Abdominal Aortic Stent Grafts Combined with Peripheral Vascular Disease

By Stephen D Scott, MBA, RT (R) (CT); Zorica Vranic, AS, RT (R) (CT); Michael Cullinane*, BS, RT (R) (CT)
Center for Diagnostic Imaging, St. Luke's Hospital, Chesterfield, Missouri, USA
*Siemens Healthineers, USA

History

A 70-year-old male patient, suffering from an abdominal aortic aneurysm (AAA) had undergone stent grafts placement. He had a known history of peripheral vascular disease and came to the hospital for a follow-up. CT angiography (CTA) was performed for evaluation.

Diagnosis

CTA images revealed a stable infrarenal AAA, measuring 5.5 cm in diameter, with no evidence of an endoleak. Aortic and iliac stent grafts were well opacified and showed no signs of stenosis. All abdominal branches were patent. The left superfacial femoral artery (SFA) was occluded at the origin without reconstitution, as was the popliteal artery (PA). The left calf vasculature was filled by collaterals. Aneurysms were visualized in the distal right SFA (2.5 cm), the right PA (1.2 cm) and the left SFA (1.8 cm).

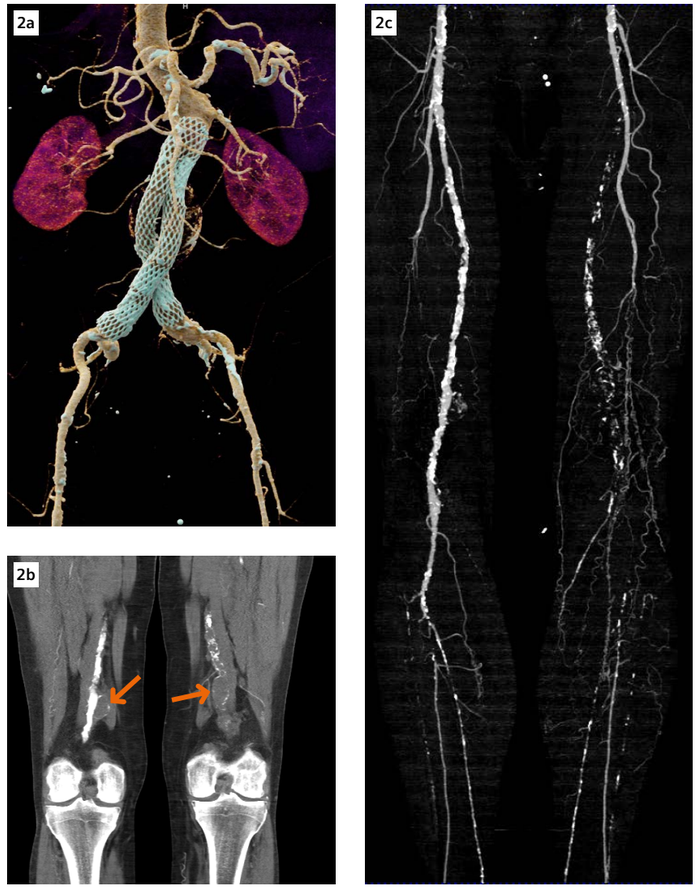
Extensive calcified plaques along the calf vasculature were present, causing multifocal irregularities bilaterally with a diminished two-vessel runoff to the feet.

1 cVRT images show an overview of the scan range with (Fig. 1a) and without (Fig. 1b) bony structures.

Comments

Follow-up CT scans are routinely performed on patients with a history of stent graft placement and peripheral vascular disease. In this case, 80 kV was applied to enhance the contrast and reduce the radiation dose, combined with CARE Dose4D (real-time anatomic exposure control) and iterative reconstruction technique SAFIRE (Sinogram Affirmed iterative reconstruction). An excellent image quality was achived enabling the physicians to rule out an endoleak, confim stent grafts patency and evaluate the peripheral vascular disease. Cinematic rendering technique improves depth and shape perceptions, allowing for an improved life-like 3D demonstration. ●

The outcomes by Siemens Healthineers customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption), there can be no guarantee that other customers will achieve the same results.



Examination Protocol

Scanner	SOMATOM go.Up
Scan area	Abdominal aorta through lower extremities
Scan mode	Spiral
Scan length	1410 mm
Scan direction	Cranio-caudal
Scan time	42 s
Tube voltage	80 kV
Effective mAs	110 mAs
Dose modulation	CARE Dose4D
$CTDI_{vol}$	2.94 mGy
DLP	427 mGy cm
Rotation time	0.8 s
Pitch	1.2
Slice collimation	32 × 0.7 mm
Slice width	0.6 mm
Reconstruction increment	0.6 mm
Reconstruction kernel	Bv36 (SAFIRE 3)
Contrast	350 mg/mL
Volume	100 mL
Flow rate	4 mL/s
Start delay	Aortic bolus tracking @100 HU + 15 s

2 A cVRT image (Fig. 2a) shows the stent grafts in place, without stenosis. A coronal MPR image reveals aneurysms (arrows) bilaterally in the distal SFA. A MIP image demonstrates the occluded left SFA and PA, with collaterals filling the calf vasculature.