

How I Teach It: Percutaneous Arterial & Venous Cannulation For MICS

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ONLINE VIDEO



TO BE FOUND IN THE FILE.

INTRODUCTION

- Minimally-invasive cardiac surgery has been adopted increasingly in the USA
- Femoral cannulation is commonly used for MICS
- To further reduce invasiveness of MICS, percutaneous cannulation can be used routinely

OBJECTIVES

- Review percutaneous cannulation considerations
- Provide a step-by-step on patient selection, cannulation and decannulation using a percutaneous technique
- Highlight common pitfalls when using percutaneous cannulation

PATIENT SELECTION

- Factors to consider: body habitus (BMI), anatomy & quality of access vessels
- CT angiography from 'neck to knees' to measure vessels, assess quality (calcifications) and possible alternatives
- Determine arterial cannula Fr maximum
- Manta™ device generally not suitable for very obese & those with back-/sidewall calcifications
- Proglide™ generally not suitable for heavily calcified anterior wall

CANNULATION

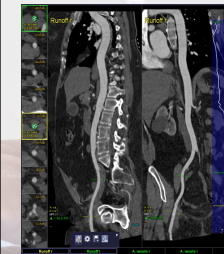
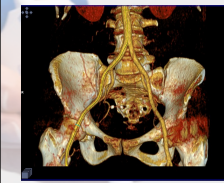
- Study landmarks for arterial access on CTA: halfway between inferior epigastric & femoral bifurcation + stay away from calcium
 - U/S-guided access (recreate CTA) with micropuncture needle & wire: access both anteriorly & give 5000 units of heparin
 - Place long 7Fr sheath through arterial access: confirm wire in aorta by TEE -> preclose/pre-measure -> Amplatz Super Stiff -> dilate (12Fr) -> insert arterial cannula -> full dose heparin
- Preclose vein -> Amplatz Super Stiff through venous access: confirm wire in SVC -> serial dilation -> insert 25Fr venous cannula

DECANNULATION

- Decannulate vein, then artery: additional U-stitch with Rummel tourniquet if needed
- Arterial closure with Manta™ device or cinch Proglide™ sutures with Rummel tourniquet: keep access wire -> give protamine & hold gentle pressure
- Check flow with U/S distal to cannulation: a cut-down is no failure - missing or ignoring an access site complication, however, is

STEP-BY-STEP OF PERCUTANEOUS CANNULATION

Patient selection



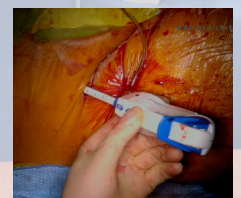
Cannulation



TIPS & TRICKS

- Tape pannus up & away
- Skin cut over artery big enough for index finger
- Tunnel soft tissue down to artery before stick
- Push down U/S probe to reduce distance to artery
- Follow tip of needle down to artery
- Ideal angle for artery is ~45°, for vein it's ~30°
- Use a stiff wire for cannulation
- Use minimal force to advance venous wire
- Valsalva can help getting into SVC
- Bent wires won't work

Decannulation



TIPS & TRICKS

- Given protamine & be patient: oozing will resolve
- Bailout for the Manta™ device is a cut-down
- Continued bleeding after Proglide™ can often be fixed with a 6Fr AngioSeal™