Value of CO₂ DSA For Abdominal and Pelvic Trauma: Why and How To Use CO₂ Angiography With Massive Bleeding And When To Supplement It With Iodinated Contrast

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Value of CO₂ DSA

- Non-allergic and Non-nephrotoxic
- Highly soluble (20 - 30X O₂)
- Low viscosity (1/400 iodinated contrast)
  - Use with 3Fr or 4Fr endhole catheter
  - Detection of bleeding, PSA, and AVF
- Proximal (Central) reflux
- Use of unlimited volumes
- Inexpensive

Methods for CO₂ Delivery

Plastic Bag

CO₂mmander

Catheters for CO₂ Injection

CO₂ Bubble

CO₂ DSA: Technique

- Start with CO₂ aortography
- May repeat aortography with CO₂ injections at the level of celiac, renal or aortic bifurcation below diaphragm.
- Selective injection with iodinated contrast for a road map.
- Superselective injection with iodinated contrast: if no extravasation, repeat injection with CO₂.

DISCLOSURES:
None
Splenic Trauma

CO\textsubscript{2} Aortogram  Iodinated Contrast  CO\textsubscript{2}

CO\textsubscript{2} Celiac DSA in Splenic Rupture

Hepatic Laceration

CO\textsubscript{2} Aortogram  Iodinated Contrast

Renal Artery Rupture

CO\textsubscript{2} Aortogram  Iodinated Contrast

Pelvic Penetrating Injury by Pool Cue

CO\textsubscript{2} Aortogram  Iodinated Contrast

Angiography in Pelvic Trauma

CO\textsubscript{2}
Conclusions

• CO₂ DSA is a valuable imaging modality for abdominal and pelvic trauma.
• Start with CO₂ aortography: If indicated, repeat CO₂ injections below diaphragm.
• Selective injections with iodinated contrast for a road map: If no extravasation, repeat selective or superselective injection with CO₂.
• Must prevent air contamination during the CO₂ injection.

THANK YOU FOR YOUR ATTENTION