

## Case 10

# A Rare Anomaly of the Middle Cerebral Artery Detected by Three-Dimensional Subtraction CT-Angiography

Jacqui Fielding

Department of Radiology, Angliss Hospital, Upper Ferntree Gully, Melbourne VIC, Australia

### HISTORY

A 66-year-old woman with a history of hypertension and recent headaches presented at the hospital with an acute onset of vertigo, fatigue and severe headache. On examination and questioning of the patient, it was found that her mother died at an early age from complications of a cerebral aneurysm. The patient was referred for a brain CT and brain CTA to rule out sub-arachnoid hemorrhage and aneurysm.

### DIAGNOSIS

The non-enhanced brain CT shows no sign of subarachnoid bleeding. Using the functionality of digital subtraction CT-Angiography, automatically subtracting a non-contrast from a contrast enhanced study, the complete cerebrovascular tree could be demonstrated and two progressed aneurysms in the middle cerebral arteries could be detected.

### COMMENTS

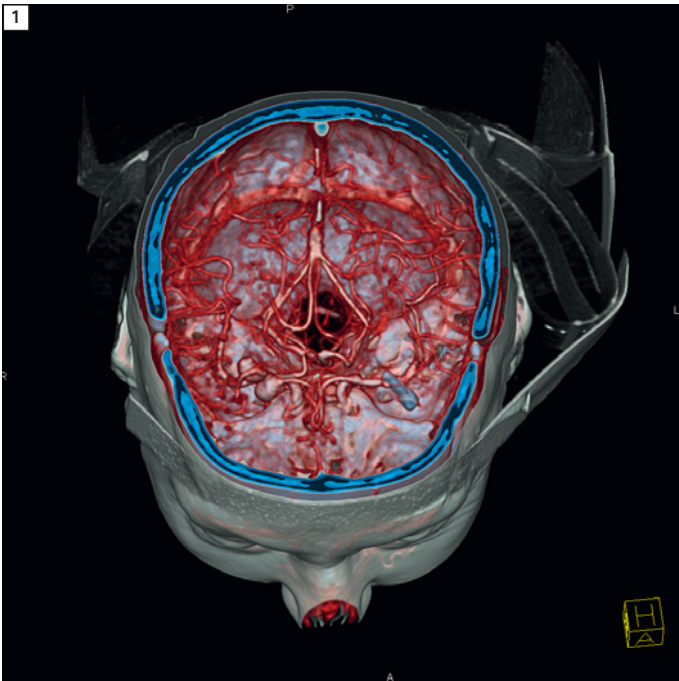
In this 66-year-old woman, preoperative angiography and 3-dimensional computed tomography angiography revealed a double aneurysm at the right middle cerebral artery (Circle of Willis).

Both aneurysms were clipped and superficial temporal artery-DMCA\* anastomosis was performed. She was discharged with no neurologic deficits.

### EXAMINATION PROTOCOL

<b>Scanner</b>	SOMATOM Emotion 16
<b>Scan area</b>	Circle of Willis
<b>Scan length</b>	80 mm
<b>Scan direction</b>	caudo-cranial
<b>Scan time</b>	7 s
<b>Tube voltage</b>	100 kV
<b>Tube current</b>	100 Eff. mAs
<b>Dose modulation</b>	CARE Dose off
<b>CTDI<sub>vol</sub></b>	15 mGy
<b>Rotation time</b>	0.6 s
<b>Pitch</b>	0.8
<b>Slice collimation</b>	16 x 0.6 mm
<b>Slice width</b>	0.75 mm
<b>Reconstruction increment</b>	0.5 mm
<b>Reconstruction kernel</b>	H31
<b>Contrast</b>	Ultravist 370
<b>Volume</b>	50 ml
<b>Flow rate</b>	4 ml/s
<b>Iodine delivery rate</b>	4 ml/s
<b>Start delay</b>	CARE Bolus

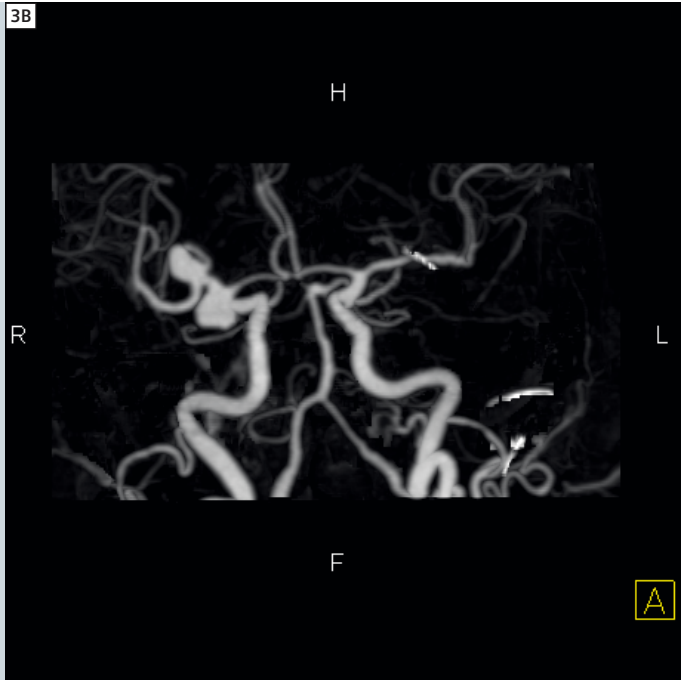
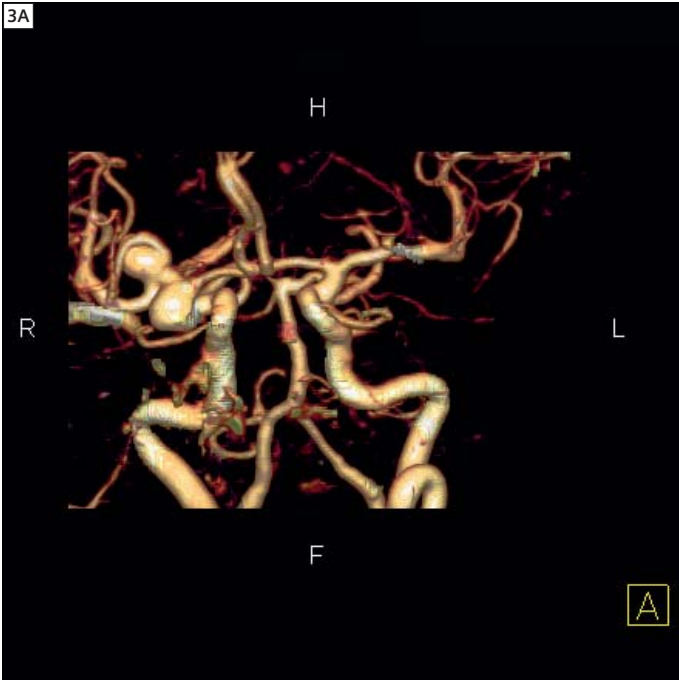
\*Duplication of the middle cerebral artery.



**1** View into the brain via Volume Rendering Technique (VRT), showing the position of the double aneurysm in the Circle of Willis.



**2** Detailed VRT image, showing both aneurysms, located consecutively in an aortic brain vessel.



**3** View on the two aneurysms in the Circle of Willis, virtually separated from brain tissue in VRT (Fig. 3A) and in comparison in MIP (Fig. 3B).