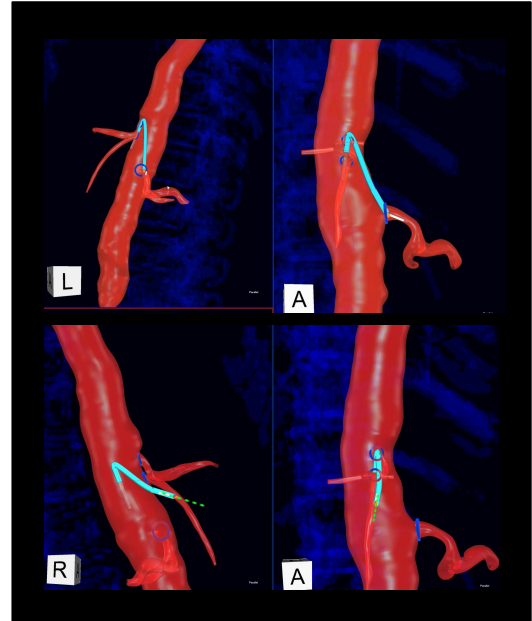


AUTHOR

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OBSERVATIONS

“IOPS technology allows for selective catheterization of renal and mesenteric vessels without exposing the operator to any ionizing radiation. This revolutionary technology eliminates contrast use during the catheterization step of these procedures and minimizes overall contrast dose administered, which is critical in patients with chronic kidney disease.”



CASE INFORMATION

Patient Information:

A female requiring superior mesenteric artery (SMA) intervention complicated by Stage 3a chronic kidney disease (CKD) and having a solitary kidney, making contrast reduction a priority. IOPS electromagnetic navigation was identified as a solution to limit dependence on contrast angiography.

Scan Protocol: Pre-operative CT arteriogram scan; intra-operative cone-beam CT scan

Location: Superior Mesenteric Artery, Left Renal Artery

Aneurysm: Type IV Thoraco-abdominal aortic aneurysm

Instruments Used:

8F, 25 cm vascular access sheath, 8F 100 cm IOPS Reverse Curve Catheter, 0.035" 160 cm IOPS guidewire, 0.035" Rosen guidewire

Cannulation Time:

Superior Mesenteric Artery: 38 seconds after forming catheter
Left Renal Artery: 25 seconds after forming catheter

Fluoro Duration: 10.5 minutes

Contrast Dose: 50 mL Omnipaque 350

Radiation: 845 mGy

PATIENT HISTORY

59-year-old woman with history of multi-bed vascular occlusive disease and asymptomatic small <5-cm abdominal aortic aneurysm presented with postprandial abdominal pain and unintentional significant weight loss. She has a solitary functioning left kidney with history of prior left renal artery stenting for malignant hypertension refractory to medical therapy and worsening renal function. On duplex U/S and CTA imaging, she was noted to have severe stenosis of celiac artery, superior mesenteric artery and left renal artery stent stenosis. She was diagnosed with chronic mesenteric ischemia and left renal in-stent stenosis.

PRE-OPERATIVE

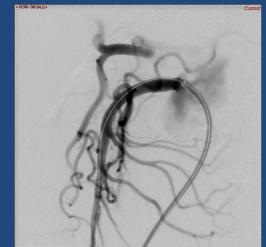
An aortic model was created using the preoperative CTA. The IOPS self-adhesive fiducial tracking pad was attached to the patient's lumbar region and the angiography system used to perform a non-contrast cone-beam CT scan. The cone-beam CT volume was then loaded on the IOPS cart and manually aligned with the pre-operative CT volume.

PROCEDURE

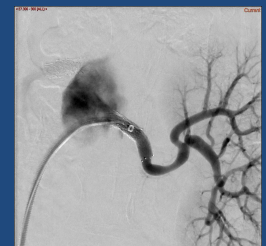
After obtaining 8F arterial access in the right common femoral artery with ultrasound and fluoroscopic guidance, the 8F IOPS reverse curve catheter and 0.035" IOPS guidewire were advanced into the abdominal aorta. The IOPS system was used to perform selective catheterization of the superior mesenteric artery. The SMA was successfully cannulated using IOPS guidance 38 seconds after forming the catheter. With the catheter fully seated, the IOPS wire was exchanged for a Rosen wire and the catheter removed. Under fluoroscopic guidance, the SMA was stented with a 7x22mm iCAST balloon-expandable stent. Completion angiogram demonstrated wide patency.

The same IOPS catheter and guidewire were then used to catheterize the left renal artery. Cannulation was achieved using IOPS guidance 25 seconds after the catheter was formed. Selective angiography demonstrated severe stenosis distal to the prior stent. The stenosis was stented by distal extension of the prior balloon-expandable stent with a 6x20mm Protégé self-expanding stent at the vessel's curvature. Completion angiogram revealed resolution of stenosis and excellent angiographic results.

On follow-up, the patient's symptoms were resolved and no hemodynamically significant stenosis was noted on surveillance duplex ultrasound of left renal and superior mesenteric arteries.



SMA Final



Left Renal Final