„Hibernating kidney“: successful surgical salvage of renal failure after renal artery occlusion following EVAR

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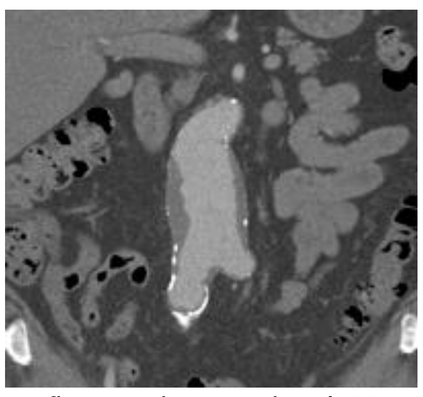
fig. 1 preinterventional CT


fig. 2 smaller right kidney


fig. 3 zoom view right renal artery

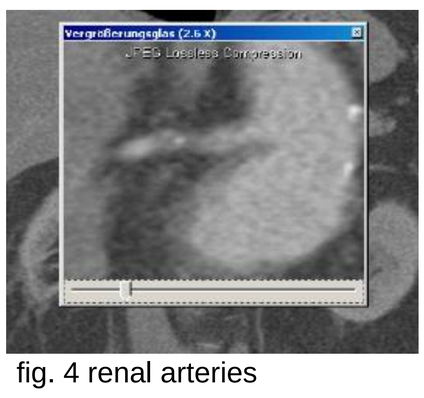

fig. 4 renal arteries

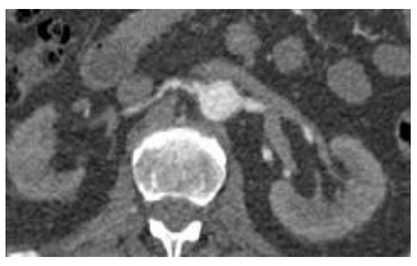
fig. 5 smaller right kidney

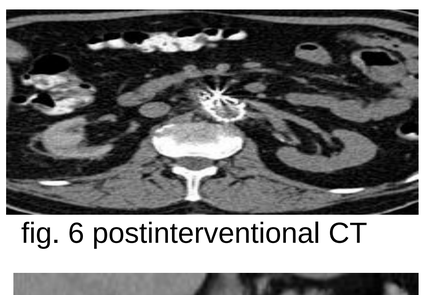
fig. 6 postinterventional CT

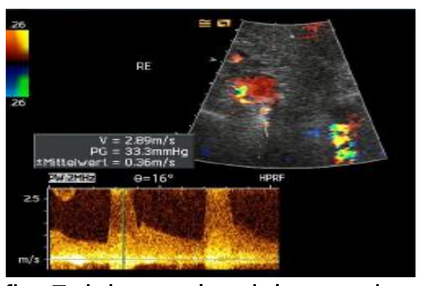

fig. 7 right renal ostial stenosis

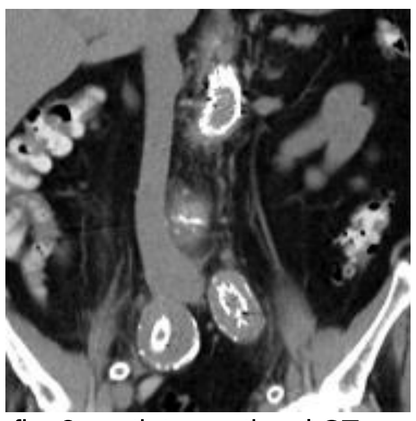
fig. 8 postinterventional CT

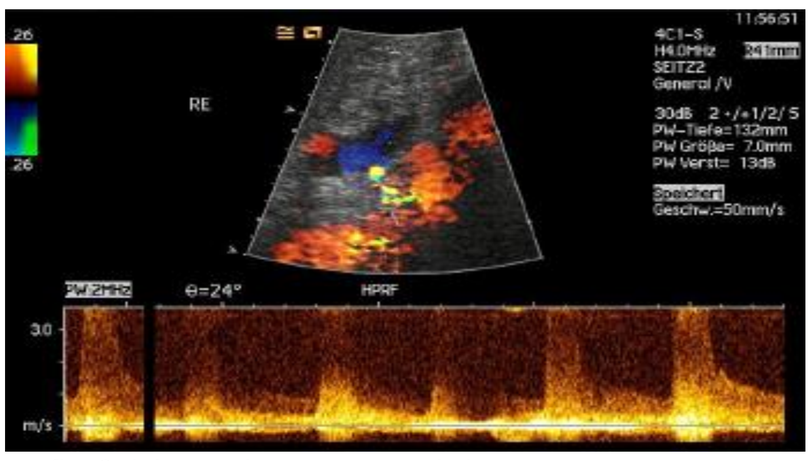

fig. 9 right renal artery, coronal view

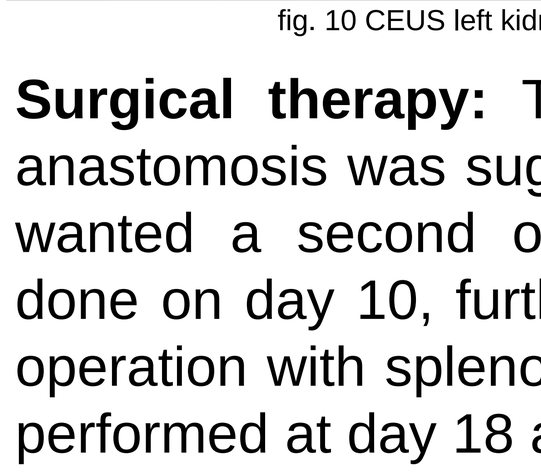

fig. 10 CEUS left kidney

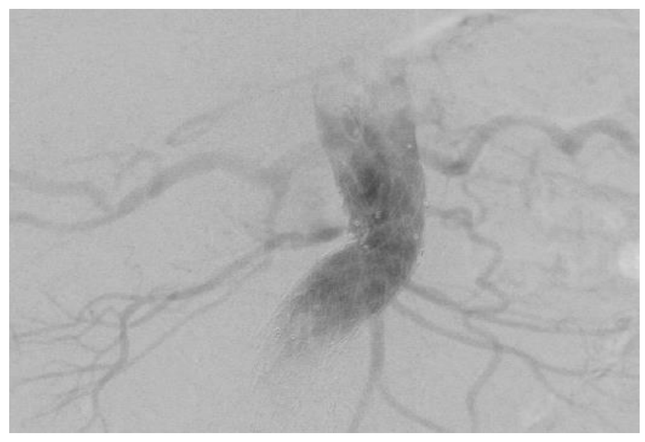
fig. 11 Angiography, right renal artery stenosis

Case history:

A 72-year old patient with juxtarenal aortic aneurysm and right sided renal artery stenosis (fig. 1-5) underwent endovascular aortic aneurysm repair (EVAR) in an external institution. On day 3 he was transferred to our nephrology department because of acute renal failure requiring hemodialysis therapy. Blood pressure was 200/112 mmHg, he showed showed pulmonary congestion, serum-creatinine peaked to 9,9 mg/dl. ***CT-scan*** and ***duplex-sonography*** showed occlusion of the left renal artery due to incorrect stent graft position and an atrophic kidney on the right side due to renal artery stenosis (fig. 6-8). Arterial perfusion signals in the periphery of the left renal parenchyma were absent. Contrast enhanced ultrasound (CEUS), however, disclosed slowed parenchymal perfusion without signs of infarction (fig. 10). Percutaneous interventional revascularisation was technically not feasible (fig. 11).

Surgical therapy: To restore renal function, a splenorenal anastomosis was suggested, but the patient did not agree and wanted a second opinion. Therefore, repeated CEUS was done on day 10, further without signs of kidney infarction and operation with splenorenal transposition for the left kidney was performed at day 18 after informal consent of the patient.

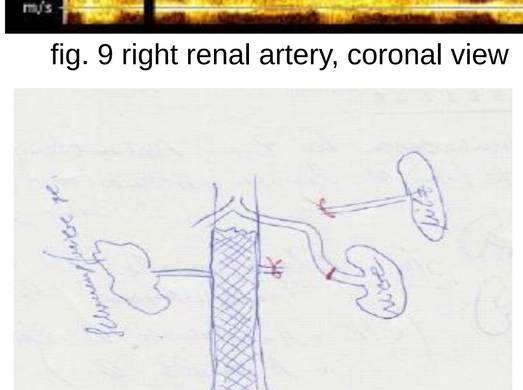
fig. 12 operation drawing

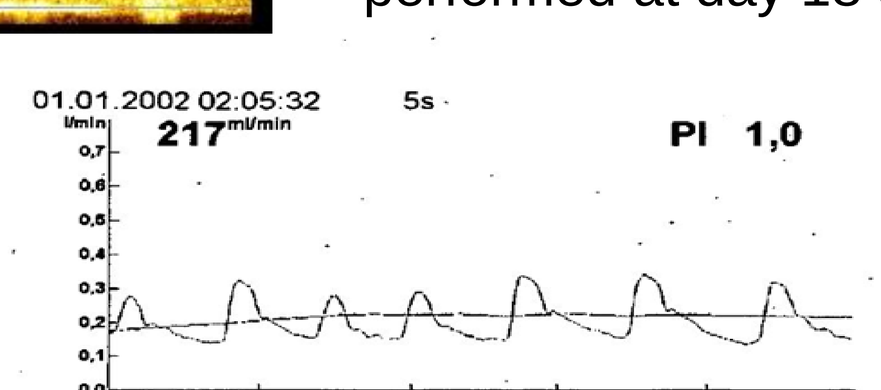

fig. 13 intraoperative doppler-flowmeasurement

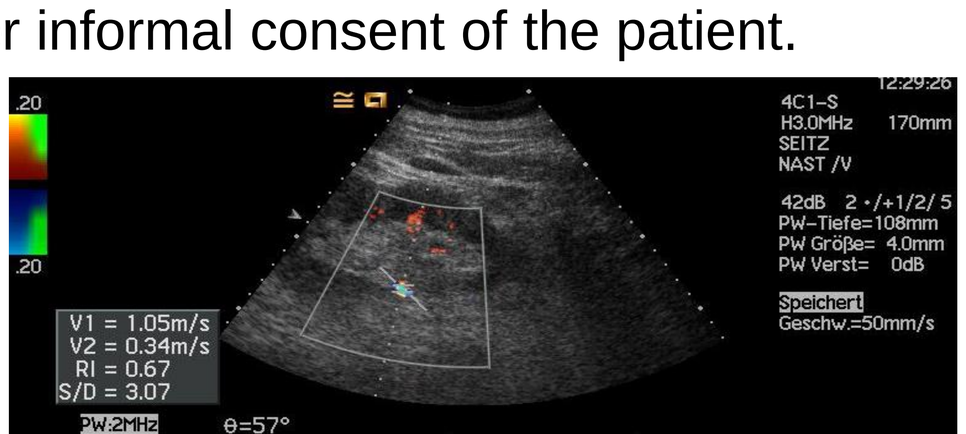

fig. 14 postoperative doppler spectrum left kidney

Postoperative course: After surgery diuresis increased immediately and creatinine fell to 2,8 mg/dl. Hemodialysis therapy was discontinued. Postoperative sonography showed no splenic infarction or a decrease in splenic size with strong hilar doppler signal (fig. 14). After 6 weeks creatinine had regressed to 1,6 mg/dl (fig. 15).

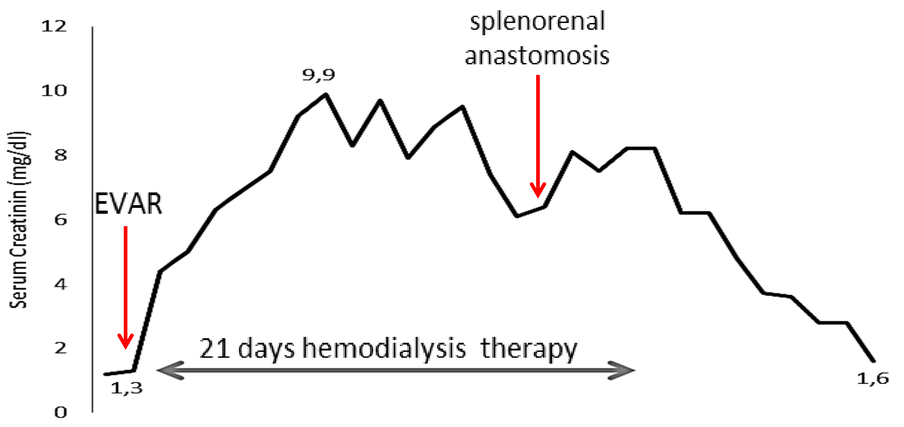

fig. 15 creatinine values before and after EVAR

Conclusion

1. Operative salvage of the left kidney was successfully performed three weeks after acute renal failure following EVAR.
2. “Slow-food” oxygen supply prevented ischemic renal necrosis, but subfiltration perfusion pressure resulted in a “hibernating kidney” with reversibility after splenorenal anastomosis.
3. CEUS proofed parenchmal viability after acute renal artery failure due to renal artery overstenting, delayed revascularisation after 18 days was able to restore kidney function in this patient.