Important Information

Patient Name:

Surgeon:

Hospital:

Surgery Date:

Oncologist:

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Norfolk Medical Products - NorPort™
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Tips when Accessing the NorPort™

An aseptic technique is essential

1. Scrub the injection site with an appropriate surgical scrub using aseptic technique
2. Using sterile gloves, palpate the implant site to locate both the port and its septum (fig. 1).

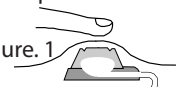
Figure. 1

3. To access the NorPort™, isolate the top surface. Then, while stabilizing the port with the forefinger and thumb, puncture the skin and septum with the "Huber" point needle or needle set. Needle entry and contact with the needle stop are discerned by the "feel" of the needle as it passes through the septum to the base. Direct the needle perpendicular to the palpated surface. This will guide you to the center of the port (fig. 2).

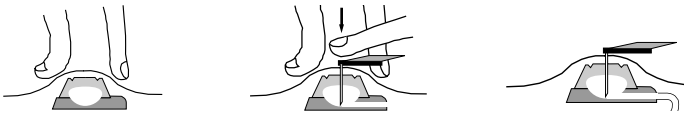
Figure 2

Caution **The needle must be held securely against the base below the septum during these procedures to avoid injecting the drug into the subcutaneous tissue. Do not impart angular motion or twist the needle and syringe once in the septum.**

4. Prior to injecting any drug, flush the NorPort™ with 20mL of normal saline to check needle placement.
5. Inject the drug applying consistent, firm pressure or connect the extension set to an appropriate infusion pump
6. After each drug injection, flush the port with 10mL of normal saline solution.

Caution **Do not aspirate or allow fluids to proceed retrograde without flushing the NorPort™. Standing blood in the catheter is likely to result in catheter occlusion. Flushing is vital to continued use of the port.**

7. After injecting saline, detach the syringe from the needle leaving the needle in place within the septum.
8. Attach a different syringe filled with 100u/mL heparinized saline. Inject 5mL of this solution into the port. This constitutes a "heparin lock" and will help deter catheter tip occlusion by the invasion of blood into the catheter.
9. Withdraw the needle and syringe while maintaining positive pressure on the plunger of the syringe. Discard used components.
10. Examine the injection site closely. Palpate the area to ensure that the drug was delivered to the specific site and that the "heparin lock" was completed properly.

The Implanted Port

The port is inserted during a short surgical procedure. The procedure is relatively simple and the surgeon may elect to place the port in an ambulatory setting.

Pre-operative patient teaching should include a brief description of the device, how it works, an explanation of the procedure for placement, and a discussion of the patient's responsibility in the maintenance of the port. Many patients appreciate the opportunity to see a sample of the port if one is available.

The most common site for the port catheter tip is the superior vena cava via either the subclavian, internal jugular, or cephalic vein. The reservoir is normally placed over a bony prominance, such as a rib, to provide support, and it is secured to the deep fascia. The catheter is placed by venipuncture in the chosen vessel and a pocket is made under the skin for the reservoir/port body.

Once patency is established, the port is secured to the fascia using non-absorbable sutures. The incisions are then closed.

The skin incisions generally require post-operative care for 7-10 days. While some physicians prefer to wait until post-operative edema and discomfort subside before accessing the port, it can be accessed immediately. Ideally, the "Huber" point needle should be inserted in the operating room or no sooner than 48 hours post-operatively. During this period, the site should be monitored for fluid collection or the formation of a hematoma.

USE OF FIBRINOLYTIC AGENTS FOR CATHETER BLOCKAGE

Use of fibrinolytic agents have successfully cleared clotted catheters when gentle irrigation and aspiration have failed. The following procedure may be employed on the order of a physician. Additional instructions provided by the drug manufacturer should be followed.

EQUIPMENT

- Non-coring needle
- 10mL syringe containing port priming volume of a fibrinolytic agent
- 20mL syringe filled with sterile, normal saline

PROCEDURE

Review Site Preparation and Accessing Implanted Ports sections before proceeding with this section.

1. Explain procedure to patient and prepare injection site.
2. Aseptically locate and access the port with a non-coring needle attached to a 10mL syringe void of air and filled with port priming volume of a fibrinolytic agent.
3. Gently instill fibrinolytic solution. Use a gentle pull-push action on the syringe plunger to maximize solution mixing within port and catheter.

   WARNING: ***Occluded catheters may not accept all of the solution. If strong resistance is felt, do not attempt to force solution into catheter. Leave solution in place for 15 minutes.***
4. Attempt to aspirate solution and the clot(s).
5. If unsuccessful, repeat the procedure.
6. Once blockage has been cleared, flush catheter with at least 20mL sterile, normal saline.
7. Perform heparin lock procedure.

5. Always flush the port following injection.
6. Perform heparin lock procedure.

Bolus Injection Procedure

EQUIPMENT

- Non-coring needle
- 10mL syringe filled with sterile normal saline
- Extension set with clamp

PROCEDURE

Review Site Preparation and Accessing Implanted Port sections before proceeding with this section.

1. Explain procedure to patient and prepare injection site.
2. Attach a non-coring needle to the extension set and 10mL syringe filled with sterile normal saline. Expel all air and clamp extension.
3. Aseptically locate and access port.
4. Flush port with 10mL sterile normal saline. Clamp the extension set and remove the syringe.
5. Connect syringe containing the drug to the extension set. Release clamp and begin to administer injection.
6. Examine the injection site for signs of extravasation; if noted, immediately discontinue the injection and initiate appropriate intervention.
7. When injection is completed, clamp the extension set.
8. Flush after each injection with 10mL of sterile, normal saline to help prevent interaction between incompatible drugs.
9. Perform heparin lock procedure. Lock the port with 3-5mL of a sterile heparin-saline solution (suggested concentration 100 u/mL) after every use and at least once every four weeks.

NOTE The needle hub should not be left open to the air while in the port. Do not manipulate the needle once it is in the septum.

10. When deaccessing the port, the needle should be removed using the positive pressure technique. Positive pressure is maintained while flushing the accessed port by clamping the infusion set tubing while still infusing the line. This helps reduce the potential for blood backflow into the catheter tip which could encourage catheter clotting.

TROUBLESHOOTING GUIDE

Aspiration Difficulties

POSSIBLE CAUSES

1. Failure to flush adequately, resulting in lumen obstruction.
2. Catheter tip sucking up to vein wall with aspiration.
3. Blood clot, fibrin sheath or particulate matter obstructing lumen during aspiration.
4. A clot or other obstruction in the catheter lumen can cause a one-way valve effect. During infusion, the catheter wall expands slightly allowing fluid to flow around the obstruction. During aspiration, the catheter wall contracts slightly, tightening around the obstruction and preventing aspiration.
5. Fibrin sheaths usually begin to form within a few days after catheter insertion. They may grow and extend beyond the catheter tip and/or be pulled into and obstruct the catheter during aspiration while resisting infusion.
6. Compression or transection of the catheter between the clavicle and first rib ("pinch-off area").
7. Kinked catheter.
8. Malposition or migration of the catheter tip.

POSSIBLE SOLUTIONS

1. If no resistance to infusion is felt, attempt to flush with 10mL normal saline, then pull back gently on syringe plunger 2-3mL and proceed with aspiration.
2. If resistanace to infusion is felt, check for signs of extravasation. If present, notify physician. If not present, proceed to step 4.
3. Attempt to aspirate with a 20mL syringe.
4. Move patient's arm, shoulder, neck, head to see if a change in position will allow aspiration.
5. Obtain physician order for x-ray to determine catheter position.
6. If the catheter tip is not in the superior vena cava, catheter should be repositioned.

8. When infusion is complete, clamp extension set and remove the delivery system.

9. Flush after each infusion with 10mL sterile normal saline to help prevent interaction between incompatible drugs.

10. Perform heparin lock procedure. Lock the port with 3-5mL of a sterile heparin-saline solution (suggested concentration 100u/mL) after every use and at least once every 4 weeks.

NOTE The needle hub should not be left open to the air while in the port. Do not manipulate the needle once it is in the septum.

11. When deaccessing the port, the needle should be removed using the positive pressure technique. Positive pressure is maintained while flushing the accessed port by clamping the infusion set tubing while still infusing the line. This helps reduce the potential for blood backflow into the catheter tip which could encourage catheter clotting.

Blood Sampling Procedure

EQUIPMENT

- Extension set with clamp
- Non-coring needle
- Syringe filled with sterile normal saline
- Syringe (2) or evacuated blood collection vials
- Sterile, normal saline

PROCEDURE

Review Site Preparation and Accessing Implanted Port sections before proceeding with this section.

1. Explain procedure to patient and prepare injection site.

2. Aseptically locate and access port. Confirm correct positioning of the needle within the port reservoir by aspiration of blood ("flashback"). If there is doubt regarding proper needle placement, have a radiographic dye procedure done to confirm placement.

3. Flush port with sterile normal saline.

4. Withdraw at least 5mL of blood and discard syringe.

5. Aspirate desired blood volume into second syringe or evacuataed blood collection system.

6. Once sample is obtained, perform saline lock procedure by immediately flushing the system with 20mL sterile normal saline.

5. Flush the NorPort™ Implantable Port with 10-20mL of 0.9% normal saline. The device should flush without resistance.

Warning **Not assessing patency may result in device failure.**

6. Close the clamp on the Power Injectable Infusion Set tubing
7. Remove the syringe from the Power Injectable Infusion Set.
8. Attach the power injection tubing per manufacturer's recommendations to the luer hub end of the Power Injectable Infusion Set. Release the clamp.
9. **Set the power injection machine per manufacturer's recommendations for a maximum pressure of 300 psi. Flow rate as indicated.**

19 or 20 gauge / 5ml/sec • 22 gauge / 2ml/sec.

10. Perform the study. Do not exceed 300 psi during injection of contrast dye. Refer to the Procedure for Power Injection section in this booklet for additional information and instructions.
11. Close the clamp. Disengage the power injection tubing from the luer hub of the Power Injectable Infusion Set.
12. Place a new injection cap on the Power injectable Infusion Set luer hub.
13. Flush the NorPort™ Implantable Port with 10-20mL 0.9% normal saline.
14. Flush the NorPort™ Implantable Port with 3-5mL of 10-100 units/mL heparinized saline. Actual amount and strength depends on facility policy.

Warnings

- Do not use smaller than a 10mL syringe. These syringes are recommended for all flushing or injection procedures. Use of smaller syringes may result in system damage.
- Contrast dye should be warmed to body temperature prior to utilization for power injection. Failure to have contrast at body temperature may lead to device failure.
- Do not exceed the maximum pressure settings that have been established for the NorPort™ power injectable ports. Failure can result in over pressurization of the port device. Power injection machine may not prevent over pressurization in the presence of occlusion or resistance. Refer to the Procedure for Power injection section in this booklet for additional information and instructions.
- **Do not exceed 300 psi. Exceeding pressures of 300 psi could lead to device rupture or catheter malposition.**
- **Failure to assess the patency of the NorPort™ Implanted Port prior to power injection may lead to device rupture or failure.**
- Absence of a blood return or a poor blood return can be a sign of a

NOTE Alcohol should not be used to soak or declot polyurethane catheters because alcohol is known to degrade polyurethane catheters exposed to repeated and prolonged exposure.

PROCEDURE

Review Site Preparation and Accessing Implanted Port sections before proceeding with this section.

1. Explain procedure to patient and prepare injection site.
2. Attach a 10mL syringe filled with sterile heparinized saline to non-coring needle.
3. Aseptically locate and access the port.
4. Flush and lock the system.

Deaccessing Implanted Ports

NOTE Always remove non-coring needle slowly while injecting the last 0.5mL of solution to reduce potential for blood backflow into the catheter tip and to inhibit possible catheter clotting. Stabilize the port with two fingers during needle withdrawal.

Important Information Regarding NorPort™ Power Injectable Ports

- Read all instructions prior to utilization of device.
- Use a Power Infusion Set for power injections of contrast media.
- Contrast dye should be warmed to body temperature prior to utilization for power injection. Failure to have contrast at body temperature may lead to device failure.
- Maximum pressure settings for power injection have been established for the NorPort™. Failure to follow guidelines can result in over pressurization of the port device. The power injection machine may not prevent over pressurization in the presence of an occlusion or resistance.
- Do not exceed 300 psi. Exceeding pressures of 300 psi could lead to device rupture or catheter rupture or malfunction.
- Failure to assess the patency of the NorPort™ prior to power injection may lead to device failure or rupture.
- **Absence of a blood return or a poor blood return can be a sign of a potential complication such as occlusion, kinking, breakage, Pinch-Off Syndrome, fibrin formation, thrombosis or malposition. This should be evaluated prior to device use. A blood return should be present prior to use of the device for any therapy or testing.**