

Testicular varicocele embolisation using CO2, gadolinium and lipiodol as contrast agents in a patient with iodinated contrast allergy

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Introduction

The use of non-iodinated contrast agents (NICA) is well established in interventional radiology (IR) when there is contraindication to iodinated agents such as allergy or renal failure. However, there is a paucity of literature on the use of combination NICA.

Alternatives to iodinated contrast

	Advantages	Disadvantages
CO2	Non-allergenic and non-nephrotoxic	Infradiaphragmatic arteriography only
	unlimited volumes can be used	vapor lock
	low viscosity aids visualization of small collateral vessels	Specialist equipment/cost
Gadolinium	Readily available	Nephrogenic systemic sclerosis
	Relatively cheap	Nephrotoxicity if eGFR <60
		Requires DSA due to low concentrations
Lipiodol	Better emulsification with hydrophobic agents	Higher viscosity profile to ICM
	Can act as embolic agent	

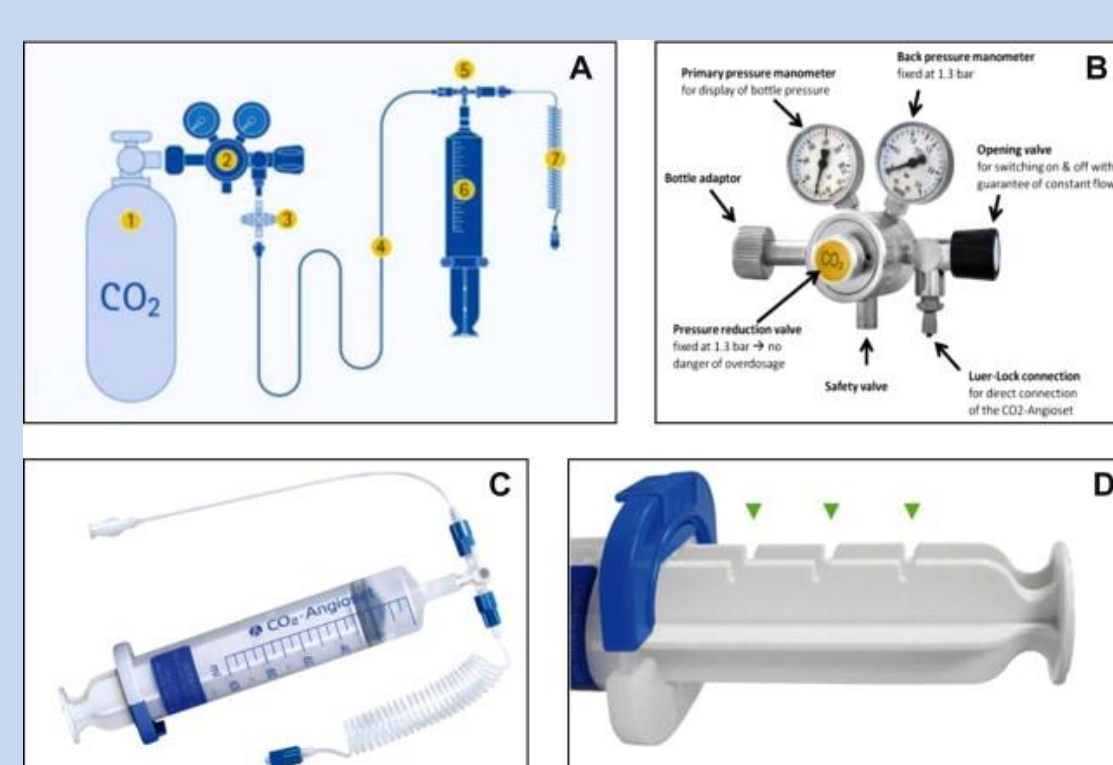


Fig 1. Component and function of CO2 angioset

Case

A 44 year old gentleman was referred to IR for varicocele embolisation (VE) by the fertility clinic following investigation for oligospermia. A testicular ultrasound identified a left grade II varicocele. The patient had known anaphylaxis to iodinated contrast.

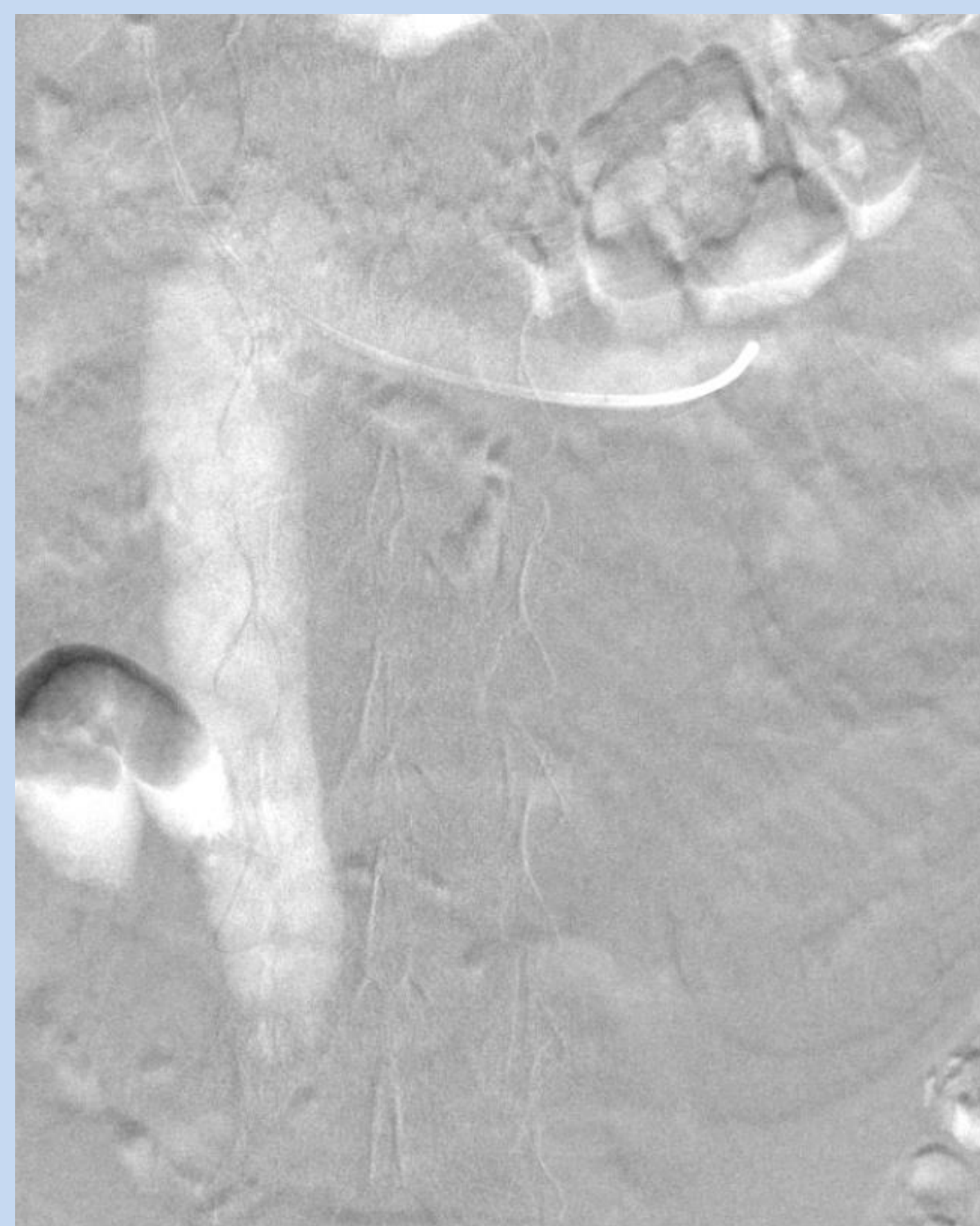


Fig 2. DSA CO2 venogram to confirm catheter position in left renal vein

Following careful counselling and consent of the patient, for off label use, it was planned to perform VE with combination NICA.

The procedure was performed under general anaesthetic to mitigate the pain related to CO2 angiography. He was also extremely needle phobic.

Following standard venous access techniques of the right internal jugular vein CO2 was used as the main contrast agent, with digital subtraction angiogram (DSA), to confirm catheter selection of left testicular vein (TV). This demonstrated a large varicocele. After coil deployment gadolinium was injected and DSA used to confirm occlusion of the left TV. Then a combination of 4mls of 3% Fibrovein and 2 mls of Lipiodol (SDS foam) was injected to achieve embolisation of the TV collaterals. The patient made an uneventful recovery.

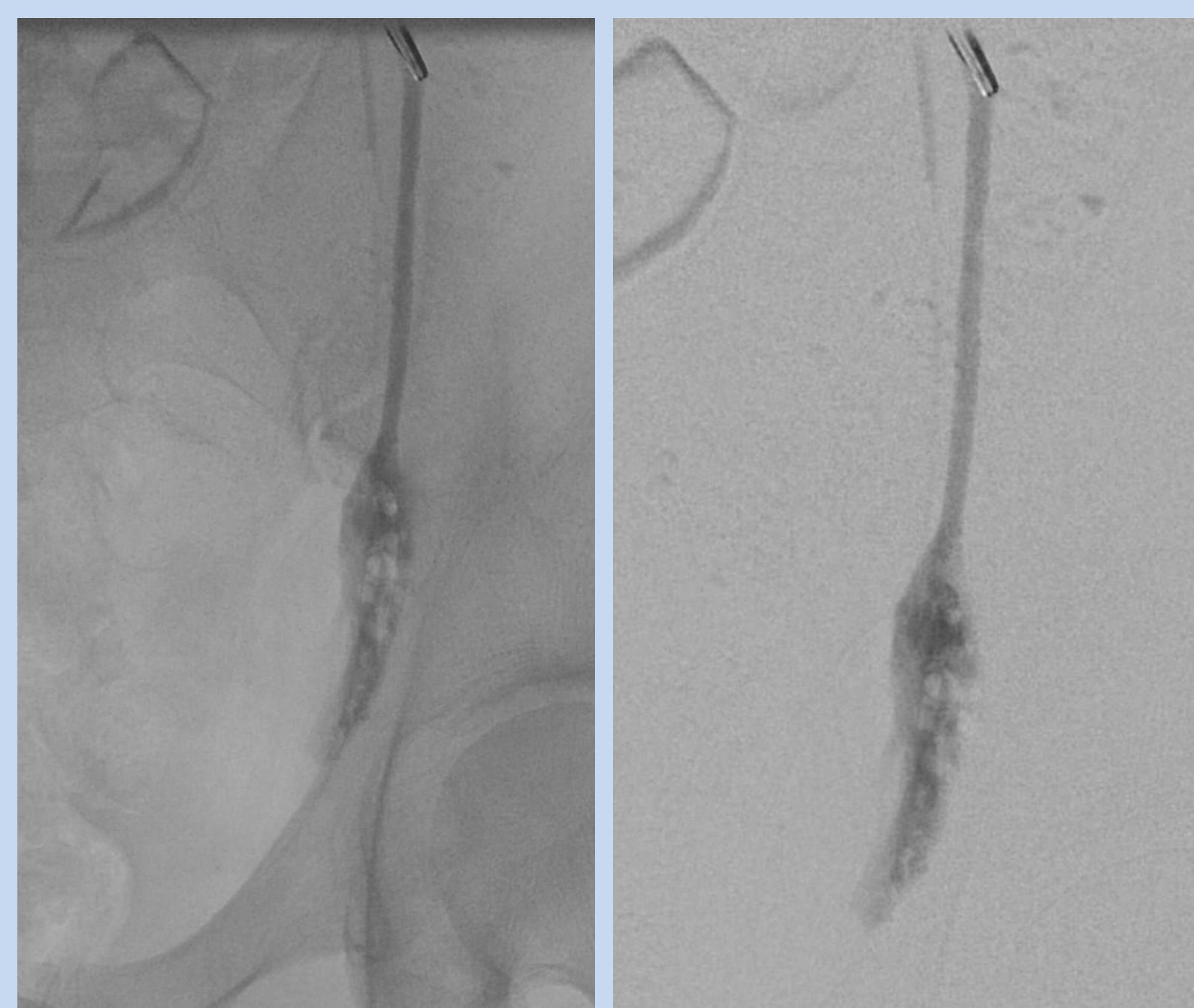


Fig 3: DSA following injection of gadolinium to demonstrate varicocele



Fig 4. DSA with gadolinium to confirm occlusion of TV

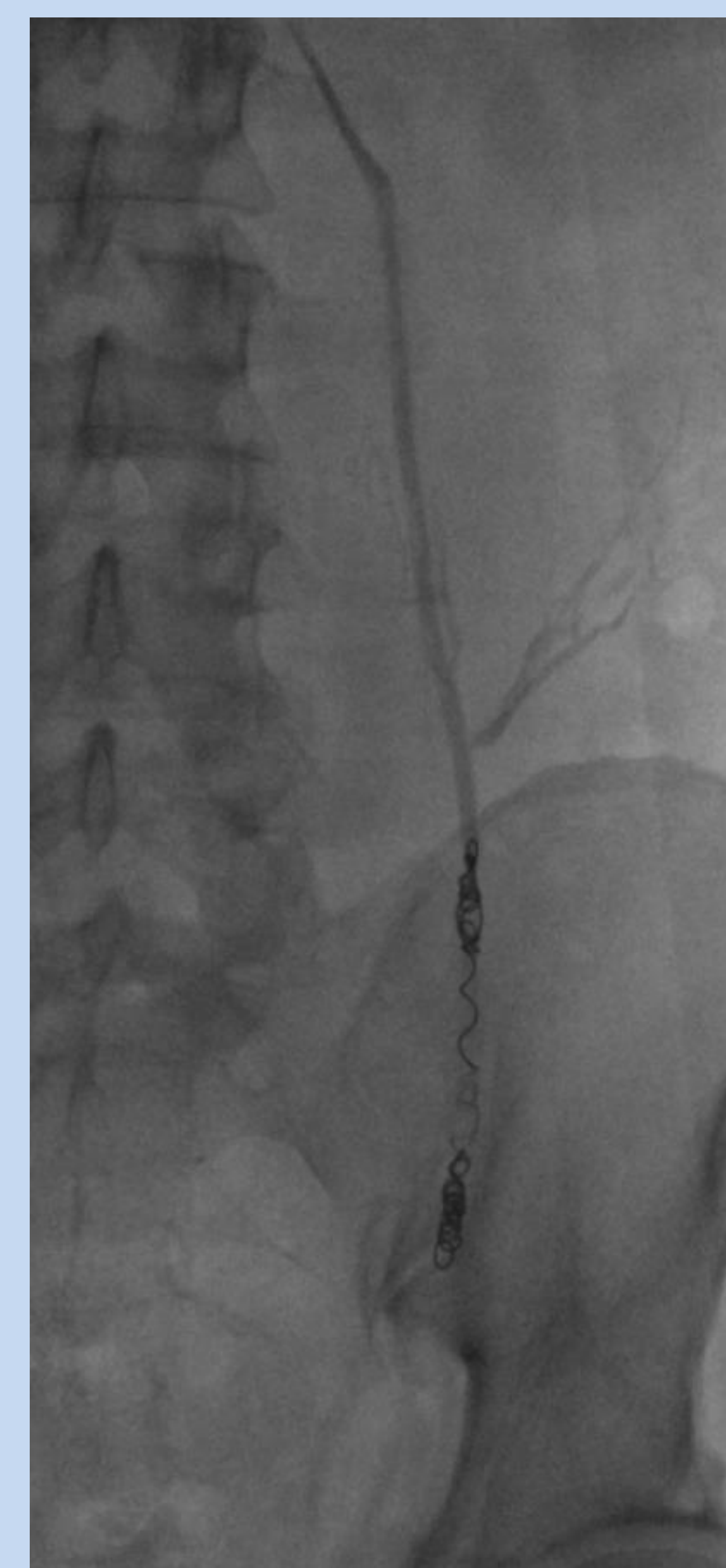


Fig 5. Fluoroscopic image where Fibrovein/lipiodol was injected to achieve embolisation of the TV collaterals

Conclusion

- This is the first reported case of both CO2 angiography and gadolinium being used in varicocele embolisation.

Learning points

- The use of non-iodinated contrast appears safe and effective in VE in those patients with contraindications to ionic agents.
- Due to their different properties combinations of NICA can be more effective than a single agent.
- Careful counselling and consent of the patient, for the off label use of NICA, is required prior to the IR procedure.

References

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