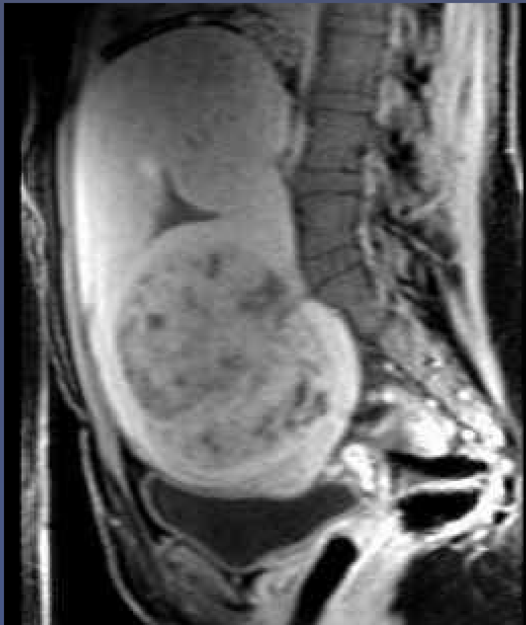
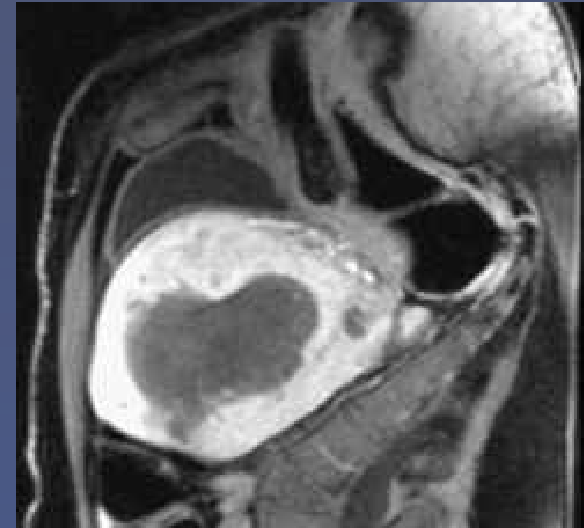
Technical Approaches to the Difficult Uterine Artery Embolization



Robert L. Vogelzang

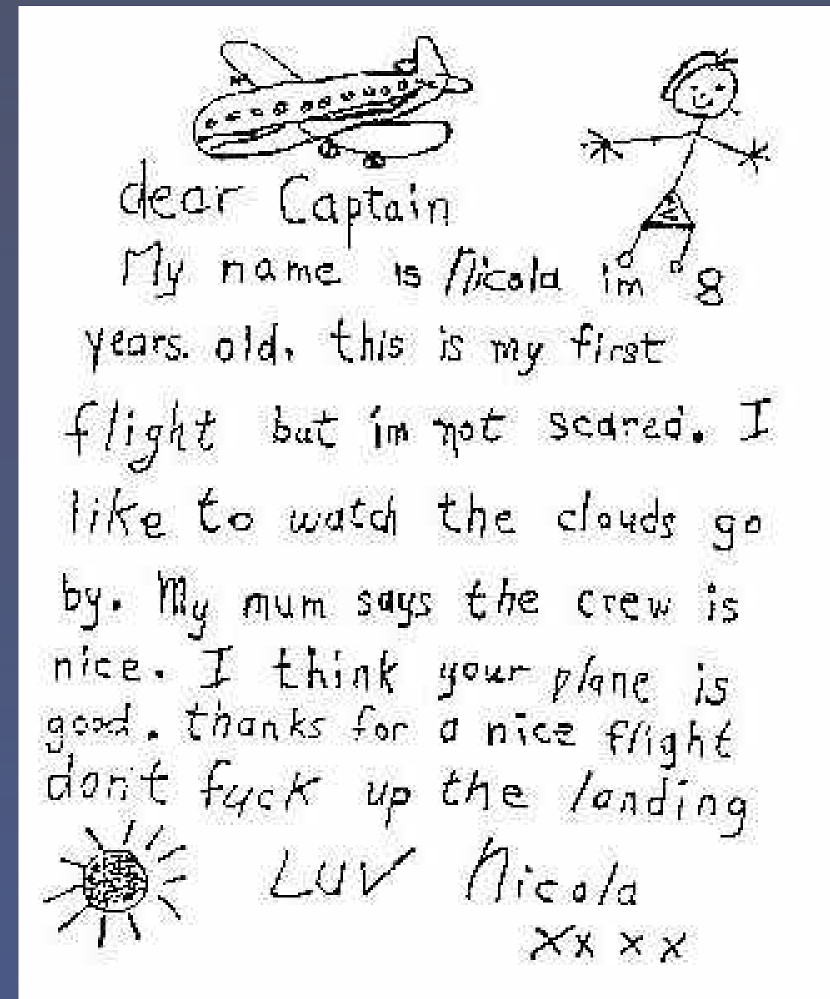


Technical Requirements for Performance of UFE

- IR Core competency
- Full familiarity with pelvic anatomy and variants and their angiographic appearance
- Ability to perform super-selective catheterization
- Ability to embolize

UFE

- Generally straightforward for experienced IR
- 5-10% technically challenging or difficult
- Ability to recognize, catheterize and treat is the difference between <1% technical failure and 3-5% failure



dear Captain
My name is Nicola im 8 years. old. this is my first flight but im not scared. I like to watch the clouds go by. My mum says the crew is nice. I think your plane is good. thanks for a nice flight don't fuck up the landing

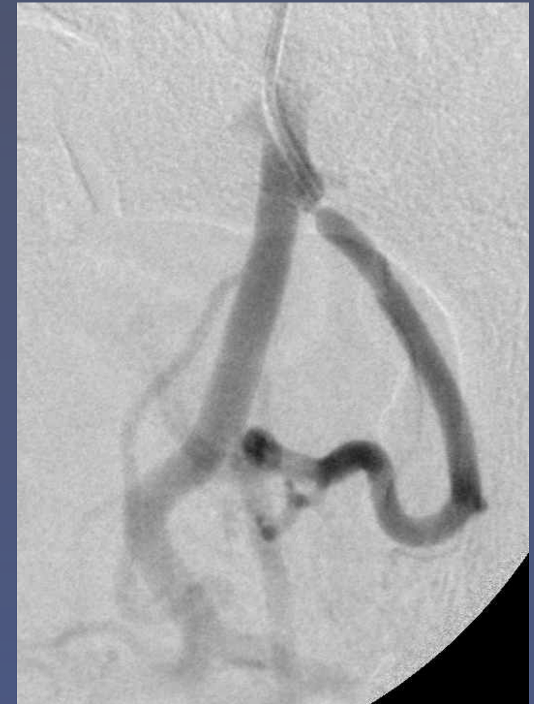
LUV Nicola
xx xx

The Technically Challenging UFE

- Uterine artery spasm
- Failure to identify the UA origin
- Uterine artery tortuosity
- Anatomic variants / alternate pathways of fibroid flow

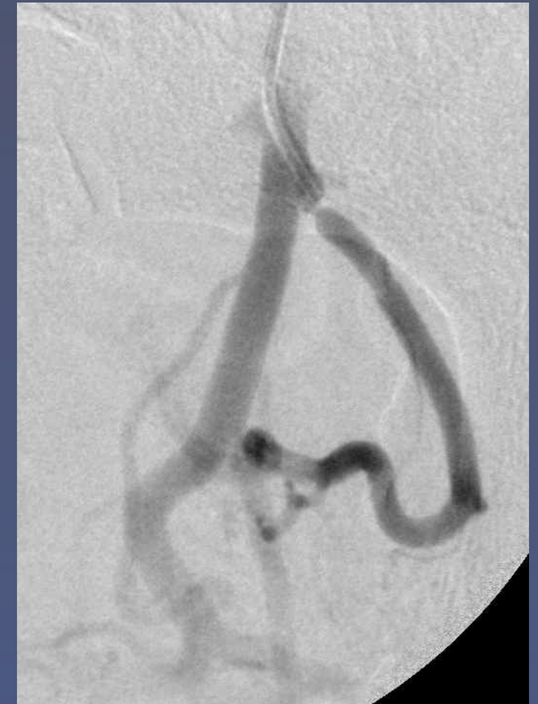
Uterine Artery Spasm

- Typical problem in any non-diseased artery
- Persistent problem in UFE
- Prevents free-flow embolization—may reduce UFE efficacy



Uterine Artery Spasm: Causes

- Excessive manipulation/multiple attempts at catheterization
- Large catheters into small arteries
- Guidewire irritation



Uterine Artery Spasm: Recognition

- Usually easily recognized
- Origin of vessel
- When catheter tip distal to origin, proximal spasm may produce only flow abnormalities
  - Poor washout
  - Persistence of contrast at catheter tip
  - Withdraw catheter until contrast column clears

UA Spasm: Treatment

- Prevention!!!
  - Pre-visualize the uterine artery origin
  - Road-map
  - Gentle manipulation
  - Microcatheters
- Watchful waiting
- Pharmacologic
  - 100-200 mcg NTG

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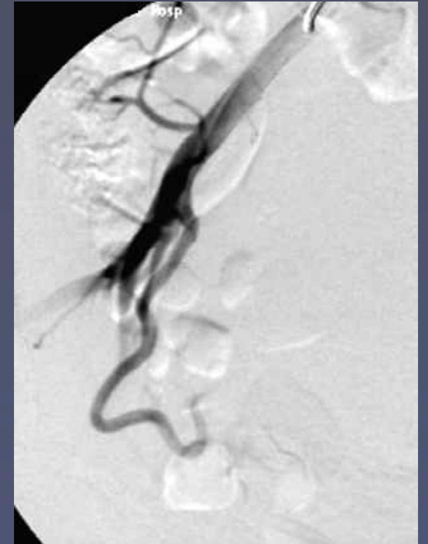
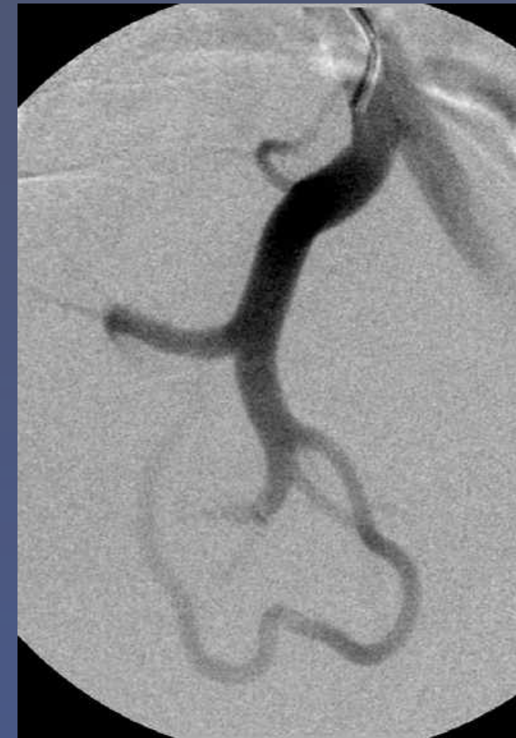
Identifying the UA Origin

- Ipsilateral oblique: 87%
- Contralateral oblique: 11%
- Other: 2%

Or…………Bob's Rule of Obliques:

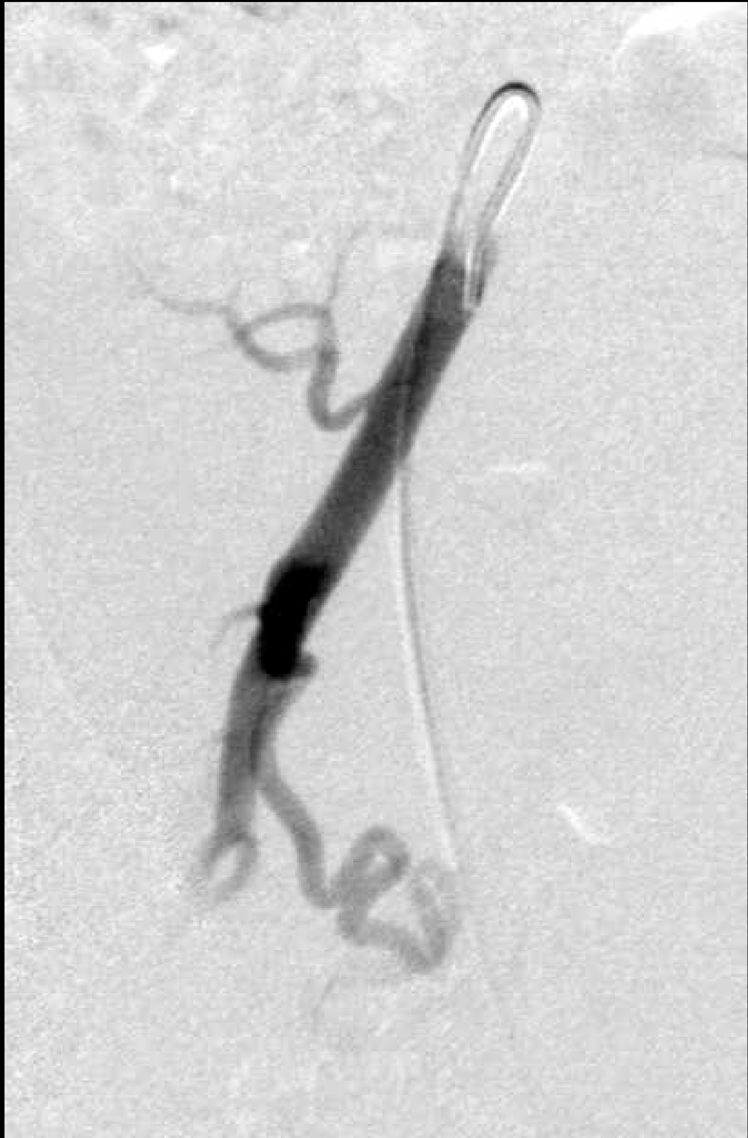
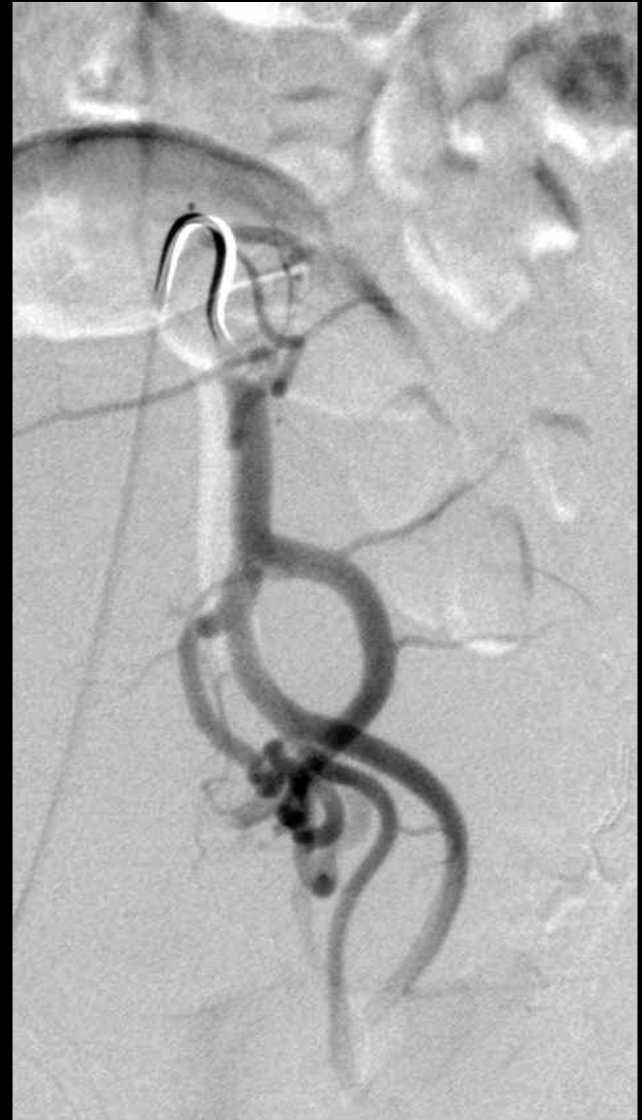
- Try one oblique
- Then try the other one





UFE Obliques made easy

- Contralateral
  - For internal iliac origin
- Ipsilateral
  - For most UA origins
- Contralateral
  - For remaining 15%

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Uterine artery tortuosity

- Difficult to catheterize
- Kinking and occlusion post-catheterization
- Spasm-prone

Managing Uterine artery tortuosity

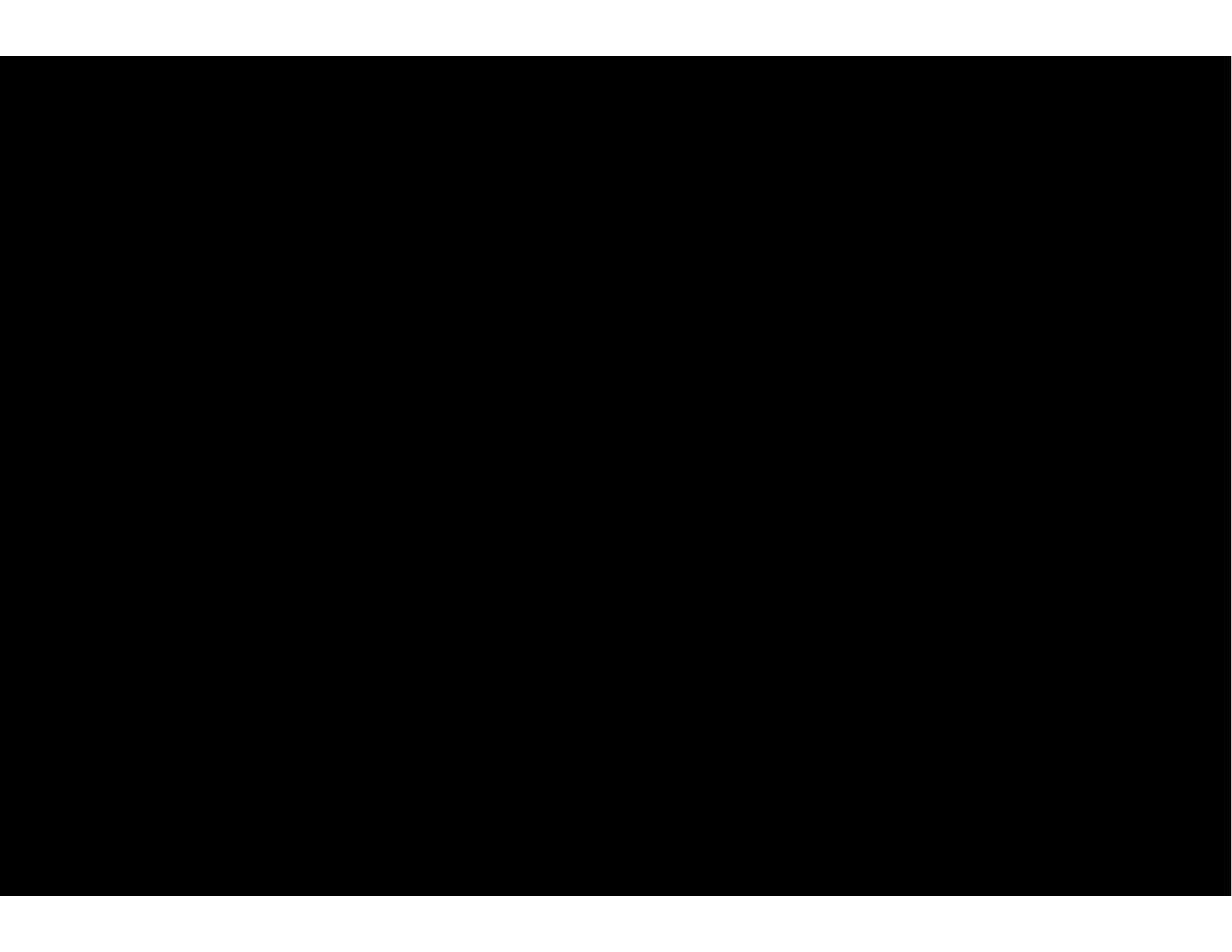
- New microcatheters and guidewires:
- Less traumatic
- More reliable
- Now >25% of UA caths

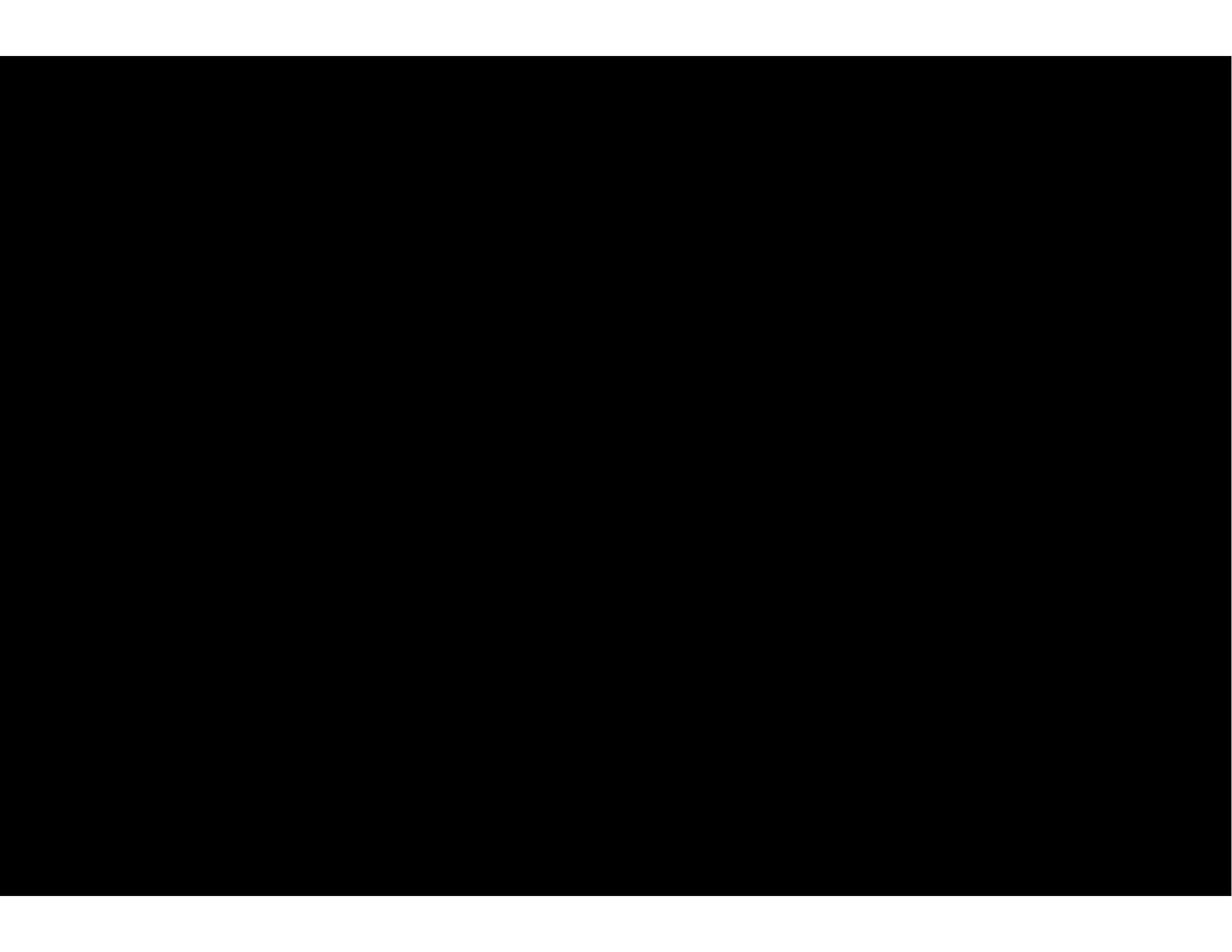
Microcatheters and Guidewires for UA Catheterization

- Headliner
  - Target Therapeutics
  - Originally designed for cerebral catheterization
  - Right angle tip for UA origins
  - Radio-opaque
  - Floppy distal segment
  - Very atraumatic

Microcatheters and Guidewires for UA Catheterization

- Transend
  - Target Therapeutics
  - Shapeable tip
  - Hydophilic
- Rapid Transit
  - Cordis
  - Kink resistant
  - Flexible
  - Radiopaque





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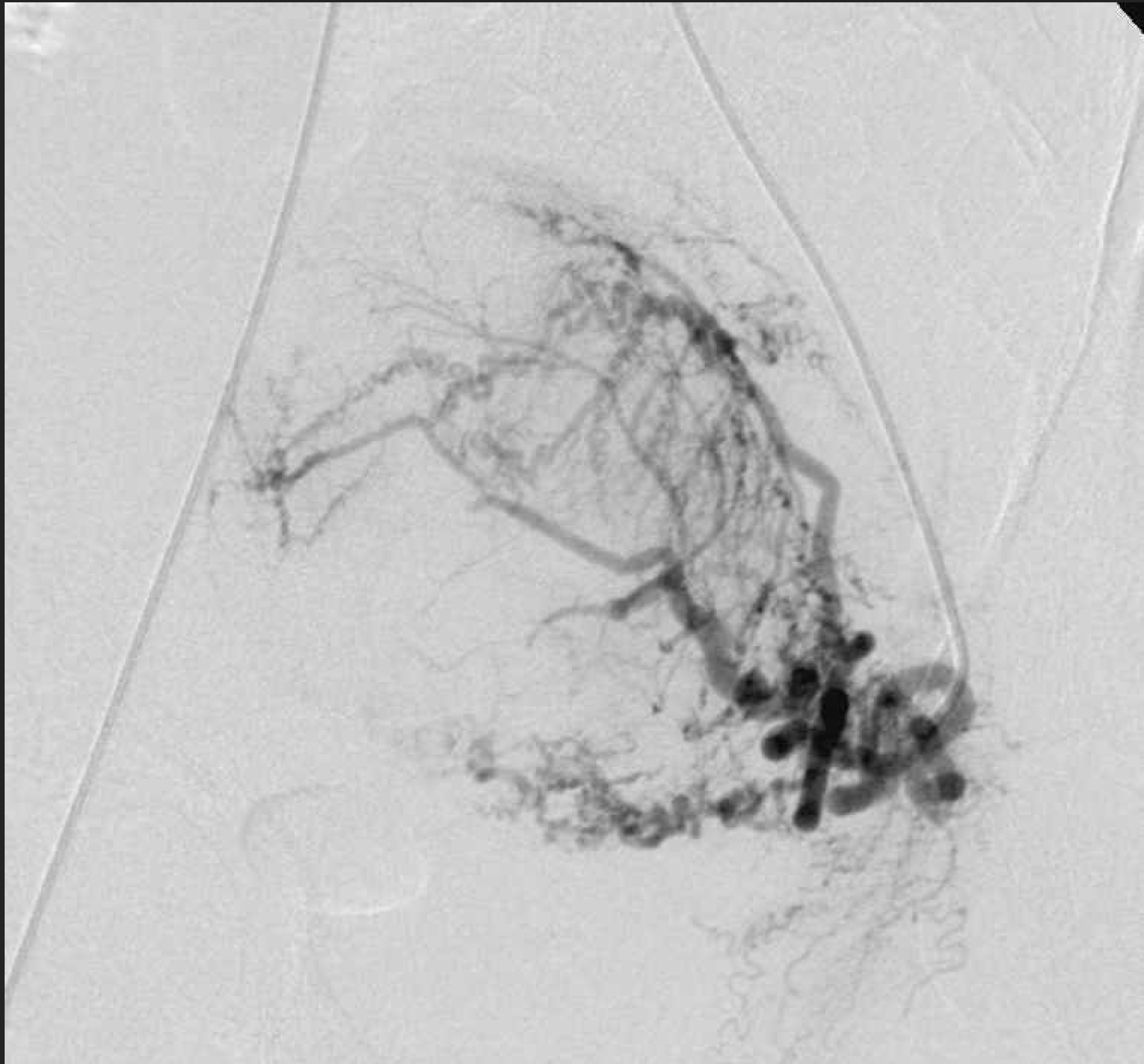
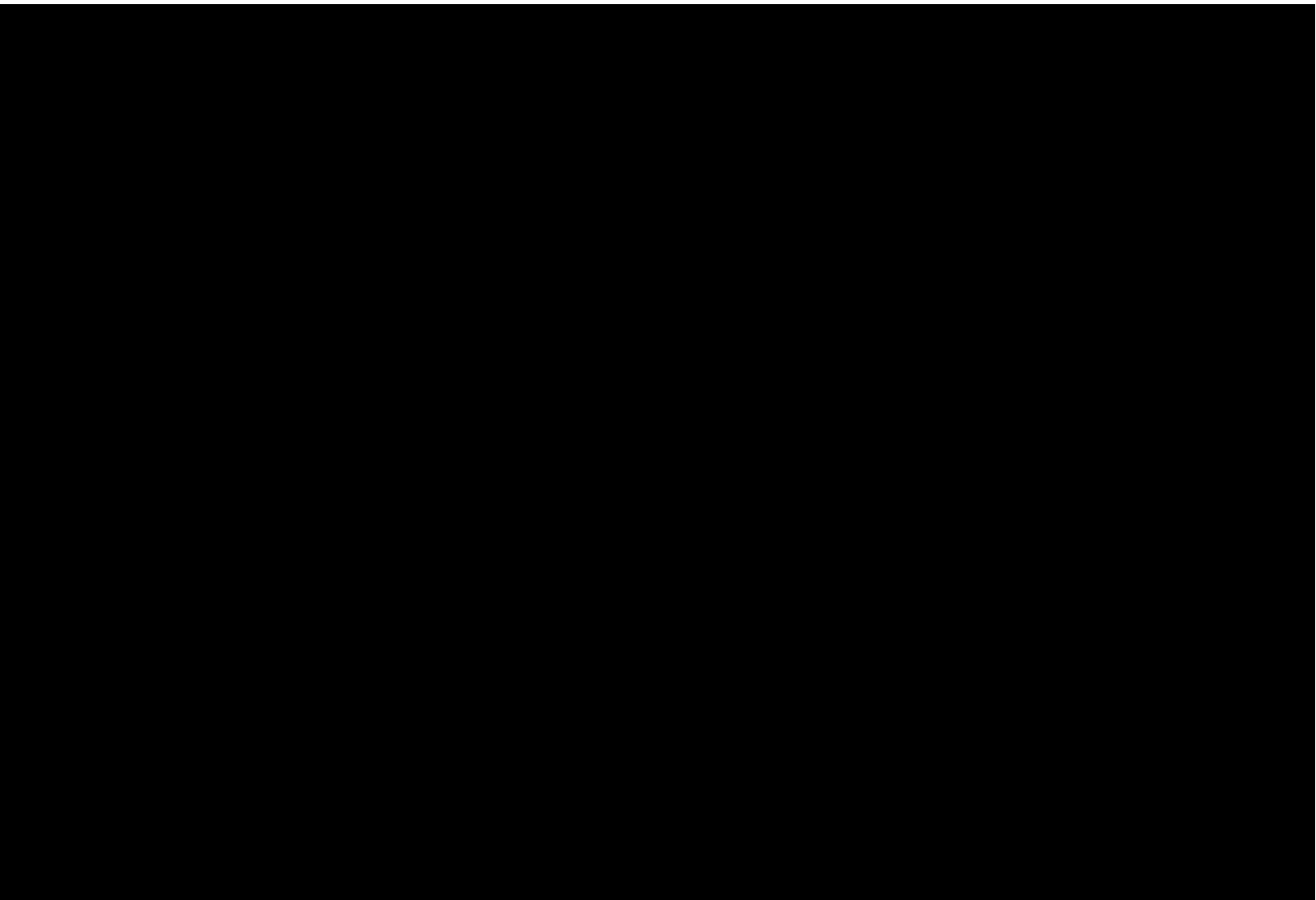
Anatomic Variants

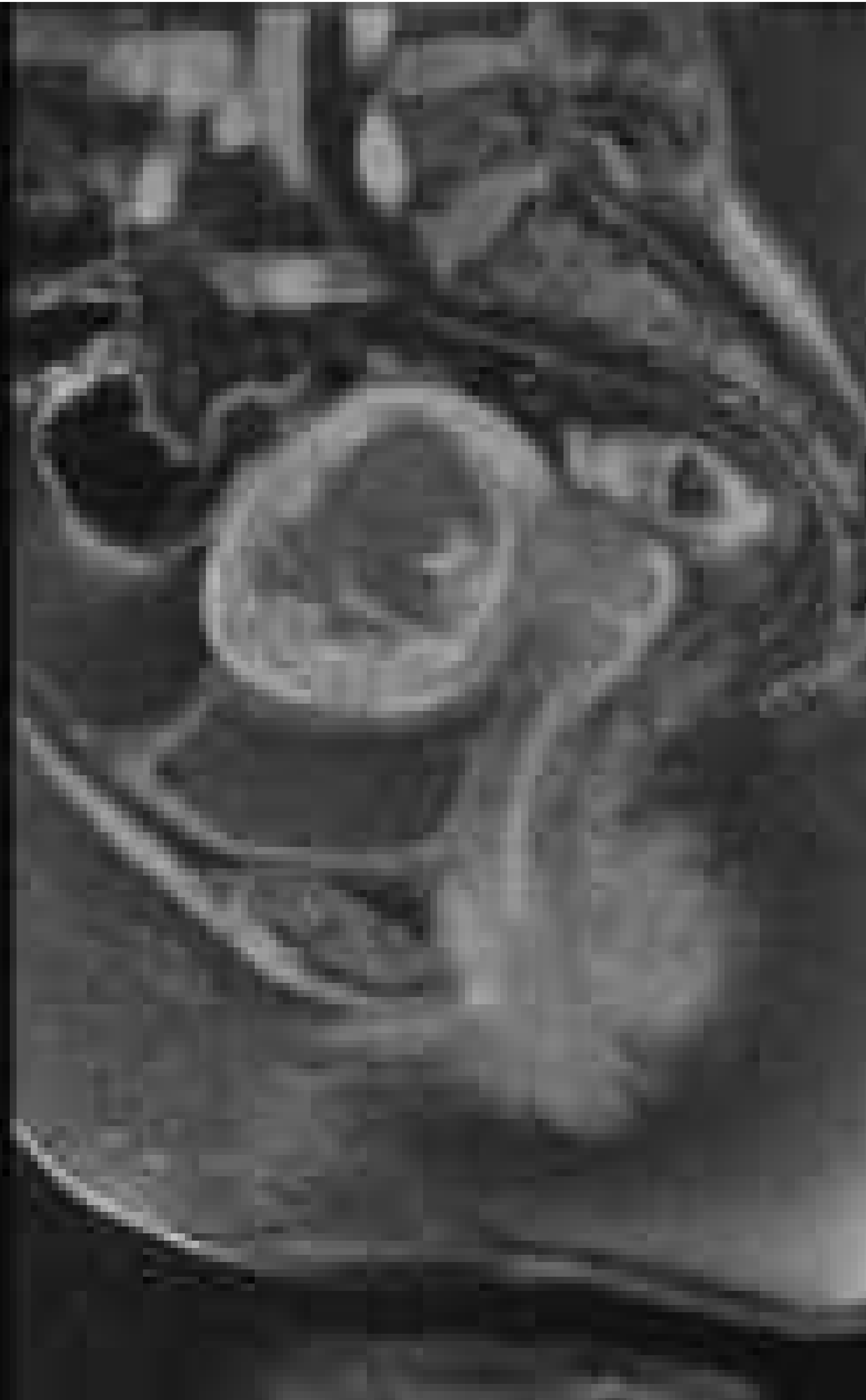
- Variant uterine arteries
  - Accessory / duplicated
  - Replaced:
    - Ovarian, aortic, common iliac
- Alternate / collateral flow patterns
  - Ovarian
  - Internal iliac collaterals
  - Others (SMA)



Collateral / alternate flow patterns

- Aortography ***after*** embolization, not before!
- Early (1 day) post embolization MR with contrast to evaluate efficacy (necrosis)





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Uterine Artery Embolization

- Technical challenging cases fairly common
- Advanced catheter skills and knowledge of anatomy will solve most problems and permit high rates of technical success
- “Contra - Ipsi - Contra”