Disclaimer: This presentation is intended to be used as a demonstration educational device to showcase Terumo products. It is NOT intended to be used as a diagnostic device and should never be used in the delivery or as part of the delivery of direct patient care.
Overview of Ultrasound Clinical Articles
Good Closure Starts with Good Access

Successful arterial puncture and closure of the arteriotomy site play a vital role in the safety of PCI. The most frequent vascular access site for cardiac catheterization in the US remains the CFA. [i]

- **Ultrasound**

  - Utilizing ultrasound is associated with reduced number of attempts to access, improved first pass success rate, reduced the time to access and reduced vascular complications. [ii]
Realtime Ultrasound Guidance Facilitates femoral arterial access and reduces vascular complications (FAUST) Femoral Arterial Access With Ultrasound Trial

OBJECTIVES: Multicenter randomized trial 1,004 patients
• Compared the procedural and clinical outcomes of femoral arterial access with ultrasound (US) guidance with standard fluoroscopic guidance.
• Undergoing retrograde femoral arterial access were randomized 1:1 to either fluoroscopic or US guidance.
• The primary end point was successful common femoral artery (CFA) cannulation by femoral angiography.

OUTCOMES:
• Does not improve upon the overall success rate of flouro assisted access, except in patients with high bifurcations. According to Dr. Seto is 1/3 or all patients increasing their success rate from 69.8% to 82.6%
Characteristics To Obtain Optimal Femoral Access (con’t)

CLINICAL ARTICLE SUMMARY – All of these techniques combined provide the best clinical outcome to aid in reduced complication, which ultimately will aid in have a better closure outcome.

FEMORAL ACCESS METHODS AND OUTCOMES: UNDERSTANDING THE STRATEGY (FAMOUS) TRIAL

OBJECTIVES: Prospective single center study 1,475 patients
- Compared the clinical outcomes of fluoro/ultrasound with 18g needle, fluoro with micro access needle, and palpation with 18g needle
- Complication definitions limited to bleeding event or vascular complication only

OUTCOMES:
- End result favored Micro Access to reduce clinical outcomes such as bleeding or transfusion

Optimizing Vascular Access Management – Focus on the Introducer Sheath and Entry Arteriotomy

OBJECTIVES: Prospective 3-month single center study 189
- Completion of a subjective sheath performance characteristic matrix of TIF Sheath, overall access site complication ns and any access site-related blood loss.

OUTCOMES:
- End result showed no device related complications, retroperitoneal hematomas, pseudoaneurysm, surgical complications or access site-related blood transfusions.
- Reduced penetration force required for vascular access minimizes the trauma to the access tissues and vessel arteriotomy site itself is smooth, potentially less traumatized
- It was hypothesized that these sheath characteristics may facilitate vascular access, resulting in easier, safer introducer sheath access with the potential for less VAC
Understanding the Probe
The effects of ultra sound gel

- Position the probe over the phantom
- View the vessel without gel
- Apply gel
- View the vessel with gel

Without Gel

With Gel
The effects of ultrasound gain

- Adjust the gain on the Lumify App to determine the best setting to view the vessel
  - Dependent on your unit you may need to adjust the gain a good range is from 70-100

![Image showing ultrasound gain settings 71 and 100]
How to adjust the gain and depth

Slide the control up or down to adjust the control. You will see the control you are changing appear in the top left of the screen as well as on the right of the image.
The effects of probe angle

- Place the probe at a 90° angle or perpendicular to the vessel
- Observe the circular shape of the vessel
The effects of probe angle

- Place the probe at a 45° or angle to the vessel
- Observe how the shape of the vessel changes
Axial vs. Longitudinal scanning

- Place the probe 90° angle to the phantom
- Turn the probe to parallel to the phantom
- Observe how the shape of the vessel changes
The effects of pressure on the probe

- Place the probe at a 90° or perpendicular to the vessel
- Press down and observe how the shape of the vessel changes
Non-Echogenic Needle

- Place the probe axial or longitudinal to the vessel
- Insert the non-echogenic needle at a 45° angle to the probe
- When access into vessel is obtained pink fluid will appear in hub of needle
The benefits of an echogenic needle

- Place the probe axial or longitudinal to the vessel
- Insert the needle from the Precision Access Kit at a 45° angle to the probe to view the spiral cut echogenic grooves
- When access into vessel is obtained pink fluid will appear in hub of needle
**Needle**

**Tapered needle design from 21G tip to 19G shaft**

- Designed to Provide stability upon insertion\(^1\)
  - Tapered needle allows access with a small puncture while also providing stability on the back end with the 19G shaft
- Better Blood Return\(^2\)
  - Larger 19G lumen on the back end of the needle provides better blood return upon access

**Back bevel cuts**

- Help facilitate a straighter entry\(^3\)
  - Precision Needle provides access with less force designed to provide sharper more precise entry through the skin

**Spiral Cut Technology**

- Spiral Cut Echogenic tip is designed to provide enhanced visibility\(^1\)
  - Utilize the echogenic tip to aid in access with Ultrasound. Utilization of ultrasound can assist with reduction of vascular complications.\(^3\)

**Needle Dimensions**

- 21G Tip OD = 1.06mm
- 19G Shaft ID = 0.787mm
- Length of Needle = 70mm

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1. Data of file at Terumo: 20170018
2. Data on file at Terumo: 20110024
Viewing the wire with US

- Place the probe axial or longitudinal to the vessel
- Insert the wire from the Precision Access Kit
Viewing the sheath with US

- Place the probe axial or longitudinal to the vessel
- Insert the sheath from the Precision Access Kit
Help achieve smooth atraumatic vascular access through calcified or scarred arteries\(^1\)

Competitive sheath requires 77% higher insertion force than Total Integrated Fit (TIF) technology\(^2\)

- Greater rail strength to prevent buckling with the only 0.021” wire on the market\(^2\)
- Seamless guidewire-to-dilator and dilator-to-sheath transitions allow for easy access\(^2\)
- Kink resistant material and design helps to maintain lumen patency throughout the procedure\(^2\)
Thank You