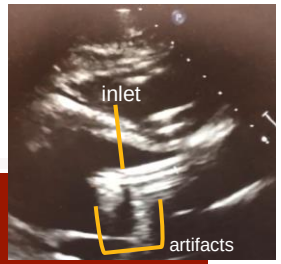
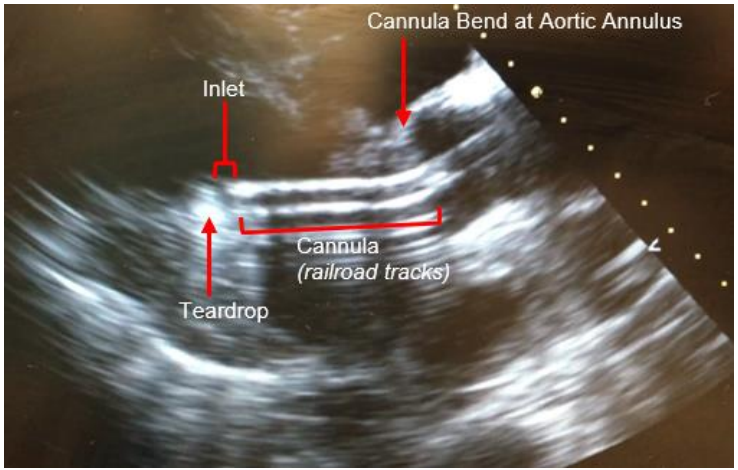
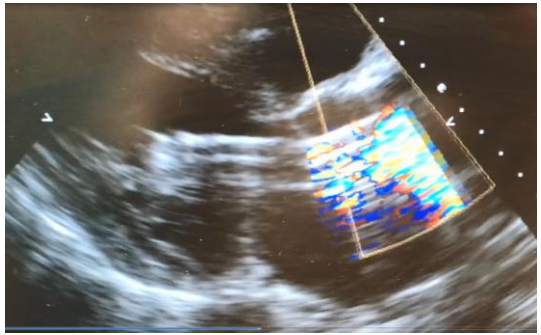
ECHO AND IMPELLA 5.5® WITH SMARTASSIST®: PROPER PLACEMENT (TTE)



Verify Proper Catheter Placement

- ✓ Stable position in mid-ventricular space
- ✓ Catheter directed toward apex
- ✓ Inlet free of mitral subvalvular structures and LV walls
- ✓ Distance from aortic valve annulus to the mid-inlet should measure approximately 5 cm
- ✓ Outlet in the aorta, well above the aortic valve (Use Color Flow Doppler)





Tips and Tricks

- For better accuracy, be sure you can visualize the catheter throughout measurement length (off-axis views may be required)
- Echogenic parallel lines denote cannula *railroad tracks*
- Reverberation artifacts posterior to the distal cannula and/or teardrop may help you locate the inlet in between (see image above)
- Inlet may appear anechoic if sound beam passes through blood entering inlet windows (shown on TEE guide)
- Utilize Color Flow Doppler to visualize outflow limited to ascending aorta
- Due to pump preload dependence, on every echo assess LV volume status and RV function

Preferred view for TTE: Parasternal long axis view

Because TTE and TEE views provide 2D images, visualizing catheter position in multiple views is recommended.

For 24-Hour Impella heart pump assistance call Abiomed's Clinical Support Center at 1-800-422-8666

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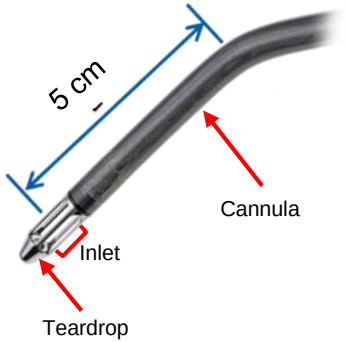

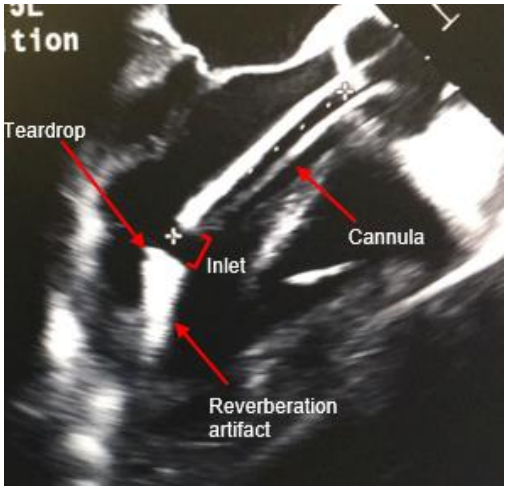

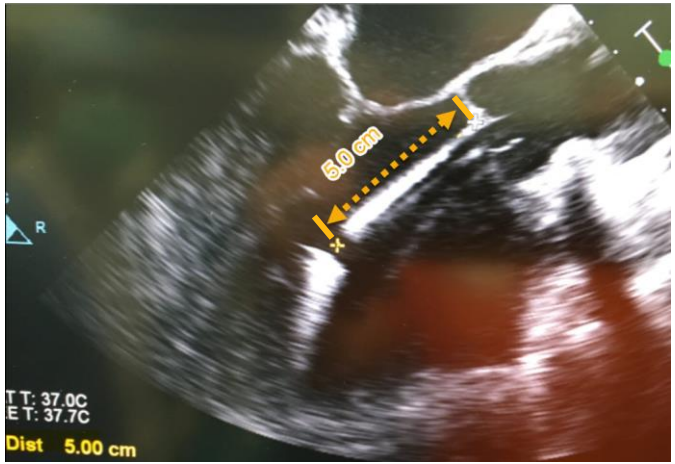

Tips and Tricks

- For better accuracy, be sure you can visualize the catheter throughout measurement length (off-axis views may be required)
- Echogenic parallel lines denote cannula *railroad tracks*
- Reverberation artifacts posterior to the distal cannula and/or teardrop may help you locate the inlet in between (see images on left)
- Inlet may appear anechoic if sound beam passes through blood entering inlet windows (see images on left)
- Utilize Color Flow Doppler to visualize outflow limited to ascending aorta
- Due to pump preload dependence, on every echo assess LV volume status and RV function

Preferred view for TEE: Mid-esophageal long axis view

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IMPELLA® DEVICE INDICATION & SAFETY INFORMATION

INDICATIONS FOR USE

High-Risk PCI

The Impella 2.5®, Impella CP® and Impella CP® with SmartAssist® Systems are temporary (≤ 6 hours) ventricular support devices indicated for use during high-risk percutaneous coronary interventions (PCI) performed in elective or urgent, hemodynamically stable patients with severe coronary artery disease, when a heart team, including a cardiac surgeon, has determined high-risk PCI is the appropriate therapeutic option. Use of the Impella 2.5, Impella CP, and Impella CP with SmartAssist Systems in these patients may prevent hemodynamic instability, which can result from repeat episodes of reversible myocardial ischemia that occur during planned temporary coronary occlusions and may reduce peri- and post-procedural adverse events.

Cardiogenic Shock

The Impella 2.5®, Impella CP®, Impella CP® with SmartAssist®, Impella 5.0®, Impella 5.5® with SmartAssist® and Impella LD® Catheters, in conjunction with the Automated Impella Controller™ (collectively, "Impella® System Therapy"), are temporary ventricular support devices intended for short term use (≤ 4 days for the Impella 2.5, Impella CP, and the Impella CP with SmartAssist, and ≤ 14 days for the Impella 5.0, Impella 5.5 with SmartAssist and Impella LD) and indicated for the treatment of ongoing cardiogenic shock that occurs immediately (< 48 hours) following acute myocardial infarction or open heart surgery or in the setting of cardiomyopathy, including peripartum cardiomyopathy, or myocarditis as a result of isolated left ventricular failure that is not responsive to optimal medical management and conventional treatment measures (including volume loading and use of pressors and inotropes, with or without IABP). The intent of Impella System Therapy is to reduce ventricular work and to provide the circulatory support necessary to allow heart recovery and early assessment of residual myocardial function.

Important Risk Information for Impella devices

CONTRAINDICATIONS

The Impella 2.5, Impella CP, Impella CP with SmartAssist, Impella 5.0, Impella 5.5 with SmartAssist and Impella LD are contraindicated for use with patients experiencing any of the following conditions: Mural thrombus in the left ventricle; Presence of a mechanical aortic valve or heart constrictive device; Aortic valve stenosis/calcification (equivalent to an orifice area of 0.6 cm^2 or less); Moderate to severe aortic insufficiency (echocardiographic assessment graded as ≥ +2); Severe peripheral arterial disease precluding placement of the Impella System; Significant right heart failure*; Combined cardiorespiratory failure*; Presence of an Atrial or Ventricular Septal Defect (including post-infarct VSD)*; Left ventricular rupture*; Cardiac tamponade*

* *This condition is a contraindication for the cardiogenic shock indication only.*

POTENTIAL ADVERSE EVENTS

Acute renal dysfunction, Aortic valve injury, Bleeding, Cardiogenic shock, Cerebral vascular accident/Stroke, Death, Hemolysis, Limb ischemia, Myocardial infarction, Renal failure, Thrombocytopenia and Vascular injury

In addition to the risks above, there are other **WARNINGS** and **PRECAUTIONS** associated with Impella devices.
Visit ***http://www.abiomed.com/important-safety-information*** to learn more.