

# Type I Aortic Endograft Leak

Emily Rey, D.O., Mitchell Pearce, D.O., Rita Sico, D.O., Gerard Buffo, M.D.

Arnot Ogden Medical Center, Diagnostic Radiology Department, Elmira, NY

## BACKGROUND

82-year-old male with a remote history of an abdominal aortic aneurysm endograft repair approximately seven years before and previous type II endoleak repair was transferred to this facility after being assessed at a outside facility and found to have active extravasation of contrast outside the lumen of his abdominal aortic graft. Earlier that morning he was speaking with a friend in the healthcare field and mentioned an episode of orthostatic hypotension and hematuria when she suggested he be evaluated at a local emergency department. He had no other symptoms and had history of prior colectomy with ostomy creation. Vital signs showed the patient to be hypertensive at 190/95 upon presentation and physical exam showed patient to have a large palpable pulsatile abdominal mass.



(Left) Sagittal, delayed phase CT of the Abdomen demonstrates extravasation of contrast from graft. This was noted to be a Type I endoleak on subsequent angiographic examination and repair (right).

## IMAGING

Initial CT examination obtained upon arrival showed a 9 cm infrarenal abdominal aortic aneurysm with pre-existing endograft and active extravasation of contrast out of the proximal graft and into the lumen of the aneurysm. Delayed arterial imaging showed increased volume of contrast extravasation from the proximal graft. Metallic coils from previous type II endoleak lumbar artery coiling were present posterior to the aortic aneurysm and exhibited metallic streak artifact which reduced anatomic detail.

## DISCUSSION

Abdominal aortic aneurysmal repair relies on two surgical methods: endovascular aneurysm repair (EVAR) or open surgical aneurysmal repair. After an EVAR, there are multiple mechanisms blood may find its way back into the aneurysmal abdominal aorta. Persistent perfusion into the excluded aneurysm after endograft repair is known as an endoleak. There are multiple types which have different mechanisms and imaging characteristics. They also present different challenges in regards to repair.

Type I endoleak is defined as a lack of seal between the vessel wall and the endograft, subtypes A, B, and C represent a lack of seal proximally, distally, and around iliac occlude within graft. Type II endoleak represents retrograde flow in the inferior mesenteric, gonadal, lumbar, or medial sacral arteries and are subdivided into A which is simple inflow into the aneurysmal sac and B which is complex flow both into and out of the aneurysmal sac. Type II flow dynamic physiology is analogous to AVM type flow where there are potentially multiple feeding vessels into a central nidus. As with AVM treatment simply eliminating the feeding vessels is not sufficient as more vessels will be “recruited” over time. The nidus must be obliterated and in the case of a type II endoleak, the nidus is the central aneurysmal space in communication with the vessels. If this is not accomplished, there is an 80% recurrence rate. Type III endoleaks are mechanical failures of the fabric of the graft. Type IV endoleaks are perfusion of the aneurysmal sac due to porosity of the graft material. Type V endoleak is continued enlargement of the aneurysmal sac without identifiable cause and is also known as endotension.

## REFERENCES

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## CONTACT

Emily M. Rey, D.O., R2: erey@arnothealth.org  
Mitchell Pearce, D.O., R3: mpearce@arnothealth.org  
Rita Sico, D.O., R4: rsico@arnothealth.org