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#11	Ultrasound Guided Percutaneous Sticks of the Femoral Vessels	Jennifer Ross	Tufts Medicine	Abstract

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Ultrasound Guided Percutaneous Sticks of the Femoral Vessels

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Vascular access in laboratory animal research is necessary for a variety of procedures and data collection including invasive blood pressure monitoring, catheterization of the heart and cannulation for extra corporeal membrane oxygenation. Traditional methods of blind percutaneous sticks using the Seldinger technique and vascular cutdown to the vessels provide consistent access but take longer establish and can damage to the surrounding tissues. Ultrasound guided percutaneous sticks using the Seldinger method for establishing vascular access allows for quicker access and vessel catheterization saving time, decreased damage to surrounding tissues and refinement of established practices which supports the 3Rs of animal research.

The goal of this presentation is to provide a visual demonstration of femoral vein and artery placement on the legs, show the ultrasound view of femoral vasculature with ultrasound technique and discuss the benefits of ultrasound guided percutaneous sticks over traditional techniques. Using ultrasound to assess the vessel size allows for better selection of catheters whether that be a smaller sheath, 5F to 11F, or a larger cannula used for ECMO, 15-21F. The Butterfly iQ3 has multiple settings that allow for vessels to be measured and recorded.

Ultrasound training was completed using the Butterfly iQ3 system connected to a mini iPad or iPhone. Both devices were purchased by Tufts and we have no affiliation with Butterfly iQ.

Percutaneous Stick Procedure:

Prepare and flush all catheters and access kits with 0.9% saline

Palpate the femoral pulse from approximately the patella down towards the pelvis. The vessels “dive” deeper into the tissue as they move proximal to the abdomen.

Mark the skin in a triangle pattern above the vessels (image to be included in presentation)

Using ultrasound, locate your femoral artery and vein. Start with your Transverse view (short axis)

Once centered, rotate your probe 90 degrees to capture a longitudinal view (long access) of the femoral artery and vein.

With the vascular identified, you will advance the percutaneous needle attached to a 10 mL syringe with 5 mL of 0.9% NaCl into the tissue and look for the needle on your Ultrasound image

The needle will glow and will be easy to visualize puncturing the vessel.

Once you have entered the lumen of the vessel, draw back 2-3 mLs of blood to ensure you are still in the vessel.

While holding the needle still with one hand, remove the 10mL syringe and use the “skinny” wire (0.018” wire) that comes with the 5F Mini Access kit and advance the wire down the needle. The wire should easily advance into the vessel.

Using an 11 blade on a scalpel, make an incision around the base of the needle to allow for catheters to be advanced through the tissue.

Once the incision is made, remove your needle ensuring that the wire (4-5”) remains in the vessel. Be sure not to let the wire slip into the vessel as this can cause many i