

RF10. Carbon Dioxide Gas Angiography in the Endovascular Treatment of Ruptured Abdominal Aortic Aneurysms

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OBJECTIVES: Endovascular repair of ruptured abdominal aortic aneurysms (AAAs) is gradually being preferred. This technique typically requires a significant volume of iodinated contrast dye that often follows contrast administered previously for computed tomography angiography (CTA). This substantially increases the risk of renal failure, which is a known predictor of postoperative mortality. The following two cases describe a novel method using carbon dioxide (CO₂) angiography to treat ruptured AAAs.

METHODS: A sixty-seven year old male was transferred from an outside institution with a ruptured AAA secondary to a presumably undiagnosed Type IA endoleak that was being followed over two years by serial ultrasounds alone. His accompanying CTA demonstrated an AneuRx endograft inside the aneurysm sac and subsequent rupture of his 6.7 cm AAA. The other patient was a sixty-eight year old male flown to us with a 6.8 cm ruptured AAA with extravasation of contrast detected on CTA. In both cases, carbon dioxide (CO₂) angiography was used to identify the renal and iliac arteries. In the first patient, the internal iliac artery was embolized, an aorto-uniiliac endograft was deployed, and the contralateral iliac limb was occluded followed by a femoral to femoral bypass. In the second patient an internal iliac artery was embolized and a modular, bifurcated graft was deployed.

RESULTS: Following placement of the endografts, completion angiography with CO₂ documented no endoleak in the first case and a Type II endoleak in the second. Both patients demonstrated patent renal arteries and exclusion of the AAA confirmed by follow-up CTA. The patients were discharged on postoperative days 3 and 5, respectively. No change in their serum creatinine was noted upon discharge.

CONCLUSIONS: CO₂ angiography can be used as the primary contrast agent for emergent endovascular treatment of ruptured AAAs. It is inexpensive, does not require a power injector and has no toxic effect on renal function.