A challenging case of a leaking bypass graft following open aortic aneurysm repair in a patient with iodine contrast allergy successfully relined with EVAR stent graft using carbon dioxide angiography

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I have the following potential conflicts of interest to report:

- [ ] Consulting
- [ ] Employment in industry
- [ ] Stockholder of a healthcare company
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- [ ] Other(s)

✓ I do not have any potential conflict of interest
Background

• Contrast agents are the mainstay for CT angiograms and planning successful endovascular aneurysm repairs

• Iodine based contrast is the most commonly used

• Carbon dioxide angiography offers an alternate imaging modality
Case

- 77 year old Male
- 2014: Open repair for 5.5 cm Abdominal Aortic Aneurysm
- Medical History: Coronary stents, type II diabetes, carcinoma of bladder
- Severe allergy to iodine based contrast noted during coronary stent intervention
Case

• 2019: Presented for routine ultrasound surveillance scan

• 0.5cm leak at the distal end of the tube graft at the aortic bifurcation

• Aneurysmal sac: 6.7cm in anteroposterior diameter
Case

- MR angiogram (MRA) performed using IV gadolinium contrast
Case

• Developed lower back pain few days following MRA

• Haemodynamically stable

• Non-contrast CT scan performed
Intervention

- Multidisciplinary team discussion
- Relining of aortic tube graft with an EVAR stent graft using Carbon Dioxide angiography
- Type of EVAR graft
Intervention

• Intravascular Ultrasound (IVUS) used to confirm the diameter of the neck of the aneurysm

• Total of 20 ml IA Gadolinium contrast used to delineate the iliac bifurcation bilaterally

• Gore excluder AAA stent graft was advanced via the right common femoral artery
Carbon dioxide angiography kit

Mermaid Medical
Intervention

• Final hand injected CO2 angiographic run showed no obvious endo-leak with preservation of both renal and the internal iliac arteries

• Low back pain resolved
Follow-Up

- Duplex US in 6 weeks and 6 months
- Thrombosed aortic aneurysm sac
- No evidence of endo-leak
- Sac size measuring 6.2 cm in maximal AP diameter at 6 months
Conclusion

- CO2 angiography safe and effective
- Caution while injecting CO2 in patients with severe COPD
- Challenging if renal artery has a posterior lie
- Follow up in such patients remains a challenge
Thank You
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