POST DIALYSIS
Use aseptic technique (as outlined above).
1. Flush arterial and venous lumens with a minimum of 10 mL of sterile saline.

**WARNING:** To avoid damage to vessels and viscous, infusion pressures must not exceed 25 psi (172 kPa). The use of a 10 mL or larger syringe is recommended because smaller syringes generate more pressure than larger syringes.

2. Inject heparin solution into both the arterial and venous lumens of the catheter. The appropriate heparin solution concentration and flushing frequency should be based on hospital protocol. Heparin solution of 1,000 to 5,000 units/mL has been found to be effective for maintaining the patency of hemodialysis and apheresis catheters. When injecting heparin solution, inject quickly and clamp extension while under positive pressure. Heparin solution volume to lock each lumen must be equal to the priming volume of each lumen. Priming volumes are marked on each lumen.

3. Clean catheter Luer-lock connectors per hospital protocol. Attach sterile end caps to both the arterial and the venous clamping extension pieces.

**WARNING:** To prevent systemic heparinization of the patient, the heparin solution must be aspirated out of both lumens immediately prior to using the catheter. In most instances, no further heparin solution injection is necessary for 48-72 hours, provided the catheter has not been aspirated or flushed.

CATHETER REMOVAL
Evaluate the catheter routinely and promptly remove any nonessential catheter, as per physician’s orders. The white retention cuff (if applicable) will facilitate tissue in-growth. The catheter must be surgically removed. Free the cuff from the tissue and pull the catheter gently and smoothly. After removing the catheter, apply manual pressure to the puncture site for 10-15 minutes until no signs of bleeding are visible. This facilitates tissue in-growth. The catheter must be surgically removed. Free the cuff from the tissue and pull the catheter gently and smoothly. After removing the catheter, apply manual pressure to the puncture site for 10-15 minutes until no signs of bleeding are visible. Then apply sterile, transparent, semipermeable dressing or dressing per hospital protocol for a minimum of 8 hours. Follow hospital protocol regarding bedrest after catheter removal.

DISPOSAL
After use, this product may be a potential biohazard. Handle and dispose of in accordance with accepted medical practice and all applicable local, state and federal laws and regulations.

TROUBLESHOOTING

**PATIENT WITH FEVER**

If a patient with fever and chills following the procedure may be indicative of catheter-related bacteremia. If bacteremia is present, removal of the catheter may be indicated.

**INSUFFICIENT FLOW**

Excessive force must not be used to flush an obstructed lumen. Insufficient blood flow may be caused by an occluded tip resulting from a clot or by contacting the wall of the vein. If manipulation of the catheter or retracting arterial and venous lines does not help, then the physician may attempt to dissolve the clot with a thrombolytic agent (e.g., TPA, Catfish Activase® (thrombolytic). Physician discretion advised.

CATHETER EXCHANGE

Do not routinely replace dialysis catheters to prevent catheter-related infections. It may be necessary to exchange the indwelling catheter due to persistent rise in pressures or decrease of flow rates which cannot be rectified through troubleshooting. Catheter exchanges should be performed under strict aseptic conditions in which the physician should wear a cap, mask, sterile gown, sterile gloves, and use a large sterile drape to cover the patient.

REFERENCES:


14. Other references available upon request.

An issued or revision date for this instructions is included for the users information. In the event two years have elapsed between this date and product use, the user should contact Bard Access Systems, Inc. to see if additional product information is available. Revision date: October, 2012.

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As reported in literature, left sided catheter placement may provide unique challenges due to the right angles formed by the innominate vein and the left brachiocephalic vein with the SVC.

1. Provide a sterile field throughout the procedure. The operator should wear a cap, mask, sterile gown, sterile gloves, and use a large sterile drape to cover the patient.

2. Prepare the access site using standard surgical technique and drape the prepared area with sterile towels. If hair removal is necessary, use clippers or depilatories. Next, scrub the entire area with an antiseptic solution containing in which case povidone-iodine solution may be used. Use a back-and-forth friction scrub for at least 30 seconds. Do not wipe off the antiseptic solution to air dry completely before application.

3. If applicable, administer local anesthesia to the insertion site and the path for subcutaneous tunneling.

4. Flush each lumen with heparin solution prior to insertion and clamp the extension legs. If using stylet, do not clamp the arterial lumen. The guidewire and guidewires are removed. This will help with the stylet and prevent guidewire passage.

5. Insert the introducer needle with an attached syringe to the desired location. Aspirate gently as the insertion is made.

6. When the vein has been entered, remove the syringe leaving the needle in place.

7. If using a micropuncture set, insert the flexible end of the introducroscope into the needle. Advance the microuniconductro guidewire as far as possible to ensure correct positioning using fluoroscopy or ultrasound. Withdrawing the needle while holding the guidewire in position.

8. The standard guidewire can be inserted into the needle hub and passed through the needle. Advance the standard guidewire to the desired location in the vessel.

9. If using a microintroducer, gently withdraw and remove the small sheath, while holding the standard guidewire in position.

10. Remove the needle while holding the guidewire in place. Wipe the guidewire clean and secure it in place. If using a stylet, withdraw the stylet until the guidewire extends out the arterial Luer-lock connector.

1. Use a sterile, transparent, semipermeable dressing or per hospital protocol. Provide a sterile field throughout the procedure. The operator should wear a cap, mask, sterile gown, sterile gloves, and use a large sterile drape to cover the patient.

2. Use aseptic technique and positive pressure technique.

3. Place a thumb over the orifice of the sheath to minimize blood loss and risk of air aspiration.

4. Withdrawing the dilator, keep the guidewire in the venous system while applying digital compression at the puncture site to minimize the risk of air embolism.

5. After removing the dilator, keep the guidewire in the venous system while applying digital compression at the puncture site to minimize the risk of air embolism.

6. If not using a stylet, the proximal end of the guidewire must be inserted into the end hole of the catheter tip and threaded into the arterial lumen. The guidewire must be threaded through the arterial lumen until it extends out the arterial Luer-lock connector (red). If using stylet, thread the proximal end of the guidewire through the distal tip of the guidewire until the guidewire extends out the Luer-lock connector.

7. Insert the catheter through a small venotomy in the selected vein. Advance the catheter tip. Catheter tip placement, tip orientation and proper length selection is left to the discretion of the physician. However, routine x-ray should always follow the initial insertion to confirm the correct positioning of the catheter tip prior to use. Recommended tip location is at the junction of the superior vena cava/right atrium (SVC/RA) or in the mid-right atrium. All tip placements should be confirmed by fluoroscopy.

8. CAUTION: For optimal product performance, do not insert any portion of the cannula into the vein.

9. Remove the guidewire and stylet while applying forward pressure on the catheter so it does not withdraw.

10. CAUTION: Ensure that the catheter does not move out of the vein while removing the insertion stylet.

1. Go to D (Common Steps).

INSERTION TECHNIQUE (3) Sheathless Procedure:

For sheathless placement, the catheter is preferably inserted into the internal jugular vein. For the sheathless procedure, the patient should be placed in Trendelenburg position with the head turned opposite the side of the entry.

1. Go to A (Common Steps).

2. Go to B (Common Steps).

3. Go to C (Insertion Technique (1) Percutaneous Placement).

4. Sequentially dilate (guiding dilators over the guidewire) the venous puncture site to accommodate the catheter (dilate vessel to at least French size 7). Use 7F (French size 11) or 8F (French size 14) to accommodate a 5F (French size) catheter.

5. If performing a jugular insertion and external jugular vein catheterization is intended, perform the following technique.

6. CAUTION: Cardiac arrhythmias may result if the guidewire and/or stylet is allowed to touch the walls of the right atrium.

7. After removing the guidewire and stylet (if applicable) while applying forward pressure on the catheter so it does not withdraw.

8. CAUTION: Ensure that the catheter does not move out of the vein while removing the insertion stylet.

Step 2

INSERTION TECHNIQUE (4) Femoral Vein Placement Procedure:

For femoral placement, the patient should be positioned supine, and the catheter tip should be inserted into the iliac vein and the vena cava/right atrium (SVC/RA) or in the mid-right atrium. All tip placements should be confirmed by fluoroscopy.

1. Place the patient in a supine position. The operator should wear a cap, mask, sterile gown, sterile gloves, and use a large sterile drape to cover the patient.

2. Prepare a sterile field throughout the procedure. The operator should wear a cap, mask, sterile gown, sterile gloves, and use a large sterile drape to cover the patient.

3. Confirm catheter patency by releasing clamp and aspirating blood through each lumen.

4. Flush each lumen with 10 mL sterile saline using a 10 mL or larger syringe.

5. WARNING: To avoid damage to vessels and viscera, infusion pressures should not exceed 250 mmHg (172 kPa). The use of a 10 mL or larger syringe is recommended because smaller syringes pressure the vessel wall.

6. Inject heparin solution into each lumen in amounts equal to the priming volumes as printed on the catheter labels. Be sure to clamp lumen immediately. Failure to clamp extensions when not in use may lead to air embolism.

7. WARNING: Acetone and PEG-containing ointments can cause failure of this device and should not be used with polyurethane catheters. Chlorhexidine patches or bacitracin zinc ointments (e.g., Polysporin® ointment) are the preferred alternative.

8. Recommended Dressing Technique

1. Secure the catheter to the skin using one or two novel devices.

2. Cut a 1-2 inch (3.5 - 6 cm) slot in the side of the dressing using sterile scissors over the backing sheet.

3. Viewing catheter site through the dressing on the skin so that the tip of the catheter is pulled back, press one side of dressing into place while holding the other side off the skin.

4. Partially remove the frame portion of the dressing near the catheter which is already secured to the skin.

5. WARNING: Acetone and PEG-containing ointments can cause failure of this device and should not be used with polyurethane catheters. Chlorhexidine patches or bacitracin zinc ointments (e.g., Polysporin® ointment) are the preferred alternative.

6. WARNING: Acetone and PEG-containing ointments can cause failure of this device and should not be used with polyurethane catheters. Chlorhexidine patches or bacitracin zinc ointments (e.g., Polysporin® ointment) are the preferred alternative.


* Hand cleaner solutions are not intended to be used for disinfecting Bort dialysis catheter Luer-lock connectors.