



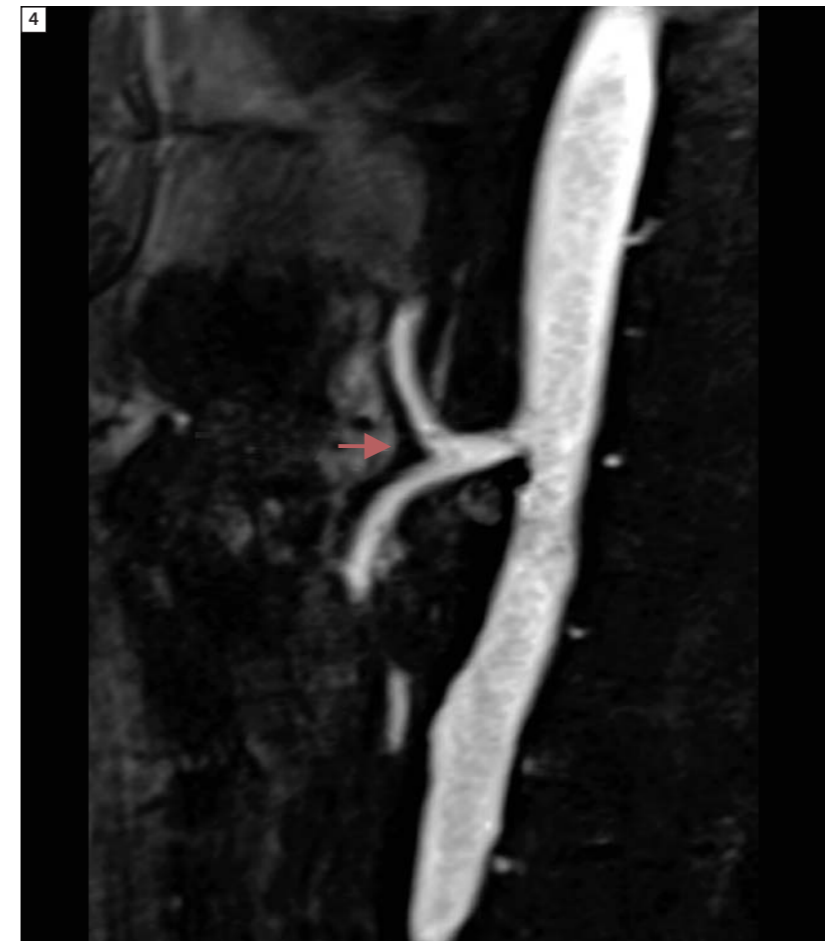
2A Another potential renal donor. **(2A)** Coronal MIP image reconstructed from an axial *syngo* Native TrueFISP acquisition clearly demonstrates the 2 bilateral renal arteries. The more inferior vessels (arrowheads) are smaller and could easily occlude if the decision was made to harvest one of these kidneys. Early bifurcation of the main right artery (arrow).



2B A MIP image from a conventional coronal MRA acquisition shows significant venous contamination, with obscuration of some arterial segments.



3 Coronal MIP reconstruction of a *syngo* Native TrueFISP data set in pre-operative work-up for renal tumor. The image lays out the intrarenal arteries quite well, without obscuration by the early parenchymal enhancement that often contaminates contrast-enhanced MRA. The technique clearly has potential to rule out fibromuscular dysplasia in the distal portion of the main arteries. It could also prove useful in the search for the tiny intrarenal aneurysms of polyarteritis nodosa.



4 48-year-old woman with chronic abdominal pain who is also allergic to contrast agents. The examination was undertaken to exclude significant disease in the mesenteric vessels. The source images for this sagittal MIP through the upper abdominal aorta were actually acquired in the sagittal plane, for optimal visualization of the celiac and SMA ostia. Clearly, significant atheromatous disease is excluded, but the common celiac-SMA trunk, a normal variant, is nicely demonstrated (arrow).

this branch vessel from the *syngo* Native TrueFISP images, it was still not clearly delineated on the MRA, which is degraded by venous contamination and a band of horizontally-oriented pulsation artifact. This patient was ultimately rejected as a suitable donor. Harvesting would have been difficult and implantation into the recipient would have been even more challenging. Moreover, the small size of the branch vessel dramatically increased the likelihood of eventual stricture or thrombosis at the anastomosis.

Discussion and other examples

Figure 2 illustrates another example of duplicated renal vessels, with the *syngo* Native TrueFISP adding value to the information provided by the conventional MRA technique. Yet another potential application for the non-enhanced technique stems from its capacity to depict the intrarenal arteries in detail (Fig. 3). This ability is quite robust, as long as the patient's cardiac output is good and patient motion is minimized. If output is low or if the patient is dehydrated, signal will fall off rapidly as the aorta descends. Consequently, a significant limitation to aortic blood flow should discourage the radiologist from committing to a stand-alone Native TrueFISP for renal artery assessment. The technique's Z-axis limitations also dictate very careful placement of the acquisition volume, with its superior margin just above the vessels in question.

Figure 4 represents a change of the source acquisition to the sagittal plane for this scan designed to rule out atherosclerotic disease or clot in the larger arteries of the bowel mesentery. These images have been acquired using our 1.5T MAGNETOM Avanto with Spine and Body Matrix coils.

Case study

A healthy 31-year-old male would like to donate a kidney to his father. The renal transplant service requested an MRA as part of the customary pre-transplant evaluation for potential donors.

Sequence details

The renal arterial anatomy of this patient was imaged first with *syngo* Native TrueFISP followed by conventional ceMRA. The Native TrueFISP volume was acquired in the axial plane, 120 slices with 1 mm through slice resolution. The acquisition was fat suppressed at a TR/TE = 878/1.8 ms and a flip angle of 90 degrees. A PAT

factor of 2 was used with one average. Acquisition time was 3:10 min. Images have been acquired using our 1.5T MAGNETOM Espree with Spine and Body Matrix coils.

Imaging findings

The donor in question has very complex arterial anatomy, with four arteries supplying the right kidney, all arising from the aorta in close proximity to each other (Fig. 1). There are only two arteries on the left, but the superior artery quickly gives rise to a branch vessel that courses outside the hilum to enter the kidney through the upper pole renal tissue. Even with prior knowledge of

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