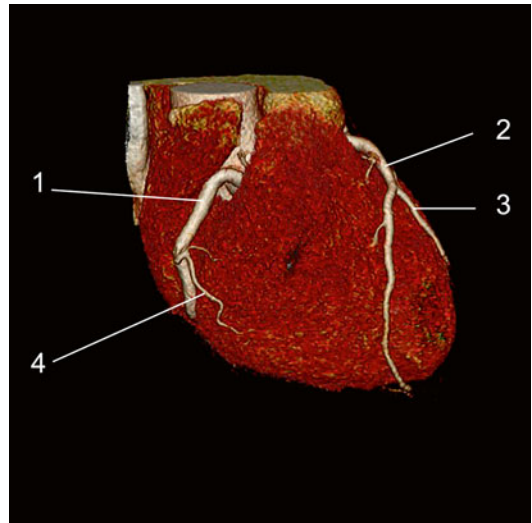
**Fig. 4.2** Coronary CT angiography 3D VRT reconstruction  
 1. Aorta  
 2. A. coronaria sinistra  
 3. R. circumflexus  
 4. R. atrialis intermedius  
 5. R. marginalis sinister  
 6. R. interventricularis anterior  
 7. A. coronaria dextra



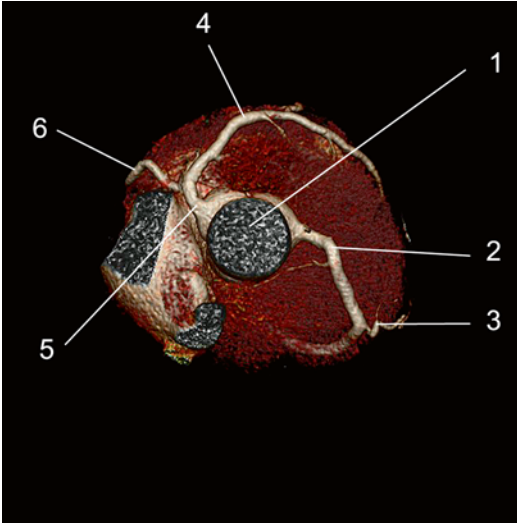
**Fig. 4.4** Coronary CT angiography 3D VRT reconstruction  
 1. Aorta  
 2. A. coronaria sinistra  
 3. R. circumflexus  
 4. R. interventricularis anterior  
 5. R. marginalis anterior



**Fig. 4.3** Coronary CT angiography 3D VRT reconstruction  
 1. Auricula sinister  
 2. R. circumflexus  
 3. R. marginalis sinister  
 4. R. interventricularis anterior  
 5. R. lateralis

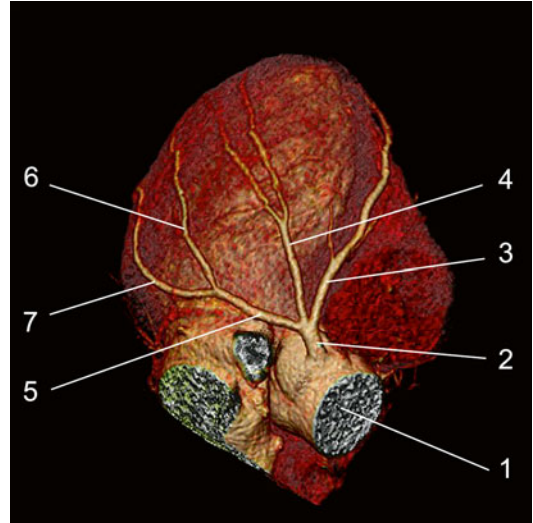


**Fig. 4.5** Coronary CT angiography 3D VRT reconstruction  
 1. A. coronaria dextra  
 2. R. interventricularis anterior  
 3. R. diagonalis  
 4. Arteria marginalis dexter



**Fig. 4.6** Coronary CT angiography 3D VRT reconstruction

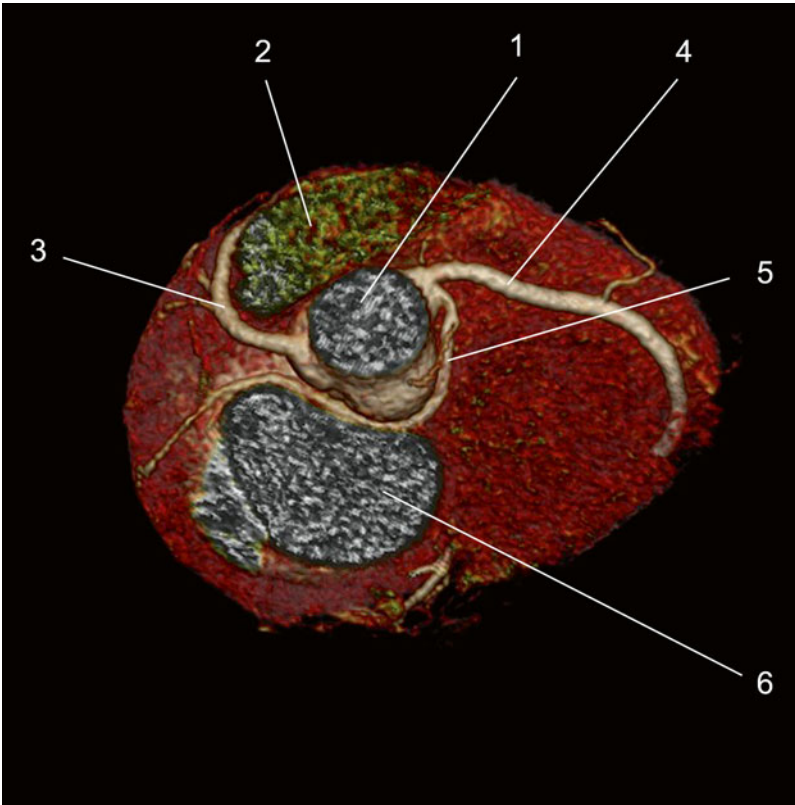
1. Aorta
2. A. coronaria dextra
3. R. marginalis dexter
4. R. interventricularis anterior
5. A. coronaria sinistra
6. R. circumflexus



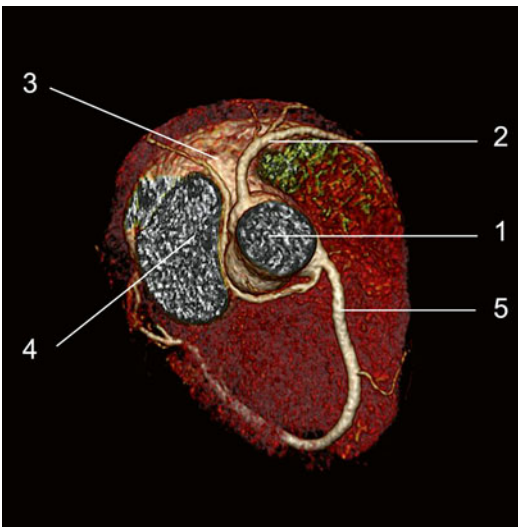
**Fig. 4.7** Coronary CT angiography 3D VRT reconstruction

1. Aorta
2. A. coronaria sinistra
3. R. marginalis sinister
4. R. atrialis intermedius
5. R. circumflexus
6. R. marginalis sinister
7. R. marginalis sinister

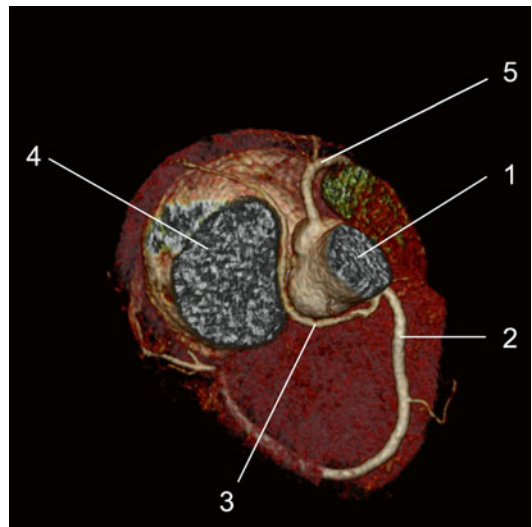
### 4.2 Abnormal Emergence of the R. Circumflexus



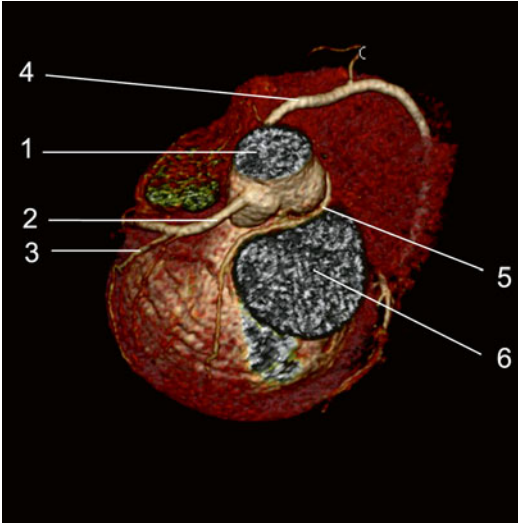
**Fig. 4.8** Coronary CT angiography 3D VRT colour reconstruction  
 1. Aorta  
 2. Truncus a. pulmonalis cut out during post-processing operation  
 3. R. interventricularis anterior  
 4. A. coronaria dextra  
 5. R. circumflexus with retroaortic course  
 6. Atrium sinistrum



**Fig. 4.9** Coronary CT angiography 3D VRT colour reconstruction  
 1. Aorta  
 2. R. interventricularis anterior  
 3. R. circumflexus  
 4. Atrium sinistrum  
 5. R. interventricularis anterior

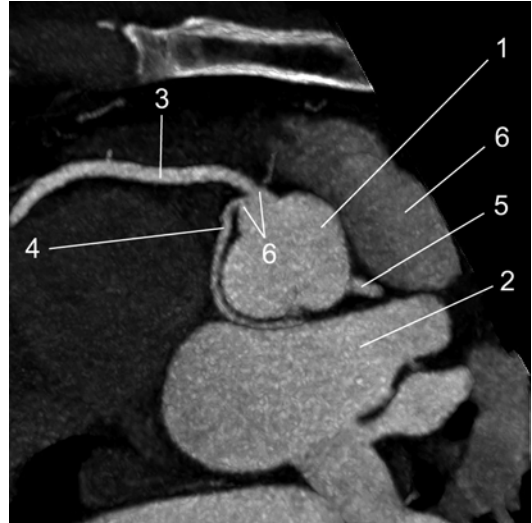


**Fig. 4.10** Coronary CT angiography 3D VRT colour reconstruction  
 1. Aorta  
 2. Arteria coronaria dextra  
 3. R. circumflexus  
 4. Atrium sinistrum  
 5. R. interventricularis anterior



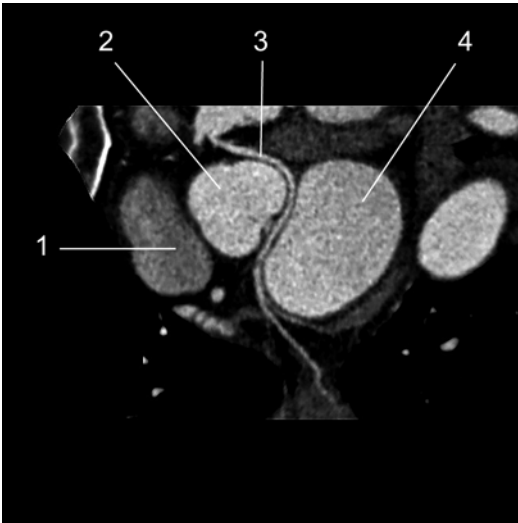
**Fig. 4.11** Coronary CT angiography 3D VRT colour reconstruction

1. Aorta
2. R. interventricularis anterior
3. R. lateralis
4. A. coronaria dextra
5. R. circumflexus
6. Atrium sinistrum



**Fig. 4.13** Angiography 3D MIP reconstruction

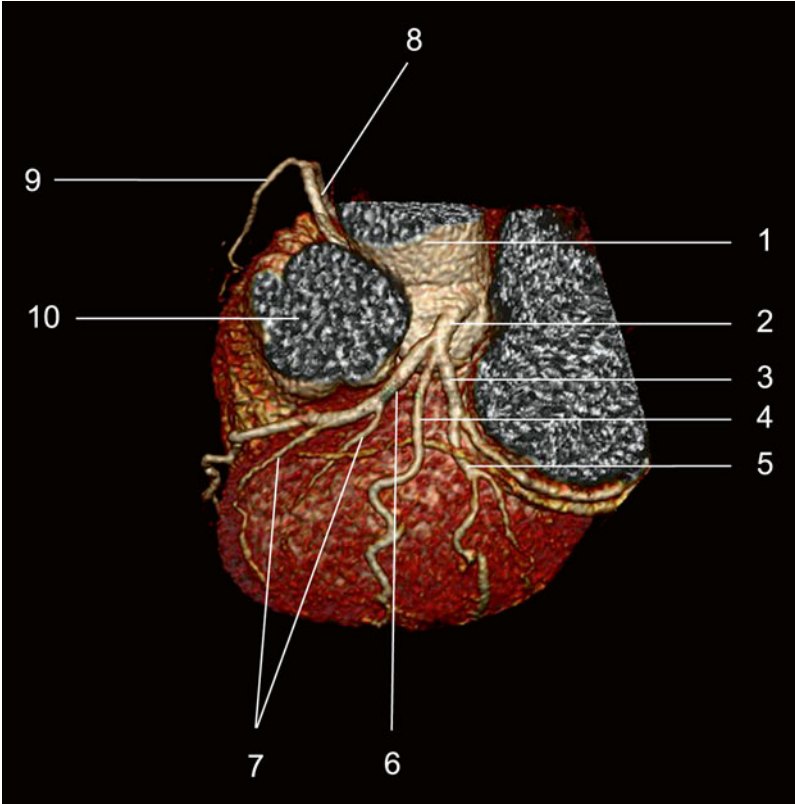
1. Aorta
2. Atrium sinistrum
3. A. coronaria dextra
4. R. circumflexus
5. R. interventricularis anterior
6. Separate ostium of the two arteriae coronariae (a. coronaria dextra and r. circumflexus)



**Fig. 4.12** Angiography 3D MIP reconstruction

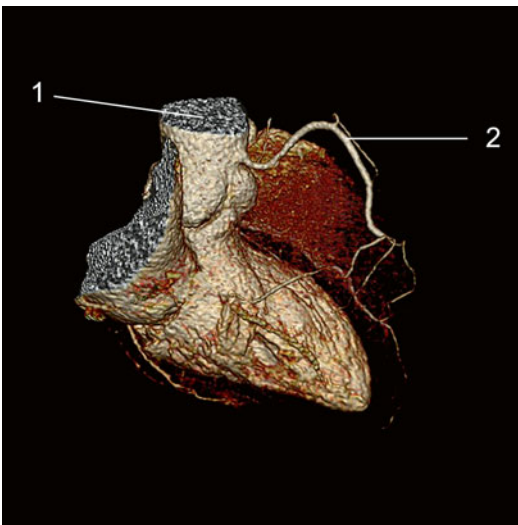
1. Aorta
2. R. circumflexus with retroaortic course anterior from the atrium sinistrum
3. Atrium sinistrum
4. A. pulmonalis

### 4.3 Abnormal Emergence of the A. Coronaria Dextra Placed on the Posterior Aortic Wall



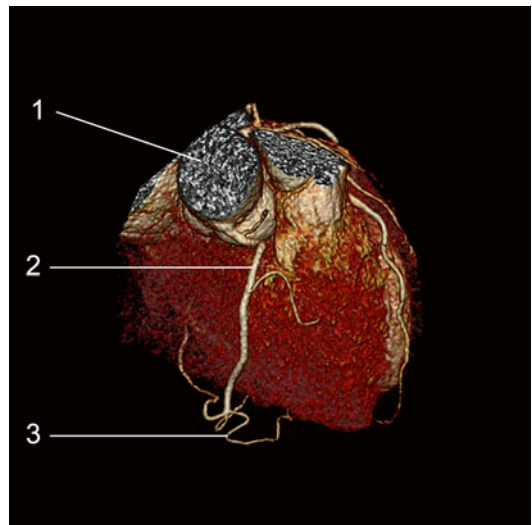
**Fig. 4.14** Coronary CT angiography 3D VRT colour reconstruction

1. Aorta
2. Truncus a. coronaria sinistra
3. R. circumflexus
4. R. atrialis intermedius
5. R. marginalis sinister
6. R. interventricularis anterior
7. R. lateralis
8. A. coronaria dextra
9. R. marginalis dexter
10. Truncus a. pulmonalis



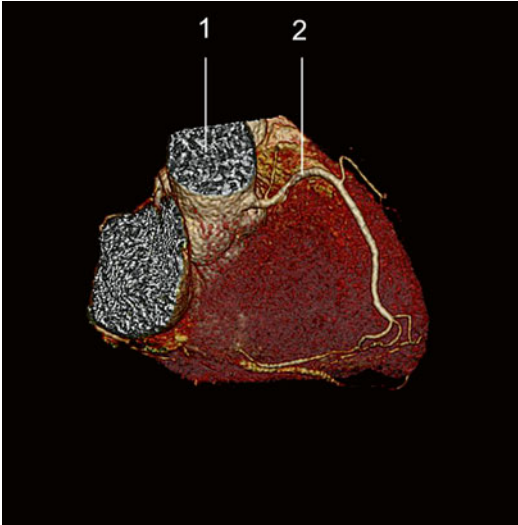
**Fig. 4.15** Coronary CT angiography 3D VRT colour reconstruction

1. Aorta
2. Emergent a. coronaria dextra sided on the posterior aortic wall above the sinus aortae



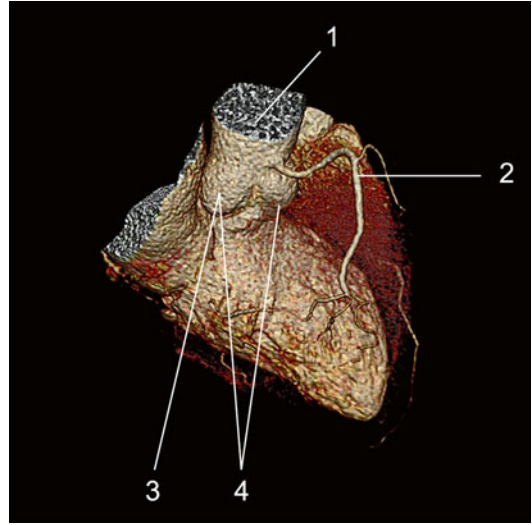
**Fig. 4.16** Coronary CT angiography 3D VRT colour reconstruction

1. Aorta
2. Emergent a. coronaria dextra sided on the posterior aortic wall above the sinus aortae
3. R. marginalis dexter



**Fig. 4.17** Coronary CT angiography 3D VRT colour reconstruction

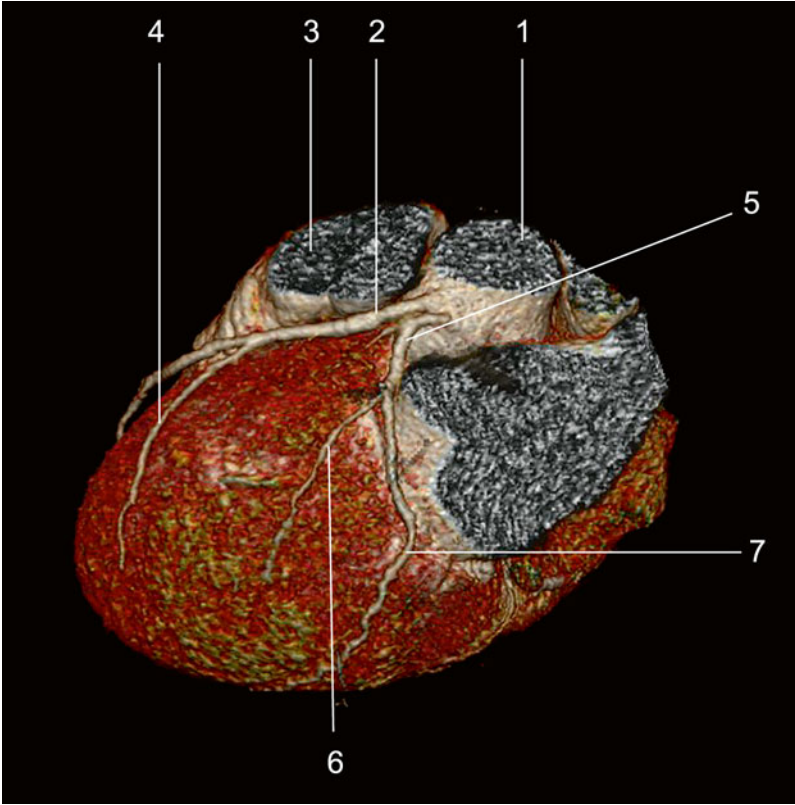
1. Aorta
2. A. coronaria dextra



**Fig. 4.18** Coronary CT angiography 3D VRT colour reconstruction

1. Aorta
2. A. coronaria dextra
3. Non-coronary cusps of the sinus aortae
4. Right coronary cusps, in this case a non-coronary cusps due to the abnormal emergence of the a. coronaria dextra

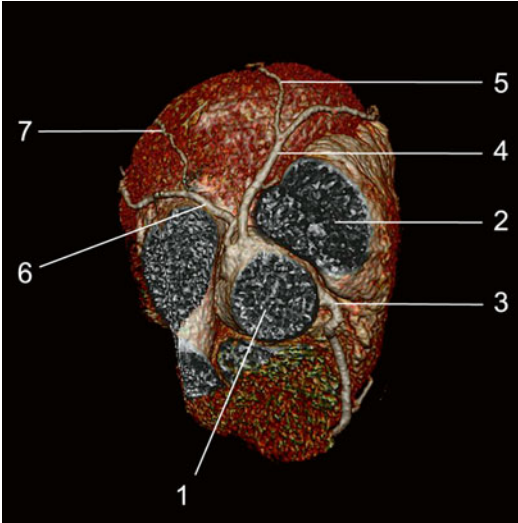
### 4.4 Emergence Through Separate Ostium of the Three A. Coronariae



**Fig. 4.19** Coronary CT angiography 3D VRT colour reconstruction

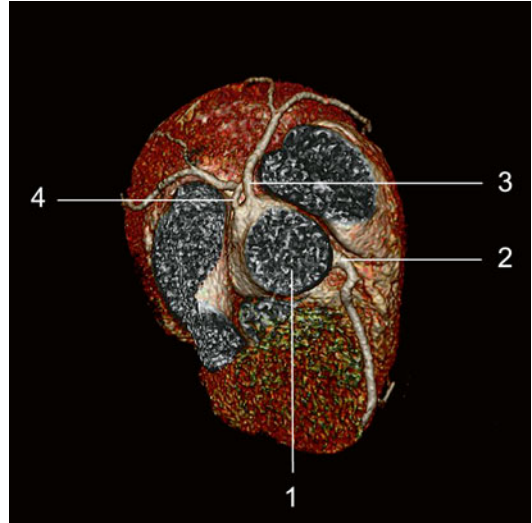
1. Aorta
2. A. coronaria sinistra
3. A. pulmonalis
4. R. lateralis
5. R. circumflexus
6. R. marginalis sinister
7. R. marginalis sinister





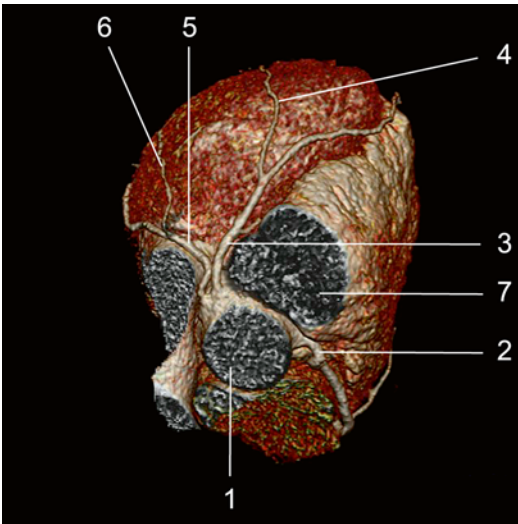
**Fig. 4.20** Coronary CT angiography 3D VRT colour reconstruction

1. Aorta
2. A. pulmonalis
3. A. coronaria dextra
4. R. interventricularis anterior
5. R. lateralis
6. R. circumflexus
7. R. marginalis sinister



**Fig. 4.22** Coronary CT angiography 3D VRT colour reconstruction

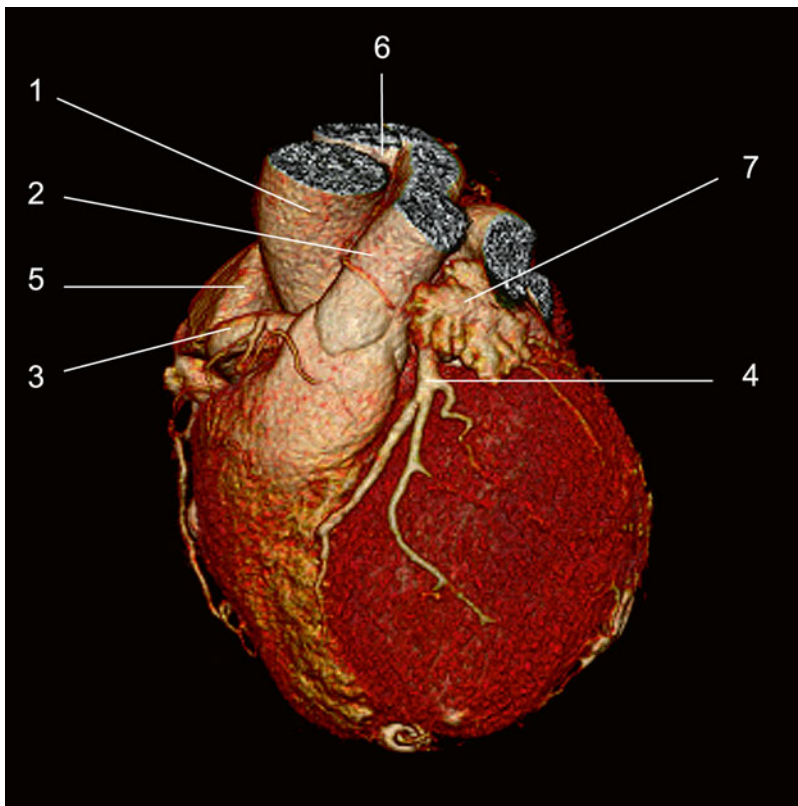
1. The aorta with three separated ostium emergencies of the a. coronaria
2. A. coronaria dextra
3. R. interventricularis anterior
4. R. circumflexus



**Fig. 4.21** Coronary CT angiography 3D VRT colour reconstruction

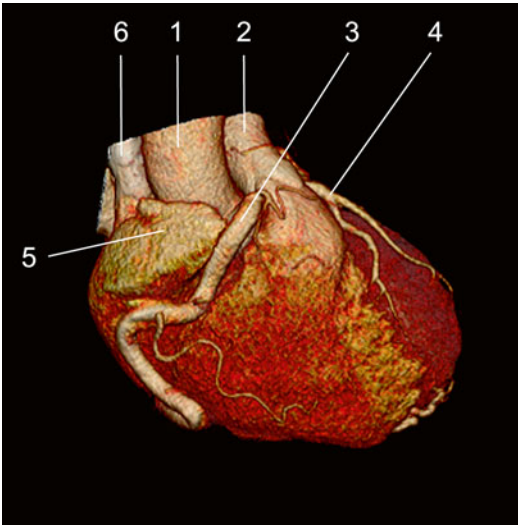
1. Aorta
2. A. coronaria dextra
3. R. interventricularis anterior
4. R. lateralis
5. R. circumflexus
6. R. marginalis sinister
7. A pulmonalis

#### 4.5 Abnormal A. Coronaria dextra emergence from the Truncus A. Pulmonalis



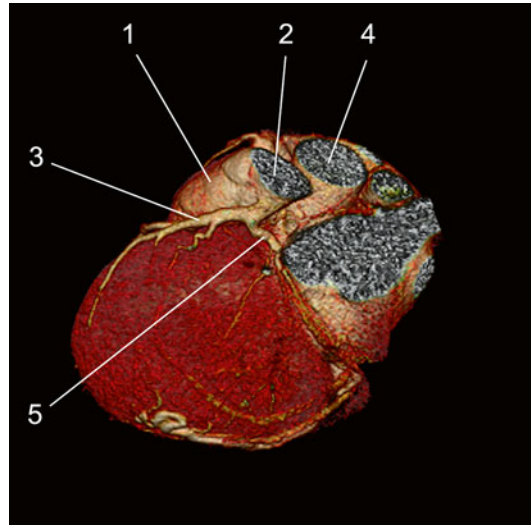
**Fig. 4.23** Coronary CT angiography 3D VRT colour reconstruction

1. Aorta
2. Truncus a. pulmonalis
3. A. coronaria dextra
4. A. coronaria sinistra
5. Auricula dextra
6. Vena cava superior
7. Auricula sinistra



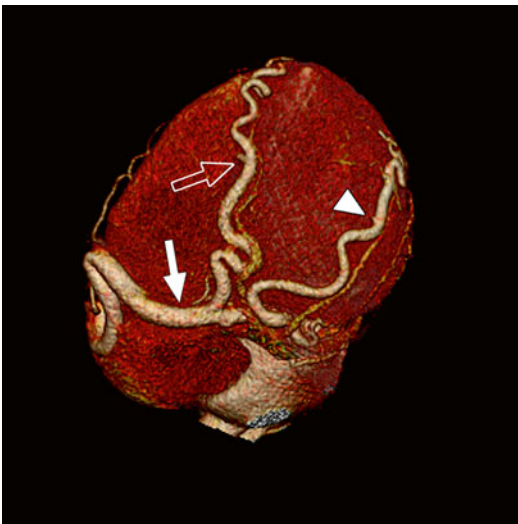
**Fig. 4.24** 3D VRT colour reconstruction

1. Aorta
2. Truncus a. pulmonalis
3. A. coronaria dextra
4. A. coronaria sinistra
5. Auricula dextra
6. Vena cava superior



**Fig. 4.26** 3D VRT colour reconstruction

1. Truncus a. pulmonalis
2. A. coronaria sinistra
3. A. interventricularis anterior
4. Aorta
5. R. circumflexus



**Fig. 4.25** 3D VRT colour reconstruction

*Full arrow* = a. coronaria dextra  
*Arrow with contour* = r.interventricularis posterior  
 The tip of the *arrow* = r. posterolateralis dexter



**Fig. 4.27** 3D VRT colour reconstruction

1. Truncus a. pulmonalis
2. A. coronaria sinistra
3. A. interventricularis anterior
4. R. circumflexus
5. Aorta
6. A. coronaria dextra



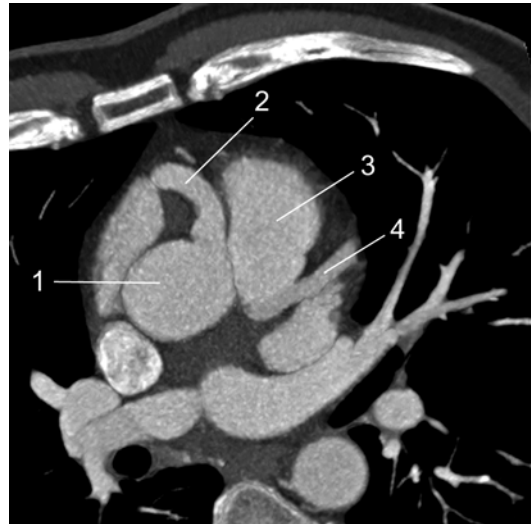
**Fig. 4.28** 3D MPR reconstruction  
1. Truncus a. coronaria sinistra+r. interventricularis anterior  
2. A. pulmonalis  
3. Aorta



**Fig. 4.30** 3D MIP reconstruction  
1. Aorta  
2. Truncus a. pulmonalis  
3. Truncus a. coronaria sinistra

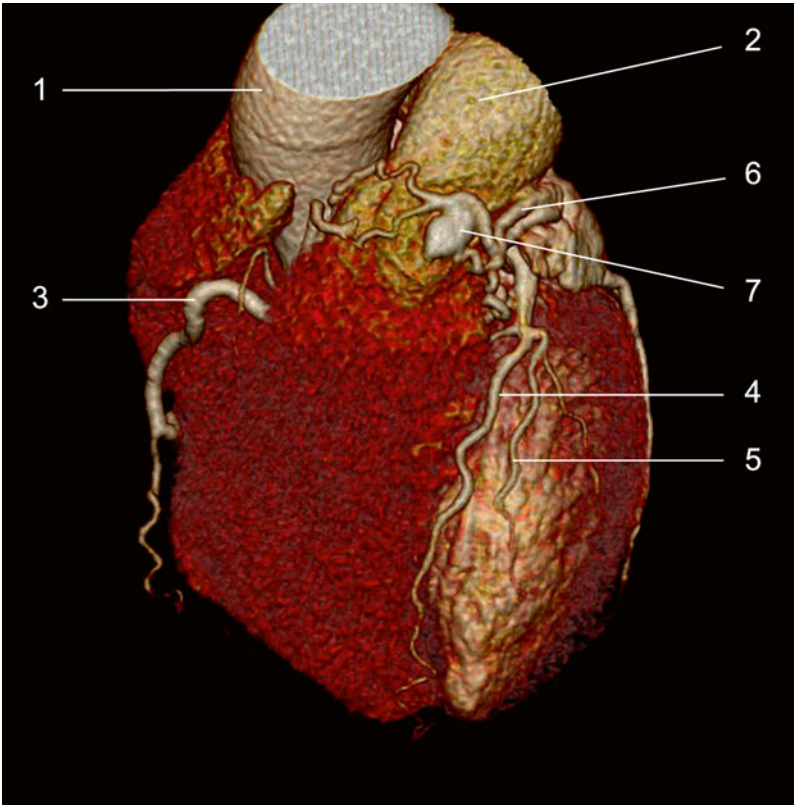


**Fig. 4.29** 3D MIP reconstruction  
1. Aorta  
2. Truncus a. pulmonalis  
3. Truncus a. coronaria sinistra



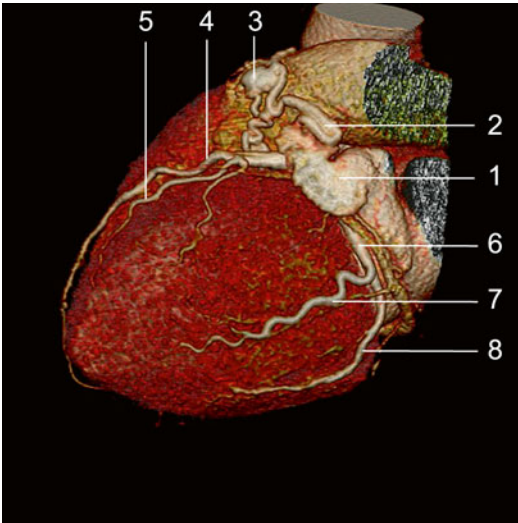
**Fig. 4.31** 3D MIP reconstruction  
1. Aorta  
2. A. coronaria dextra  
3. A. pulmonalis  
4. Truncus a. coronaria sinistra

## 4.6 Coronary and Aortopulmonary Fistulas



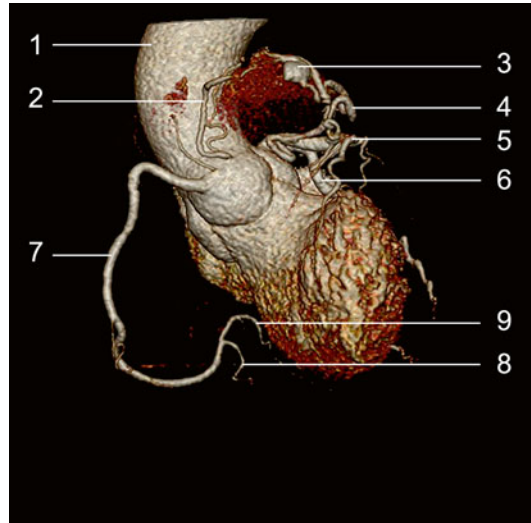
**Fig. 4.32** Coronary CT angiography 3D VRT

1. Aorta
2. Truncus a. pulmonalis
3. A. coronaria dextra
4. R. interventricularis
5. R. lateralis
6. Fistulous course between r. interventricularis anterior and a. pulmonalis
7. Aneurysmal dilatation at the confluence level of the fistulas' course



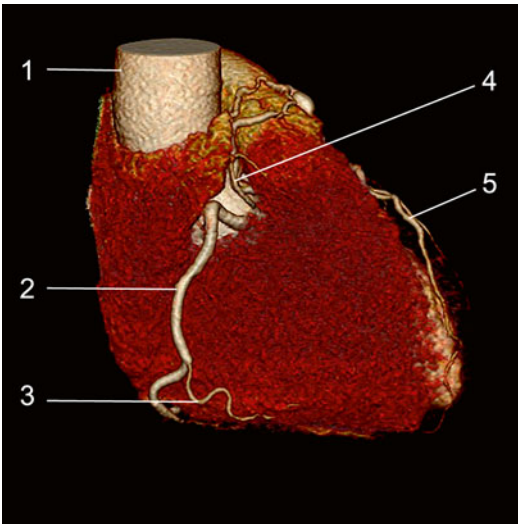
**Fig. 4.33** Coronary CTA 3D VRT

1. Auricula sinistra
2. Fistula
3. Aneurysm
4. R. interventricularis anterior
5. R. lateralis
6. R. circumflexus
7. R. marginalis sinister
8. R. marginalis sinister



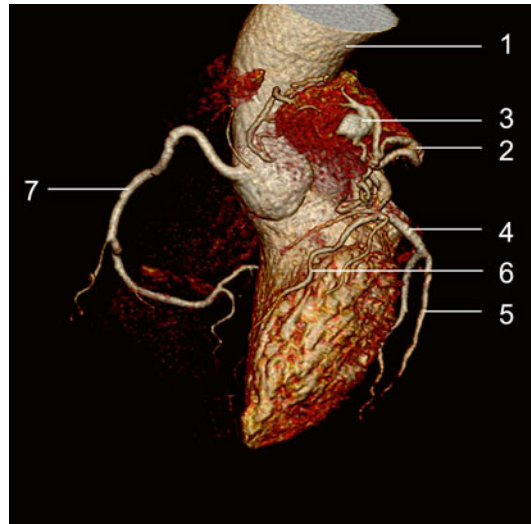
**Fig. 4.35** Coronary CTA 3D VRT

1. Aorta
2. From the aorta emergent fistulous course
3. Aneurysmal dilatation
4. From the a. coronaria sinistra emergent fistulous course communicating with a. pulmonalis
5. R. interventricularis anterior
6. R. circumflexus
7. A. coronaria dextra
8. R. interventricularis posterior
9. R. posterolateralis dexter



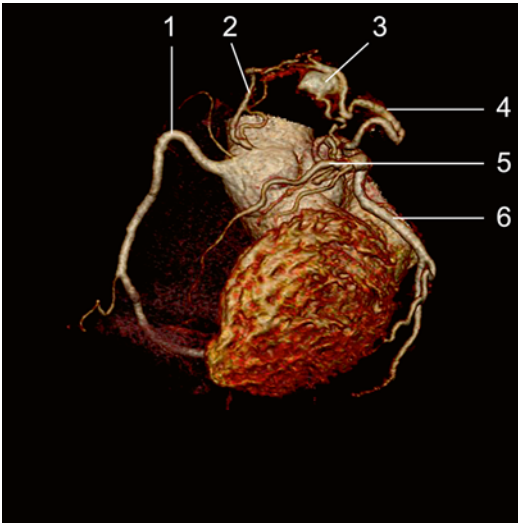
**Fig. 4.34** Coronary CTA 3D VRT

1. Aorta
2. A. coronaria dextra
3. R. marginalis dexter
4. Frontal aorta emergent fistulous course
5. R. interventricularis anterior



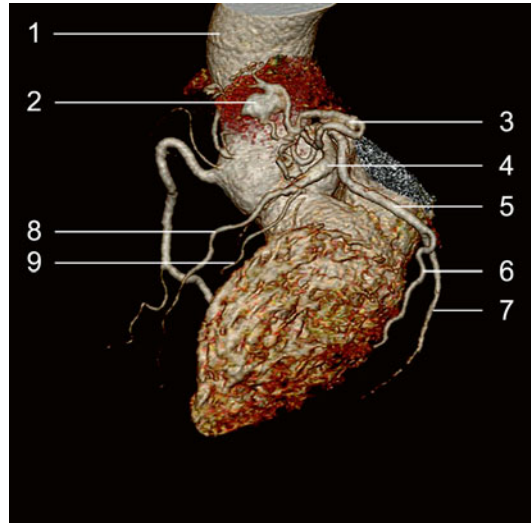
**Fig. 4.36** Coronary CTA 3D VRT

1. Aorta
2. From the r. interventricularis anterior emergent fistulous course communicating with a. pulmonalis
3. Aneurysmal dilatation
4. R. circumflexus
5. R. marginalis sinister
6. R. interventricularis anterior
7. A. coronaria dextra



**Fig. 4.37** Coronary CTA 3D VRT

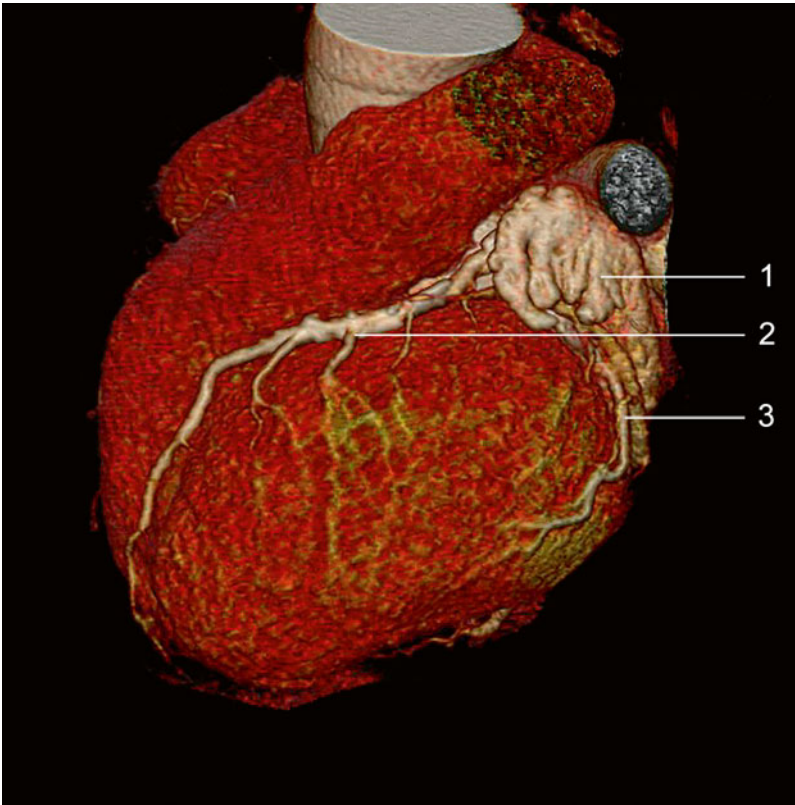
1. A. coronaria dextra
2. Fistulous course
3. Aneurysmal dilatation
4. Fistulous course
5. R. interventricularis anterior
6. R. circumflexus



**Fig. 4.38** Coronary CTA 3D VRT

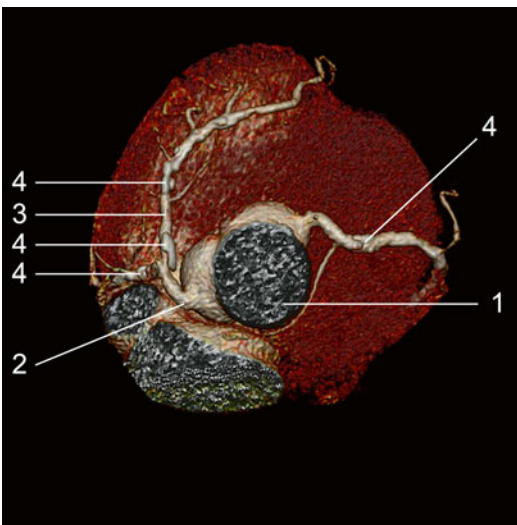
1. Aorta
2. Aneurysmal dilatation
3. Fistulous course
4. R. interventricularis anterior, pars proximalis
5. R. circumflexus
6. R. marginalis sinister
7. R. marginalis sinister
8. R. interventricularis anterior
9. R. lateralis

### 4.7 Coronary Calcification



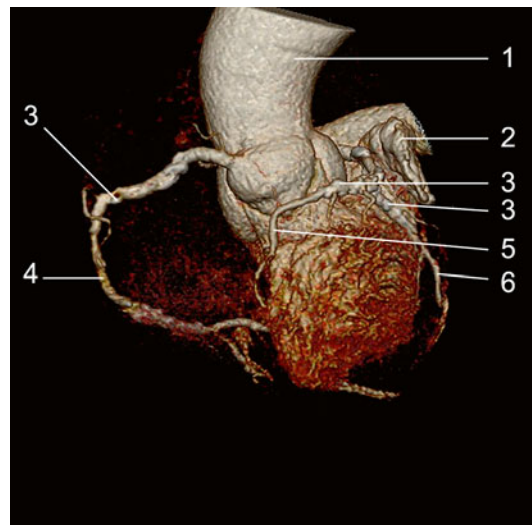
**Fig. 4.39** Coronary CTA 3D VRT

1. Auricula sinistra
2. R. interventricularis anterior
3. R. circumflexus



**Fig. 4.40** Coronary CTA 3D VRT

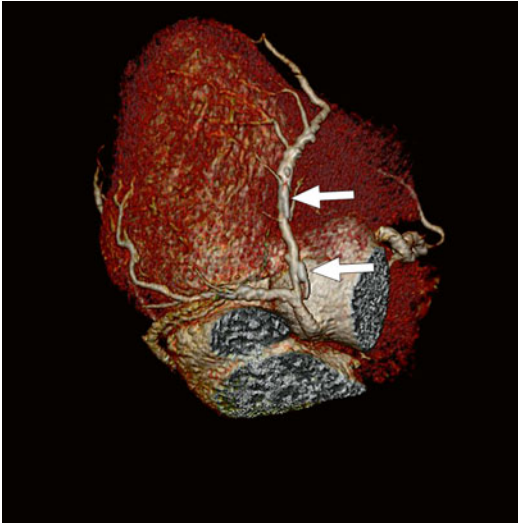
1. Aorta
2. Truncus a. coronaria sinistra
3. R. interventricularis anterior
4. Calcified plaques located on the three a. coronariae



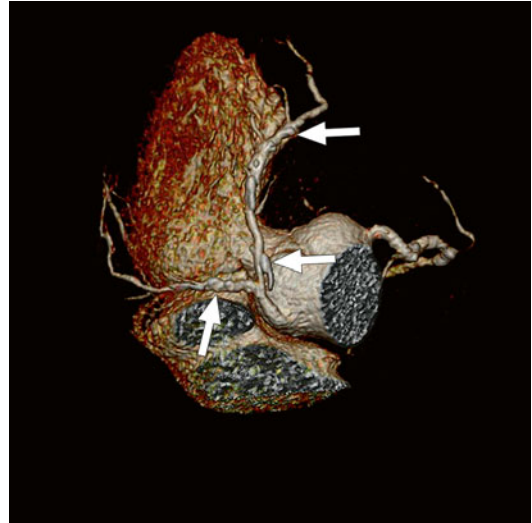
**Fig. 4.41** Coronary CTA 3D VRT

1. Aorta
2. Auricula sinistra
3. Calcified plaques located on the three a. coronariae
4. A. coronaria dextra
5. A. interventricularis anterior
6. R. circumflexus

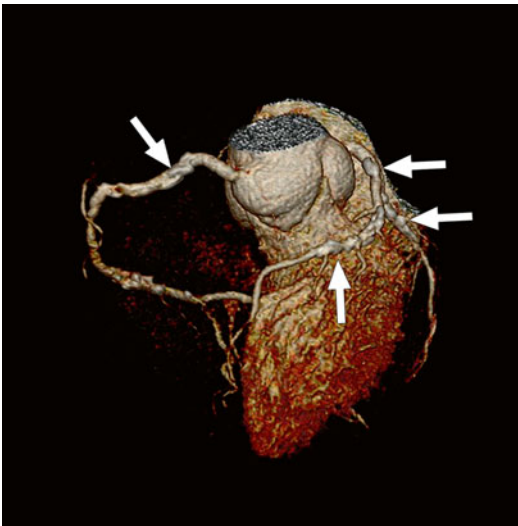




**Fig. 4.42** Coronary CT angiography 3D VRT  
The *full arrow* indicates calcified atheromatous plaques

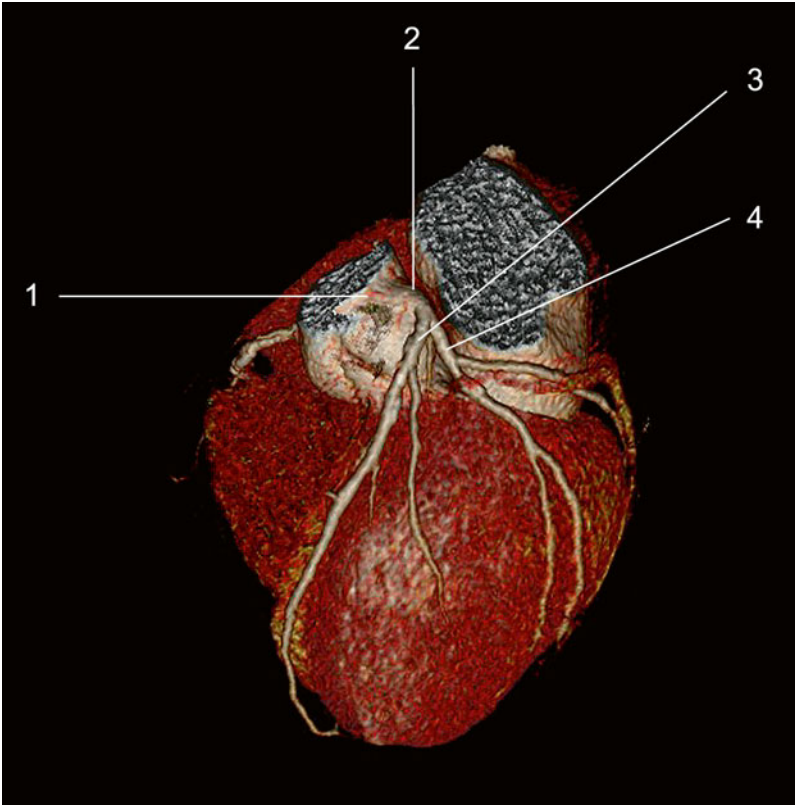


**Fig. 4.44** Coronary CT angiography 3D VRT  
The *full arrow* indicates calcified atheromatous plaques



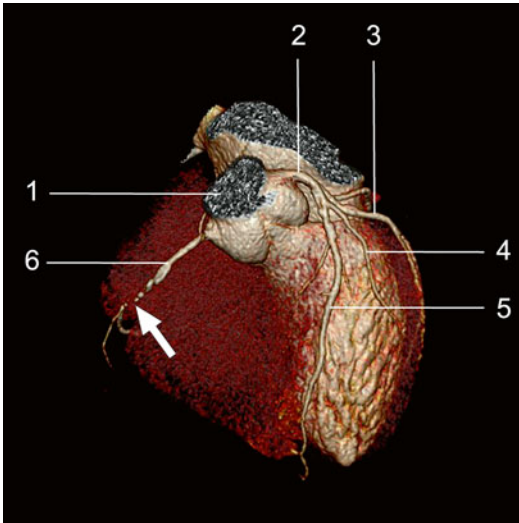
**Fig. 4.43** Coronary CT angiography 3D VRT  
The *full arrow* indicates calcified atheromatous plaques

### 4.8 Monovascular Coronary Disease: A. Coronaria Dextra Occlusion



**Fig. 4.45** Coronary CT angiography 3D VRT

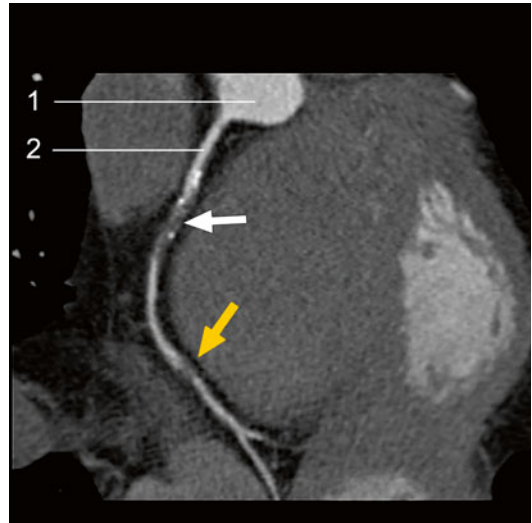
- 1. Aorta
- 2. Truncus a. coronaria sinister
- 3. R. interventricularis sinister
- 4. R. circumflexus



**Fig. 4.46** Coronary CTA 3D VRT

1. Aorta
2. Truncus a. coronaria sinister
3. R. circumflexus
4. R. lateralis
5. R. interventricularis anterior
6. A. coronaria dextra

The *full arrow* indicates occlusive lesion at the middle segment of a. coronaria dextra

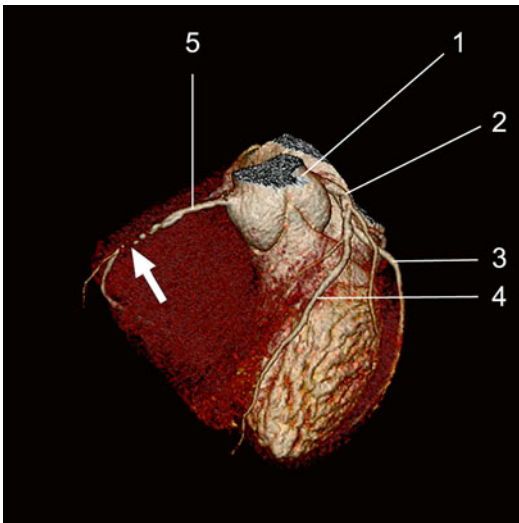


**Fig. 4.48** Coronary CTA 3D MIP

1. Aorta
2. A. coronaria dextra

*White arrow*=occlusion area at the middle segment of the a. coronaria dextra

*Yellow arrow*=occlusion area at the distal segment of the a. coronaria dextra



**Fig. 4.47** Coronary CTA 3D VRT

1. Aorta
2. Truncus a. coronaria sinister
3. R. circumflexus
4. R. interventricularis anterior
5. A. coronaria dextra

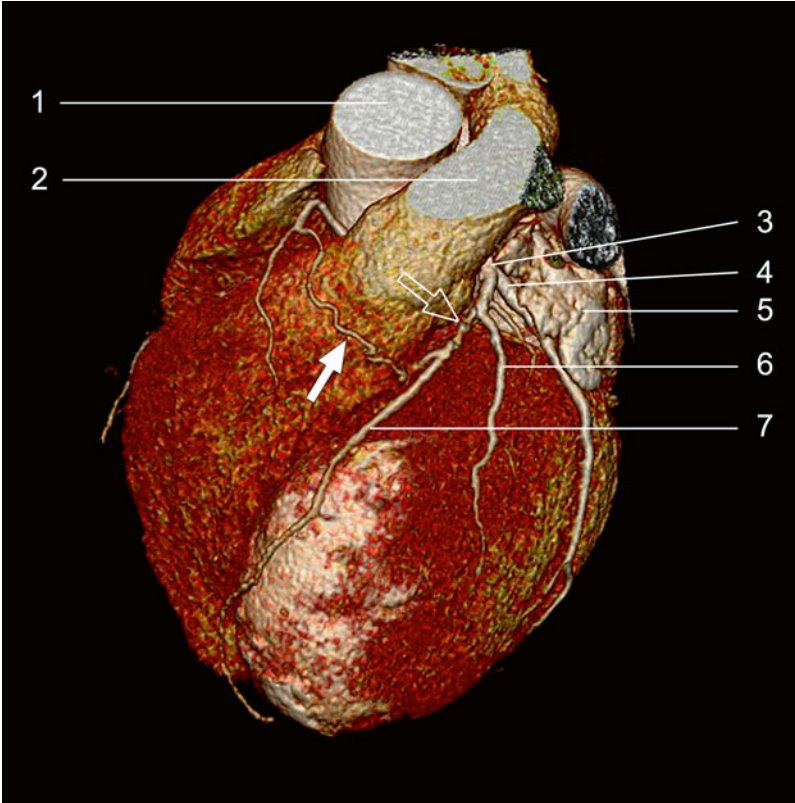
*White arrow*=occlusion area at the middle segment of the a. coronaria dextra



**Fig. 4.49** Coronary CTA 3D MIP

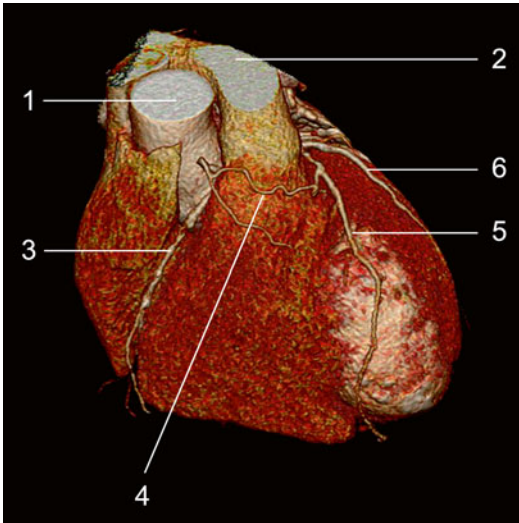
1. Aorta
2. A. coronaria dextra
- 3 and 4 occlusional areas at the middle segment and distal segment of a. coronaria dextra

**4.9 Occlusive Lesion at the Middle Segment of the R. Interventricularis Anterior – Collateral Circulation A. Coronaria Dextra – R. Interventricularis Anterior**



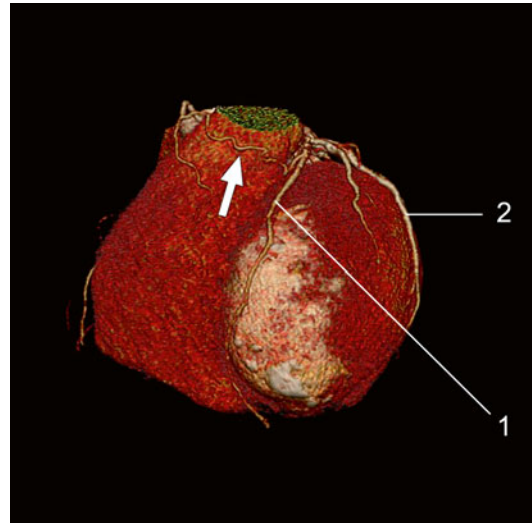
**Fig. 4.50** Coronary CTA 3D VRT

- 1. Aorta
  - 2. Truncus a. pulmonalis
  - 3. Truncus a. coronaria sinistra
  - 4. R. circumflexus
  - 5. Auricula sinistra
  - 6. R. lateralis
  - 7. R. interventricularis anterior – pars media
- White arrow*=collateral arteries  
*Empty arrow*=occlusive/subocclusive lesion



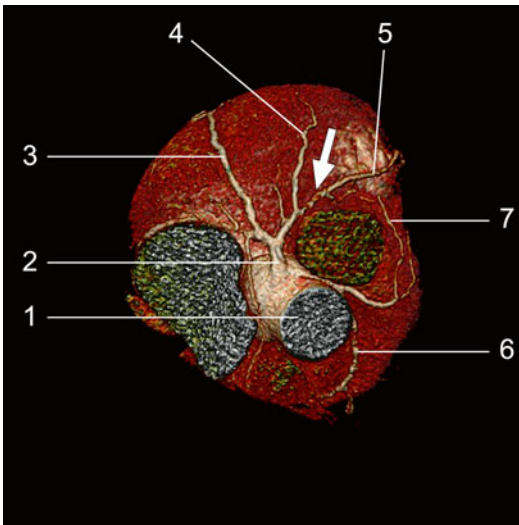
**Fig. 4.51** Coronary CTA 3D VRT

1. Aorta
2. Truncus a. pulmonalis
3. A. coronaria dextra
4. Colateralis a. coronaria dextra – r. interventricularis anterior
5. R. interventricularis anterior – pars distalis
6. R. lateralis



**Fig. 4.53** Coronary CTA 3D VRT

1. R. interventricularis anterior
  2. R. circumflexus
- The *full arrow* indicates colateralis a. coronaria dextra r. interventricularis anterior

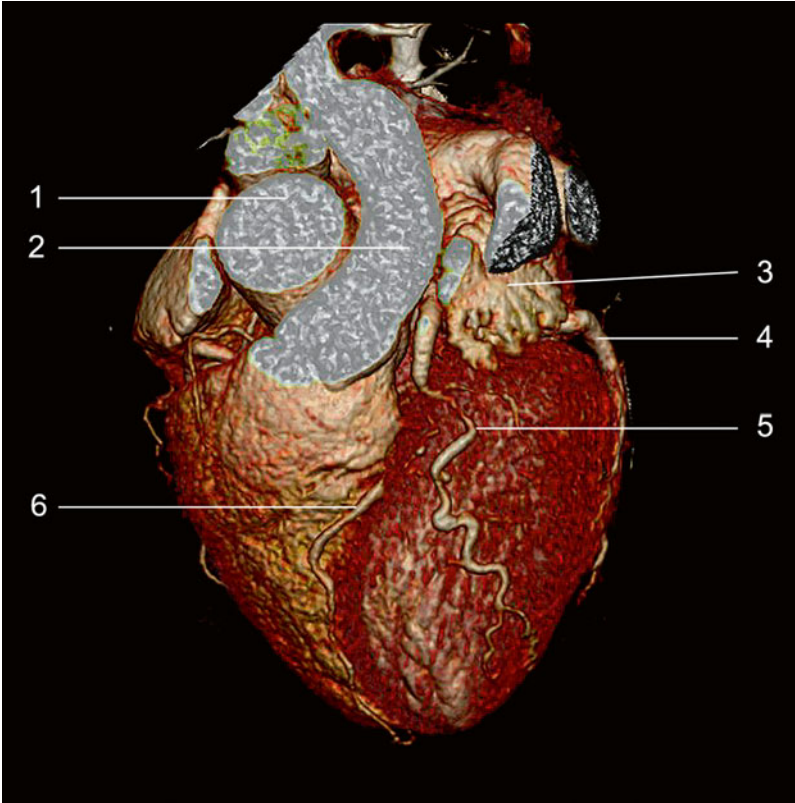


**Fig. 4.52** Coronary CTA 3D VRT

1. Aorta
2. Truncus a. coronaria sinistra
3. R. circumflexus
4. R. lateralis
5. R. interventricularis anterior
6. A. coronaria dextra
7. Colateralis a. coronaria dextra – r. interventricularis anterior

The *full arrow* indicates occlusion area of the r. interventricularis anterior pars media

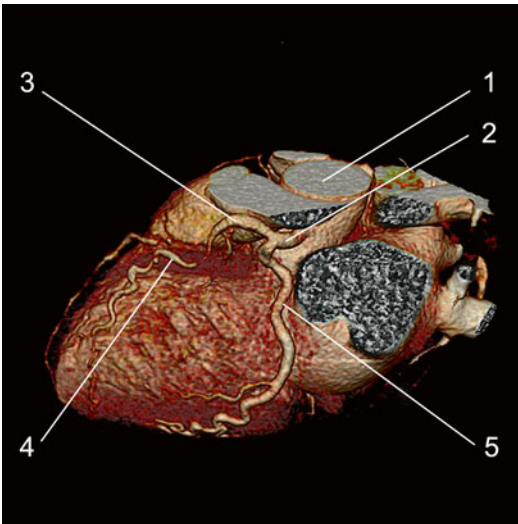
### 4.10 Bivascular Coronary Disease



**Fig. 4.54** Coronary CTA

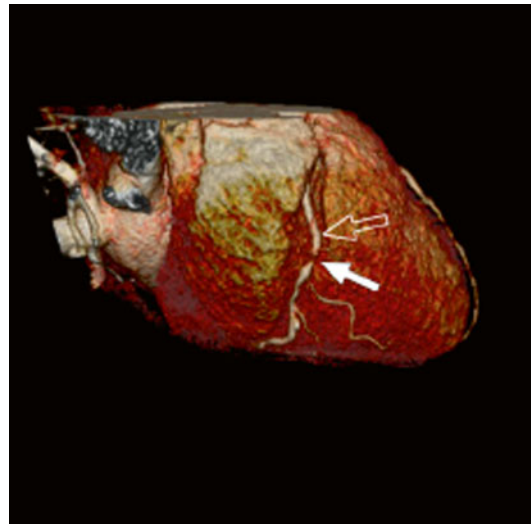
3D VRT

- 1. Aorta
- 2. A. pulmonalis
- 3. Auricula sinistra
- 4. R. circumflexus
- 5. R. lateralis
- 6. R. interventricularis anterior



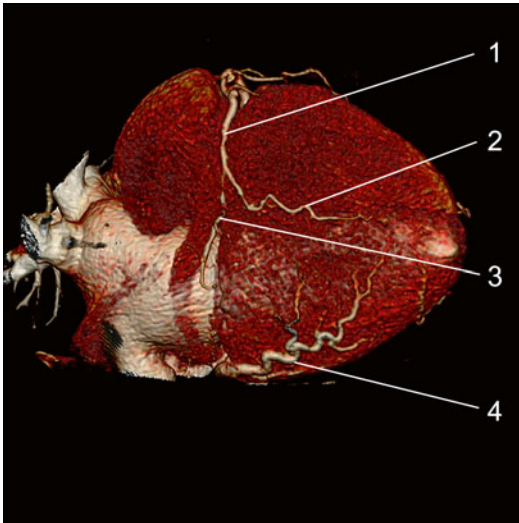
**Fig. 4.55** Coronary CTA 3D VRT

- 1. Aorta
- 2. Truncus a. coronaria sinistra
- 3. R. interventricularis anterior
- 4. R. lateralis
- 5. R. circumflexus

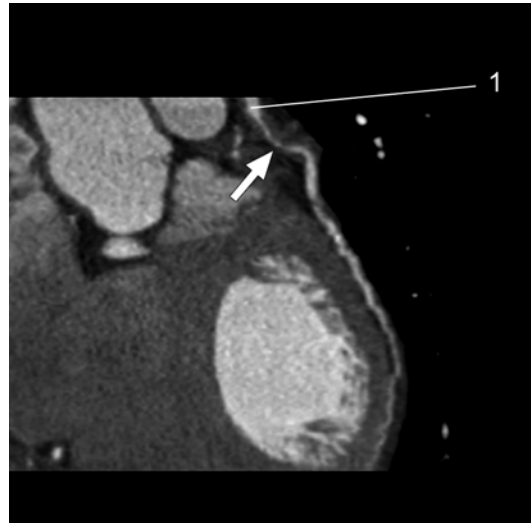


**Fig. 4.56** Coronary CTA 3D VRT

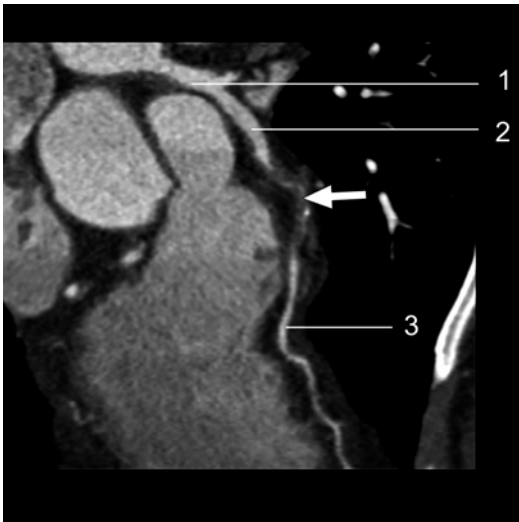
*Full arrow* = stenotic area at the middle segment level  
*Arrow with contour* = a. coronaria dextra



**Fig. 4.57** Coronary CTA 3D VRT  
 1. A. coronaria dextra – pars distalis  
 2. R. interventricularis posterior  
 3. R. postero lateralis dexter  
 4. R. marginalis sinister



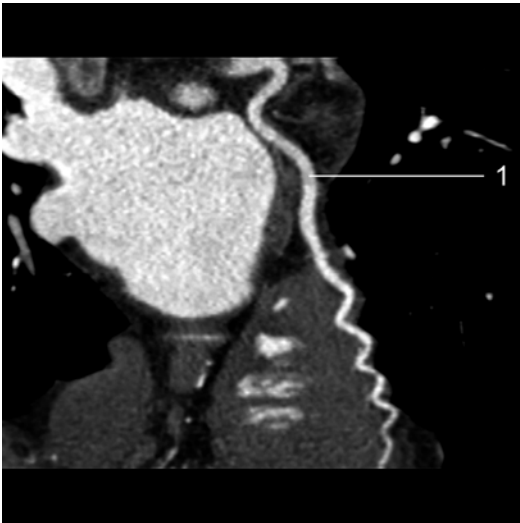
**Fig. 4.59** Coronary CTA 3D MPR  
 1. R. lateralis  
 The *full arrow* indicates severe stenotic lesions



**Fig. 4.58** Coronary CTA 3D MPR  
 1. Truncus a. coronaria sinistra  
 2. At the pars proximalis patent r. interventricularis anterior  
 3. Patent r. interventricularis anterior – pars distalis  
 The *full arrow* indicates occlusional lesion at the level of middle segment



**Fig. 4.60** Coronary CTA 3D MPR  
 1. A. coronaria dextra  
*Full arrow*: occlusional lesion at the level of a. coronaria dextra  
*Arrow with contour*=moderate stenotic atheromatous plaques

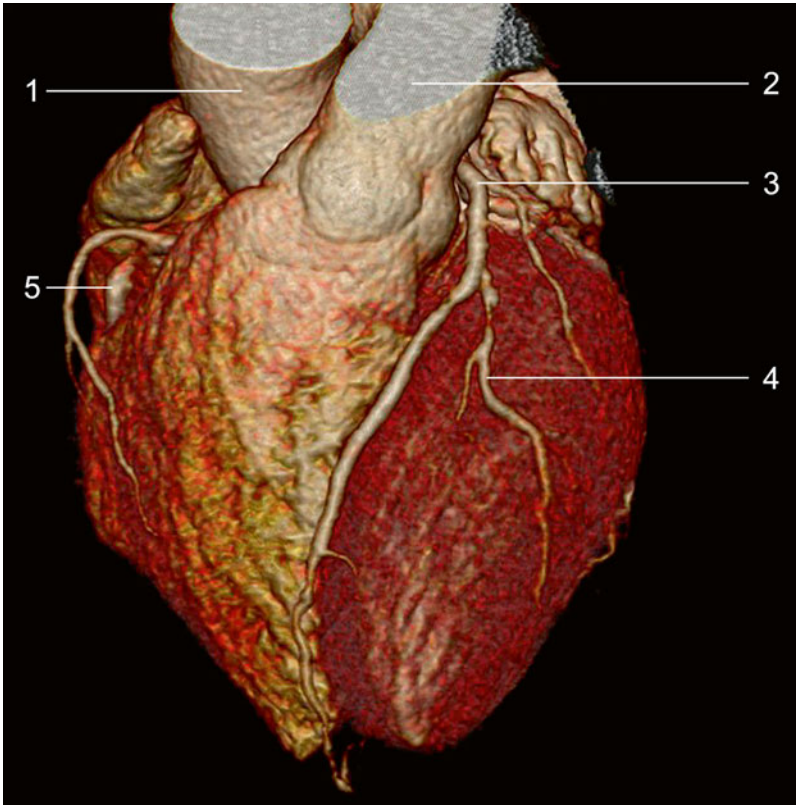


**Fig. 4.61** Coronary CTA 3D MPR

1. R. circumflexus + r. marginalis sinister without evident stenotic lesions

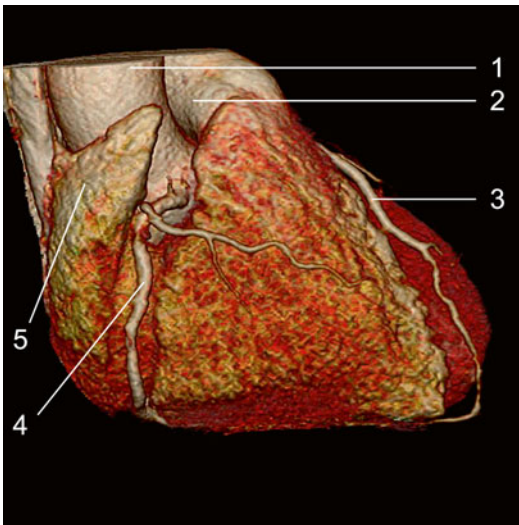


**4.11 Trivascular Coronary Disease**



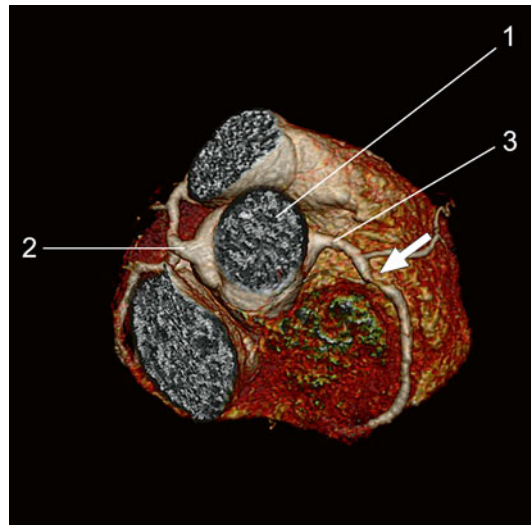
**Fig. 4.62** Coronary CTA 3D VRT

- 1. Aorta
- 2. Truncus a. pulmonalis
- 3. R. interventricularis anterior
- 4. R. lateralis
- 5. A. coronaria dexra



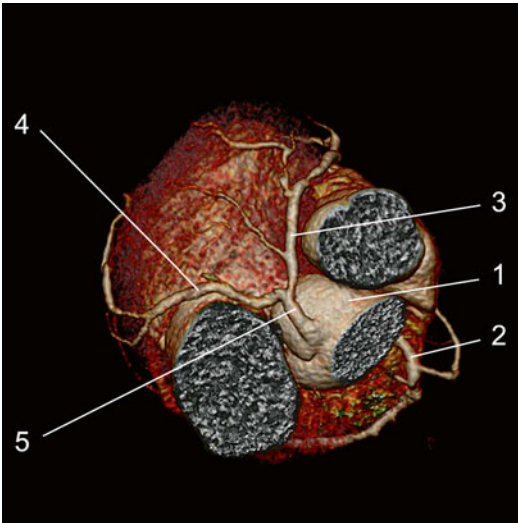
**Fig. 4.63** Coronary CTA 3D VRT

- 1. Aorta
- 2. Truncus a. pulmonalis
- 3. R. interventricularis anterior
- 4. A. coronaria dexra
- 5. Auricula dexra



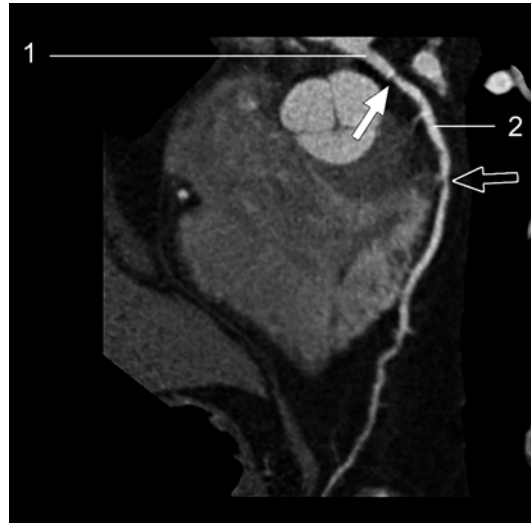
**Fig. 4.64** Coronary CTA 3D VRT

- 1. Aorta
  - 2. Truncus a. coronaria sinistra
  - 3. A. coronaria dexra
- The *full arrow* indicates stenotic area at the level of a. coronaria dexra pars proximalis



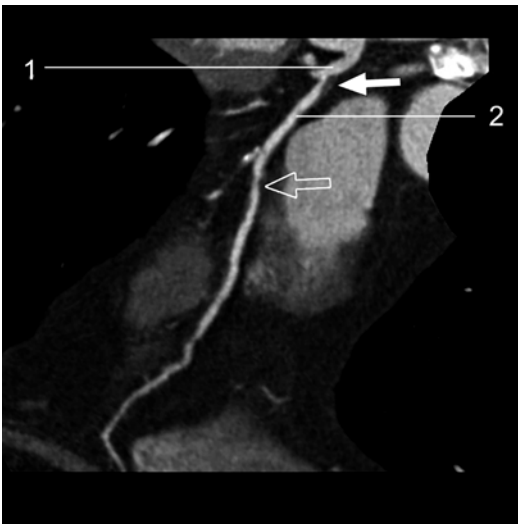
**Fig. 4.65** Coronary CTA 3D VRT

1. Aorta
2. A. coronaria dextra
3. R. interventricularis anterior
4. R. circumflexus
5. Truncus a. coronaria sinistra



**Fig. 4.67** Coronary CTA 3D MPR

1. A. coronaria sinistra
  2. R. interventricularis anterior
- Full arrow* = significant stenotic lesion ostial located at the r. interventricularis anterior  
*Arrow with contour* = ranged non-calcified atherosclerotic plaques located in the middle and distal segments



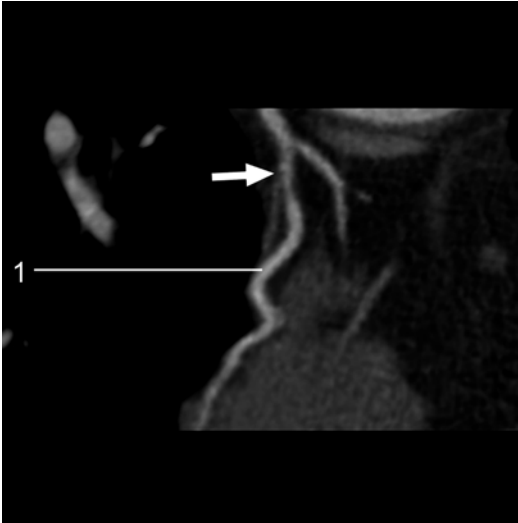
**Fig. 4.66** Coronary CTA 3D MPR

1. A. coronaria sinistra
  2. R. interventricularis anterior
- The *full arrow* indicates severe stenotic lesion  
 The *Empty arrow* indicates severe stenotic lesion



**Fig. 4.68** Coronary angiography 3D MPR

1. R. circumflexus
- The *full arrow* indicates non-calcified mild stenotic plaques located at pars proximalis of r. circumflexus

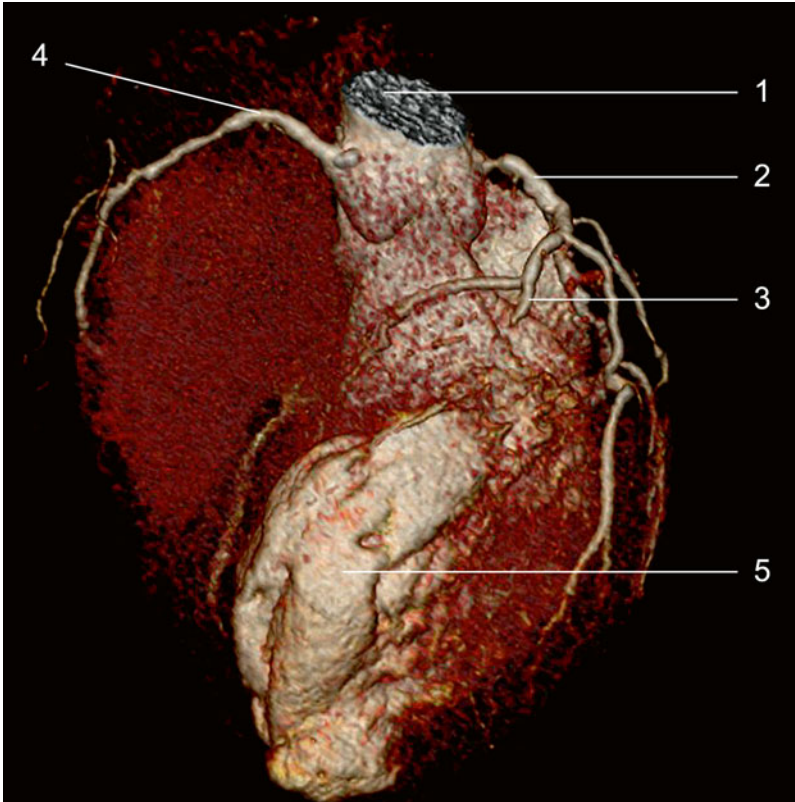


**Fig. 4.69** Coronary angiography 3D MPR  
 1. R. marginalis sinister  
 The *full arrow* indicates non-calcified significantly stenotic plaques located at pars proximalis of r. marginalis sinister



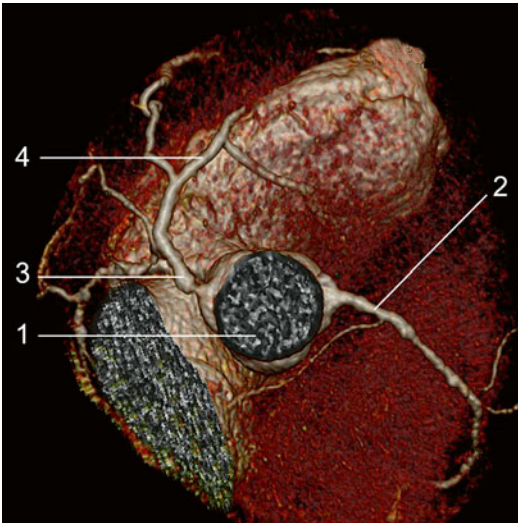
**Fig. 4.70** Coronary angiography 3D MPR  
 1. A. coronaria dextra  
 2. R. interventricularis posterior  
 The *full arrow* indicates non-calcified eccentric plaques, subocclusive located at the pars proximalis of a. coronaria dextra

#### 4.12 Aneurysm of the Left Ventricle and R. Interventricularis Anterior Occlusion



**Fig. 4.71** Coronary CTA 3D VRT

1. Aorta
2. Truncus a. coronaria sinistra
3. Occluded a inter-ventricularis anterior in middle and distal segment
4. A. coronaria dextra
5. Ventriculus sinister aneurysm



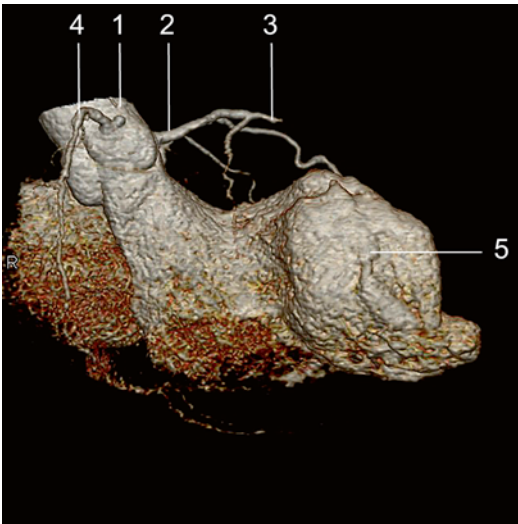
**Fig. 4.72** Coronary CTA 3D VRT

1. Aorta
2. A. coronaria dextra
3. Significantly stenotic lesion of a. coronaria sinistra
4. R. interventricularis anterior with occlusion in the middle part



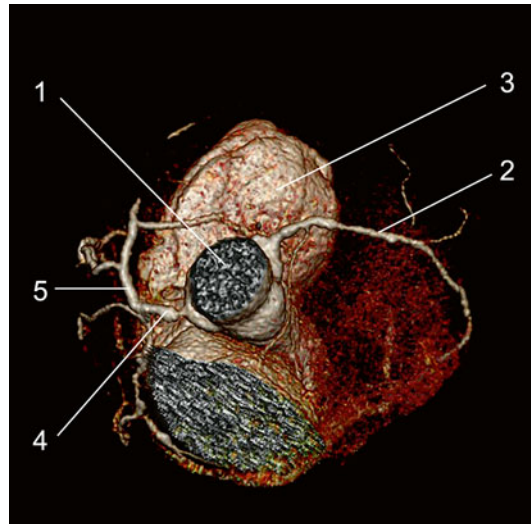
**Fig. 4.74** Coronary CTA VRT

The *full arrow* indicates aneurysm



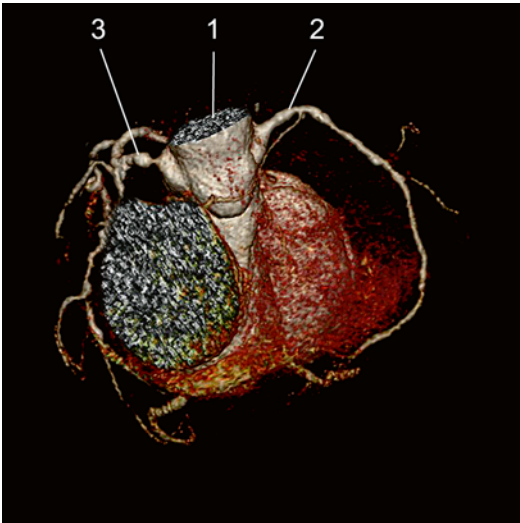
**Fig. 4.73** Coronary CTA 3D VRT

1. Aorta
2. Truncus coronaria sinistra
3. R. interventricularis anterior
4. A. coronaria dextra
5. Ventriculus sinister aneurysm

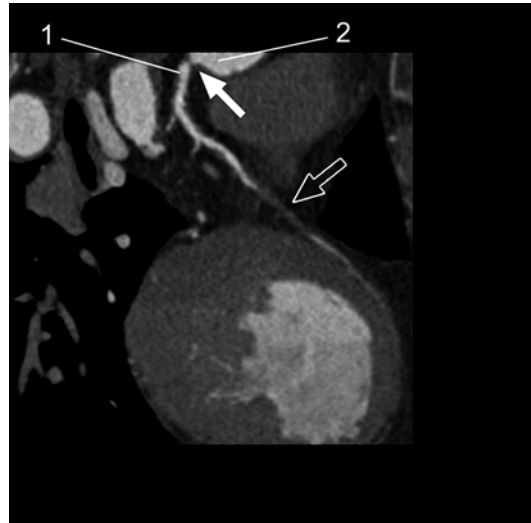


**Fig. 4.75** Coronary CTA VRT

1. Aorta
2. A. coronaria dextra
3. Ventriculus sinister aneurysm
4. Sever stenotic ostial lesion of truncus a. coronaria sinistra
5. R. interventricularis anterior



**Fig. 4.76** Coronary CTA 3D VRT  
1. Aorta  
2. A. coronaria dextra  
3. Truncus a. coronaria sinistra

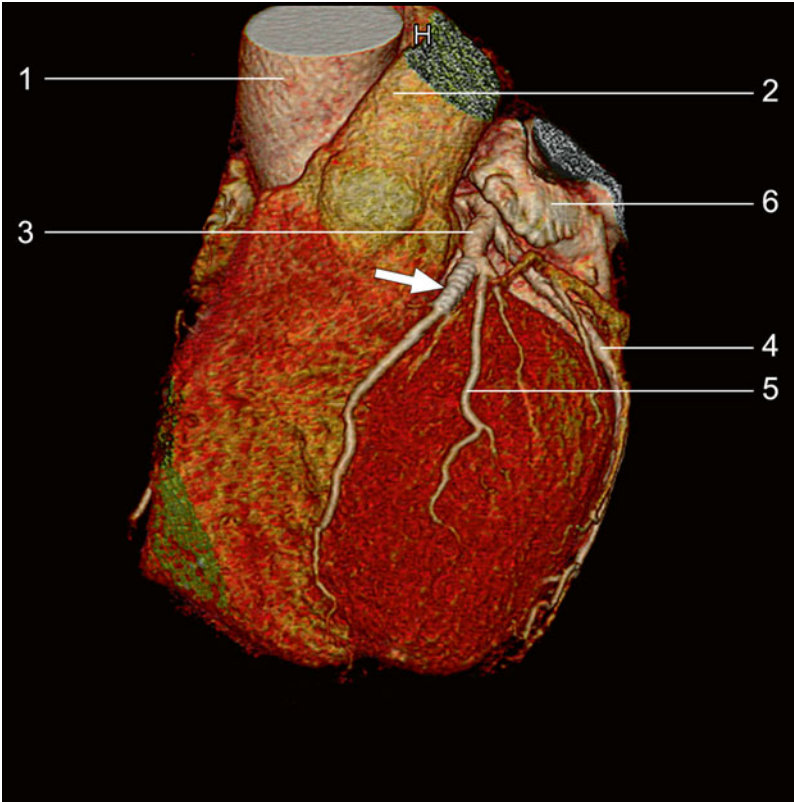


**Fig. 4.78** Coronary CTA 3D MPR  
1. Truncus a. coronaria sinistra  
2. Aorta  
*Full arrow*=severe stenotic lesion of ostium a. coronaria sinistra  
*Arrow with contour*=r. interventricularis anterior with occlusion in the middle part



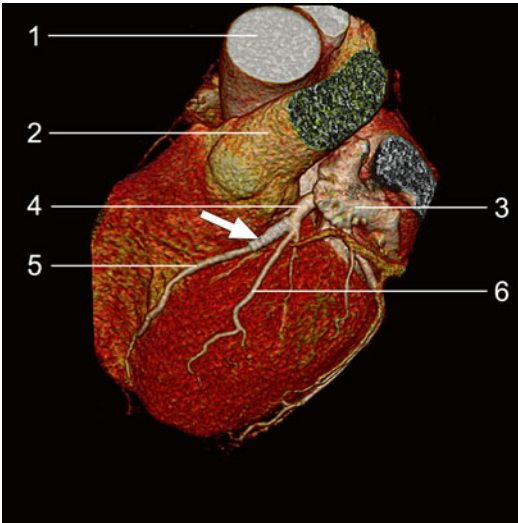
**Fig. 4.77** Coronary CTA 3D MPR  
1. Aorta  
2. R. interventricularis anterior  
*Full arrow*=significantly stenotic lesion of ostium a. coronaria sinistra  
*Arrow with contour*=r. interventricularis anterior with occlusion in the middle part

### 4.13 Monovascular Coronary Disease Patent Stent in the Middle Segment of R. Interventricularis Anterior

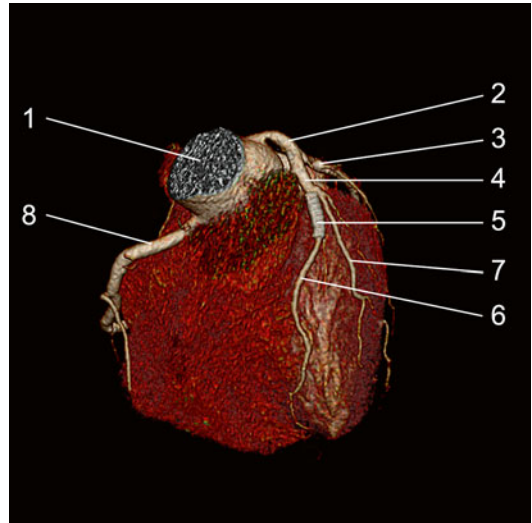


**Fig. 4.79** 3D VRT colour reconstruction

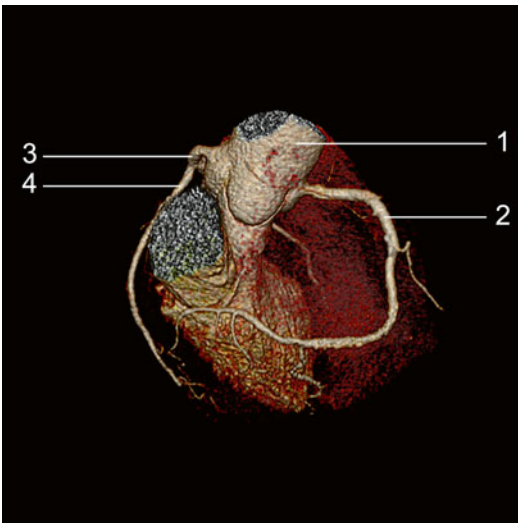
1. Aorta
  2. Truncus a. pulmonalis
  3. R. interventricularis anterior – pars proximalis
  4. R. circumflexus
  5. R. lateralis
  6. Auricula sinistra
- The *full arrow* indicates stent



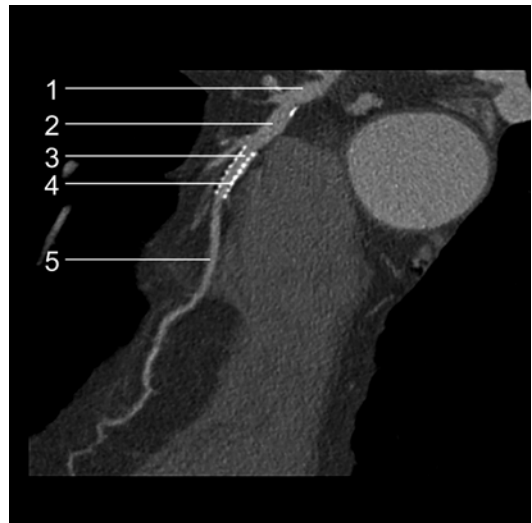
**Fig. 4.80** 3D VRT colour reconstruction  
 1. Aorta  
 2. Truncus a. pulmonalis  
 3. Auricula sinistra  
 4. R. interventricularis anterior – pars proximalis  
 5. R. interventricularis anterior – pars distalis  
 6. R. lateralis  
 The *full arrow* indicates stent



**Fig. 4.82** 3D VRT colour reconstruction  
 1. Aorta  
 2. Truncus a. coronaria sinistra  
 3. R. circumflexus  
 4. R. interventricularis anterior – pars proximalis  
 5. Patent stent on r. interventricularis anterior, middle part  
 6. R. interventricularis anterior – pars distalis  
 7. R. lateralis  
 8. ACD



**Fig. 4.81** 3D VRT colour reconstruction  
 1. Aorta  
 2. A. coronaria dextra  
 3. Truncus a. coronaria sinistra  
 4. R. circumflexus



**Fig. 4.83** 3D MPR reconstruction  
 1. Truncus a. coronaria sinistra  
 2. R. interventricularis anterior – pars proximalis  
 3. Patent stent  
 4. Stent  
 5. R. interventricularis anterior – pars distalis





**Fig. 4.84** 3D MPR reconstruction

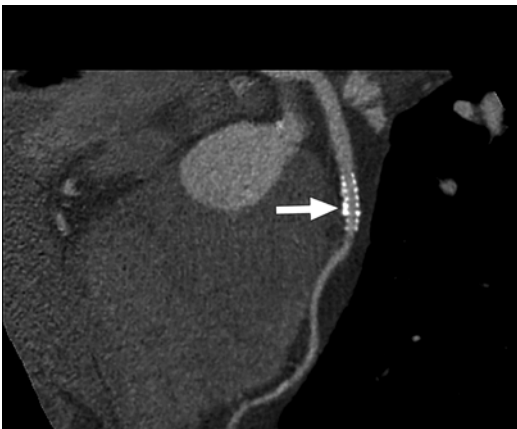
1. Truncus a. coronaria sinistra
2. R. interventricularis anterior – pars proximalis
3. Patent stent
4. Stent
5. R. interventricularis anterior – pars distalis

The *full arrow* indicates calcified atheromatous plaque



**Fig. 4.86** 3D MPR reconstruction

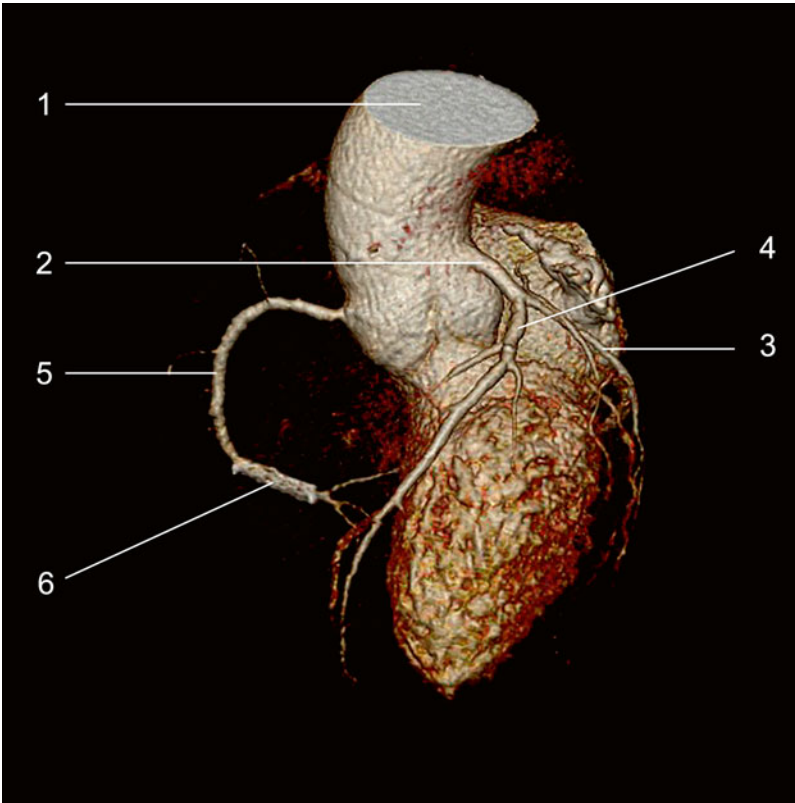
The *full arrow* indicates permeable stent at the middle segment of r. interventricularis anterior



**Fig. 4.85** 3D MPR reconstruction

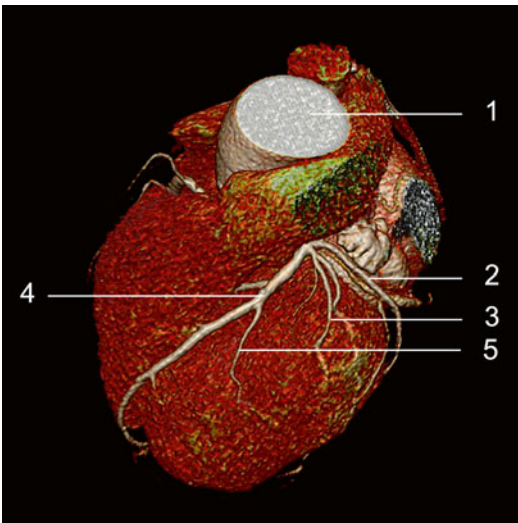
The *full arrow* indicates permeable stent at the middle segment of r. interventricularis anterior

### 4.14 Restenosis at Stent Level



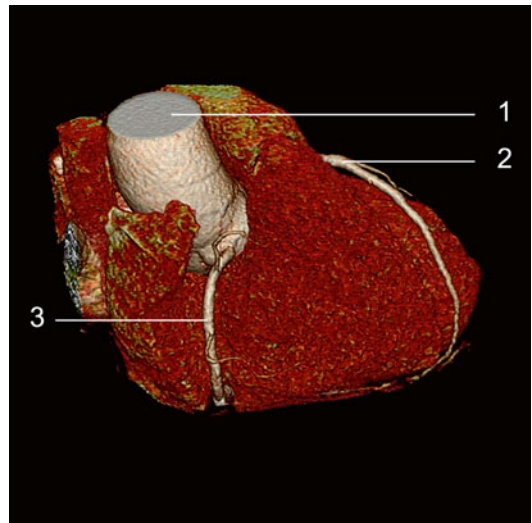
**Fig. 4.87** 3D VRT colour reconstruction

1. Aorta
2. Truncus coronaria sinistra
3. R. circumflexus
4. R. interventricularis anterior
5. A. coronaria dextra
6. Stent at the level of a. coronaria dextra proximal from crux cordis



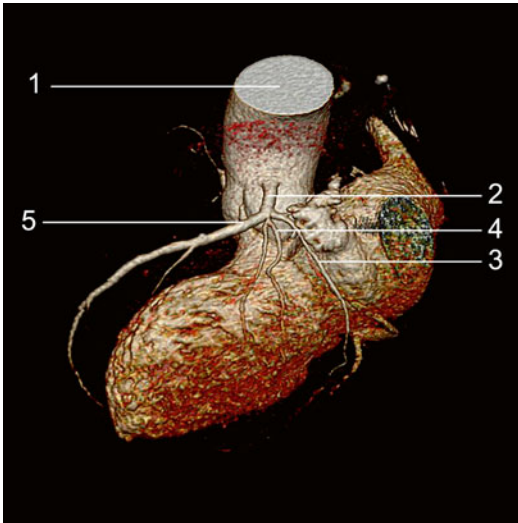
**Fig. 4.88** 3D VRT colour reconstruction

1. Aorta
2. R. circumflexus
3. R. atrialis intermedius
4. R. interventricularis anterior
5. R. lateralis



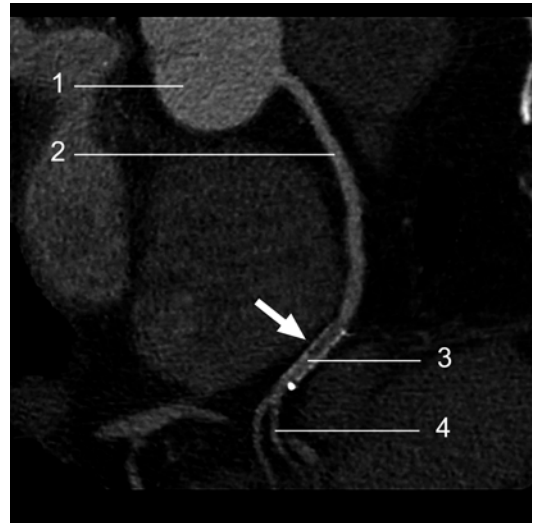
**Fig. 4.89** 3D VRT colour reconstruction

1. Aorta
2. R. interventricularis anterior
3. A. coronaria dextra



**Fig. 4.90** 3D VRT colour reconstruction

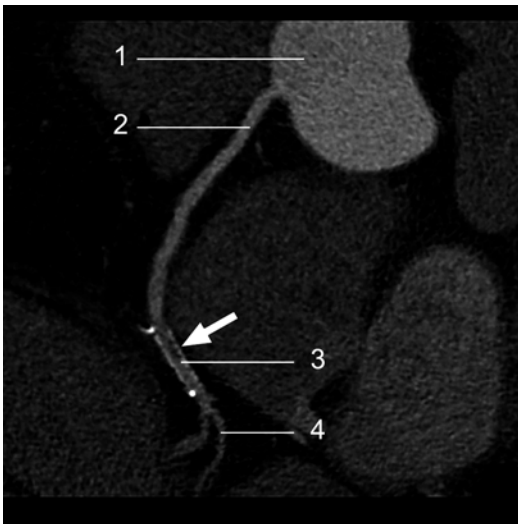
1. Aorta
2. Truncus a. coronaria sinistra
3. R. circumflexus
4. R. intermedius
5. R. interventricularis anterior



**Fig. 4.92** 3D MPR reconstruction

1. Aorta
2. A. coronaria dextra
3. Stent
4. Bifurcation

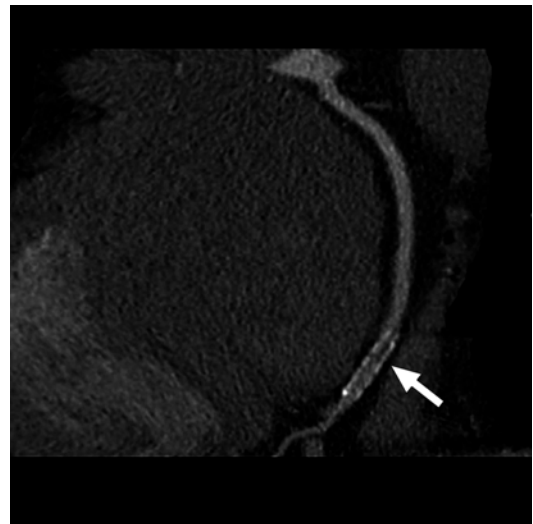
The *full arrow* indicates restenosis area in stent



**Fig. 4.91** 3D MPR reconstruction

1. Aorta
2. A. coronaria dextra
3. Stent
4. Bifurcation

The *full arrow* indicates restenosis area in stent



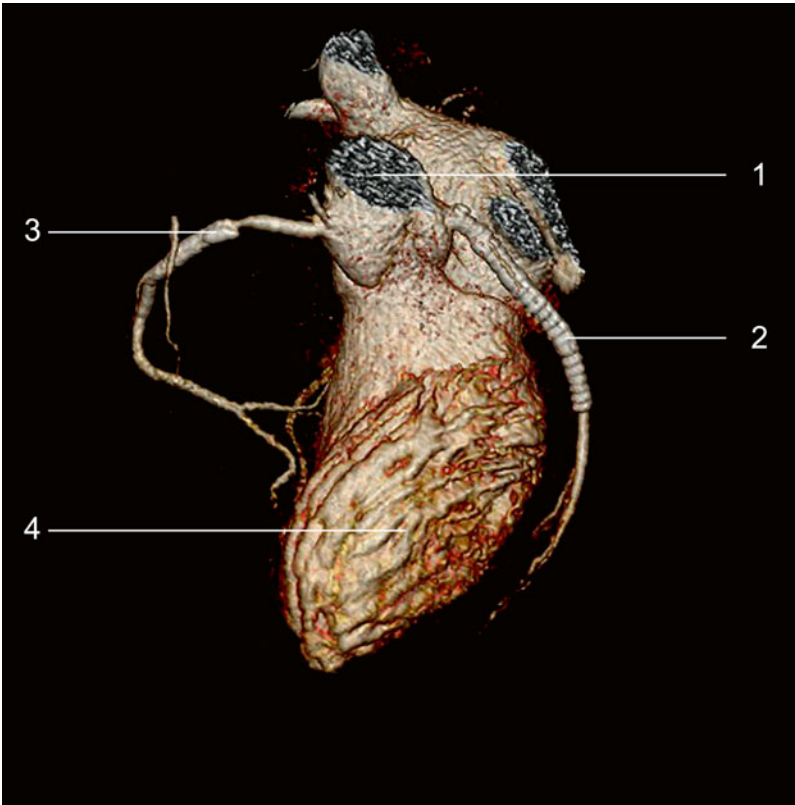
**Fig. 4.93** 3D MPR reconstruction

The *full arrow* indicates restenosis area in stent



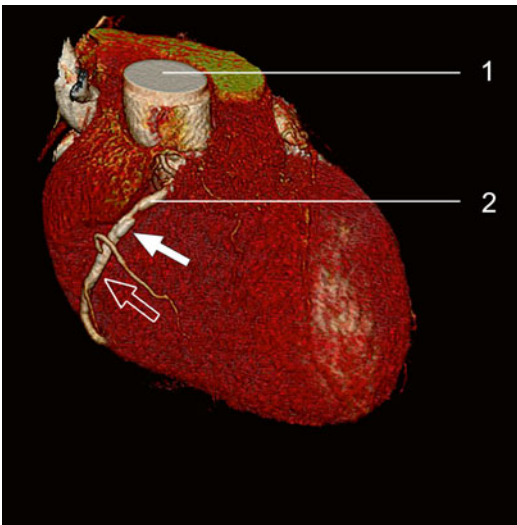
**Fig. 4.94** 3D MPR reconstruction  
The *full arrow* indicates restenosis area in stent

### 4.15 Occlusion of R. Interventricularis Anterior



**Fig. 4.95** 3D VRT colour reconstruction

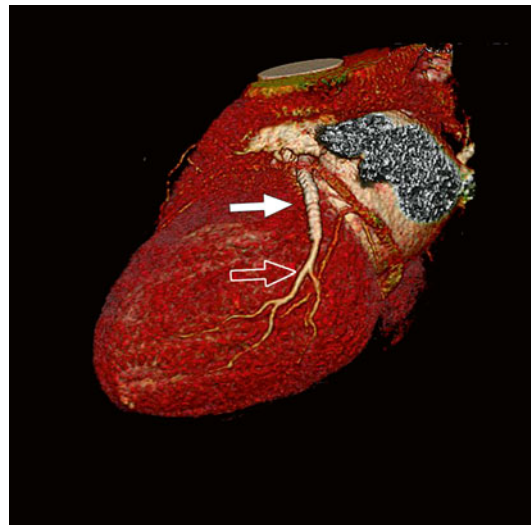
- 1. Aorta
- 2. R. circumflexus
- 3. A. coronaria dextra
- 4. Ventriculus sinister



**Fig. 4.96** 3D VRT colour reconstruction

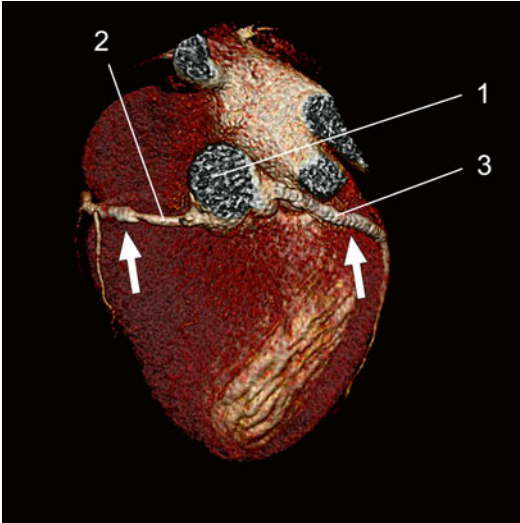
- 1. Aorta
- 2. A. coronaria dextra

*Full arrow* = calcified atherosclerotic plaque  
*Arrow with contour* = stent

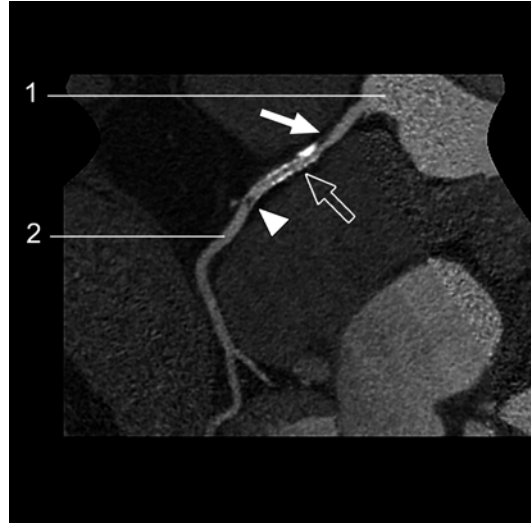


**Fig. 4.97** 3D VRT colour reconstruction

*Full arrow* = stent at the level of r. circumflexus  
*Arrow with contour* = r. marginalis sinister



**Fig. 4.98** 3D VRT colour reconstruction  
1. Aorta  
2. A. coronaria dextra  
3. R. circumflexus  
The *full arrow* indicates stents at the level of a. coronaria dextra and r. circumflexus

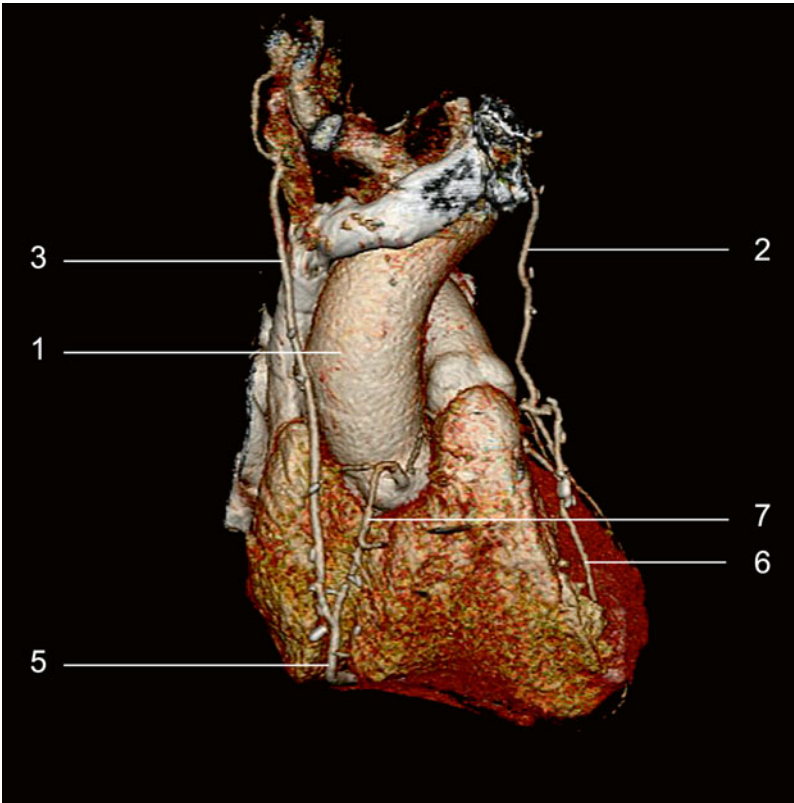


**Fig. 4.100** 3D MPR reconstruction  
1. Aorta  
2. A. coronaria dextra  
*Full arrow* = stenotic lesion proximal stent  
*Arrow with contour* = stenotic area in stent  
At the tip of the *arrow* = dissection area distally located from the stent confirmed by invasive angiography



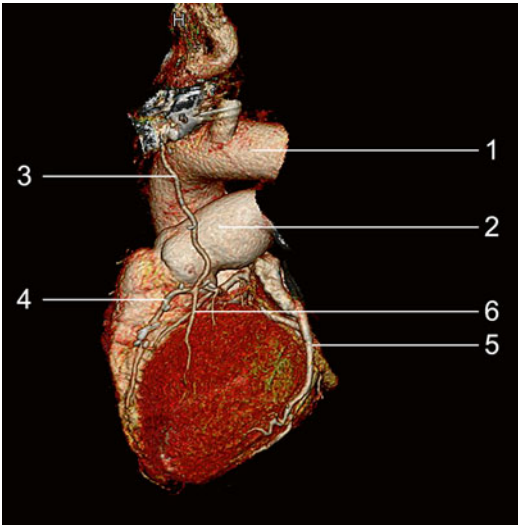
**Fig. 4.99** 3D MPR reconstruction  
1. Stents at the level of r. circumflexus  
2. R. marginalis sinister  
The *full arrow* indicates stent restenotic area

## 4.16 Coronary Bypass Evaluation



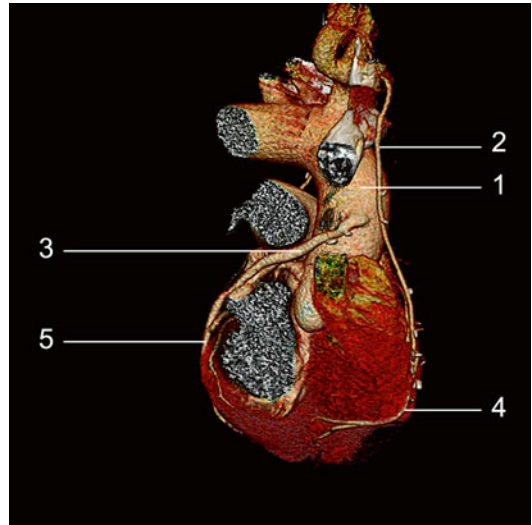
**Fig. 4.101** 3D VRT colour reconstruction after removal of the thoracic cage

1. Aorta
2. A. thoracica interna grafted at the level of r. interventricularis anterior
3. A. thoracica interna dextra grafted in the middle parts of a. coronaria dextra
4. Truncus a. pulmonalis
5. Post-anastomotic segment of a. coronaria dextra
6. Post-anastomotic segment of r. interventricularis posterior
7. Pars proximalis et media of a. coronaria dextra with occlusive lesions



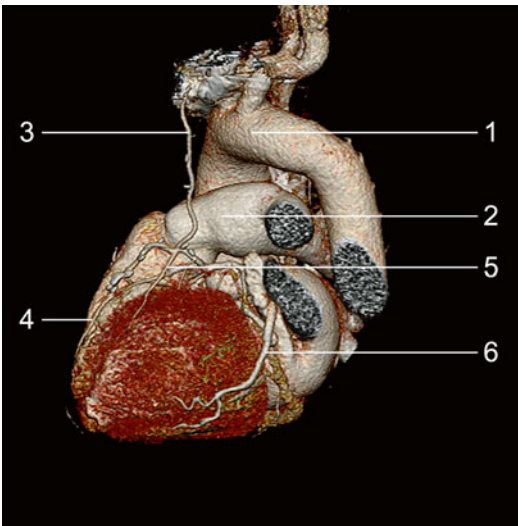
**Fig. 4.102** 3D VRT colour reconstruction after removal of the costal grill

1. Aorta
2. Truncus a. pulmonalis
3. A. thoracica interna sinistra
4. Post-anastomotic segment of r. interventricularis anterior
5. R. marginalis sinister
6. R. lateralis



**Fig. 4.104** 3D VRT colour reconstruction after removal of the thoracic cage

1. Aorta
2. A. thoracica interna dextra grafted to a. coronaria dextra
3. Saphenous venous graft to r. circumflexus
4. Pars distalis of a. coronaria dextra
5. R. marginalis sinister

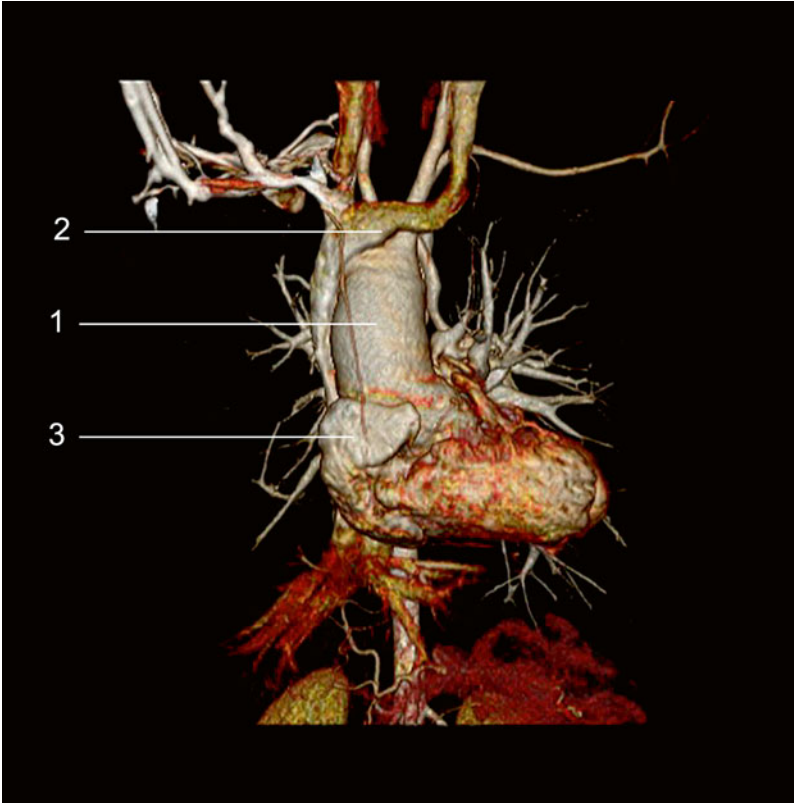


**Fig. 4.103** 3D VRT colour reconstruction after removal of the thoracic cage

1. Aorta
2. Truncus a. pulmonalis
3. A. thoracica interna sinistra grafted to r. interventricularis anterior
4. Pars distalis of r. interventricularis anterior
5. R. lateralis
6. R. marginalis sinister

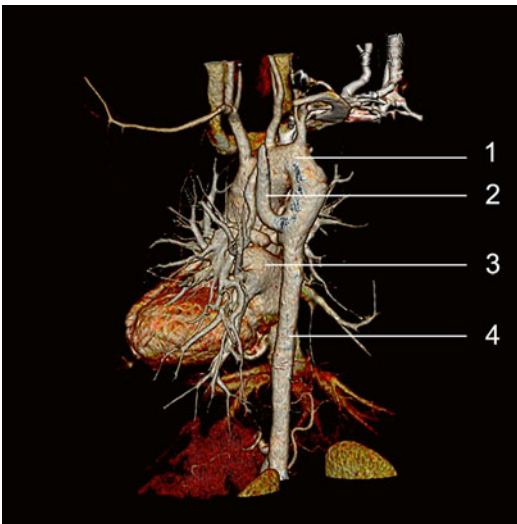


### 4.17 Fallot Tetralogy



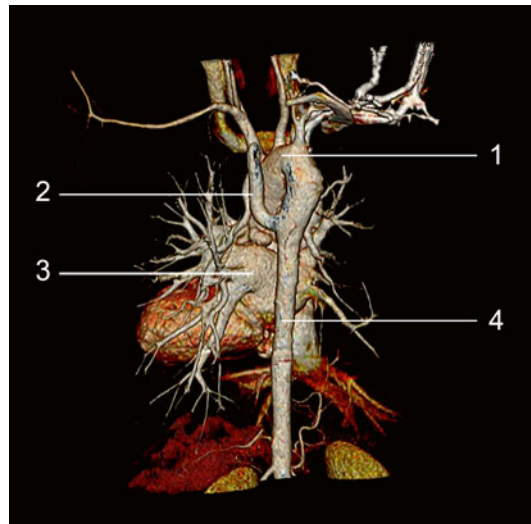
**Fig. 4.105** 3D VRT colour reconstruction

1. Aorta
2. Vena cava superior
3. Auricula dextra



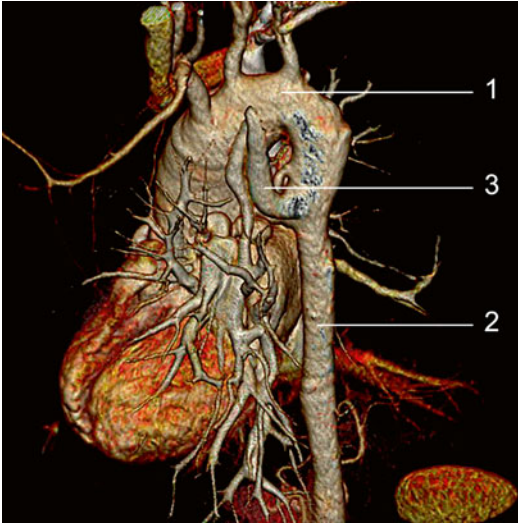
**Fig. 4.106** 3D VRT colour reconstruction

1. Arcus aortae
2. Colateralis aorto-pulmonalis
3. Atrium sinistrum
4. Aorta descendens



**Fig. 4.107** 3D VRT colour reconstruction

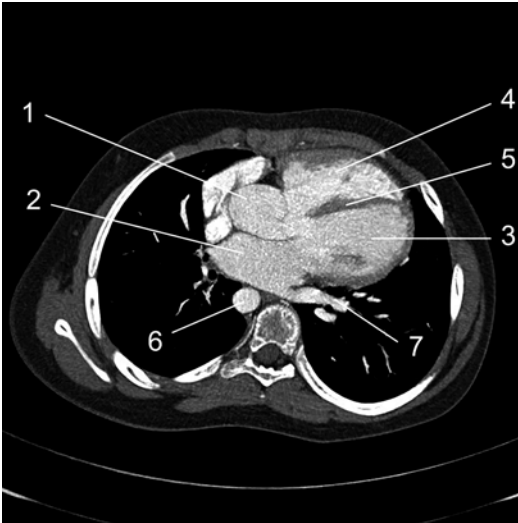
1. Arcus aortae
2. Colateralis aorto-pulmonalis
3. Atrium sinistrum
4. Aorta descendens



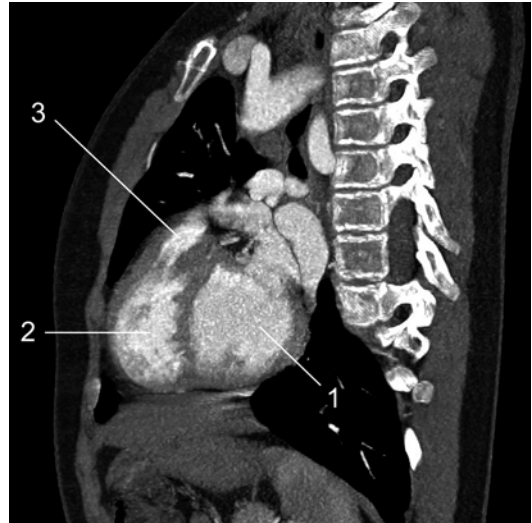
**Fig. 4.108** 3D VRT colour reconstruction  
 1. Arcus aortae with emergent vessels  
 2. Aorta descendens  
 3. Colateralis aorto-pulmonalis



**Fig. 4.110** 3D MIP reconstruction, axial plane  
 1. Aorta ascendens  
 2. Aorta descendens  
 3. Colateralis aorto-pulmonalis

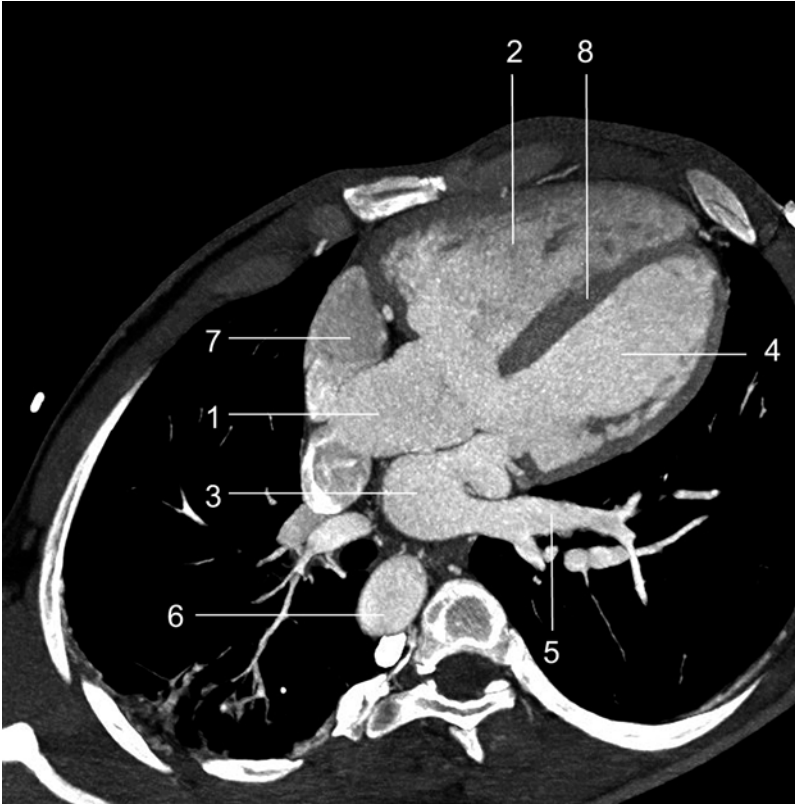


**Fig. 4.109** 3D MIP reconstruction 4CV  
 1. Aorta “riding” on the septum with predominant ventriculus dexter loading  
 2. Atrium sinistrum  
 3. Ventriculus sinister  
 4. Ventriculus dexter  
 5. Septum interventricularis  
 6. Aorta descendens  
 7. Vena pulmonalis



**Fig. 4.111** 3D MIP reconstruction  
 1. Ventriculus sinister  
 2. Ventriculus dexter  
 3. A. pulmonalis with severe stenosis over and under the valvae (indicated through *arrows*)

### 4.18 Fallot Tetralogy in an Adult Patient



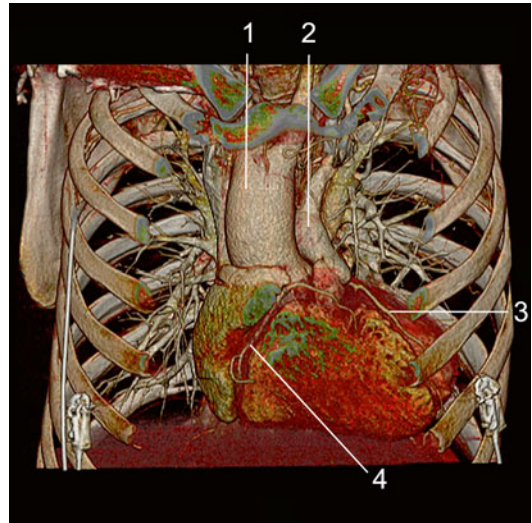
**Fig. 4.112** 3D MIP reconstruction

1. Aorta "riding" on the septum
2. Ventriculus dexter
3. Atrium sinistrum
4. Ventriculus sinister
5. Vena pulmonalis
6. Aorta descendens
7. Atrium dextrum
8. Septum interventricularis



**Fig. 4.113** 3D MIP colour reconstruction

1. Vena cava superior
2. Atrium dextrum
3. Aorta
4. Truncus a. pulmonalis
5. A. pulmonalis dextra
6. A. pulmonalis sinistra
7. Valva trunci pulmonalis
8. Stenosis area under the valvae



**Fig. 4.115** 3D VRT colour reconstruction

1. Aorta
2. A. pulmonalis
3. R. interventricularis anterior
4. A. coronaria dextra



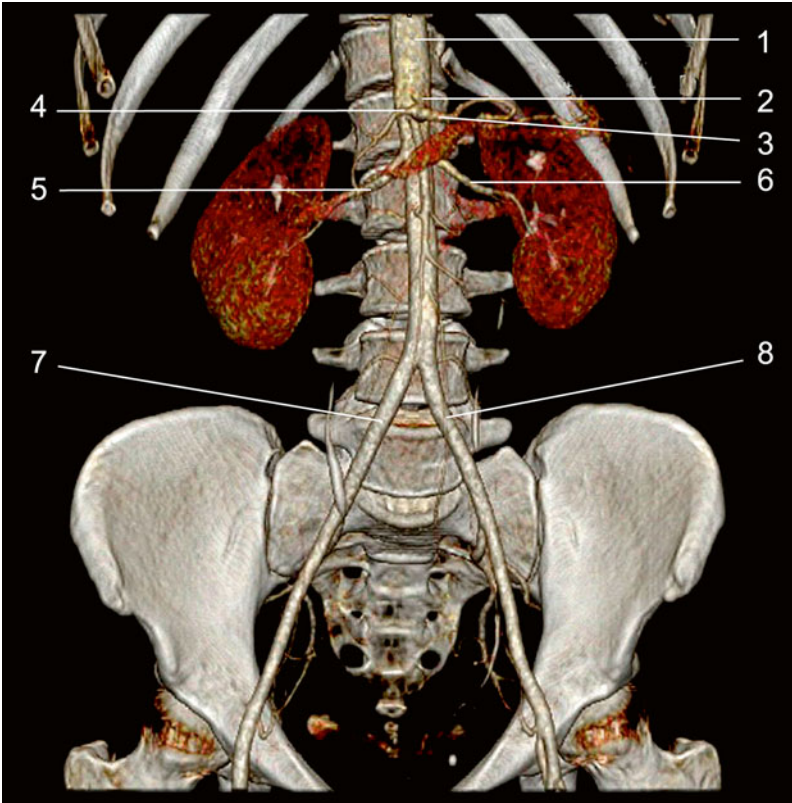
**Fig. 4.114** 3D MIP colour reconstruction

1. Vena cava superior
2. Atrium dextrum
3. Aorta
4. Truncus a. pulmonalis
5. Valva trunci pulmonalis
6. Stenotic area under the valve

## Contents

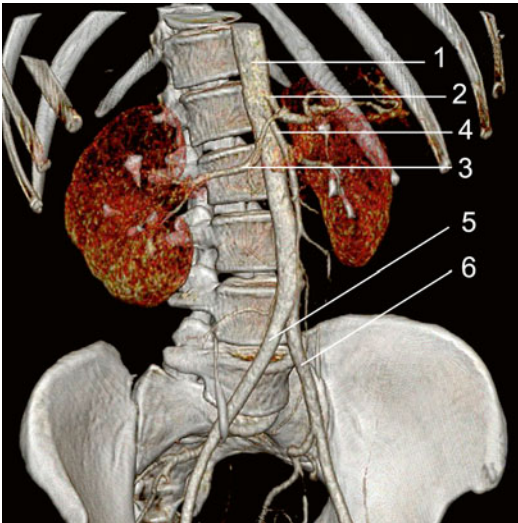
5.1	Normal Abdominal Angiography .....	132
5.2	Aneurysm of Truncus Coeliacus and Stenotic Lesion of A. Hepatica Communis.....	135
5.3	Left Renal Arteriovenous Fistula .....	137
5.4	Aorta Abdominalis Aneurysm with Aortoduodenal Fistula .....	140
5.5	Operated Aorta Abdominalis Aneurysm: Post-operative Complications .....	143
5.6	Stenosis of A. Renalis Sinistra.....	145
5.7	Right A. Renalis Dextra Occlusion Collateral Circulation for Renal Parenchyma .....	148
5.8	Dissection of Aorta Abdominalis .....	151
5.9	Separate Emergence of A. Hepatica Communis and A. Splenica Additional Polar Left Superior A. Renalis Sinistra.....	153
5.10	Multiple Aneurysms of A. Splenica Associated with Aneurysm of A. Renalis Dexter .....	156

## 5.1 Normal Abdominal Angiography



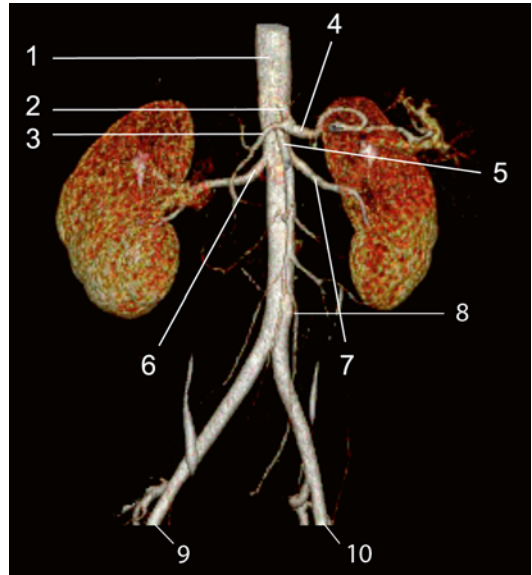
**Fig. 5.1** 3D VRT colour reconstruction frontal plane

1. Aorta abdominalis
2. Truncus coeliacus
3. A. splenica
4. A. hepatica communis
5. A. renalis dextra
6. A. renalis sinistra
7. A. iliaca communis dextra
8. A. iliaca communis sinistra



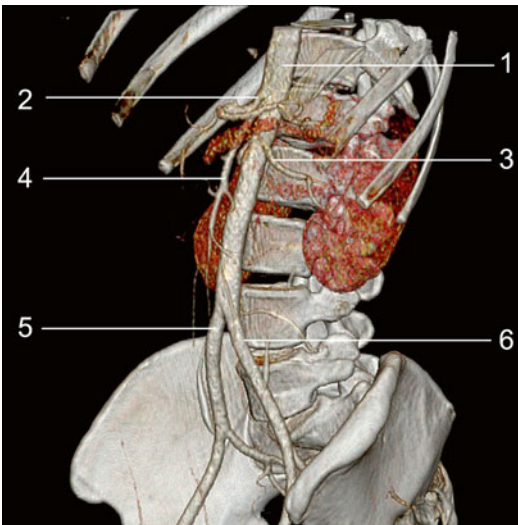
**Fig. 5.2** 3D VRT colour reconstruction right, anterior oblique plane

1. Aorta abdominalis
2. Truncus coeliacus
3. A. renalis dextra
4. A. mesenterica superior
5. A. iliaca communis dextra
6. A. iliaca communis sinistra



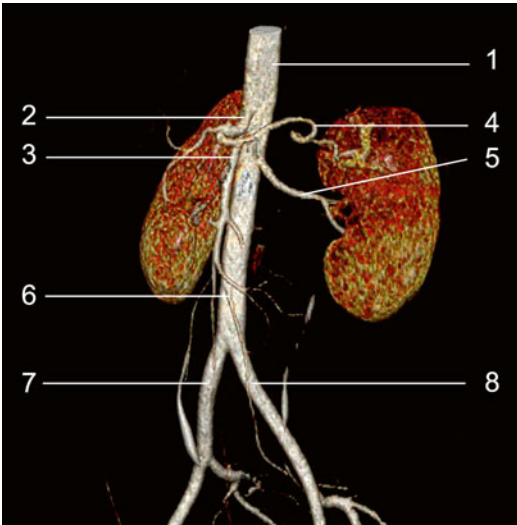
**Fig. 5.4** 3D VRT colour reconstruction left, after removal of the bone structure

1. A. abdominalis
2. Truncus coeliacus
3. A. hepatica communis
4. A. splenica
5. A. mesenterica superior
6. A. renalis dextra
7. A. renalis sinistra
8. A. mesenterica inferior
9. A. iliaca communis
10. A. iliaca communis



**Fig. 5.3** 3D VRT colour reconstruction left, anterior oblique plane

1. Aorta abdominalis
2. Truncus coeliacus
3. A. renalis sinistra
4. A. mesenterica superior
5. A. iliaca communis dextra
6. A. iliaca communis sinistra



**Fig. 5.5** 3D VRT colour reconstruction left, after removal of the bone structure

1. A. abdominalis
2. Truncus coeliacus
3. A. mesenterica superior
4. A. splenica
5. A. renalis sinistra
6. A. mesenterica inferior
7. A. iliaca communis
8. A. iliaca communis

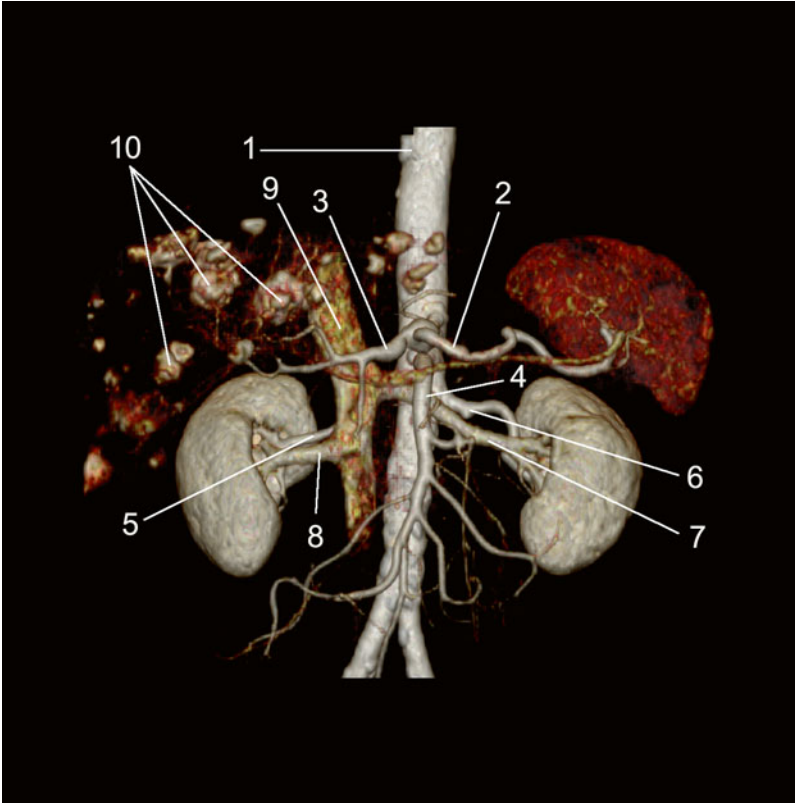


**Fig. 5.6** 3D VRT colour reconstruction left, after removal of the bone structure, posterior plane

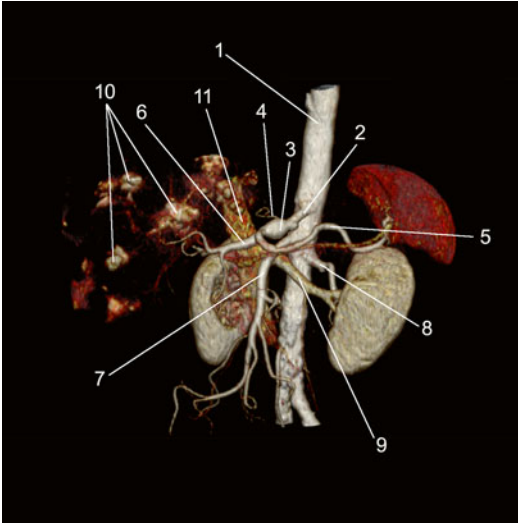
1. A. abdominalis
2. A. splenica
3. A. hepatica communis
4. A. renalis sinistra
5. A. renalis dextra
6. A. iliaca communis
7. A. iliaca communis



## 5.2 Aneurysm of Truncus Coeliacus and Stenotic Lesion of A. Hepatica Communis

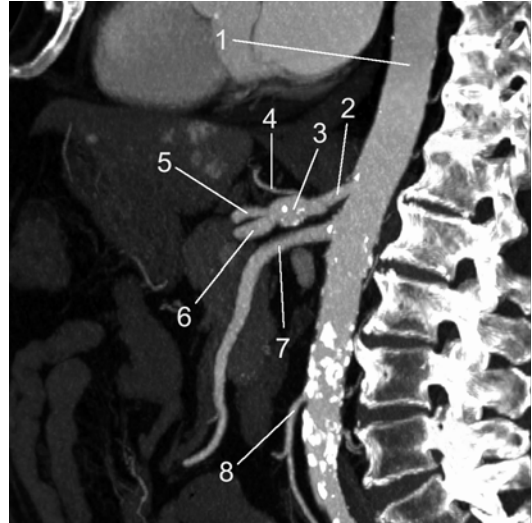


**Fig. 5.7** 3D VRT reconstruction frontal view  
1. Aorta  
2. A. splenica  
3. A. hepatica communis  
4. A. mesenterica superior  
5. A. renalis dexter  
6. A. renalis sinister  
7. V. renalis sinister  
8. V. renalis dexter  
9. V. cava inferior  
10. Hepatic haemangiomas



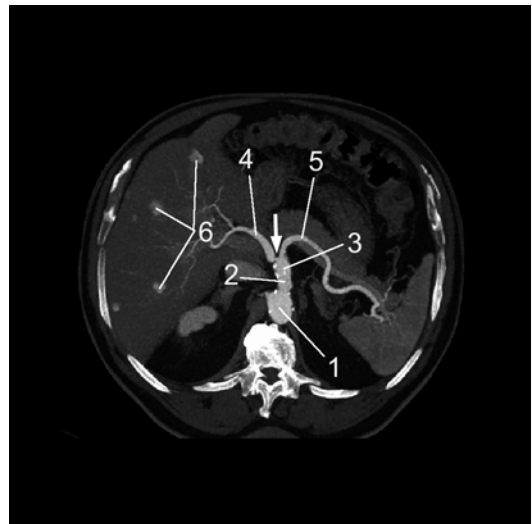
**Fig. 5.8** 3D VRT reconstruction anterolateral view

1. Aorta
2. Truncus coeliacus
3. Aneurysm of truncus coeliacus
4. A. gastrica sinistra
5. A. splenica
6. A. hepatica communis
7. A. mesenterica superior
8. A. renalis sinistra
9. V. renalis sinistra
10. Haemangiomas of the liver
11. V. cava inferior



**Fig. 5.9** 3D MIP reconstruction, sagittal plane

1. Aorta
2. Truncus coeliacus
3. Aneurysm of truncus coeliacus, with calcified plaques
4. A. gastrica sinistra
5. A. splenica
6. A. hepatica communis
7. A. mesenterica superior
8. A. mesenterica inferior

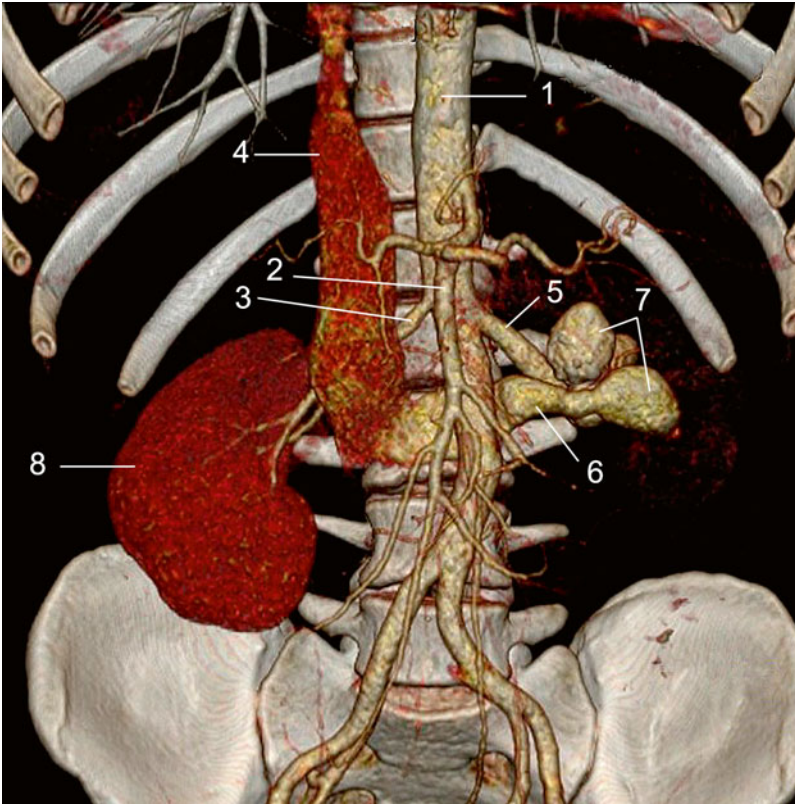


**Fig. 5.10** 3D MIP reconstruction, transversal plane

1. Aorta
2. Truncus coeliacus
3. Aneurysm of truncus coeliacus
4. A. hepatica communis
5. A. splenica
6. Haemangiomas of the liver

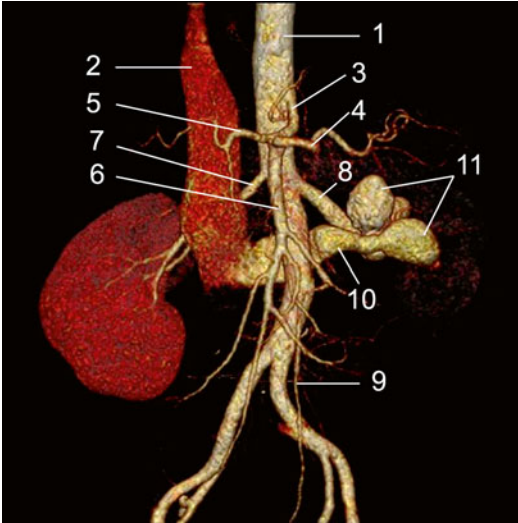
The *full arrow* indicates stenotic lesion of a. hepatica communis

### 5.3 Left Renal Arteriovenous Fistula



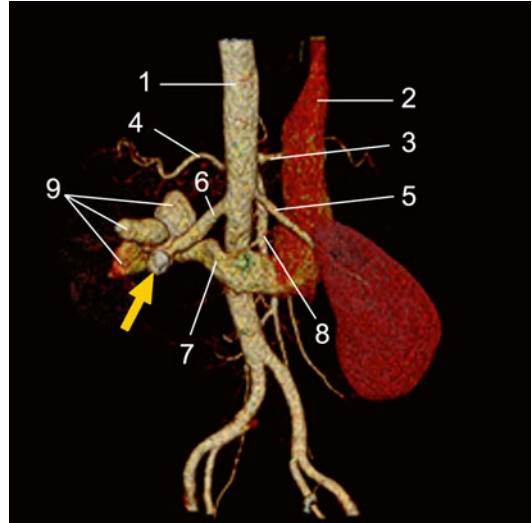
**Fig. 5.11** 3D VRT colour reconstruction

1. Aorta abdominalis
2. A. mesenterica superior
3. A. renalis dextra
4. Vena cava inferior
5. A. renalis sinistra
6. Vena renalis sinistra
7. Aneurysmal dilatations on the renal arteriovenous fistula's course
8. Normal vascularisation of the right kidney – absence of vascularisation of the left renal parenchyma can be observed



**Fig. 5.12** 3D VRT colour reconstruction after removal of the bone structure

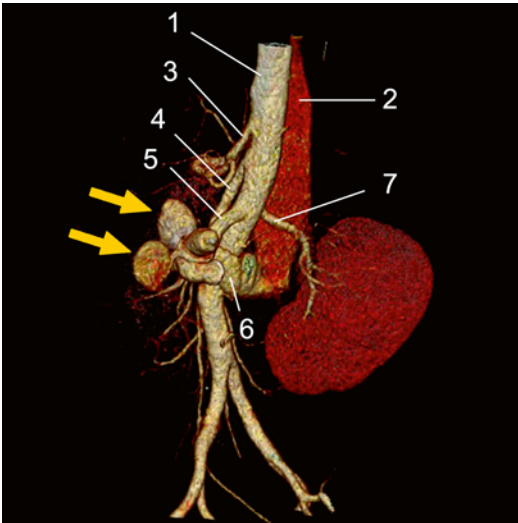
1. Aorta
2. Vena cava inferior
3. Truncus coeliacus
4. A. splenica
5. A. hepatica
6. A. mesenterica superior
7. A. renalis dextra
8. A. renalis sinistra
9. A. mesenterica inferior
10. Vena renalis sinistra with retroaortic course
11. Aneurysmal dilatations on the left renal arteriovenous fistula's course



**Fig. 5.13** 3D VRT colour reconstruction after removal of the bone structure, posterior plane

1. Aorta
2. Vena cava inferior
3. A. hepatica
4. A. splenica
5. A. renalis dextra
6. A. renalis sinistra
7. Vena renalis sinistra with retroaortic course
8. A. mesenterica superior
9. Aneurysmal dilatations on the fistula's course

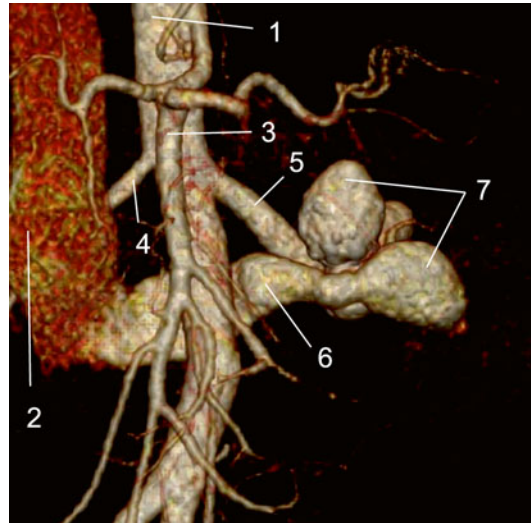
*Full arrow* indicates calcification of fistula wall



**Fig. 5.14** 3D VRT colour reconstruction after removal of the bone structure

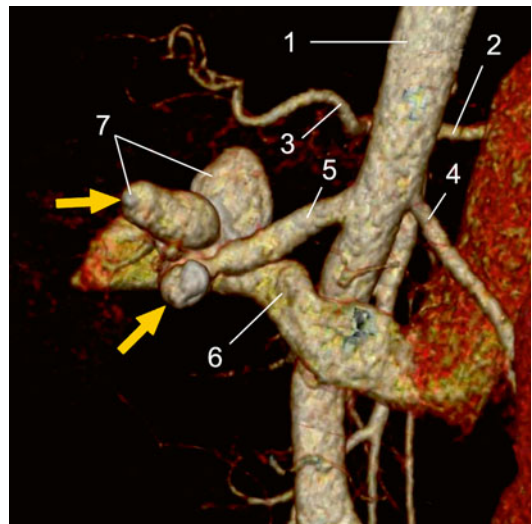
1. Aorta
2. Vena cava inferior
3. Truncus coeliacus
4. A. mesenterica superior
5. A. renalis sinistra
6. Vena renalis sinistra
7. A. renalis dextra

The *full arrow* indicates aneurysmal dilated fistula course



**Fig. 5.15** 3D VRT colour reconstruction anterior frontal plane (enlarged image)

1. Aorta
2. Vena cava inferior
3. A. mesenterica superior
4. A. renalis dextra
5. A. renalis sinistra
6. Vena renalis sinistra
7. Aneurysmal dilatations on the fistula's course



**Fig. 5.16** 3D VRT colour reconstruction posterior frontal plane (enlarged image)

1. Aorta
2. A. hepatica
3. A. splenica
4. A. renalis dextra
5. A. renalis sinistra
6. V. renalis sinistra
7. Aneurysmal dilatations of fistula with calcified plaques marked through *full arrows*

#### 5.4 Aorta Abdominalis Aneurysm with Aortoduodenal Fistula



**Fig. 5.17** 3D MIP reconstruction frontal plane

1. Aneurysmal dilated aortic lumen
2. Thrombosis area of the aneurysm

The *full arrow* indicates aneurysm with parietal calcifications



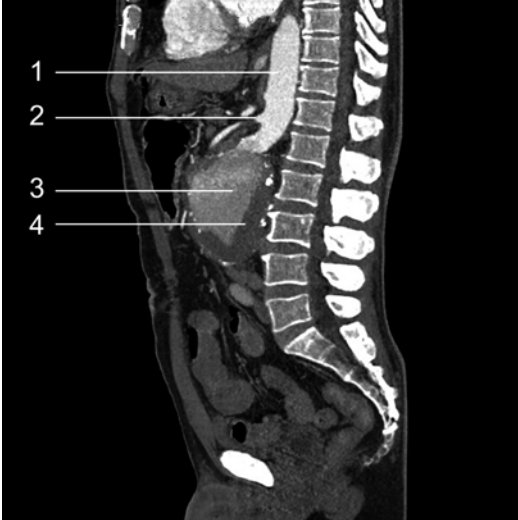
**Fig. 5.18** 3D MIP reconstruction frontal plane

1. Aneurysmal dilated aortic lumen
2. Emergence and pars proximalis a. renalis dextra
3. Thrombotic area
4. A. iliaca communis
5. A. iliaca communis



**Fig. 5.20** 3D MIP reconstruction sagittal plane

1. Aneurysmal dilated aorta
2. Mural thrombosis of aneurysm
3. A. iliaca communis



**Fig. 5.19** 3D MIP reconstruction sagittal plane

1. Aorta abdominalis
2. A. mesenterica superior
3. Aneurysm dilated at the level of aorta abdominalis
4. Mural thrombosis area



**Fig. 5.21** 3D MIP reconstruction sagittal plane

1. Aneurysmal dilated aorta
2. Parietal thrombosis
3. Fistulas course at the aneurysm level which communicated with duodenum

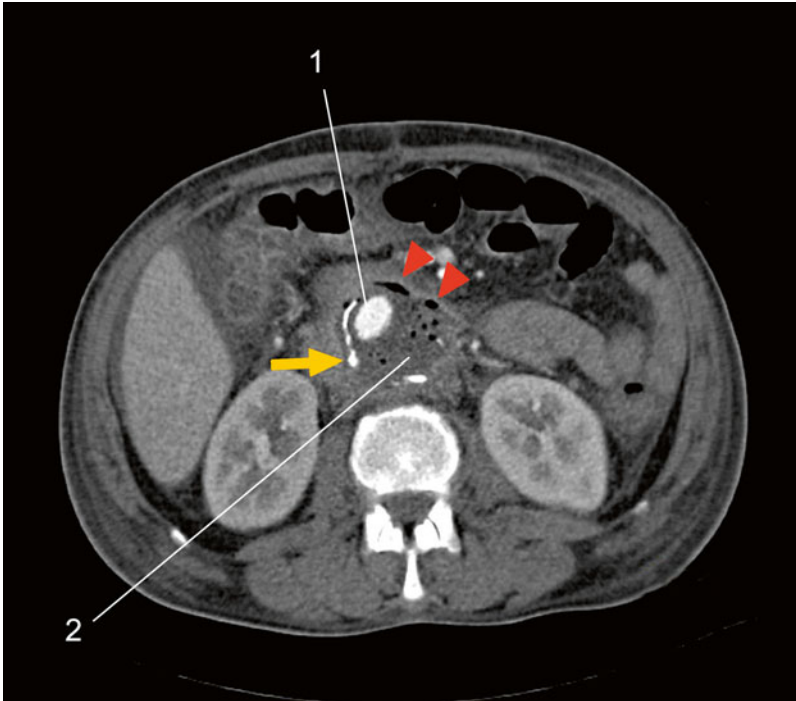


**Fig. 5.22** 3D MIP reconstruction sagittal plane

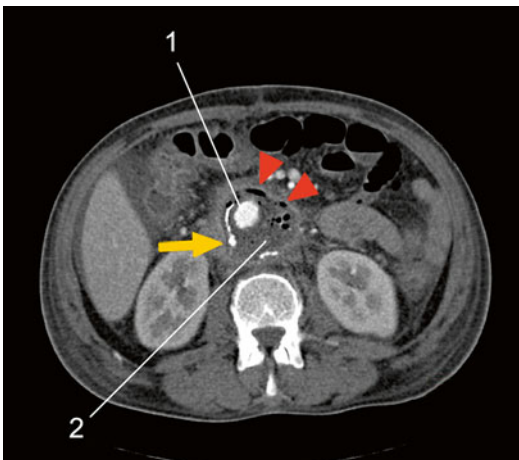
1. Aneurysmal dilated aorta
2. Parietal thrombosis
3. Fistulas course



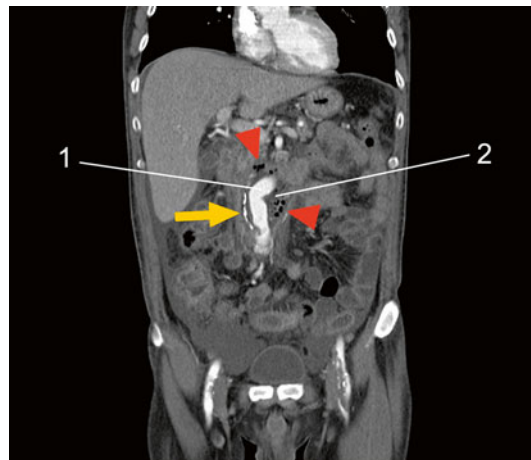
### 5.5 Operated Aorta Abdominalis Aneurysm: Post-operative Complications



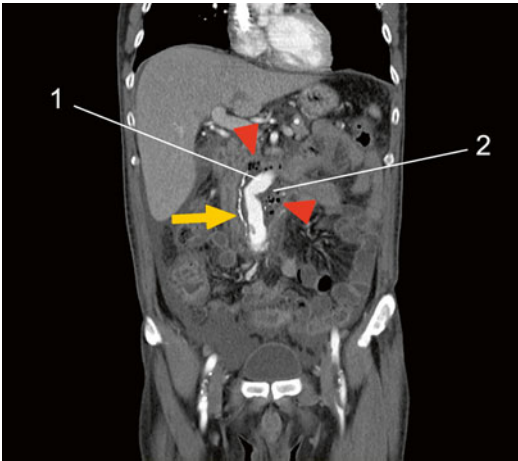
**Fig. 5.23** 3D MIP reconstruction axial plane  
 1. Lumen of aortic graft  
 2. Periprosthetic haematoma  
*Full arrow* = calcified plaques of the aortic wall  
 The *tip of the arrows* = indicate presence of gas bubbles at the level of periprosthetic haematoma suggesting over-infection



**Fig. 5.24** 3D MIP reconstruction axial plane  
 1. Lumen of aortic graft  
 2. Periprosthetic haematoma  
*Full arrow* = calcified plaques of the aortic wall  
 The *tip of the arrows* = indicate presence of gas bubbles at the level of periprosthetic haematoma suggesting over-infection



**Fig. 5.25** 3D MIP reconstruction frontal plane  
 1. Lumen of aortic graft  
 2. Periprosthetic haematoma  
*Full arrow* = calcified plaques of the aortic wall  
 The *tip of the arrows* = indicate presence of gas bubbles at the level of periprosthetic haematoma suggesting over-infection

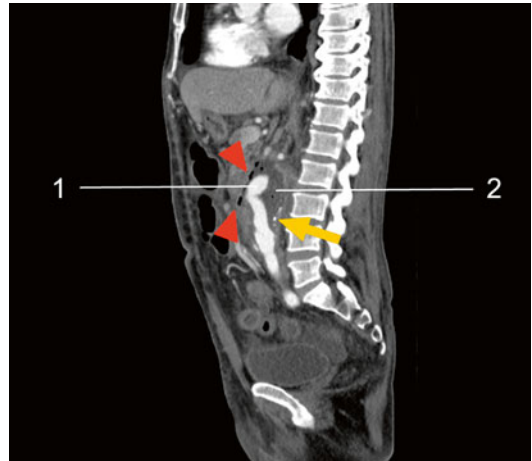


**Fig. 5.26** 3D MIP reconstruction frontal plane

1. Lumen of aortic graft
2. Periprosthetic haematoma

*Full arrow* = calcified plaques of the aortic wall

*The tip of the arrows* = indicate presence of gas bubbles at the level of periprosthetic haematoma suggesting over-infection

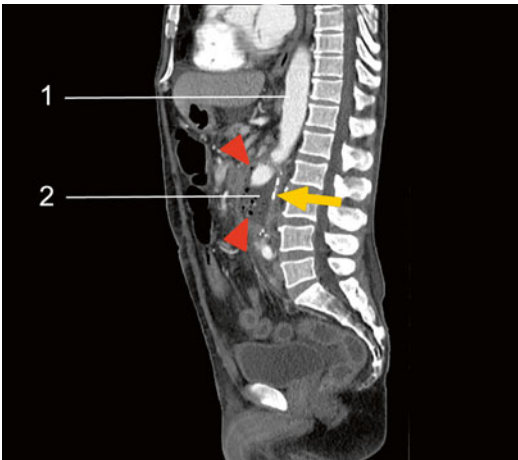


**Fig. 5.28** 3D MIP reconstruction sagittal plane

1. Lumen of aortic graft
2. Periprosthetic haematoma

*Full arrow* = calcified plaques of the aortic wall

*The tip of the arrows* = indicate presence of gas bubbles at the level of periprosthetic haematoma suggesting over-infection



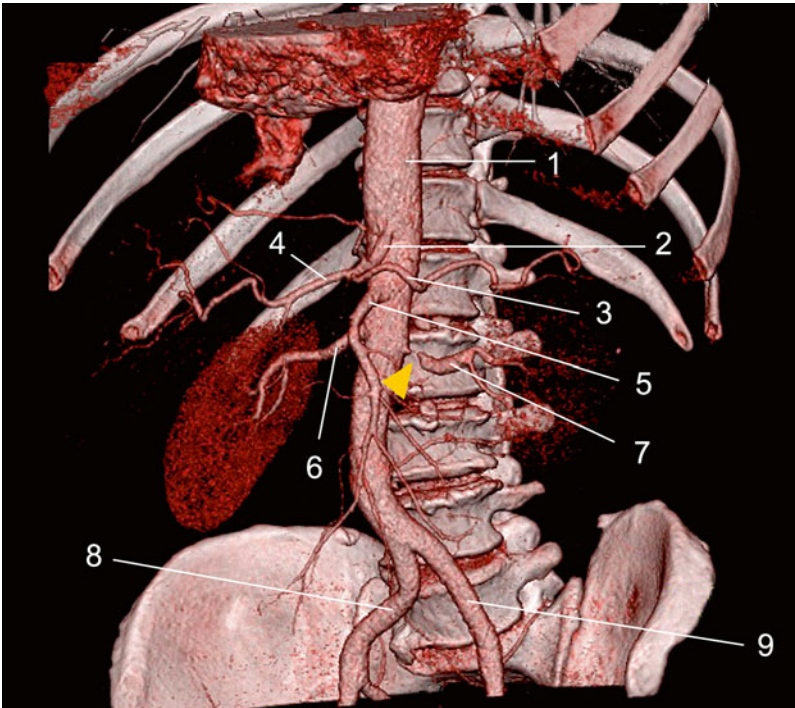
**Fig. 5.27** 3D MIP reconstruction sagittal plane

1. Lumen of aortic graft
2. Periprosthetic haematoma

*Full arrow* = calcified plaques of the aortic wall

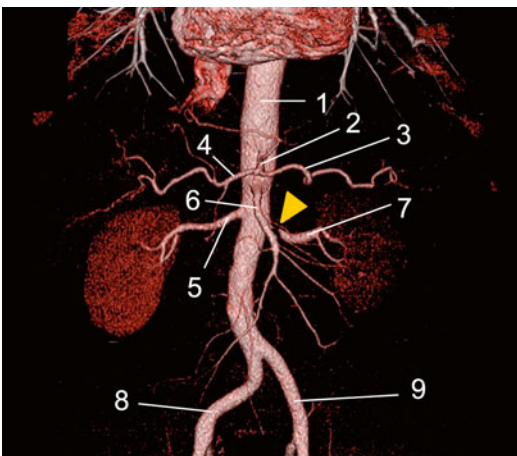
*The tip of the arrows* = indicate presence of gas bubbles at the level of periprosthetic haematoma suggesting over-infection

### 5.6 Stenosis of A. Renalis Sinistra



**Fig. 5.29** 3D VRT colour reconstruction after removal of the bone structure

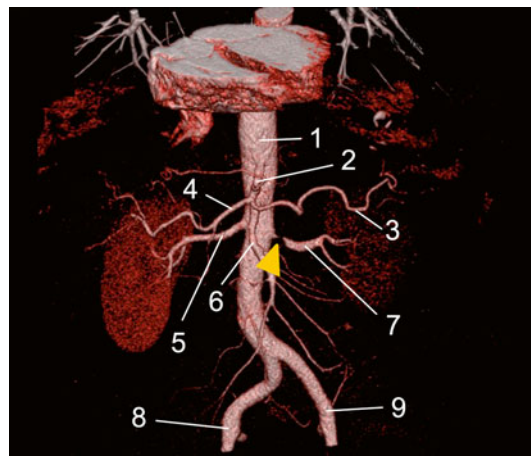
1. Aorta abdominalis
  2. Truncus coeliacus
  3. A. splenica
  4. A. hepatica
  6. A. renalis dextra
  7. A. renalis sinistra
  8. A. iliacae comunae
  9. A. iliacae comunae
- The *tip of the arrows* indicate severe ostial stenotic area



**Fig. 5.30** 3D VRT colour reconstruction after removal of the bone structure

1. Aorta abdominalis
2. Truncus coeliacus
3. A. splenica
4. A. hepatica
6. A. renalis dextra
7. A. renalis sinistra
8. A. iliacae comunae
9. A. iliacae comunae

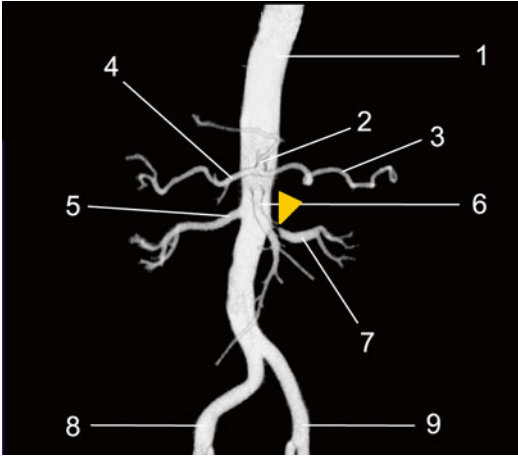
The *tip of the arrows* indicate severe ostial stenotic area



**Fig. 5.31** 3D VRT colour reconstruction after removal of the bone structure

1. Aorta abdominalis
2. Truncus coeliacus
3. A. splenica
4. A. hepatica
6. A. renalis dextra
7. A. renalis sinistra
8. A. iliacae comunae
9. A. iliacae comunae

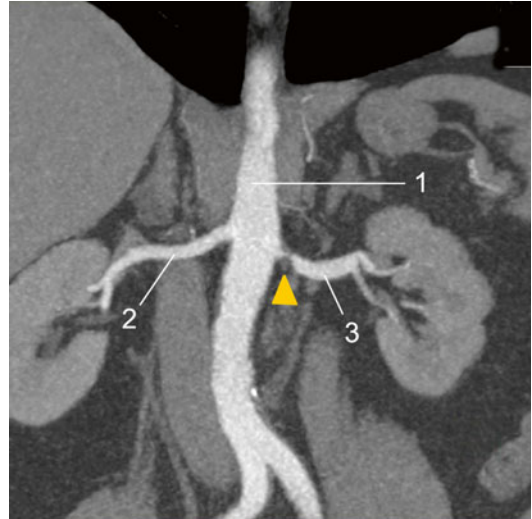
The *tip of the arrows* indicate severe ostial stenotic area



**Fig. 5.32** 3D MIP reconstruction after removal of the bone structure

1. Aorta abdominalis
2. Truncus coeliacus
3. A. splenica
4. A. hepatica
6. A. renalis dextra
7. A. renalis sinistra
8. A. iliaca comuna
9. A. iliaca comuna

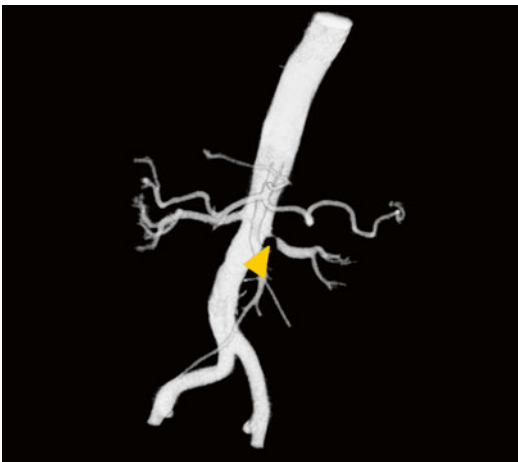
The *tip of the arrows* indicate severe ostial stenotic area



**Fig. 5.34** 3D MIP reconstruction, frontal plane

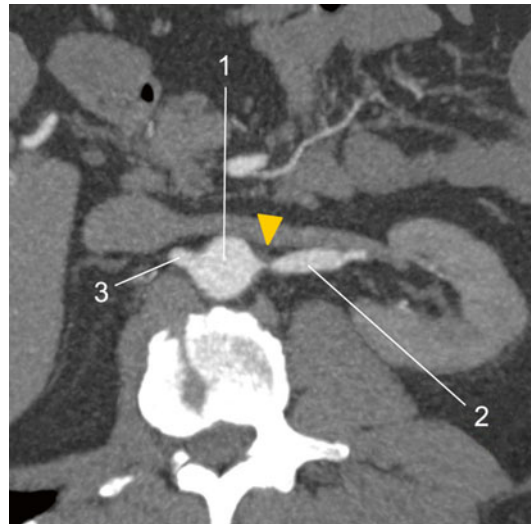
1. Aorta
2. A. renalis dextra
3. A. renalis sinistra

The *tip of the arrows* indicate severe stenotic area



**Fig. 5.33** 3D VRT reconstruction

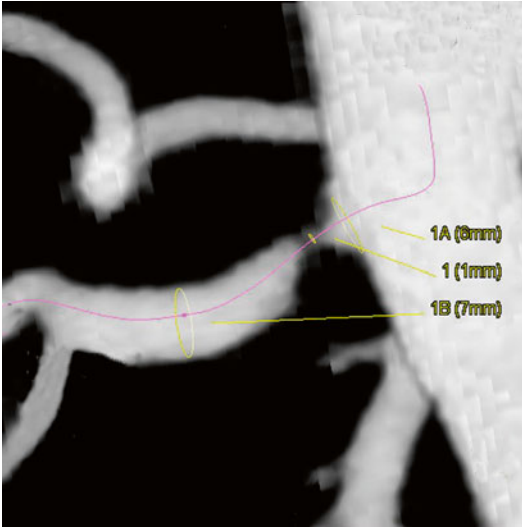
The *full arrow* indicates severe stenosis of a. renalis sinistra



**Fig. 5.35** 3D MIP reconstruction, frontal plane

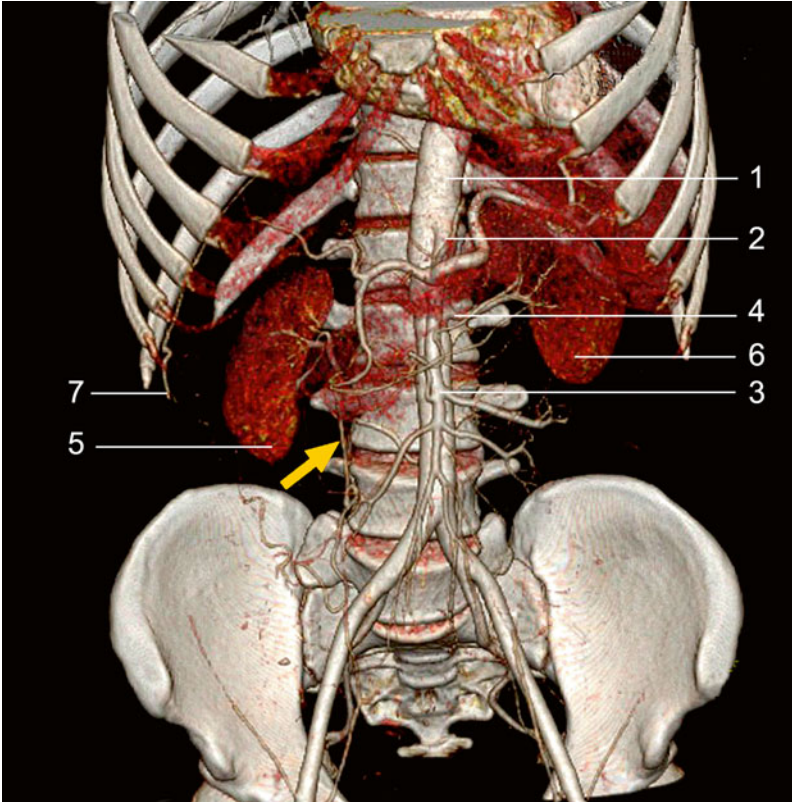
1. Aorta
2. A. renalis dextra
3. A. renalis sinistra

The *tip of the arrows* indicate severe stenotic area



**Fig. 5.36** Determination of stenosis grade

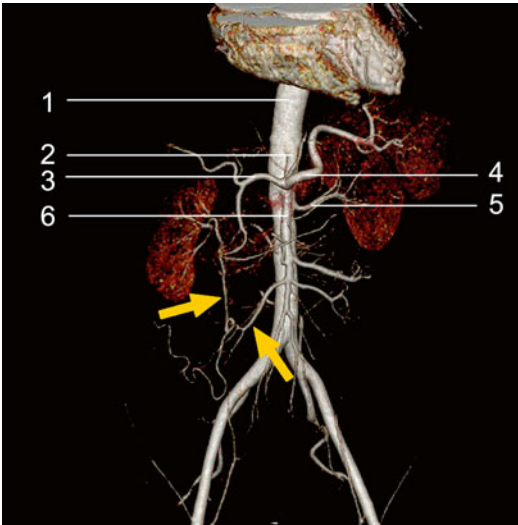
### 5.7 Right A. Renalis Dextra Occlusion Collateral Circulation for Renal Parenchyma



**Fig. 5.37** 3D VRT colour reconstruction

1. Aorta
2. Truncus coeliacus
3. A. mesenterica superior
4. A. renalis sinistra
5. Ren dextra
6. Ren sinistra
7. A. intercostalis from which hilum renale irrigating collateral develops

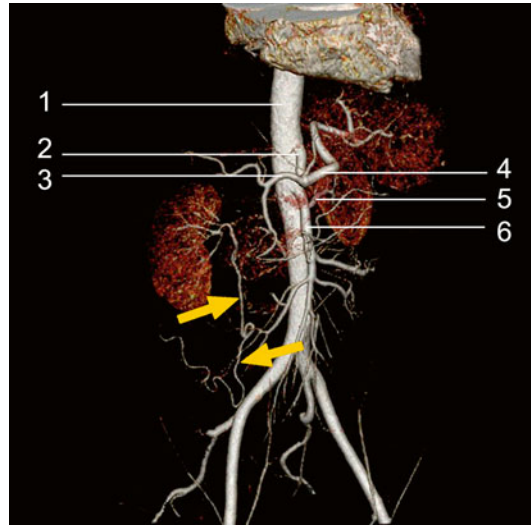
The *full arrow* indicates ren dextra vascularised through collateral arteries



**Fig. 5.38** 3D VRT colour reconstruction, after removal of the bone structure

1. Aorta
2. Truncus coeliacus
3. A. hepatica communis
4. A. splenica
5. A. renalis sinistra
6. A. mesenterica superior

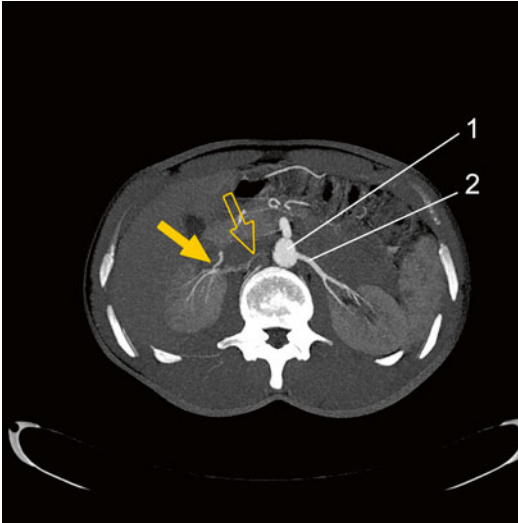
The *arrow* indicates ren dextra vascularised through col-lateral arteries



**Fig. 5.39** 3D VRT colour reconstruction, transversal plane

1. Aorta
2. Truncus coeliacus
3. A. hepatica communis
4. A. splenica
5. A. renalis sinistra
6. A. mesenterica superior

The *arrow* indicates ren dextra vascularised through col-lateral arteries



**Fig. 5.40** 3D MIP reconstruction, coronal plane

1. Aorta
2. A. renalis sinistra

*Full arrow* = vascularised hilum renale dextra

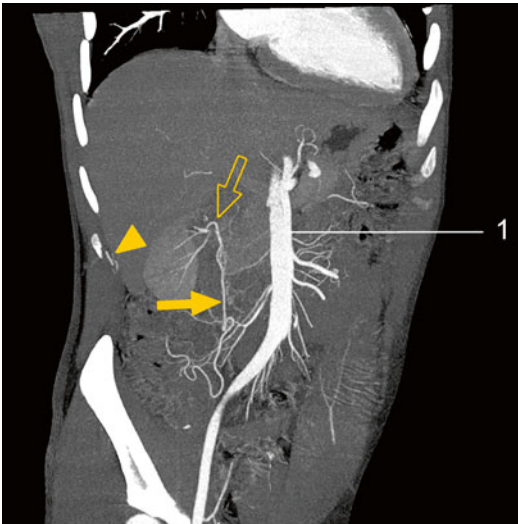
*Arrow with contour* = a. renalis dextra with chronic occlusion from the emergence



**Fig. 5.42** 3D MIP reconstruction, coronal plane

1. Aorta

The *arrows* indicate collateral course to hilum renale dextra



**Fig. 5.41** 3D MIP reconstruction, coronal plane

1. Aorta

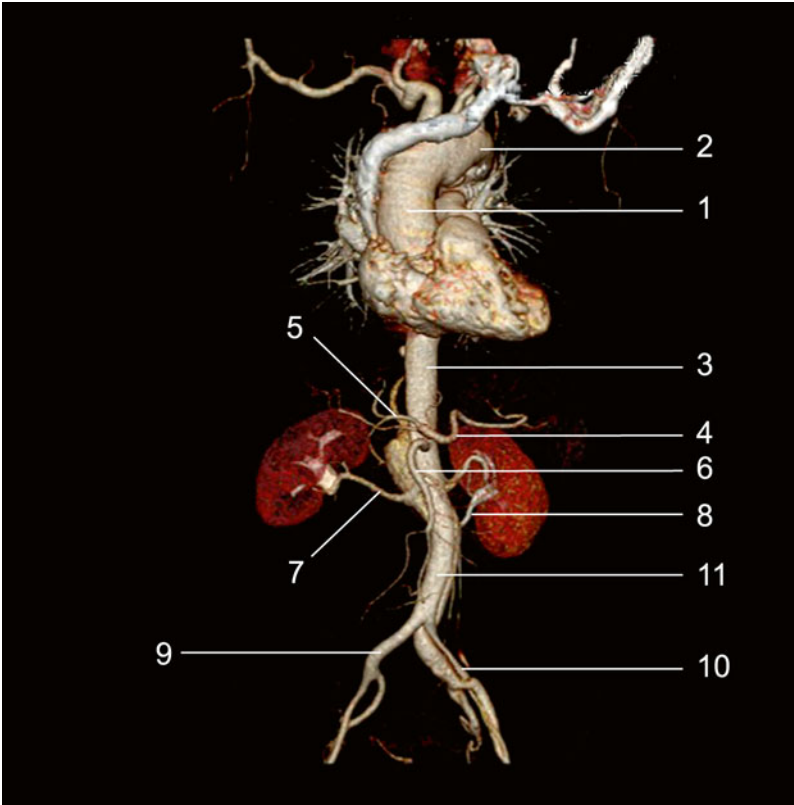
*Full arrow* = collateral with ascending course to hilum renale dextra

*Arrow with contour* = vascularised hilum renale dextra

The *tip of the arrow* = a. intercostalis from which collateral develops

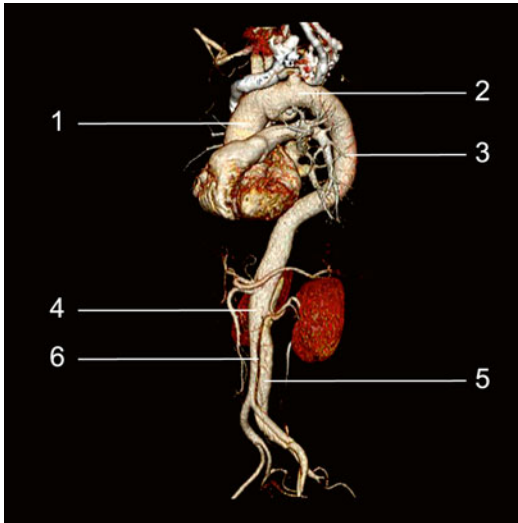


## 5.8 Dissection of Aorta Abdominalis



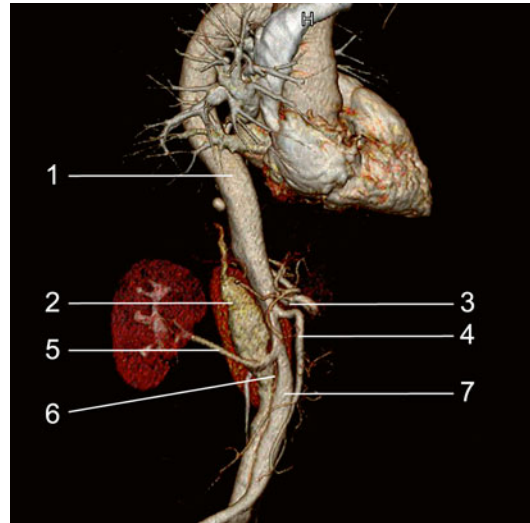
**Fig. 5.43** 3D VRT colour reconstruction after removal of the bone structure

1. Aorta ascendens
2. Arcus aortae
3. Aorta descendens
4. A. splenica
5. A. hepatica
6. A. mesenterica superior
7. A. renalis dextra
8. A. renalis sinistra
9. A. iliaca communis dextra
10. A. iliaca communis sinistra with dissection fold
11. True lumen



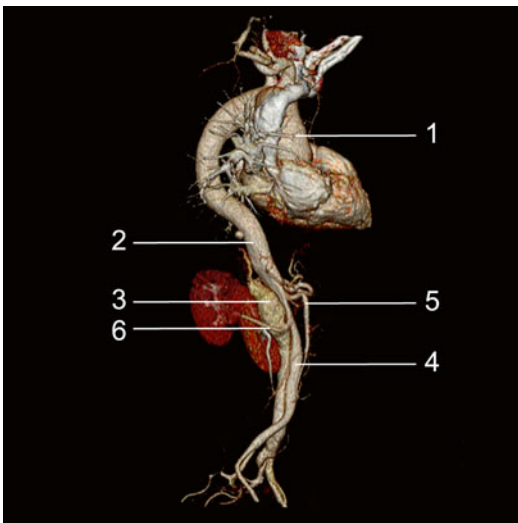
**Fig. 5.44** 3D VRT colour reconstruction

1. Aorta ascendens
2. Arcus aortae
3. Aorta thoracica
4. True lumen of aorta abdominalis
5. False lumen
6. Dissection fold



**Fig. 5.46** 3D VRT colour reconstruction

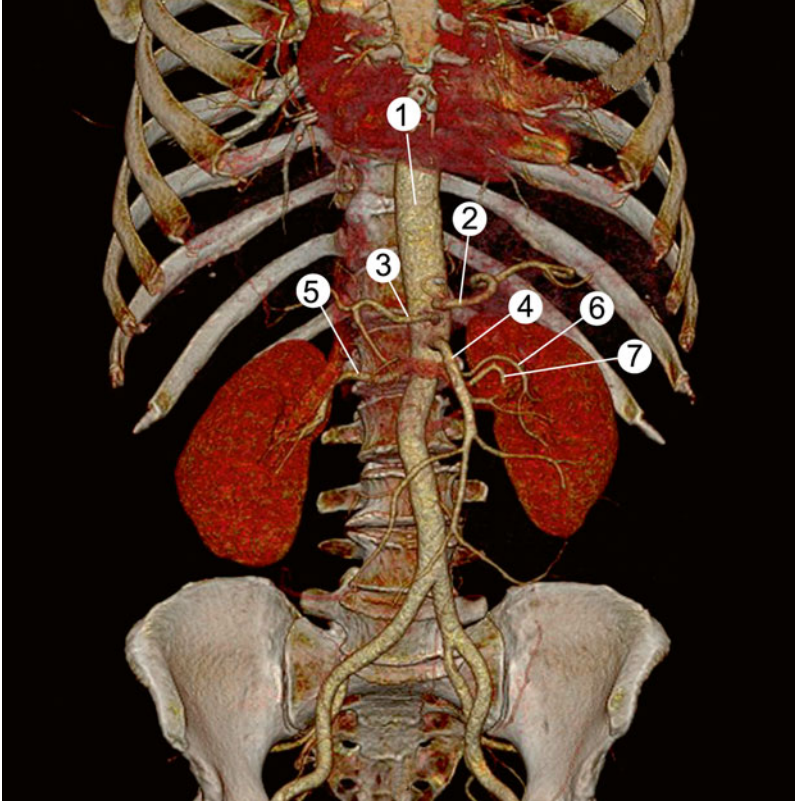
1. Aorta ascendens
2. Aorta descendens
3. False lumen
4. True lumen of aorta abdominalis
5. A. mesenterica superior
6. A. renalis dextra
7. True lumen



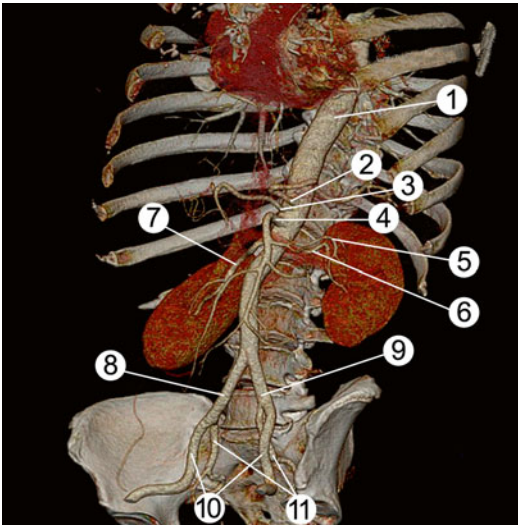
**Fig. 5.45** 3D VRT colour reconstruction

1. Aorta abdominalis
2. False lumen
3. From the lumen emerges the iliac trunk
4. A. mesenterica superior
5. From the true lumen emerges a. renalis dextra
6. Dissection fold

**5.9 Separate Emergence of A. Hepatica Communis and A. Splenica Additional Polar Left Superior A. Renalis Sinistra**

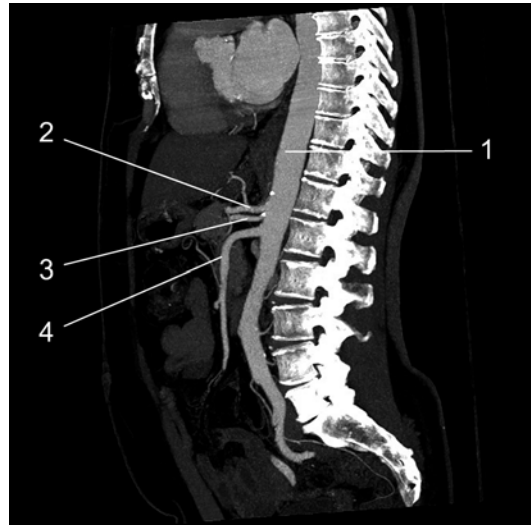


**Fig. 5.47** 3D VRT colour reconstruction  
1. Aorta  
2. A. splenica  
3. A. hepatica communis  
4. A. mesenterica superior  
5. A. renalis dextra  
6. Additional a. renalis sinistra  
7. A. renalis sinistra



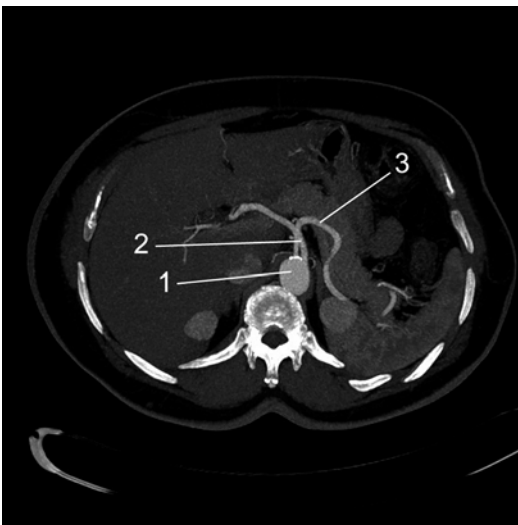
**Fig. 5.48** 3D VRT colour reconstruction

1. Aorta
2. Separate emergence of a. splenica from the aorta abdominalis
3. A. hepatica communis with independent aortic emergence
4. A. mesenterică superior
5. Additional polar left inferior a. renalis
6. A. renalis sinistra
7. A. renalis dextra
8. A. iliaca communa
9. A. iliaca communa
10. A. iliaca externa
11. A. iliaca interna



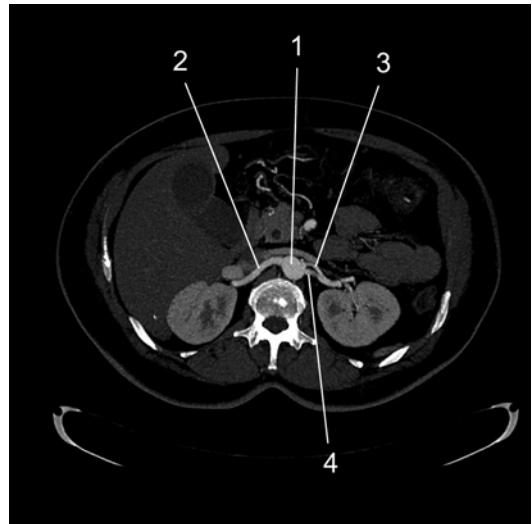
**Fig. 5.50** 3D MIP reconstruction, sagittal plane

1. Aorta
2. A. splenica
3. A. hepatica communis
4. A. mesenterica superior



**Fig. 5.49** 3D MIP reconstruction, transversal plane

1. Aorta
2. A. hepatica communis
3. A. splenica



**Fig. 5.51** 3D MIP reconstruction, axial plane

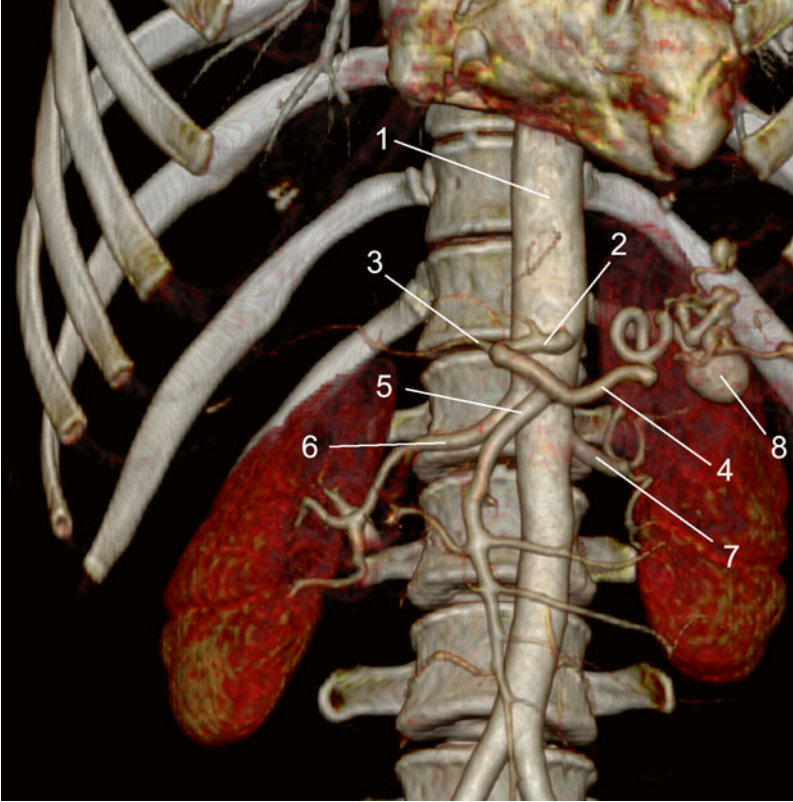
1. Aorta
2. A. renalis dextra
3. Additional polar left inferior a. renalis
4. A. renalis sinistra



**Fig. 5.52** 3D MIP reconstruction, axial plane

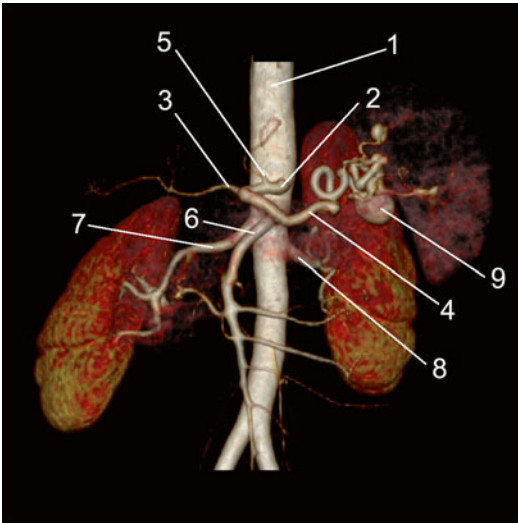
- 1. Aorta
- 2. A. renalis dextra
- 3. Additional polar left inferior a. renalis
- 4. A. renalis sinistra

### 5.10 Multiple Aneurysms of A. Splenica Associated with Aneurysm of A. Renalis Dexter



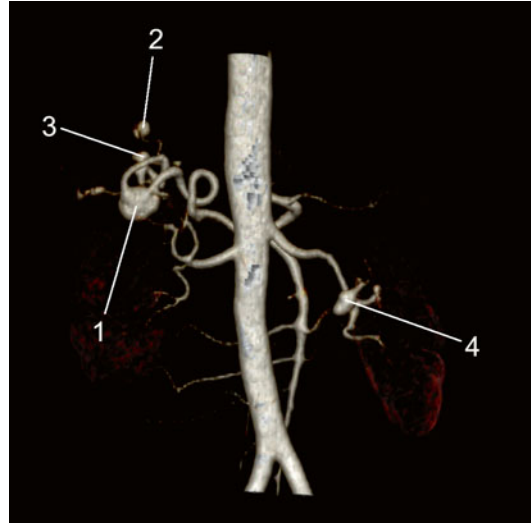
**Fig. 5.53** 3D VRT reconstruction, frontal plane

1. Aorta
2. Truncus coeliacus
3. A. hepatica communis
4. A. splenica
5. A. mesenterica superior
6. A. renalis dextra
7. A. renalis sinistra
8. Aneurysm of a. splenica



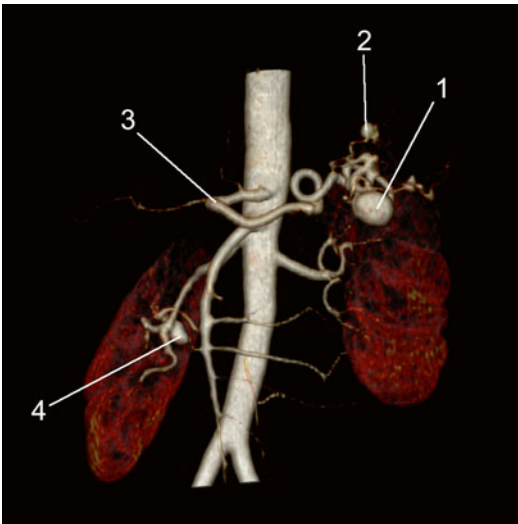
**Fig. 5.54** 3D VRT reconstruction, frontal plane, after removal of bony structures

1. Aorta
2. Truncus coeliacus
3. A. hepatica communis
4. A. splenica
5. A. gastrica sinistra
6. A. mesenterica superior
7. A. renalis dextra
8. A. renalis sinistra
9. Aneurysms of a. splenica



**Fig. 5.56** 3D VRT reconstruction, posterior view

1. Aneurysms of a. splenica
2. Aneurysms of a. splenica
3. Aneurysms of a. splenica
4. Aneurysm of a. renalis dextra



**Fig. 5.55** 3D VRT reconstruction, anterolateral view

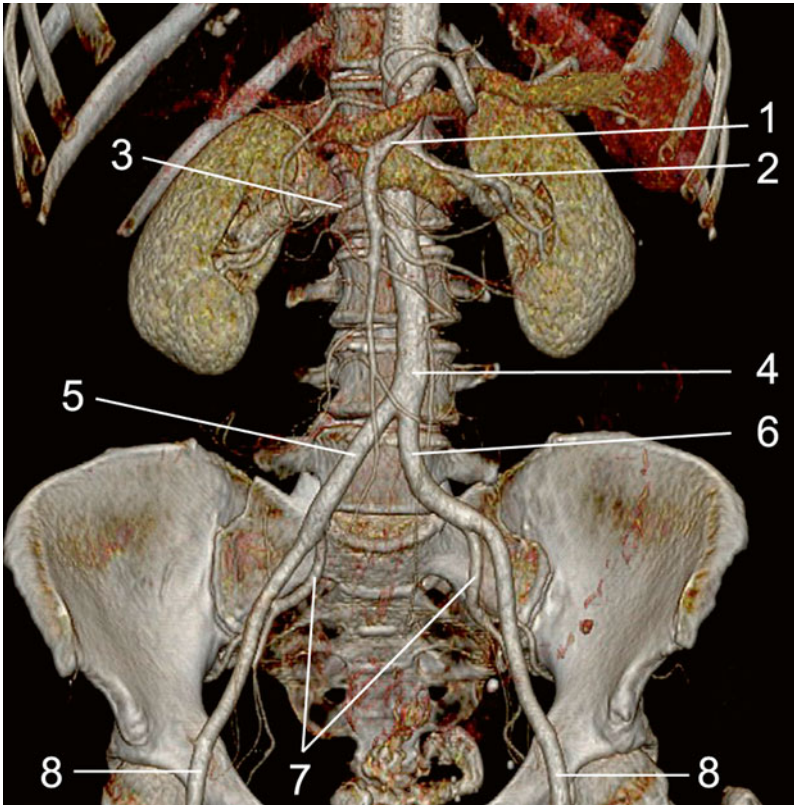
1. Aneurysms of a. splenica
2. Aneurysms of a. splenica
3. Aneurysms of a. splenica
4. Aneurysm of a. renalis dextra

**Contents**

6.1	<b>Normal Peripheral Angiography</b> .....	160
6.2	<b>Leriche Syndrome</b> .....	165
6.3	<b>Leriche Syndrome Axillobifemoral Bypass</b> .....	167
6.4	<b>Leriche Syndrome Aortobifemoral and Femoropopliteal Graft</b> .....	170
6.5	<b>Aortobifemoral Graft and Aneurysms at the Level of Anastomosis</b> .....	174
6.6	<b>Right Arm Occlusion of the Aortobifemoral Graft</b> .....	177
6.7	<b>Right Femoro-fibular Graft: Occlusion of the Left Lower Limb Arteries</b> .....	179
6.8	<b>Iliac and Femoral Stents: In-Stent Restenosis</b> .....	182
6.9	<b>Iliac and Femoral Stents: Occluded Iliac Stents</b> .....	185
6.10	<b>Autoimmune Vasculitis</b> .....	187
6.11	<b>Tumour of the Leg</b> .....	190
6.12	<b>Giant Tumour of the Thigh</b> .....	192
6.13	<b>CT Angiography of the Right Upper Limb: Occlusion of the Arteria Radialis Dextra</b> .....	194
6.14	<b>Arteriovenous Malformation in Deltoid Region</b> .....	196
6.15	<b>CTA Run-Off: Incidental Finding</b> .....	198

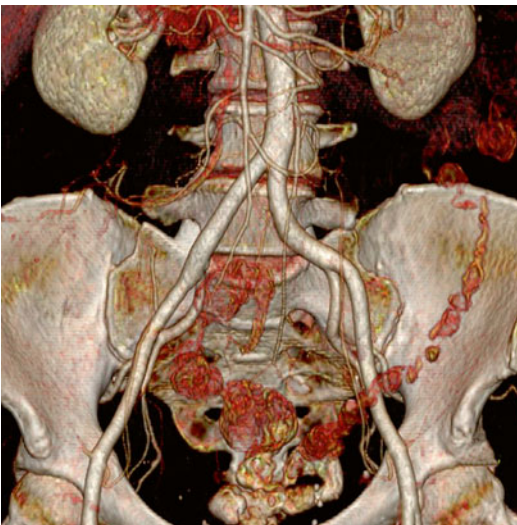


### 6.1 Normal Peripheral Angiography

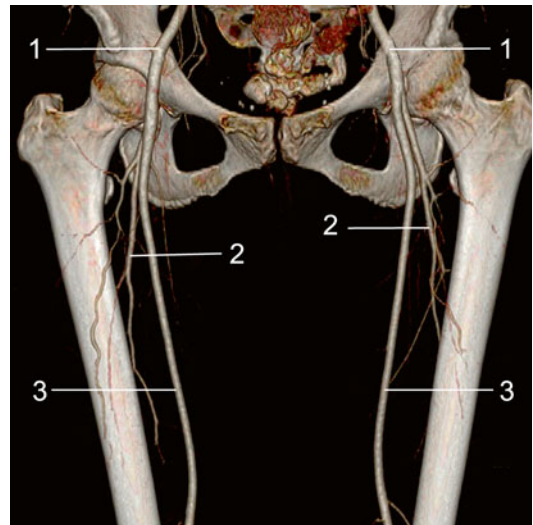


**Fig. 6.1** 3D VRT colour reconstruction, enlarged image

1. A. mesenterica superior
2. A. renalis sinistra
3. A. renalis dextra
4. Aorta abdominalis
5. A. iliaca communae
6. A. iliaca interna
7. A. iliaca externa
8. A. iliaca externa



**Fig. 6.2** 3D VRT colour reconstruction, bifurcatio aortae

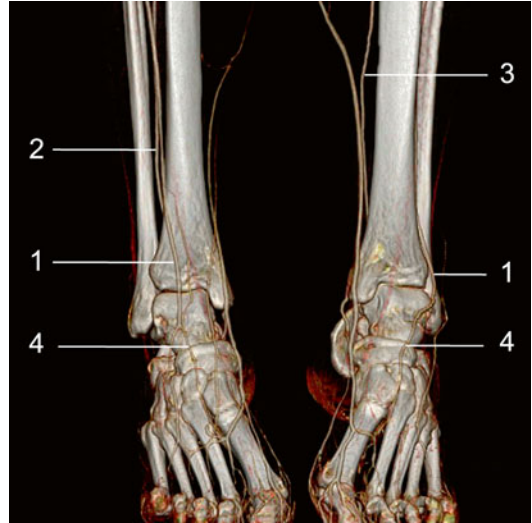


**Fig. 6.3** 3D VRT colour reconstruction

1. A. iliaca externa
2. A. profunda femoris
3. A. femoralis



**Fig. 6.4** 3D VRT reconstruction, a. femoralis pars distalis



**Fig. 6.6** 3D VRT reconstruction

- 1. A. tibialis anterior
- 2. A. peronea
- 3. A. tibialis posterior
- 4. A. dorsalis pedis



**Fig. 6.5** 3D VRT reconstruction

- 1. A. tibialis anterior
- 2. A. peronea

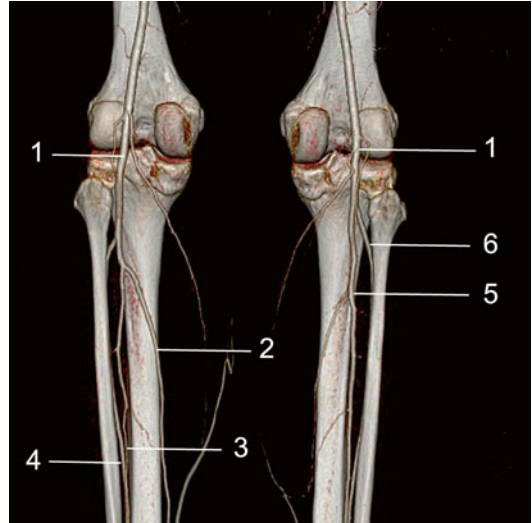


**Fig. 6.7** 3D VRT reconstruction at the level of dorsum pedis

- 1. A. tibialis anterior pars distalis
- 2. A. dorsalis pedis



**Fig. 6.8** 3D VRT reconstruction with visualisation of regio dorsalis pedis



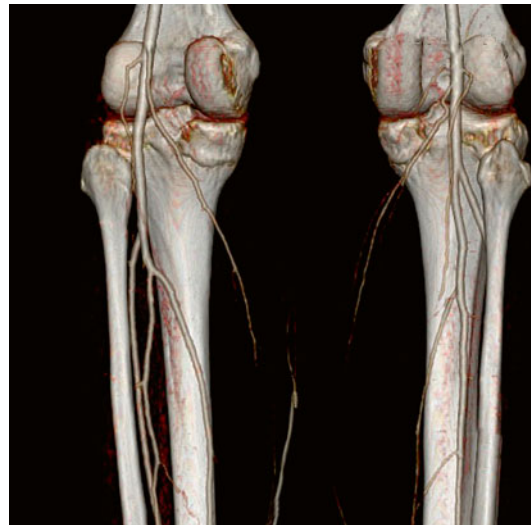
**Fig. 6.10** 3D VRT reconstruction regio cruris and fossa poplitea

1. A. poplitea
2. A. tibialis posterior sinistra
3. A. peronea sinistra
4. A. tibialis anterior sinistra
5. A. peronea dextra
6. A. tibialis anterior dextra



**Fig. 6.9** 3D VRT colour reconstruction posterior image at the level of regio cruris

1. A. tibialis posterior sinistra
2. A. peronea sinistra
3. A. tibialis anterior sinistra
4. A. tibialis anterior dextra
5. A. peronea magna
6. Hypoplastic a. tibialis posterior dextra



**Fig. 6.11** 3D VRT reconstruction at the level of fossa poplitea, enlarged image



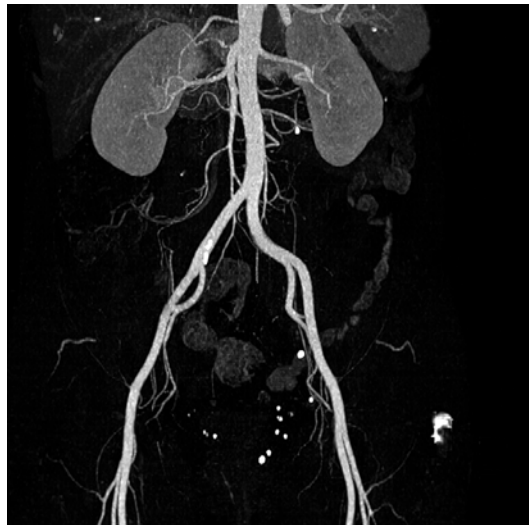
**Fig. 6.12** 3D VRT reconstruction at the level of fossa poplitea and 1/3 distal part of crus with visualisation of a. femoralis



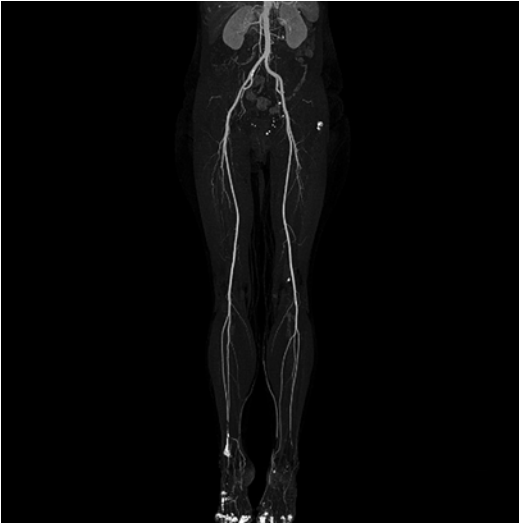
**Fig. 6.14** 3D VRT reconstruction after removal of the bone structure, visualisation of a. femoralis and a. profunda femoris



**Fig. 6.13** 3D VRT reconstruction at the level of 1/3 medialis part of crus with visualisation of a. profunda femoris

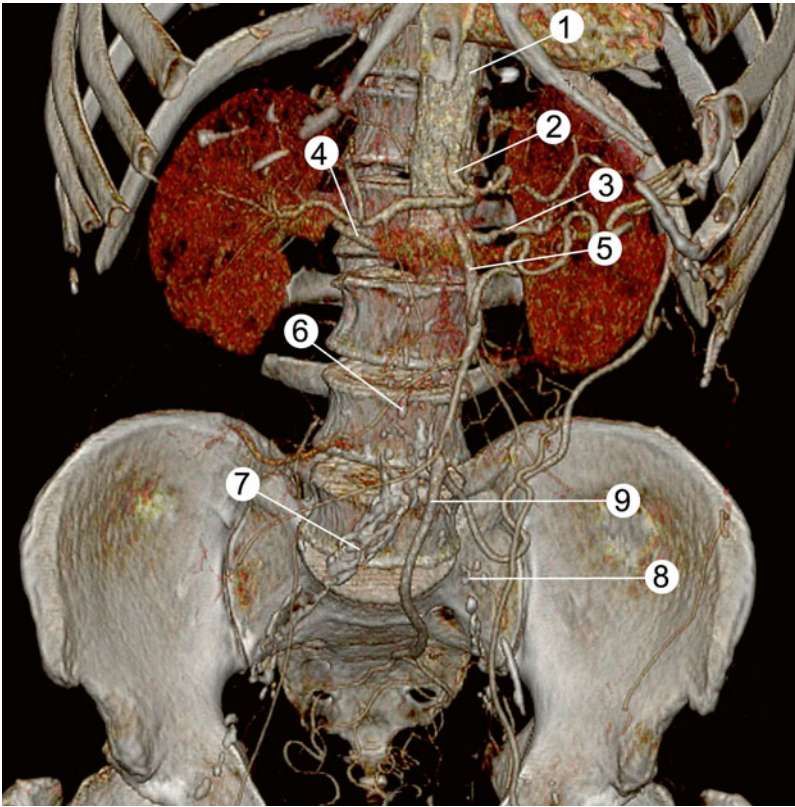


**Fig. 6.15** 3D VRT reconstruction after removal of the bone structure, at the level of abdomen with visualisation of bifurcation aortae and a. iliacae and a. femoralis



**Fig. 6.16** 3D VRT reconstruction after removal of the bone structure

## 6.2 Leriche Syndrome

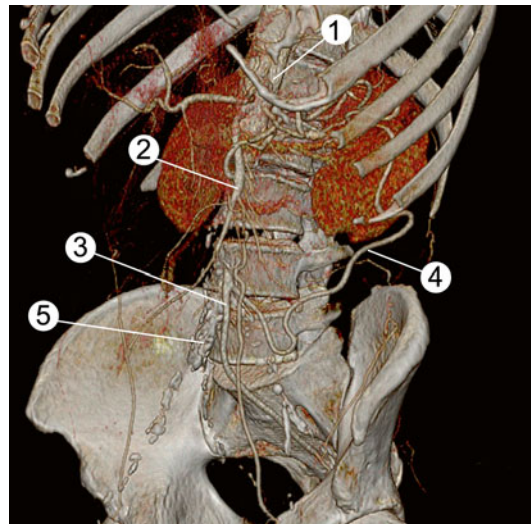


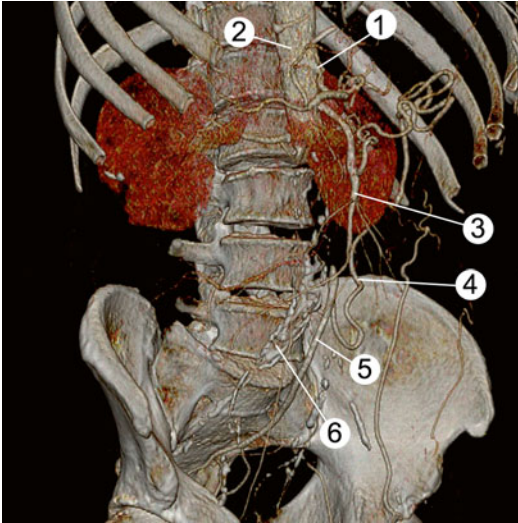
**Fig. 6.17** 3D VRT colour reconstruction

1. Aorta abdominalis + pars proximalis
2. Truncus coeliacus
3. A. renalis sinistra
4. A. renalis dextra
5. A. mesenterica superior
6. Aorta abdominalis pars distalis + thrombosis and calcification
7. A. iliaca comunae et externae thrombosed and calcified
8. A. iliaca comunae et externae thrombosed and calcified
9. A. mesenterica superior

**Fig. 6.18** 3D VRT colour reconstruction

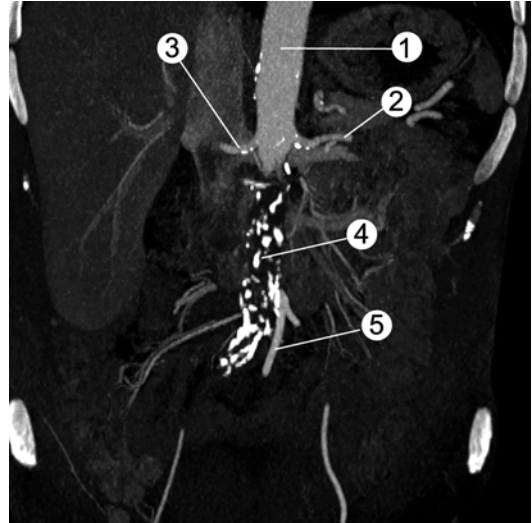
1. Aorta abdominalis
2. A. mesenterica superior
3. A. mesenterica inferior
4. Collateral through a. mesenterica inferior is vascularised
5. A. iliaca communis calcified and thrombosed





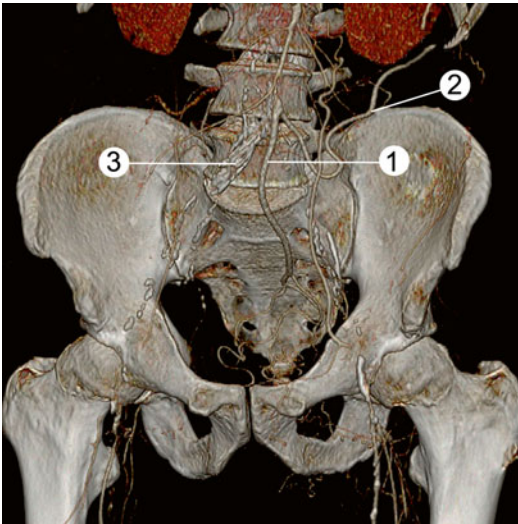
**Fig. 6.19** 3D VRT colour reconstruction

1. Truncus coeliacus
2. Aorta abdominalis
3. Ar. mesenterica superior
4. Collateral
5. A. mesenterica inferior
6. A. iliacae communes thrombosed and calcified



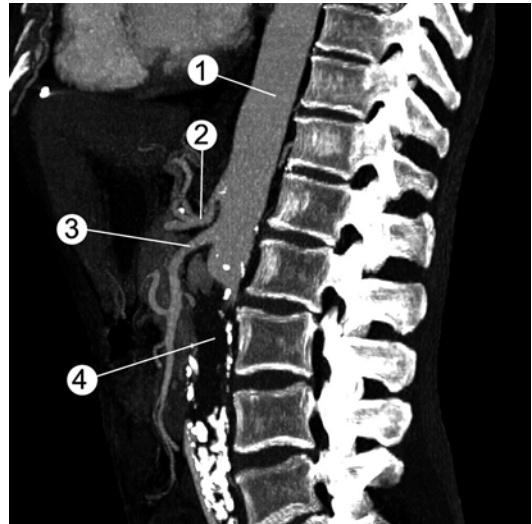
**Fig. 6.21** 3D MIP reconstruction

1. Aorta abdominalis
2. A. renalis sinistra
3. A. renalis dextra
4. A. abdominalis, pars distalis thrombosed and calcified
5. A. mesenterica inferior



**Fig. 6.20** 3D VRT colour reconstruction

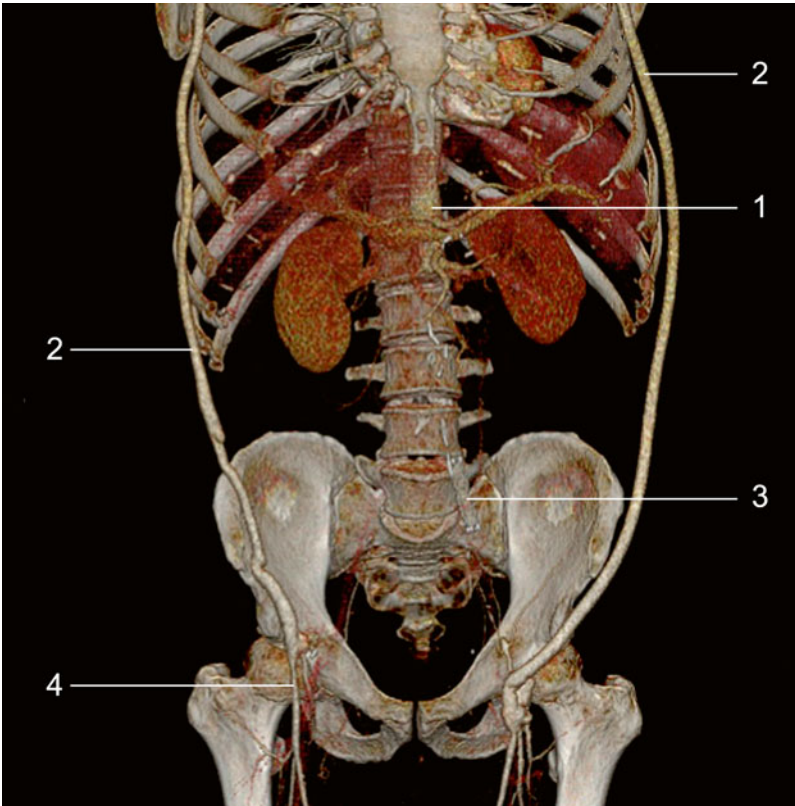
1. A. mesenterica inferior
2. Collateral
3. A. iliacae communes thrombosed and calcified



**Fig. 6.22** 3D MIP reconstruction, sagittal plane

1. A. abdominalis
2. Truncus coeliacus
3. A. mesenterica superior
4. A. abdominalis pars distalis thrombosed and calcified

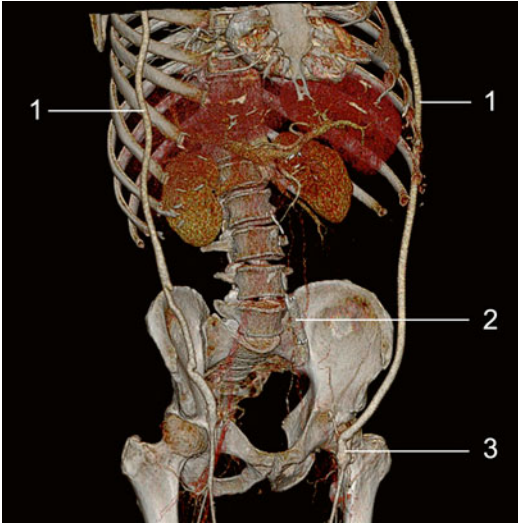
### 6.3 Leriche Syndrome Axillobifemoral Bypass



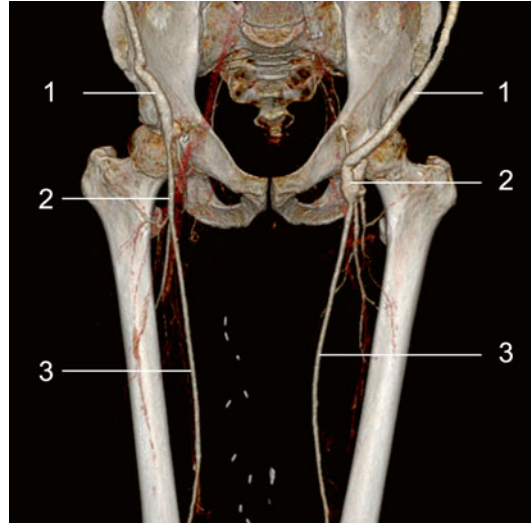
**Fig. 6.23** 3D VRT colour reconstruction

1. Aorta abdominalis
2. Extraanatomic axillofemoral graft
3. Occluded stent at the level of a. iliaca communis
4. A. femoralis

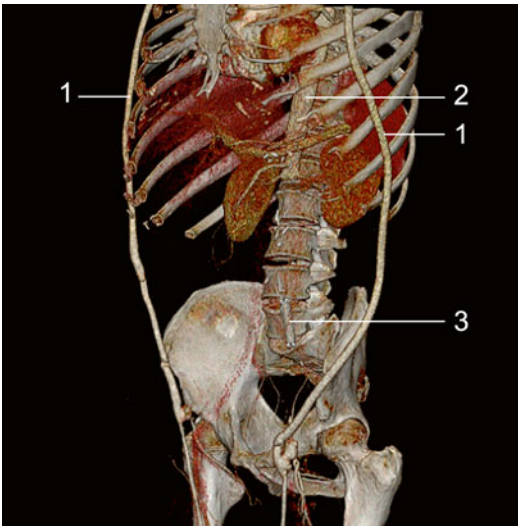




**Fig. 6.24** 3D VRT colour reconstruction right oblique incidence  
 1. Axillofemoral grafts  
 2. Occluded iliac stent  
 3. Anastomosis of a. femoralis graft



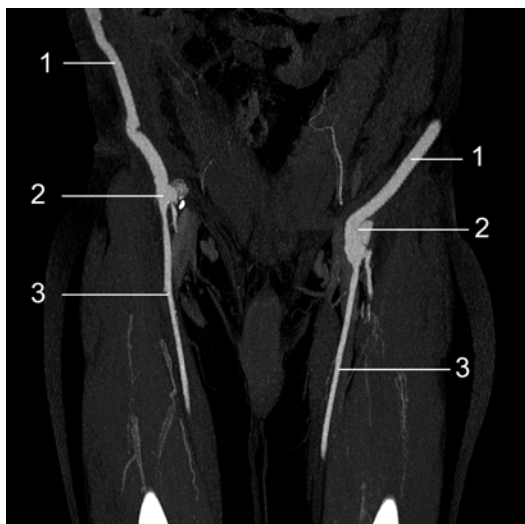
**Fig. 6.26** 3D VRT colour reconstruction  
 1. Extraanatomic grafts  
 2. Graft anastomosis + a. femoralis  
 3. A. femoralis



**Fig. 6.25** 3D VRT colour reconstruction right oblique incidence  
 1. Axillofemoral grafts  
 3. Anastomosis of a. femoralis



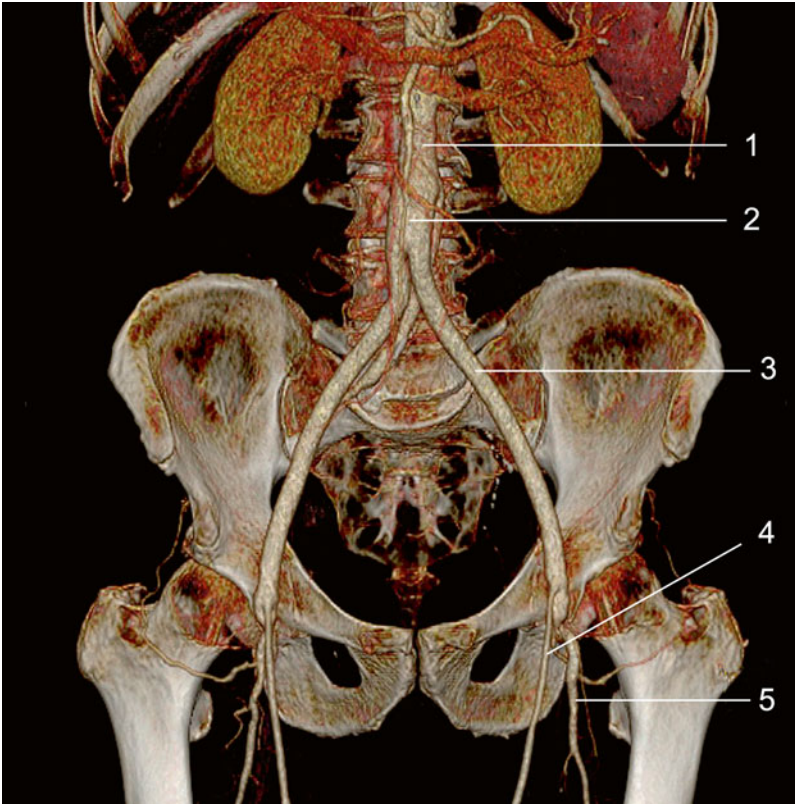
**Fig. 6.27** 3D MIP reconstruction  
 1. Aorta abdominalis  
 2. A. renalis sinistra  
 3. A. renalis dextra  
 4. Occluded iliac stent



**Fig. 6.28** 3D MIP reconstruction

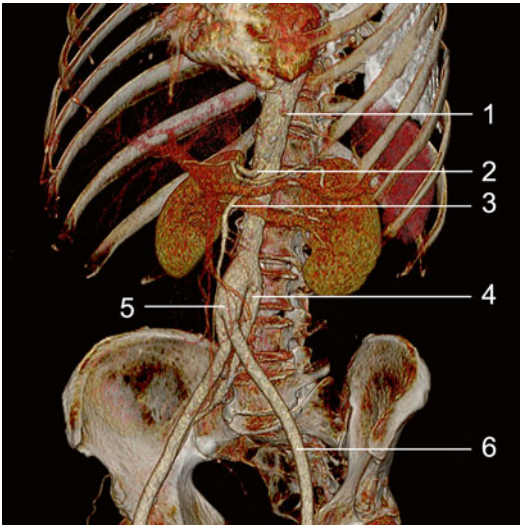
1. Axillofemoral grafts
2. Graft anastomosis
3. A. femoralis

## 6.4 Leriche Syndrome Aortobifemoral and Femoropopliteal Graft



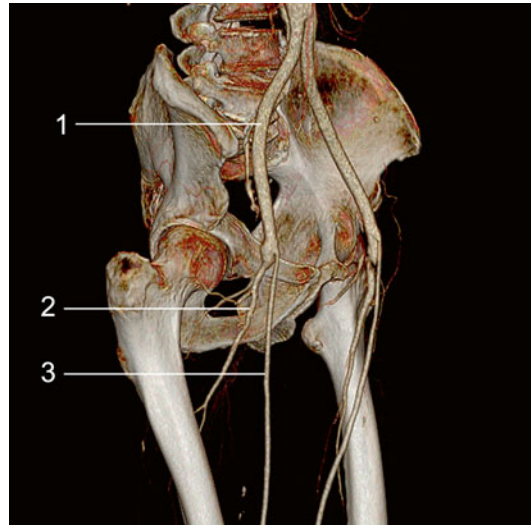
**Fig. 6.29** 3D VRT reconstruction

1. Aorta abdominalis pars distalis
2. Aortobifemoral graft
3. Arm of aortobifemoral graft
4. Femoropopliteal graft
5. A. profunda femoris



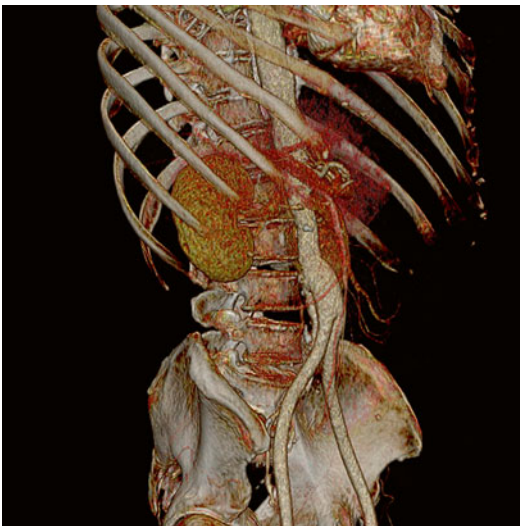
**Fig. 6.30** 3D VRT reconstruction, left oblique incidence

1. Aorta abdominalis
2. Truncus coeliacus
3. A. mesenterica superior
4. Aorta abdominalis pars distalis
5. Aortobifemoral graft
6. Arms of aortobifemoral graft



**Fig. 6.32** 3D VRT reconstruction, right oblique incidence

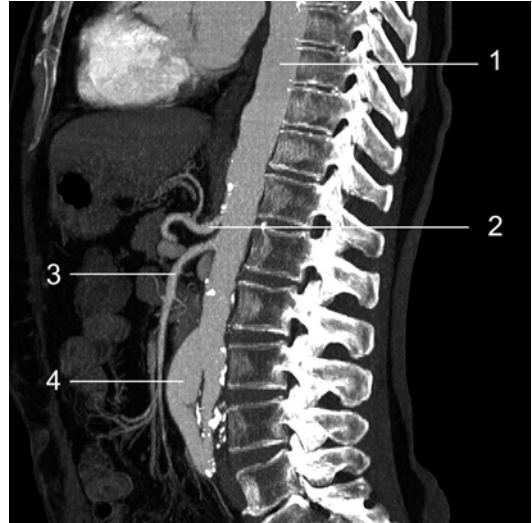
1. Arm of aortobifemoral graft
2. A. profunda femoris
3. Femoropopliteal graft



**Fig. 6.31** 3D VRT reconstruction, right oblique incidence

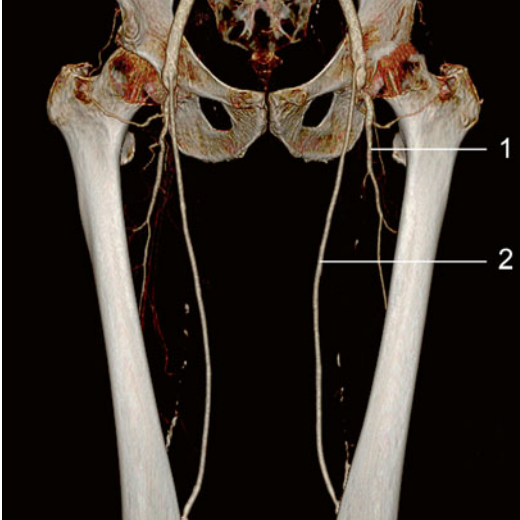


**Fig. 6.33** 3D VRT reconstruction, left oblique incidence



**Fig. 6.35** 3D MIP reconstruction sagittal plane

1. Aorta abdominalis
2. Truncus coeliacus
3. A. mesenterica superior
4. Pars proximalis of aortobifemoral graft



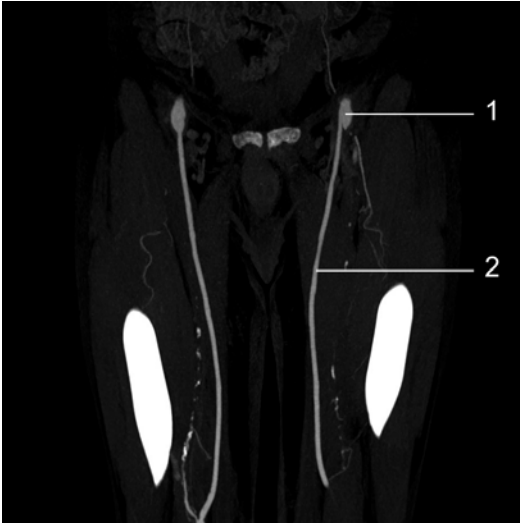
**Fig. 6.34** 3D VRT reconstruction, sagittal plane

1. A. profunda femoris
2. Femoropopliteal graft

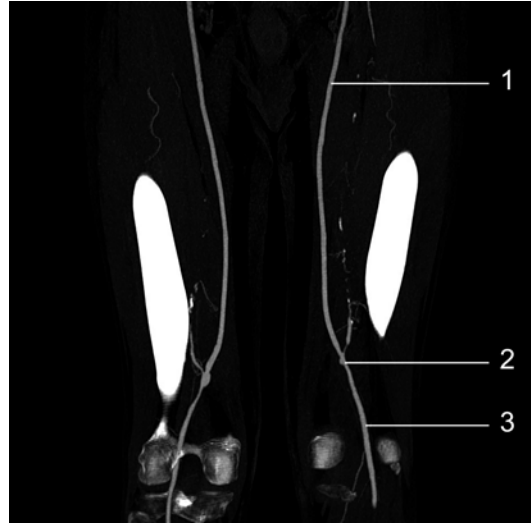


**Fig. 6.36** 3D MIP reconstruction frontal plane

1. Arm of aortobifemoral graft
2. A. profunda femoris
3. Femoropopliteal graft

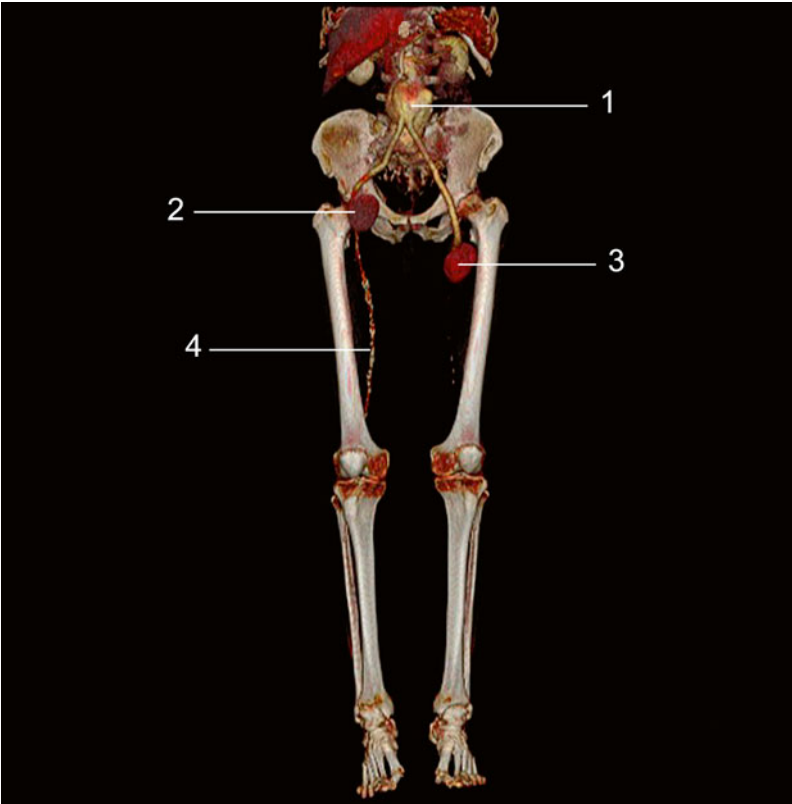


**Fig. 6.37** 3D MIP reconstruction frontal plane  
1. Arm of aortobifemoral graft  
2. Femoropopliteal graft



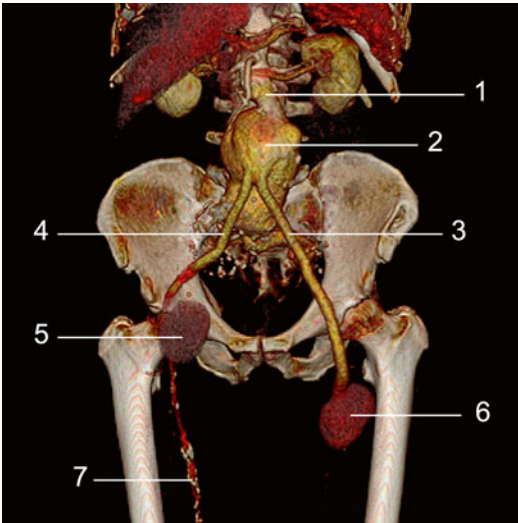
**Fig. 6.38** 3D MIP reconstruction frontal plane  
1. Femoropopliteal graft  
2. Femoropopliteal anastomosis  
3. A. popliteal

## 6.5 Aortobifemoral Graft and Aneurysms at the Level of Anastomosis



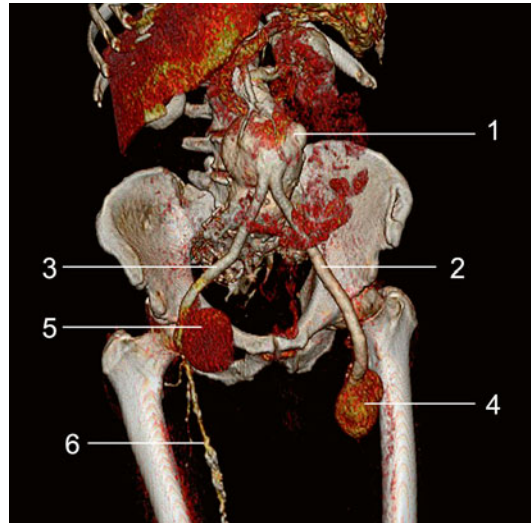
**Fig. 6.39** 3D VRT colour reconstruction

1. Aorta abdominalis pars distalis with aneurysm at the level of the graft's anastomosis
2. Aneurysm at the level of a. femoralis dextra
3. Aneurysm at the level of a. femoralis sinistra
4. A. femoralis dextra



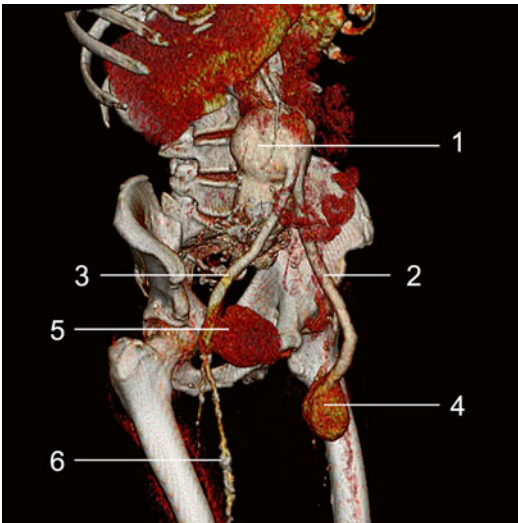
**Fig. 6.40** 3D VRT colour reconstruction coronary plane, enlarged image

1. Aorta abdominalis
2. Aneurysm at the level of aortobifemoral graft anastomosis
3. Left arm of graft
4. Right arm of graft
5. Aneurysm at the level of anastomosis with a. femoralis dextra
6. Aneurysm at the level of anastomosis with a. femoralis sinistra
7. A. femoralis dextra



**Fig. 6.42** 3D VRT colour reconstruction

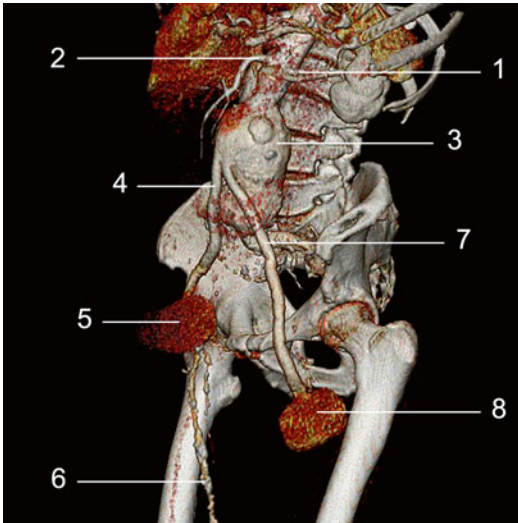
1. Aneurysm
2. Left arm of graft
3. Right arm of graft
4. Aneurysmal dilatations at the level of anastomosis
5. Aneurysmal dilatations at the level of anastomosis
6. A. femoralis dextra



**Fig. 6.41** 3D VRT colour reconstruction

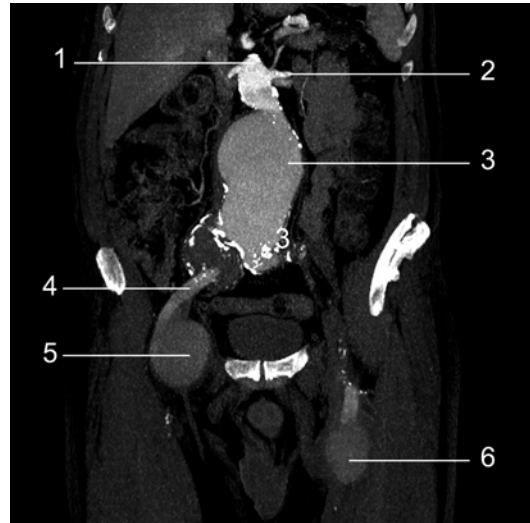
1. Aneurysm
2. Left arm of graft
3. Right arm of graft
4. Aneurysmal dilatations at the level of anastomosis
5. Aneurysmal dilatations at the level of anastomosis
6. A. femoralis dextra





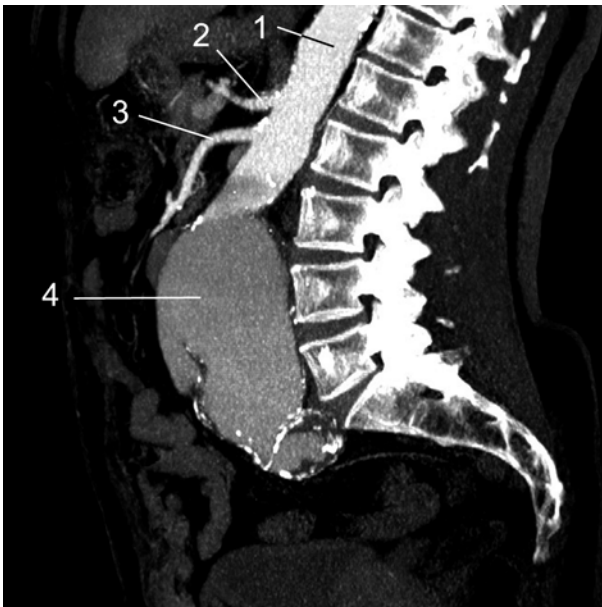
**Fig. 6.43** 3D VRT colour reconstruction

1. Aorta abdominalis
2. A. mesenterica superior
3. Aneurysm
4. Right arm of graft
5. Aneurysm at the level of anastomosis
6. A. femoralis dextra
7. Left arm of graft
8. Aneurysm



**Fig. 6.44** 3D MIP reconstruction

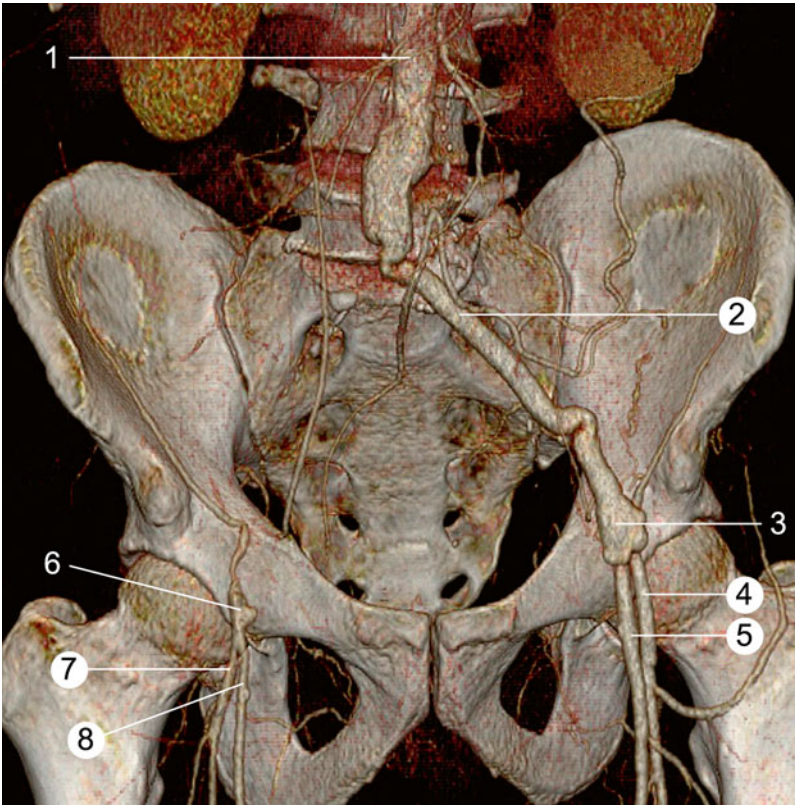
1. Aorta abdominalis
2. A. renalis sinistra
3. Aneurysm
4. Right arm of graft with aneurysmal dilatation on the level of anastomosis (5)
6. Aneurysmal dilatation at the level of left arm anastomosis



**Fig. 6.45** 3D MIP reconstruction, sagittal plane

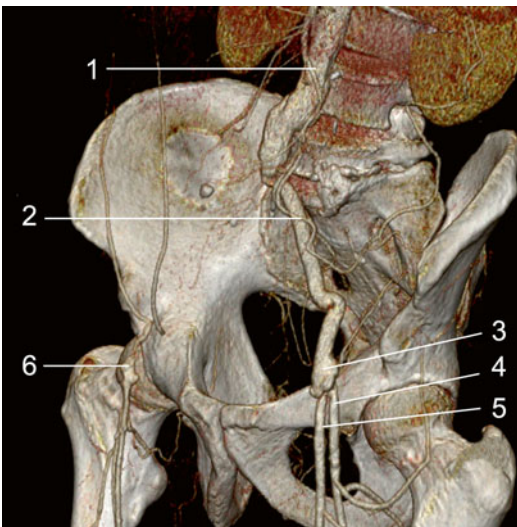
1. Aorta abdominalis
2. Truncus coeliacus
3. A. mesenterica superior
4. Aneurysmal dilatation

### 6.6 Right Arm Occlusion of the Aortobifemoral Graft



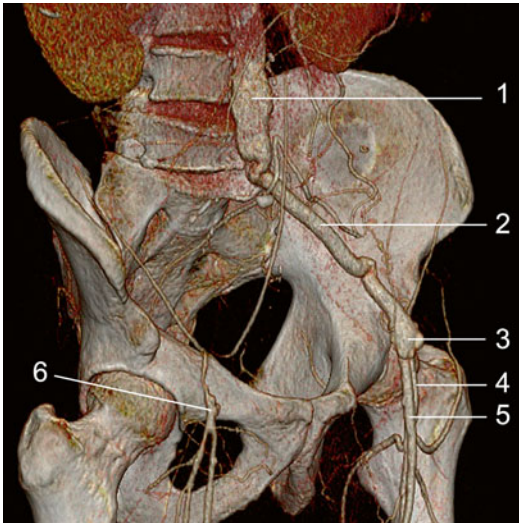
**Fig. 6.46** 3D VRT reconstruction

1. Proximal part of the graft
2. Left arm of the graft
3. Left arm anastomosis with arteria femoralis
4. Arteria profunda femoris sinistra
5. Arteria femoralis sinistra
6. Arteria femoralis dextra
7. Arteria profunda femoris dextra
8. Arteria femoralis dextra



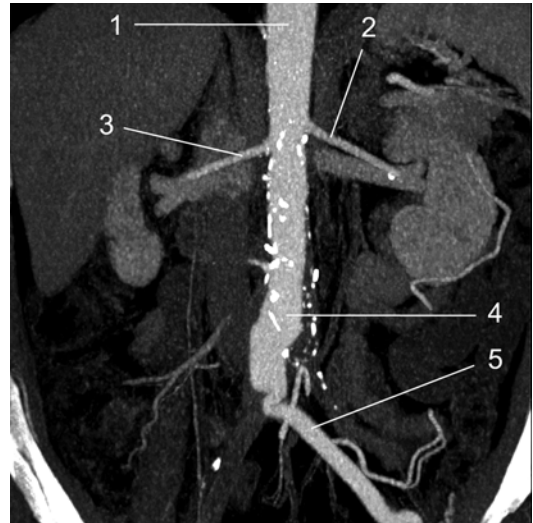
**Fig. 6.47** 3D VRT reconstruction, oblique view

1. Proximal part of the graft
2. Left arm of the graft
3. Left arm anastomosis with arteria femoralis
4. Arteria profunda femoris sinistra
5. Arteria femoralis sinistra
6. Arteria femoralis dextra



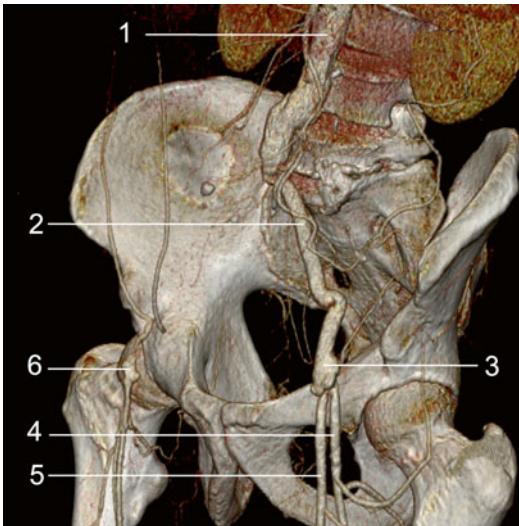
**Fig. 6.48** 3D VRT reconstruction, oblique view

1. Proximal part of the graft
2. Left arm of the graft
3. Left arm anastomosis with arteria femoralis
4. Arteria profunda femoris sinistra
5. Arteria femoralis sinistra
6. Arteria femoralis dextra



**Fig. 6.50** 3D MIP reconstruction

1. Aorta abdominalis
2. Arteria renalis sinistra
3. Arteria renalis dextra
4. Aortic graft
5. Left arm of the aortobifemoral graft



**Fig. 6.49** 3D VRT reconstruction, oblique view

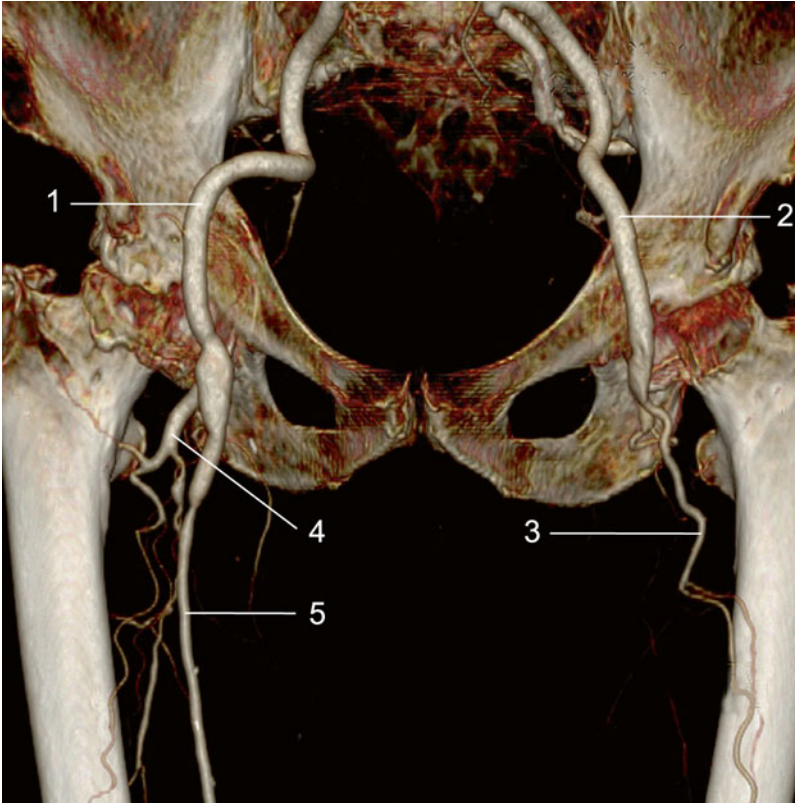
1. Proximal part of the graft
2. Left arm of the graft
3. Left arm anastomosis with arteria femoralis
4. Arteria profunda femoris sinistra
5. Arteria femoralis sinistra
6. Arteria femoralis dextra



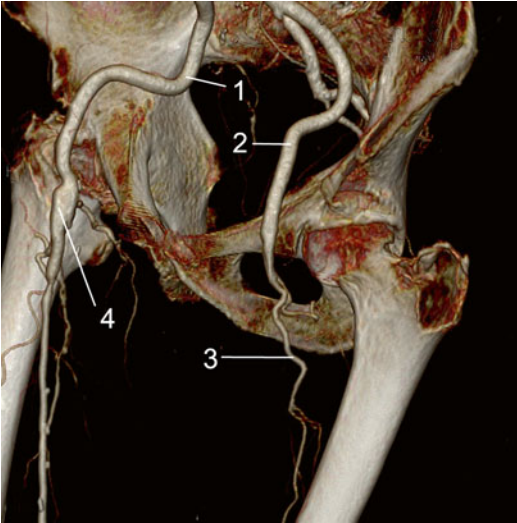
**Fig. 6.51** 3D MIP reconstruction

1. Aorta
2. Left arm of the graft
3. Arteria femoralis sinistra
4. Arteria profunda femoralis sinistra
5. Arteria femoralis sinistra
6. Arteria femoralis dextra

### 6.7 Right Femoro-fibular Graft: Occlusion of the Left Lower Limb Arteries

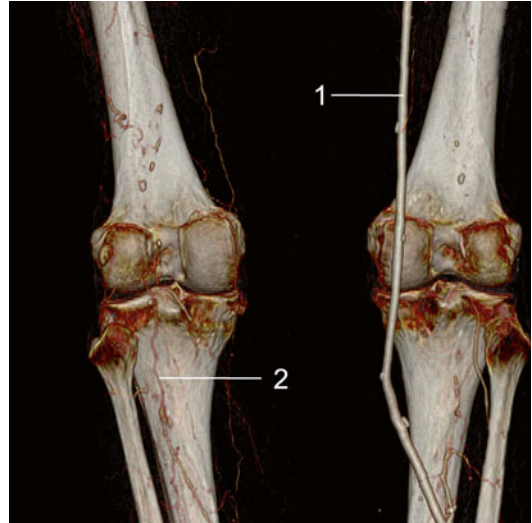


**Fig. 6.52** 3D VRT reconstruction, coronal view  
1. Arteria femoralis dextra  
2. Arteria femoralis sinistra  
3. Arteria profunda femoris sinistra  
4. Arteria profunda femoris dextra  
5. Right femoro-fibular venous graft



**Fig. 6.53** 3D VRT reconstruction, oblique view

1. Arteria iliaca externa dextra
2. Arteria iliaca externa sinistra
3. Arteria profunda femoris sinistra
4. Anastomosis of the venous graft at the distal level of the Arteria iliaca externa dextra



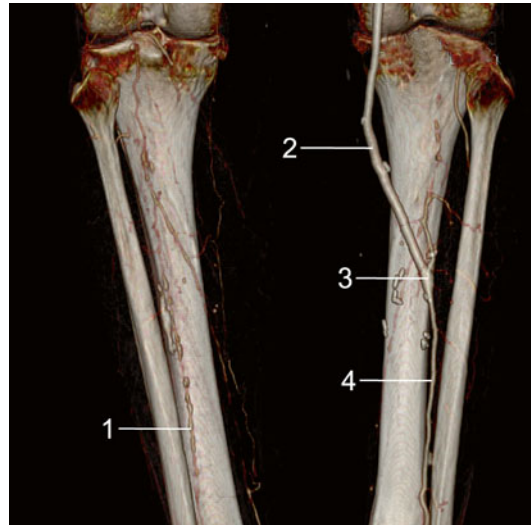
**Fig. 6.55** 3D VRT reconstruction, posterior view, at the level of the popliteal fossa

1. Venous graft
2. Collateral arteries



**Fig. 6.54** 3D VRT reconstruction, posterior view

1. Right femoro-fibular venous graft
2. Arteria profunda femoris dextra
3. Arteria profunda femoris sinistra



**Fig. 6.56** 3D VRT reconstruction, posterior view at the level of the calf

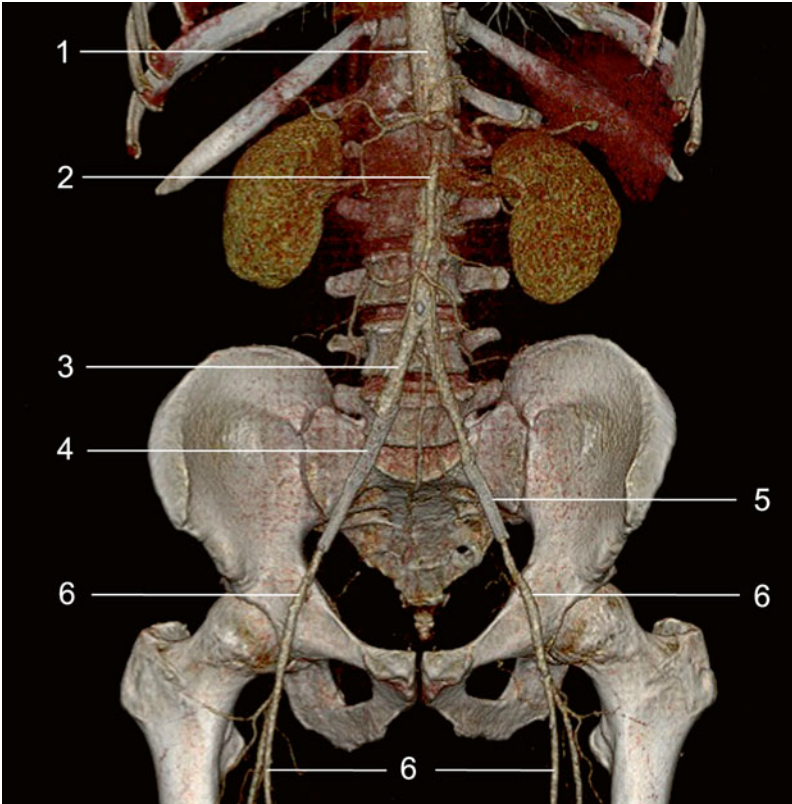
1. Arteria fibularis dextra with multiple occlusive lesions
2. Right femoro-fibular venous graft
3. Venous graft anastomosis with Arteria fibularis dextra
4. Arteria fibularis dextra



**Fig. 6.57** 3D VRT reconstruction, posterior view at the level of the calf

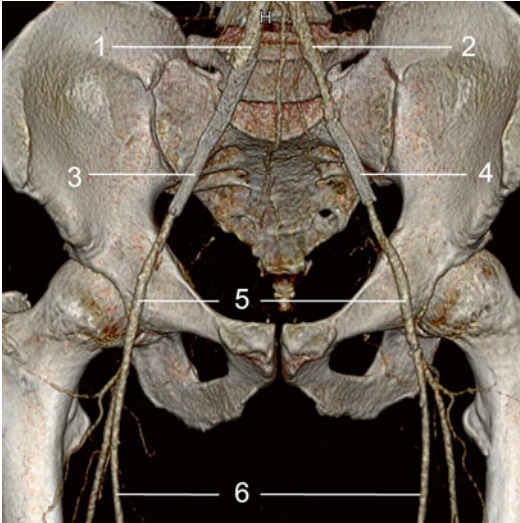
1. Arteria fibularis sinistra
2. Anastomosis
3. Arteria fibularis dextra

## 6.8 Iliac and Femoral Stents: In-Stent Restenosis



**Fig. 6.58** 3D VRT reconstruction in coronal plane

1. Aorta abdominalis
2. Arteria mesenterica superior
3. Arteria iliaca communis
4. Arteria iliaca externa
5. Stent at the level of the arteria iliaca externa
6. Arteria femoralis



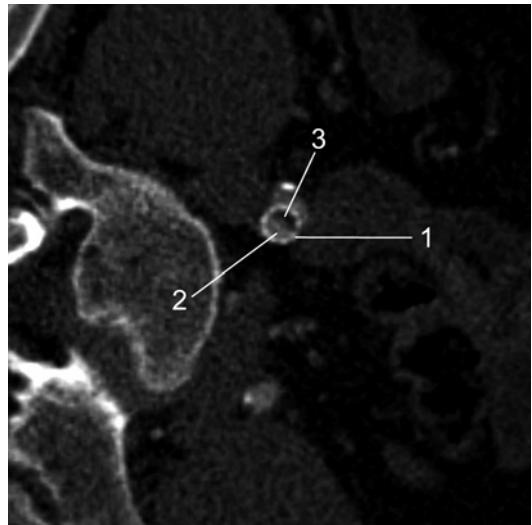
**Fig. 6.59** 3D VRT reconstruction in coronal plane  
 1. Arteria iliaca communis dextra  
 2. Arteria iliaca communis sinistra  
 3. Stent in the arteria iliaca externa dextra  
 4. Stent in the arteria iliaca externa sinistra  
 5. Arteria femoralis  
 6. Arteria femoralis



**Fig. 6.61** Curved 3D MPR  
 1. Arteria iliaca externa dextra  
 2. Patent in-stent lumen  
 3. Proximal in-stent restenosis  
 4. Stent

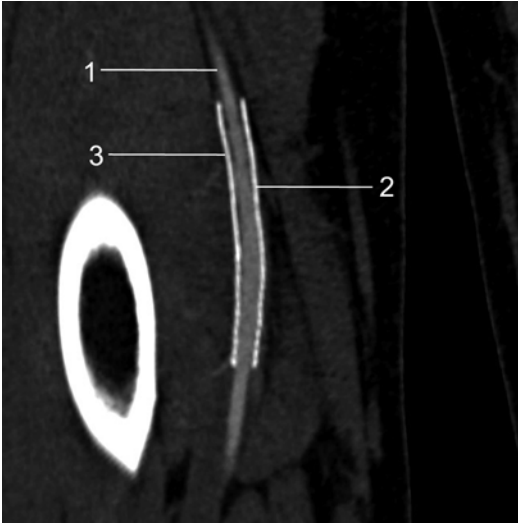


**Fig. 6.60** 3D VRT reconstruction  
 1. Arteria femoralis dextra  
 2. Stent in arteria femoralis dextra  
 3. Arteria femoralis sinistra



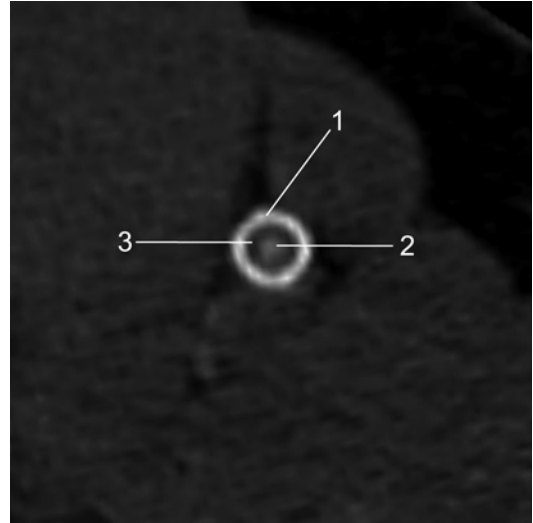
**Fig. 6.62** Axial 3D MPR  
 1. Stent  
 2. Patent lumen  
 3. Neointimal proliferation (restenosis)





**Fig. 6.63** 3D MPR at the femoral level

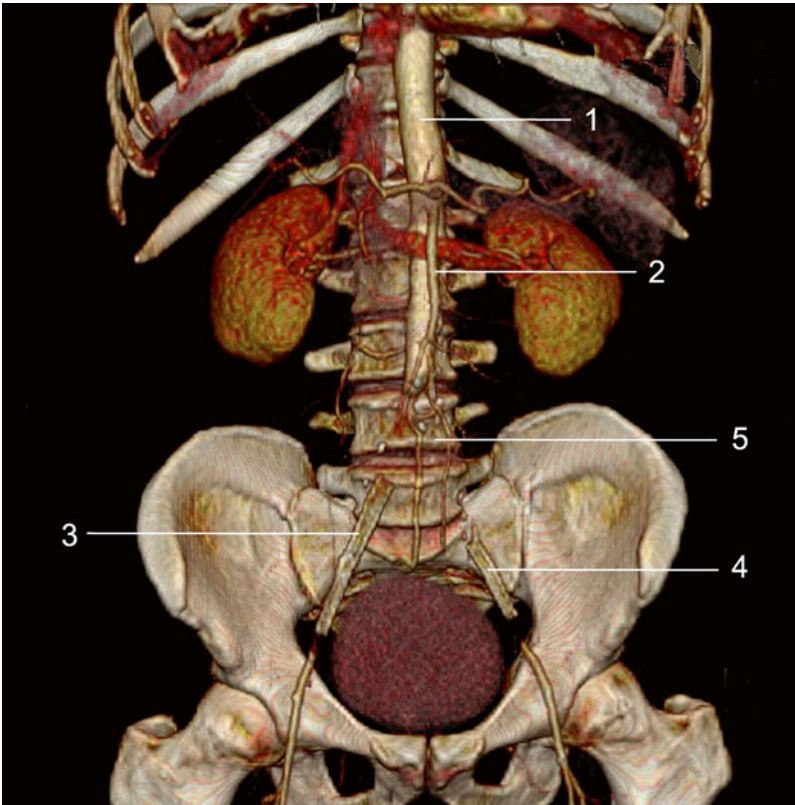
1. Patent lumen at the level of arteria femoralis dextra
2. Stent
3. Area with neointimal hyperplasia



**Fig. 6.64** 3D MPR, axial plane

1. Stent
2. Patent lumen
3. Neointimal hyperplasia

### 6.9 Iliac and Femoral Stents: Occluded Iliac Stents

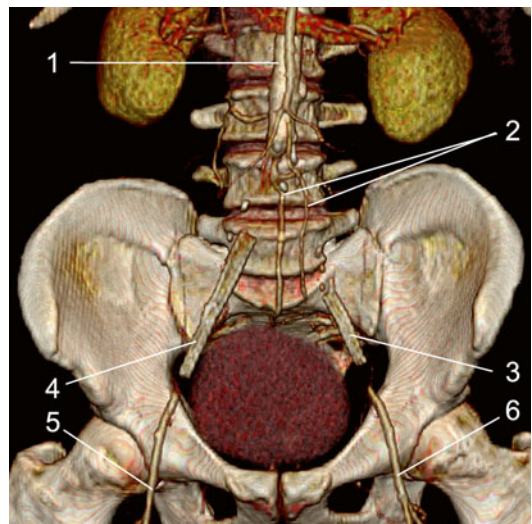


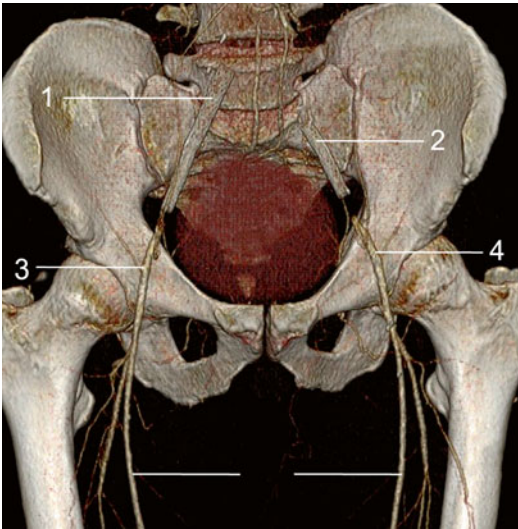
**Fig. 6.65** 3D VRT reconstruction

1. Aorta abdominalis
2. Arteria mesenterica superior
3. Thrombosis at the level of arteria iliaca communis and arteria iliaca externa dextra
4. Thrombosis at the level of arteria iliaca communis and arteria iliaca externa sinistra
5. Thrombosis of a. iliaca communis

**Fig. 6.66** 3D VRT reconstruction

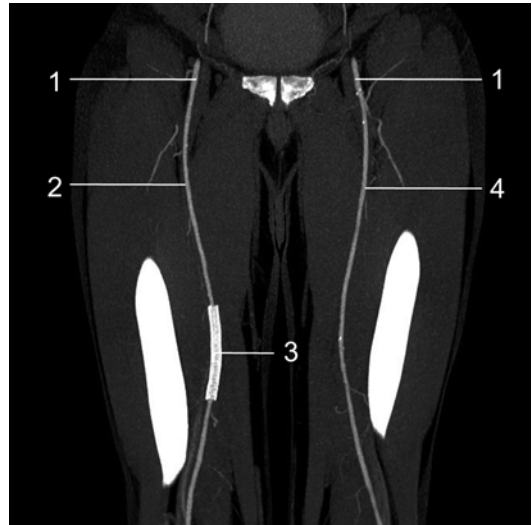
1. Aorta abdominalis
2. Occlusion at the level of arteria iliaca communis sinistra
3. Occluded stent at the level of arteria iliaca externa sinistra
4. Occluded stent at the level of arteria iliaca externa dextra
5. Arteria femoralis dextra
6. Arteria femoralis sinistra





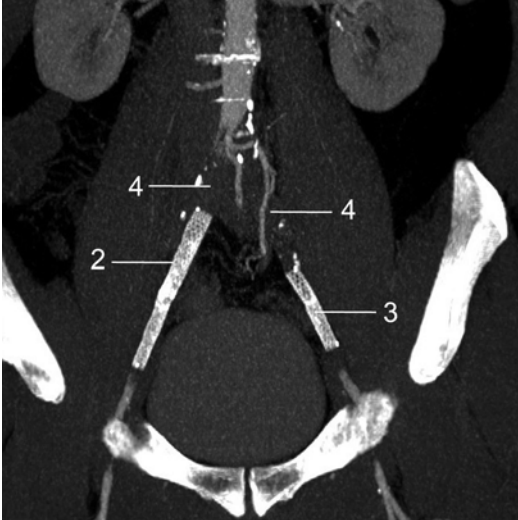
**Fig. 6.67** Reconstruction 3D VRT

1. Occluded stents at the level of arteria iliaca communis and arteria iliaca externa dextra
2. Occluded stent at the level of arteria iliaca externa sinistra
3. Arteria femoralis
4. Arteria femoralis



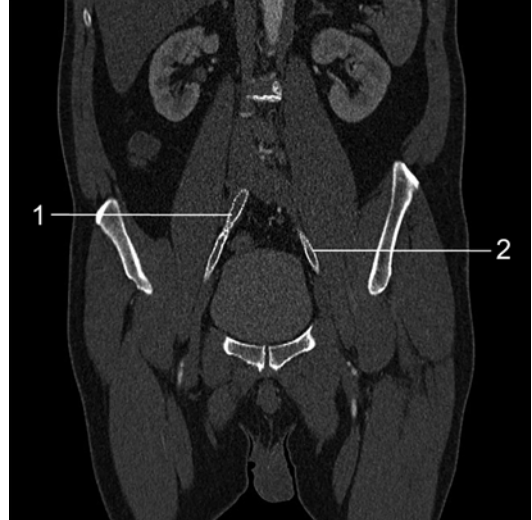
**Fig. 6.69** 3D MIP reconstruction at the thigh level

1. Arteria iliaca externa
2. and 4. Arteria femoralis
3. Patent stent at the level of arteria femoralis dextra



**Fig. 6.68** 3D MIP reconstruction

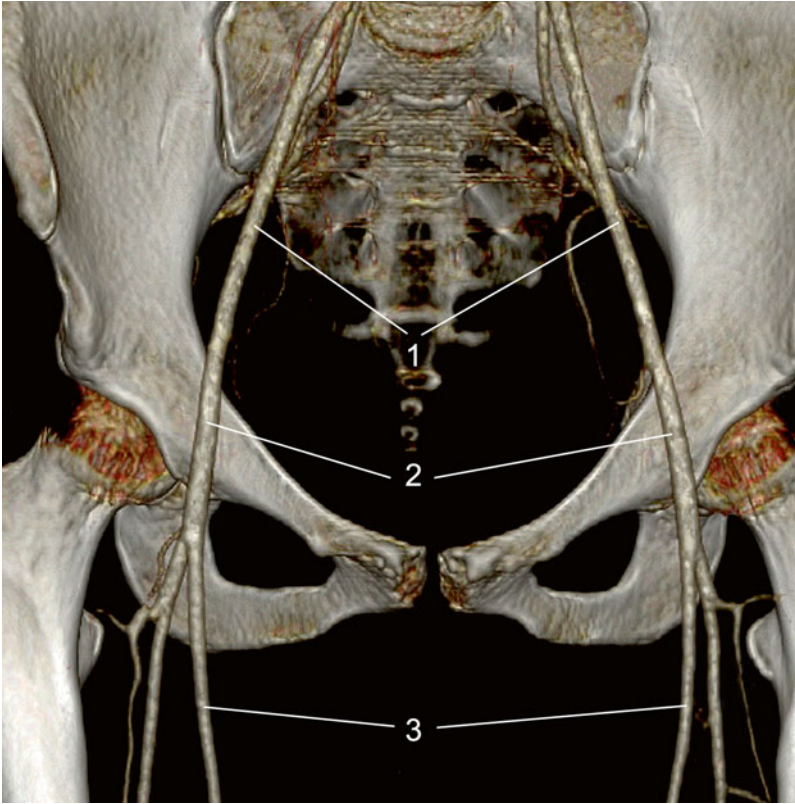
1. Aorta abdominalis
2. and 3. Occluded stents



**Fig. 6.70** 3D MPR reconstruction

1. Occluded stents
2. Occluded stents

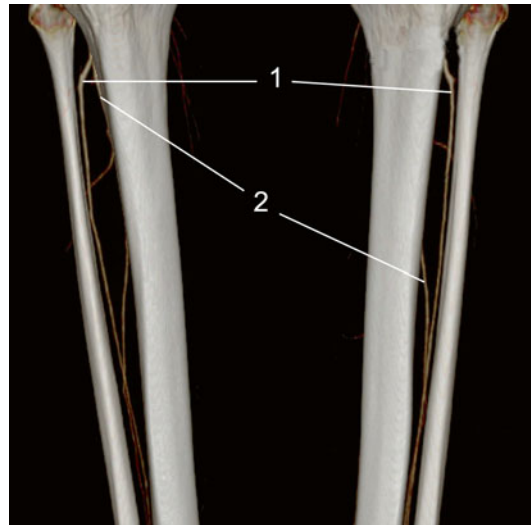
### 6.10 Autoimmune Vasculitis



**Fig. 6.71** 3D VRT reconstruction  
1. Arteria iliaca externa  
2. Arteria femoralis  
3. Arteria femoralis



**Fig. 6.72** 3D VRT reconstruction  
1. Arteria femoralis  
2. Arteria profunda femoris



**Fig. 6.73** 3D VRT reconstruction  
1. Arteria tibialis posterior  
2. Arteria fibularis



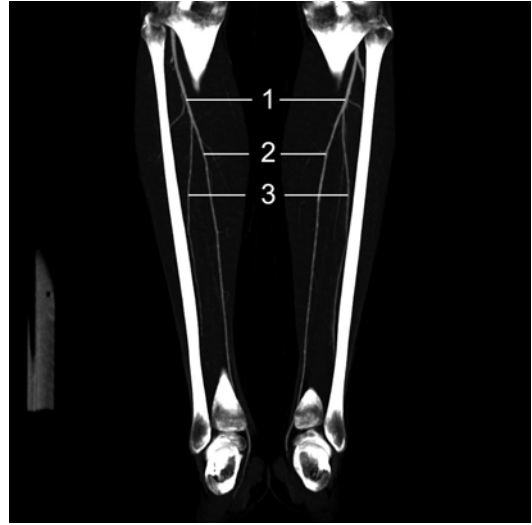
**Fig. 6.74** 3D VRT reconstruction of the distal segment of the calf with absence of arteria tibialis anterior and arteria dorsalis pedis



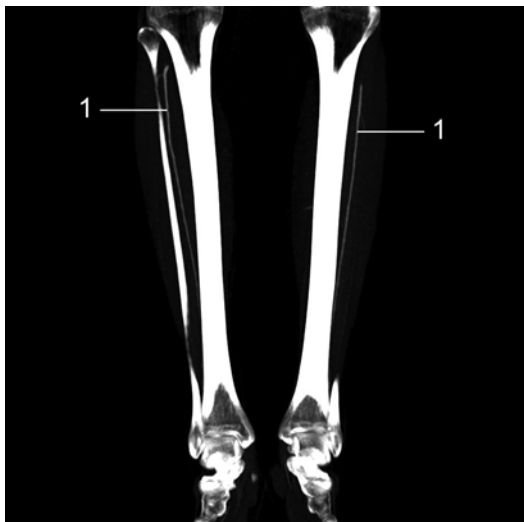
**Fig. 6.76** 3D VRT reconstruction, posterior view  
1. Arteria tibialis posterior  
2. Arteria fibularis



**Fig. 6.75** 3D VRT reconstruction of the distal segment of the calf with absence of arteria tibialis anterior and arteria dorsalis pedis



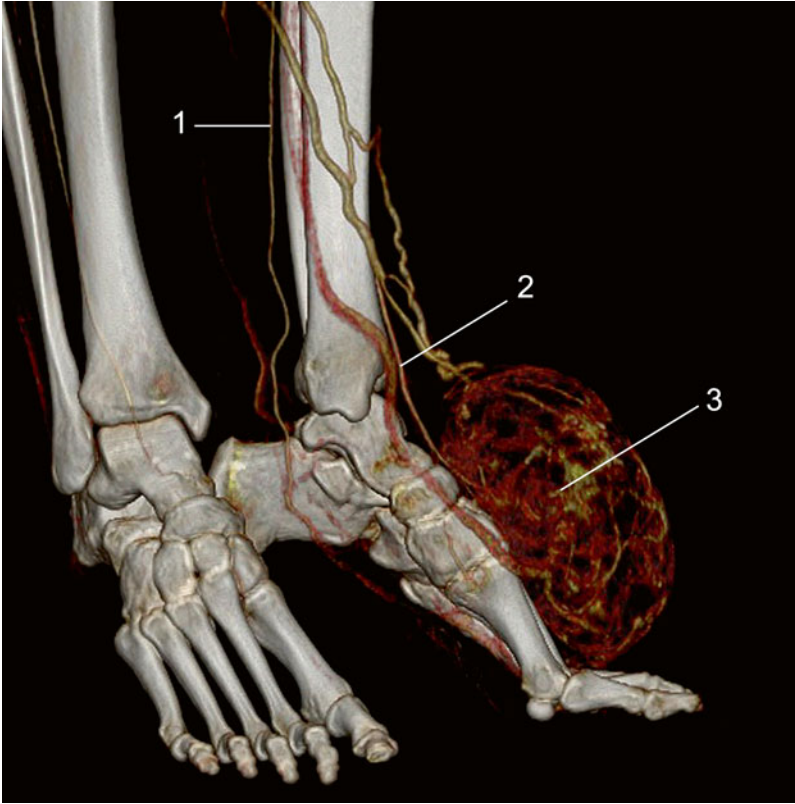
**Fig. 6.77** 3D MIP reconstruction  
1. Arteria tibialis posterior  
2. Arteria tibialis anterior  
3. Arteria fibularis



**Fig. 6.78** 3D MIP reconstruction

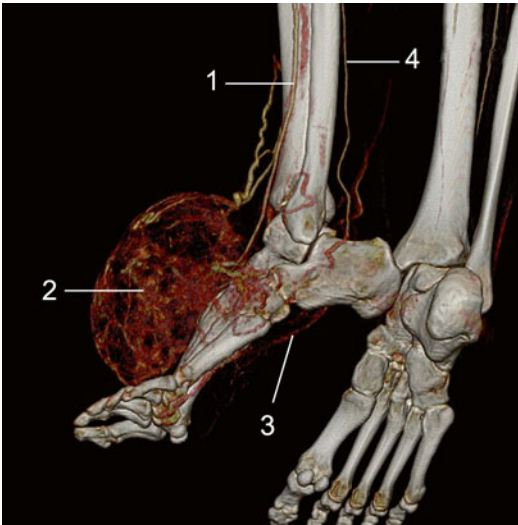
1. Arteria tibialis anterior (artery can be visible only to the middle third of the leg)

## 6.11 Tumour of the Leg

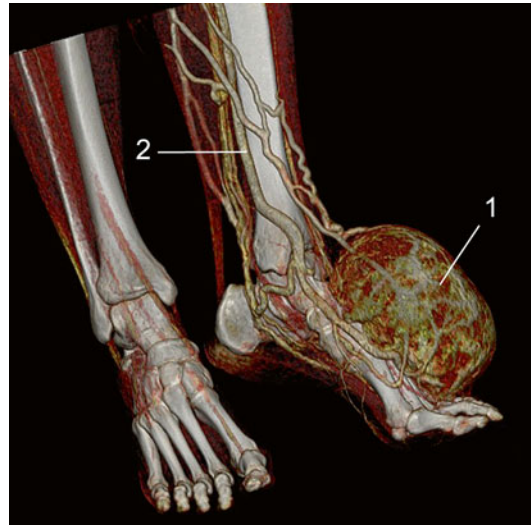


**Fig. 6.79** 3D VRT reconstruction, arterial phase

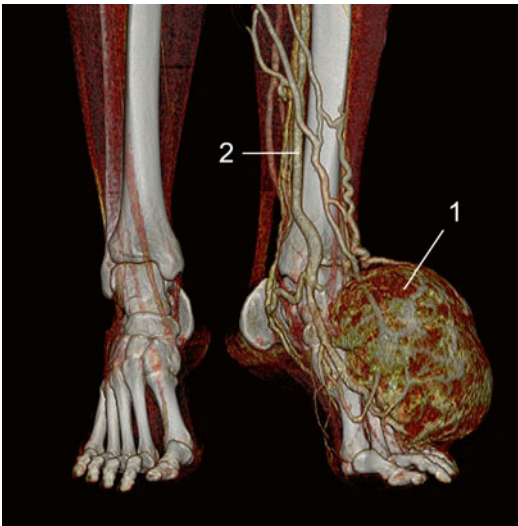
1. Arteria tibialis posterior sinistra
2. Arteria tibialis anterior sinistra
3. Hypervascular tumour



**Fig. 6.80** 3D VRT reconstruction, arterial phase  
1. Arteria tibialis anterior sinistra  
2. Hypervascular tumour  
3. Arteria plantaris  
4. Arteria tibialis posterior sinistra



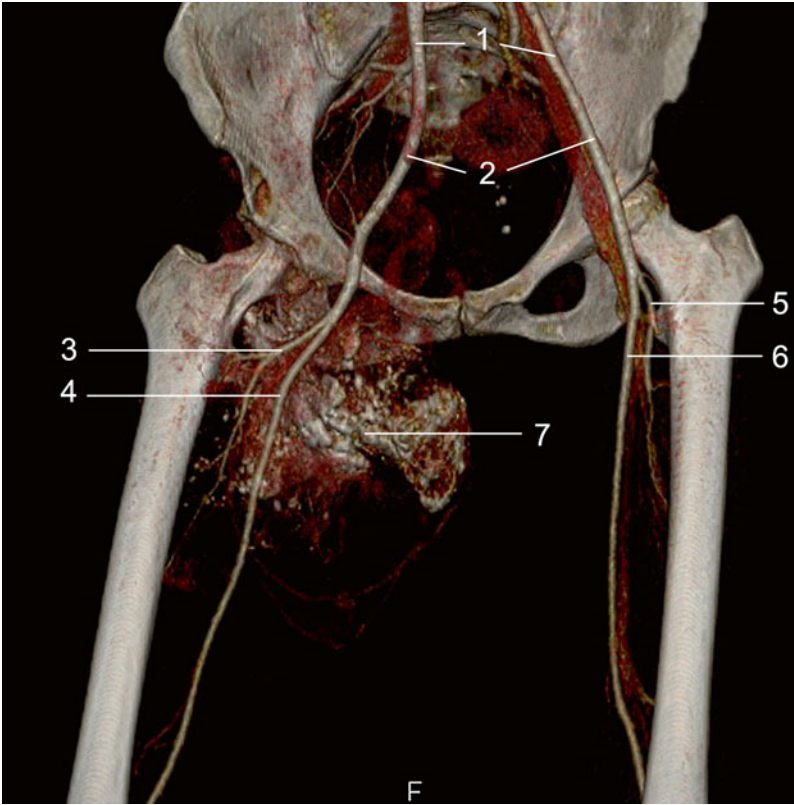
**Fig. 6.82** 3D VRT reconstruction, venous phase  
1. Tumoural mass  
2. Superficial and profound venous system



**Fig. 6.81** 3D VRT reconstruction, venous phase  
1. Tumoural mass  
2. Superficial and profound venous system

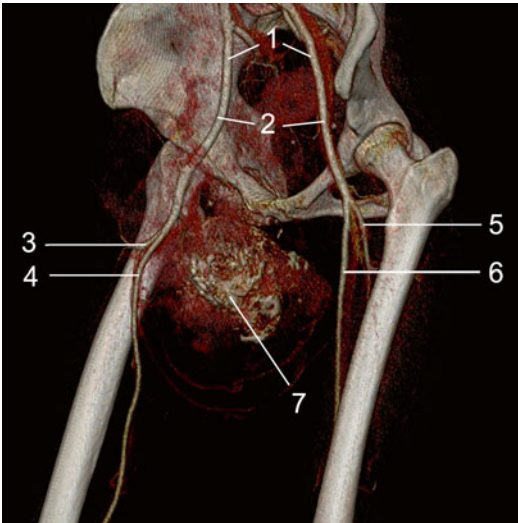


## 6.12 Giant Tumour of the Thigh



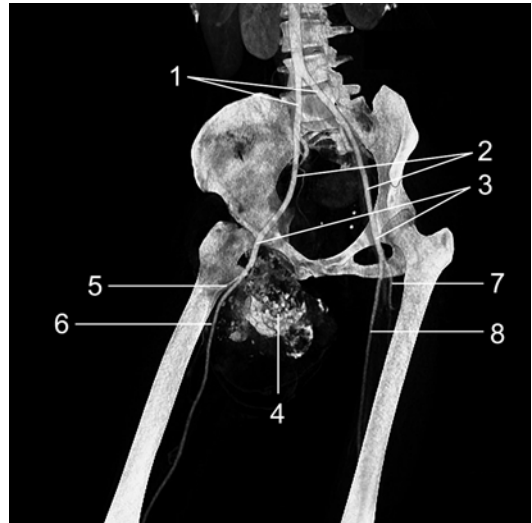
**Fig. 6.83** 3D VRT reconstruction, pelvis and thigh

1. Arteria iliaca externa
2. Arteria iliaca externa
3. Arteria profunda femoris dextra
4. Arteria femoralis dextra
5. Arteria profunda femoris sinistra
6. Arteria femoralis sinistra
7. Tumoural mass with calcification and vascularisation, without embedding of the vascular package



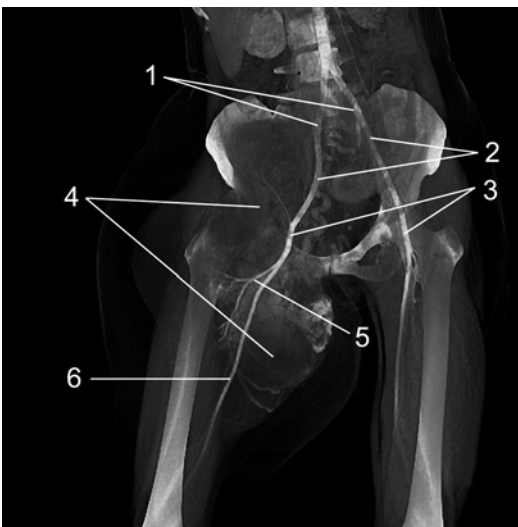
**Fig. 6.84** 3D VRT reconstruction, pelvis and thigh

1. Arteria iliaca externa
2. Arteria iliaca externa
3. Arteria profunda femoris dextra
4. Arteria femoralis dextra
5. Arteria profunda femoris sinistra
6. Arteria femoralis sinistra
7. Tumoural mass with calcification and vascularisation, without embedding of the vascular package



**Fig. 6.85** 3D VRT reconstruction

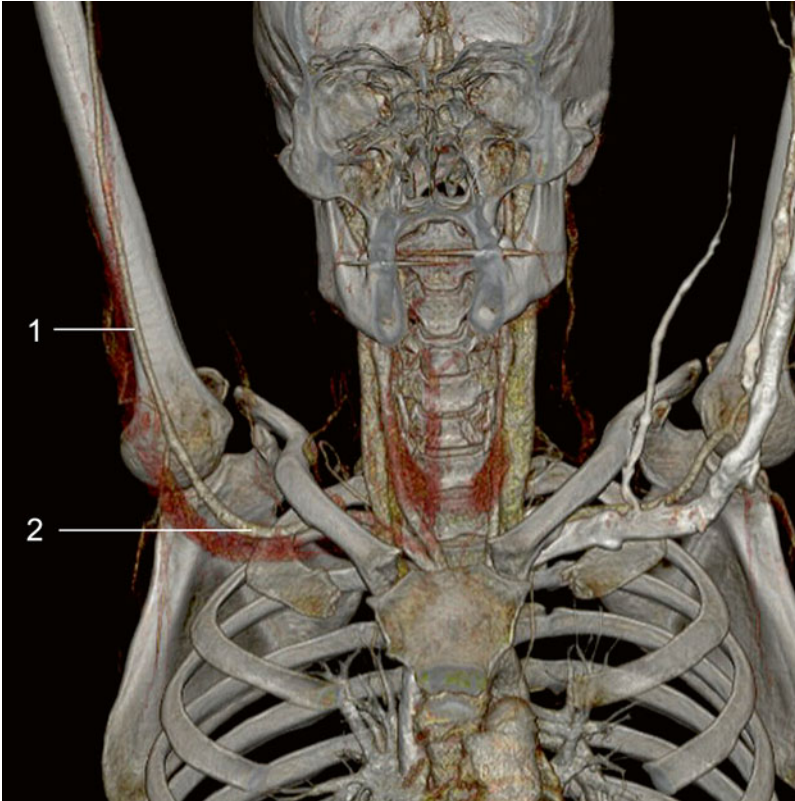
1. Arteria iliaca communis
2. Arteria iliaca externa
3. Arteria iliaca externa
4. Tumoural mass with calcification
5. Arteria profunda femoris dextra
6. Arteria femoralis dextra
7. Arteria profunda femoris sinistra
8. Arteria femoralis sinistra



**Fig. 6.86** 3D VRT reconstruction

1. Arteria iliaca communis
2. Arteria iliaca externa
3. Arteria iliaca externa
4. Tumoural mass with calcification and invasion in the pelvis
5. Arteria profunda femoris dextra
6. Arteria femoralis dextra

### 6.13 CT Angiography of the Right Upper Limb: Occlusion of the Arteria Radialis Dextra

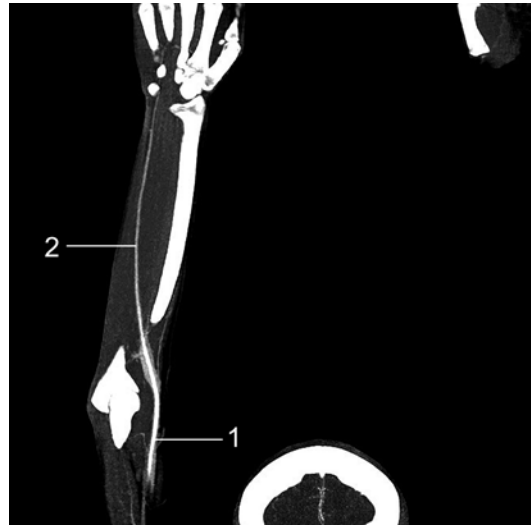


**Fig. 6.87** 3D VRT reconstruction

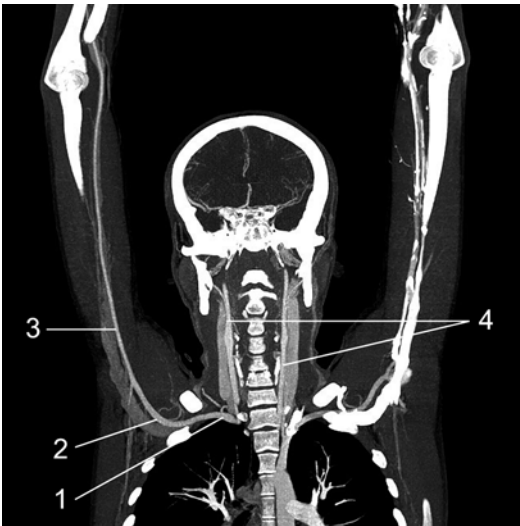
1. Arteria brachialis dextra
2. Arteria axillaris dextra



**Fig. 6.88** 3D VRT reconstruction  
1. Arteria ulnaris dextra  
2. Arteria radialis dextra (occluded)

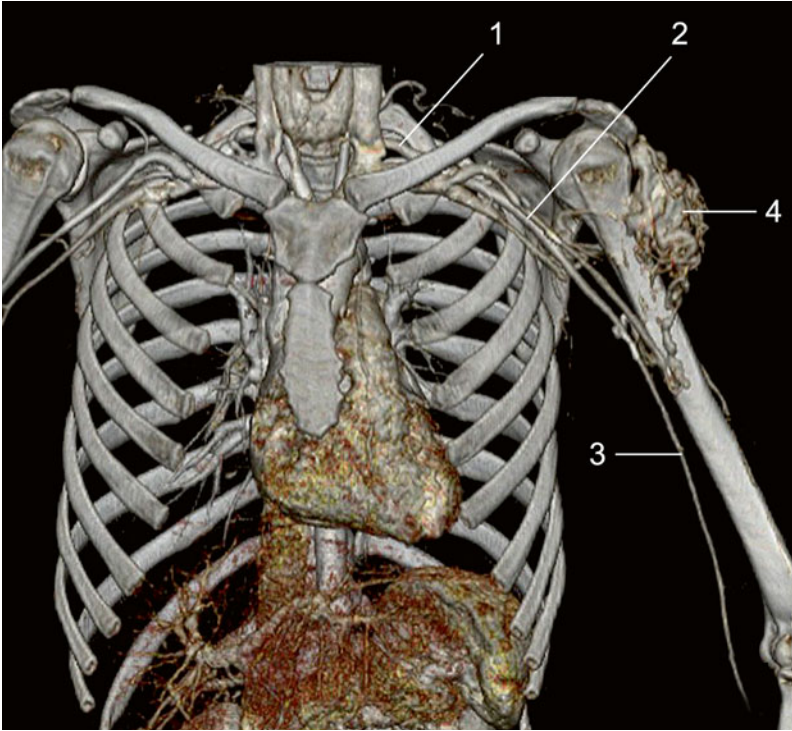


**Fig. 6.90** 3D MIP reconstruction  
1. Arteria brachialis dextra  
2. Arteria ulnaris dextra



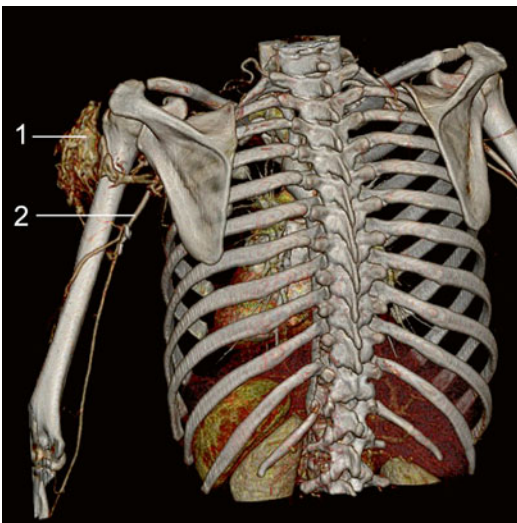
**Fig. 6.89** 3D MIP reconstruction  
1. Arteria subclavia dextra  
2. Arteria axillaris dextra  
3. Arteria brachialis dextra  
4. Arteria carotis communis

### 6.14 Arteriovenous Malformation in Deltoid Region



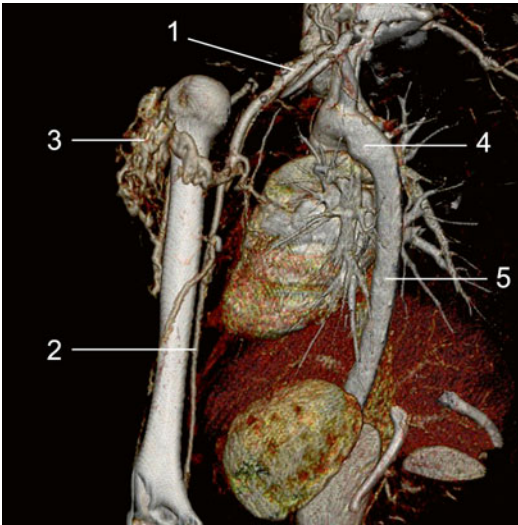
**Fig. 6.91** 3D VRT reconstruction, coronal view

1. Arteria subclavia sinistra
2. Arteria axillaris sinistra
3. Arteria brachialis sinistra
4. Arteriovenous malformation



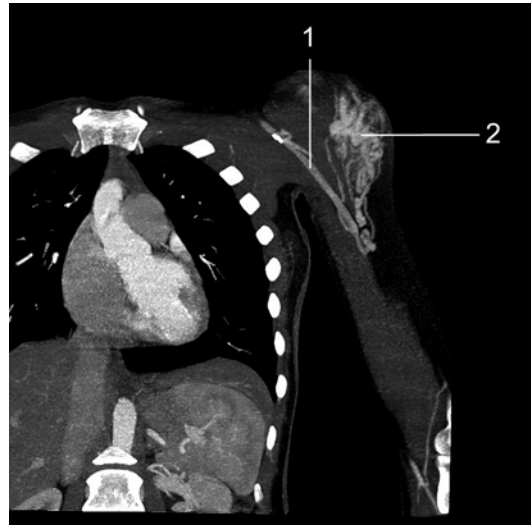
**Fig. 6.92** 3D VRT reconstruction, posterior view

1. Arteriovenous malformation
2. Arteria brachialis sinistra



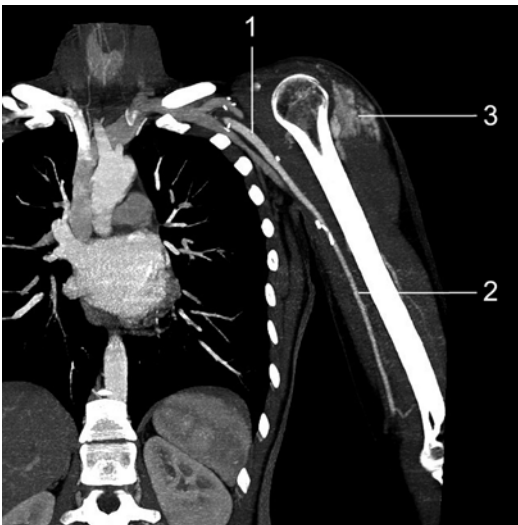
**Fig. 6.93** 3D VRT reconstruction, after removing the thoracic cage

1. Arteria subclavia and arteria axillaris sinistra
2. Arteria brachialis sinistra
3. Arteriovenous malformation
4. Arcus aortae
5. Aorta descendens



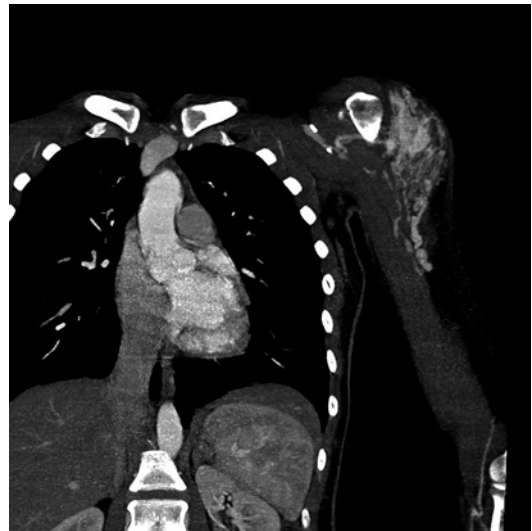
**Fig. 6.95** 3D MIP reconstruction

1. Arteria axillaris sinistra
2. Arteriovenous malformation



**Fig. 6.94** 3D MIP reconstruction

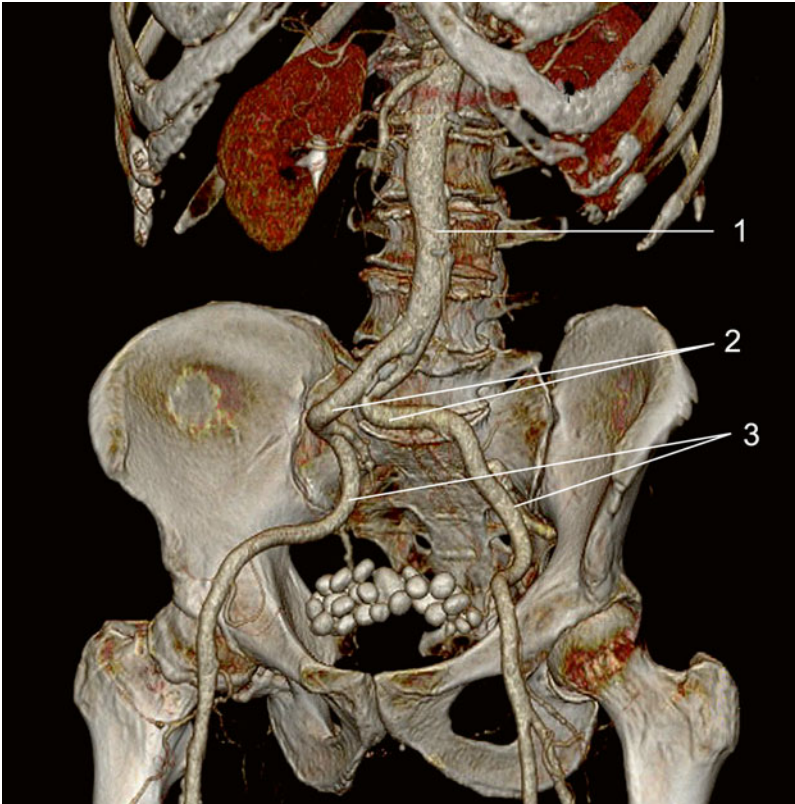
1. Arteria subclavia sinistra
2. Arteria brachialis sinistra
3. Arteriovenous malformation



**Fig. 6.96** 3D MIP reconstruction

Arteriovenous malformation

## 6.15 CTA Run-Off: Incidental Finding



**Fig. 6.97** 3D VRT reconstruction  
1. Aorta abdominalis  
2. Arteria iliaca communis  
3. Arteria iliaca externa  
4. Stones in the urinary bladder