

Endovascular Treatment of Renal Parenchymal Hemorrhage

A patient experiences a renal parenchymal hemorrhage after stenting.

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A 71-year-old woman with a history of breast cancer, atrial fibrillation, and poorly controlled hypertension was found to have bilateral renal artery stenoses on both duplex sonography and magnetic resonance angiography. She underwent staged renal artery stenting with the right renal artery initially revascularized without difficulty. Two weeks after this procedure, she was readmitted for treatment of her left renal artery stenosis.

A 6-F sheath was positioned in the left brachial artery, and subsequently the aortic arch was catheterized with a steerable Wholey wire (Covidien, Mansfield, MA), followed by a Rosch catheter (Cook Medical, Bloomington, IN). After the Rosch catheter was positioned in the aorta, the wire was removed and replaced with a Wholey Plus wire, followed by passage of the multipurpose 6-F guide catheter. An angiogram then confirmed a subtotal occlusion at the origin of the left renal artery with marked stenosis and dystrophic calcification at the proximal left renal artery (Figure 1). The 6-F multipurpose guide was then positioned at the renal ostium. A .014-inch Choice PT wire (Boston Scientific Corporation, Natick, MA) was passed across the lesion and positioned in an upper pole branch. This lesion was predilated with a 4-mm, low-profile Maverick balloon (Boston Scientific Corporation) and subsequently stented

with a 6-mm X 18-mm balloon-expandable stent. Markedly increased flow was confirmed by angiography, and the stent appeared to be well positioned (Figure 2).

Approximately 20 minutes after the completion of the procedure, the patient reported left flank pain and simultaneously was noted to have a drop in her blood pressure. She underwent an emergent CT scan that revealed a large perinephric hematoma with active extravasation of contrast (Figure 3). The patient was urgently returned to the angiography suite and the right femoral artery was accessed. A 5-F diagnostic catheter was placed at the renal artery orifice, and after this, a .014-inch wire and, subse-



Figure 1. The initial aortogram demonstrates high-grade stenosis and dystrophic calcification at the proximal right and left renal arteries.



Figure 2. A completion arteriogram shows well-positioned right (A) and left (B) renal artery stents.

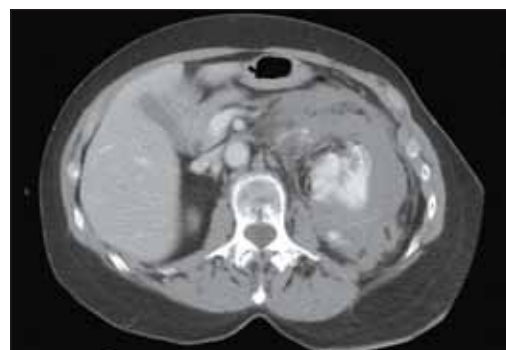


Figure 3. A postprocedure CT angiogram shows a large perinephric hematoma and active extravasation of contrast.

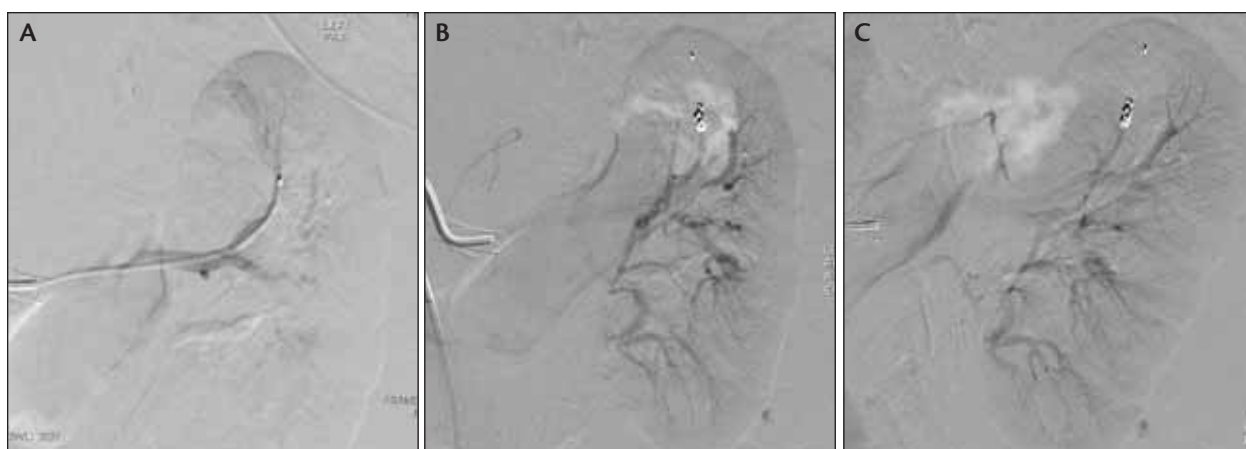


Figure 4. A selective arteriogram with active extravasation from an upper-pole cortical branch (A). Completion arteriogram after coil embolization with resolution of the bleeding (B, C).

quently, a Renegade catheter (Boston Scientific Corporation) were used to select the upper pole branch, which appeared to be the source of the hemorrhage. A cortical branch was noted to have active extravasation and was subsequently coil embolized using Tornado microcoils (Cook Medical, Bloomington, IN) with resolution of the bleeding (Figure 4). On review of the procedural images, the .014-inch wire was noted to be in excellent position in an upper pole cortical branch; however, it was likely that inadvertent advancement of this wire led to the parenchymal injury.

In a hemodynamically stable patient, observation with serial measurements of hemoglobin and hematocrit in an intensive care unit setting would have been an option. For our hemodynamically unstable patient, additional endovascular options included the use of gelfoam or microspheres to induce thrombosis of the bleeding vessel. Finally, if these endovascular approaches were unsuccessful, emergent surgical control of the hemorrhage, including possible nephrectomy, may have been necessary.

After this second procedure, her hemoglobin and hematocrit levels remained stable, and after 4 days of hydration, her creatinine level returned to baseline. She was subsequently discharged. On duplex sonography at 1-year follow-up, she had normal segmental and main renal artery waveforms with normal systolic blood-flow velocities within both renal arteries and no evidence of recurrent stenoses. ■

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