**CS CANNULATION**

**Step-by-Step Guide**

1. Advance dilator and CSG over 0.035” wire until dilator tip reaches the SVC.

2. Holding dilator stationary, advance CSG sheath to the Tricuspid Valve or into the RV. Then remove the wire and dilator.

3. Connect injection system to Braided Core & flush with full strength contrast to remove any air.

4. Insert Braided Core to tip of CSG using black marking.

5. Holding Braided Core stationary, withdraw CSG until only 1cm remains between CSG and Braided Core hub; withdrawing in this manner maximizes safety.

6. Using left hand, cradle CSG between 3rd & 4th finger. Then grasp Braided Core with thumb and index fingers.

7. Placing right hand palm up, grasp rotating hemostatic valve of injection system with thumb and index finger.

8. Using index thumb and index finger of BOTH hands, apply counterclockwise torque on Braided Core ONLY (not the CSG):
   - Using both hands to torque the catheter will prevent kinking of Braided Core near hub.
   - If PVC’s occur, system is too far into RV. Maintain gentle torque and withdraw both CSG and Braided Core as a unit until PVC’s no longer occur.

9. While applying additional counterclockwise torque, slightly withdraw both Braided Core and CSG as a unit until Braided Core is at annulus. With the additional torque the Braided Core will drop toward the CS and will stop when it reaches the ostium.

10. Request small puff of contrast to confirm tip is in CS ostium and not in a side branch.

11. Hold counterclockwise torque while gently advancing Braided Core into proximal CS:
   - If resistance is encountered with minimal effort, STOP and inject contrast to determine if the tip has engaged a side branch.
   - A 0.035” wire can be added to redirect if needed.

12. Advance CSG and Braided Core as a unit into CS until Braided Core is at mid CS. Then advance CSG over Braided Core.

13. Holding CSG stationary, withdraw Braided Core.

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**SEE REVERSE FOR INSTRUCTIONS FOR USE (IFU).**

This guide contains recommendations as provided by Dr. Seth Worley, MD

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403662001/A ID062117
Hemostatic Tear-away Introducer System

To cause cancer or birth defects or other reproductive harm.

WARNING: This product and its packaging have been sterilized with ethylene oxide. This packaging may expose you to

Other USA and Worldwide Patents pending.

Technical Manual

A suggested procedure:

1. Peel open package and place unit on sterile field.
2. Prepare skin and area in zone of anticipated puncture point as desired.
3. Defend the subclavian vein. The subclavian vein is difficult to locate unless it is distended by raising the patient's arms to a 45 degree angle and using a 1-2 cc syringe.
4. Insert needle into vessel. The needle position should be verified by observing venous blood return.
5. The angle of the needle should be adjusted depending on the patient's build: shallow in a thin person, deeper in a heavy-set person. Use an 18g needle, 1-2-3-4 ml./sec.
6. Aspirate the needle using the 1 cc syringe.
7. Remove the syringe and insert soft tip of guide wire through the introducer needle into the vessel. Advance guide wire to required depth. Leave an appropriate amount of guide wire exposed. At no time should the guide wire be advanced or withdrawn when resistance is met. Determine the cause of resistance before proceeding. Fluoroscopic verification of position of the superior vena cava and aorta is recommended.
8. Hold guide wire in place and remove introducer needle. When using the transvalvular insertion tool (TVI) can cause air embolism.
9. Insert the straight vessel dilator into the sheath until the dilator cap folds over the valve housing and secures the dilator onto sheath assembly.
10. Thread the distal sheath assembly over the guide wire.
11. Advance the dilator and sheath together with a twisting motion over the guide wire and into the vessel. Fluoroscopic observation is advisable. Attaching a clamp or hemostat to the proximal end of the guide wire will prevent inadvertent- ly advancing the guide wire entirely into the patient.
12. Once assembly is fully introduced into the venous system, separate the dilator cap from the sheath valve housing by releasing the dilator cap off the hub (see Figure 1).
13. Slowly retract the dilator, leaving the sheath and wire in position. The hemostatic valve will reduce the loss of blood and the inadvertent aspiration of air through the sheath.
14. Remove the curved braided core from the package and thread the exposed proximal portion of the retained guide wire into the distal end of the braided sheath.
15. Feed the guide wire through the curved braided core or braided sheath until the proximal end of the guide wire can be secured with either a clamp or hemostat before advancing the curved dilator into the indwelling sheath.
16. Do not advance the braided core into the sheath until the guide wire has been completely passed through the core and wire is secured with a hemostat or clamp in order to prevent inadvertently advancing the guide wire entirely into the patient.
17. Advance the curved sheath into the sheath and observe fluoroscopically as the sheath is advanced. The distal end of the sheath is positioned in the right atrium.
18. Maneuver the distal end of the guide wire or sheath into the desired location (concealed valve etc.) by combining a twisting motion of the guide wire or sheath with the gentle guiding of the guide wire or sheath itself. Fluoroscopically in the left anterior oblique (LAO) position is helpful. Advance the CSG sheath into the mid coronary sinus and establish its position by injecting contrast material through the side port. Once the guide wire is in the desired location advance the sheath over the wire until the tip rests in the desired location. It is advisable to leave a short segment of wire extending past the distal end of the tip to minimize any potential blunt trauma to the surrounding tissue.

20. Hold the wire and braided core securely in place advance the sheath over the core until the sheath rests in the left atrium. While advancing the braided core the operator should observe the sheath fluoroscopically to minimize any unwanted movement or dislodgement of the tip or wire
21. Once the sheath is in the desired location slowly retract the braided core and wire and remove the sheath. Infusing contrast material through the side port is useful in establishing that the sheath is correctly positioned.
22. Aspirate air from the sheath valve assembly by using a syringe connected to the side port. Flush the introducer through the flush port of the introducer to evacuate any air during use. Avoid pulling and testing, flushing the introducer through the side port periodically with heparinized saline.
23. A 7F transvalvular insertional tool (TVI) is provided with the CSG kit. It is to be used for the ease of valve face.”