Implanted Port Access & Management

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OVERVIEW

- The most appropriate form of venous access depends on the patient's disease process, vascular anatomy, and personal preferences.
- Ports provide reliable venous access with minimal disruption to a patient's lifestyle.
- Oncology patients are excellent candidates for port placement, as they typically need frequent, intermittent, and reliable venous access for chemotherapy, blood product transfusions, and other infusion therapies.
- Most cancer patients today have ports placed before starting treatment, to prevent damage to peripheral veins from repetitive trauma due to multiple IV access attempts, and potential sclerosis or tissue necrosis from irritant or vesicant chemotherapy agents (Walser, 2012).

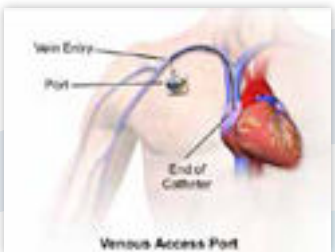
INDICATIONS

- Ports, also knowns as implanted venous access devices or IVADs, are essential in managing the care and treatment of cancer patients and others living with certain chronic diseases.
- Though chemotherapy administration is the most common indication for port placement, any patient needing long-term, intermittent venous access is a potential candidate for an implanted port.
- Additionally, some chemotherapy agents should not be administered into smaller peripheral veins, and require a larger vein for sufficient dilution (Schiffer, et al., 2013).
- Patients with poor venous access requiring long-term venous access for blood product transfusions, TPN, immunoglobulin therapy, and other intravenous medication administration may benefit from the comfort and convenience of a port.

- Port placement is a more complicated and invasive procedure than the insertion of non-implanted central venous access devices; however, ports benefit patients in a number of ways including:
  - Freeing patients from daily care of external catheters
  - Requires infrequent flushing when not in use, typically every 4 weeks
  - Allows patients to continue usual activities such as bathing, swimming, and other forms of exercise
  - Reduced risk of infection due to subcutaneous location and a self-sealing septum (Walser, 2012)
  - Less conspicuous when not in use due to subcutaneous placement

THE IMPLANTED PORT

- The port consists of a portal body, a dense septum over a reservoir, and a catheter, with single or dual lumens
- The port is placed in a surgically generated subcutaneous pocket
- The catheter connects to the port through a tunnel between the port pocket and the venous entry site
- Ports may also be placed in the abdomen for administering chemotherapy agents directly into the peritoneal cavity



PORT ACCESS CONSIDERATIONS

- Some providers outside of the oncology specialty believe accessing a port for any use other than chemotherapy increases the risk for infection and other complications, and often order the insertion of a PICC or other central venous access device.
- In a case study recounted on the Agency for Healthcare and Quality Patient Safety Network website, Roy Ilan, M.D. (2013) asserts that accessing an existing port for routine IV therapy is safe during an acute hospital admission, and exposes the patient to less risk than inserting another central venous access device.
- Evidence supports that accessing a port immediately after insertion is safe. According to a study by Karanlik, et al., (2015), ports accessed 24 hours or less after insertion did not differ significantly from those where the interval was greater than 24 hours in relation to rates of early and late complications.
- The surgeon can access the port in the OR at the time of placement so that it can be used for intravenous therapy immediately (Walser, 2012).
- Interprofessional collaboration is a critical approach for sharing knowledge, best practices, and expertise to determine the best plan for each patient (Ilan, 2013).

PORT ACCESS TECHNIQUE: STERILE VS. ASEPTIC

- Current guidelines from the Centers for Disease Control (CDC) and Oncology Nursing Society state that "strict aseptic technique should be used throughout all central venous access device (CVAD) procedures…there is no evidence that there is any difference in infection rates when using clean versus sterile technique" (Conley, Buckley, Magarace, Hsieh, & Pedulla, 2017).

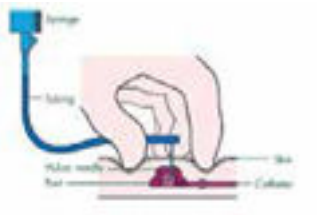
GATHER SUPPLIES

- Central line dressing change kit
- BioPatch® protective disc
- Non-coring 20G Huber gripper needle with extension tubing (use 0.75 –1.0 inch needle for ports that are located closer to the skin's surface; use 1.5 inch needle for ports that are located deeper in the subcutaneous tissue)
- A PowerLoc® non-coring needle MUST be used if needed for injecting contrast media for CT scan
- One package sterile steri-strips
- Two male needleless connector caps
- Two 10 ml prefilled normal saline (NS) syringes (more if drawing blood at time of access)
- One 5 ml prefilled 100units/ml heparin flush syringe (if port will be heparin locked for 24 hours or more)
- Vacutainer tubes and multi-sample male luer adapter for blood draw, as needed

ACCESSING THE PORT

- Attach needless caps to each port on the Huber needle extension tubing, then attach NS syringe to the distal port/cap and prime the tubing with NS to expel all air
- Clamp extension tubing
- Place sterile drape on patient just below port site using sterile technique
- Cleanse area on and around port site with chlorhexidine (CHD) using a vigorous back and forth motion for 30 seconds, then allow at least 30 seconds to dry
- Grasp the textured wings of the gripper needle and place BioPatch® over needle
- Remove protective cover from Huber needle

- Using non-dominant hand (now no longer sterile), palpate the port and stabilize on the chest wall using the thumb and first two fingers in a tripod manner
- Insert the Huber needle into the septum (center) of the port at a 90°angle until feeling the hard stop when the needle reaches the back wall of the port reservoir
- Place two steri-strips over the wings of the Huber needle to stabilize



ASSESSING PATENCY

- Unclamp extension tubing and instill 2-3 ml NS using attached syringe, then draw back to verify needle placement by assessing blood return (if no blood return, refer to troubleshooting section for next steps)
- If blood is needed for sampling, draw back and discard 10 ml before drawing sample
- Flush distal port with 10 ml NS, or 20 ml after collecting blood for sampling, then flush proximal port with an additional 10 ml NS
- Clamp extension tubing

DRESSING & FLUSHING

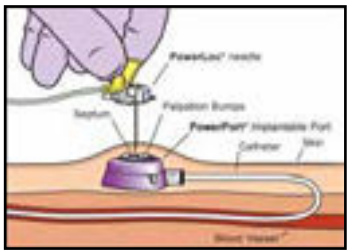
- Apply skin prep, allow to dry until tacky, then place sterile clear, occlusive dressing over port site leaving extension tubing exposed; place remaining dressing under tubing proximal to port site and affix edges to lower portion of the clear dressing
- Affix label with date, time, needle gauge, and RN's initials to dressing
- Attach extension tubing directly to IV tubing for continuous IV infusion, or instill 5 ml 100unit/ml heparin flush solution if port will not be used within 24 hours
    - When in doubt about the interval between port access and first use, flush with NS followed by heparin flush solution (Conley, Buckley, Magarace, Hsieh, & Pedulla, 2017)

DEACCESSING AN IMPLANTED PORT

- Don clean, non-sterile gloves
- Flush and heparinize port prior to removing the Huber needle
- Inject the last 0.5 ml of NS while clamping the extension tubing
- Stabilize the port by securely holding the plastic base down with the gloved, non-dominant hand
- Fold the wings together and firmly pull the wings up until the needle is completely withdrawn and when a "click" is heard or felt
- An audible click and/or visual confirmation of engagement of the clip indicates that the safety shield is fully extended and that the needle is locked in the safety position (Bard Access Systems, Inc., 2008).

POWERPORTS®

- The PowerPort® combines reliable venous access with the unique ability for power-injected Contrast-Enhanced Computed Tomography (CECT) scans.
- Power-injected CECT scans produce superior images to help better manage patient care.
- Such scans are often used to track tumor markers or perform pulmonary embolism studies.



The palpation bumps and unique triangular shape of PowerPort® Implantable ports make them easily distinguishable from non-power ports. The PowerPort® devices offer easy, flexible placement and access (C.R. Bard, Inc., 2018)

IDENTIFYING POWERPORTS®

- Always verify non-power versus PowerPort® prior to access and use
- Manufacturers of power injectable ports assert that at least one of the following methods is used to identify a PowerPort®:
  - Interventional Radiology or surgical operative reports
  - Patient PowerPort® identification card, bracelet, or key ring card
  - PowerPorts® have the letters "CT" visible when viewed on x-ray or on CT scan prior to injection of contrast media (C.R. Bard, Inc., 2018)

IMPLANTED PORTS: CARE AND MAINTENANCE

- Assess site for tenderness, swelling, redness, or drainage prior to access, during dressing changes, and at regular, frequent intervals when port is in use
- When the port is accessed, the needle and dressing may be left in place for up to 7 days (Wiley, 2017)
- Change dressing anytime it becomes damp/wet, visibly soiled, or non-occlusive
- Sanitize needleless access port caps with alcohol or CHD before and after each use, and change caps at least every 72 hours (The Joint Commission, 2013)
- Clamp extension tubing between each flush, medication, and when changing IV tubing
- Flush port with 10 ml NS between administration of each medication, at completion of all infusions, and after power injection of contrast media; flush with 20 ml NS after blood sampling or blood product transfusion
- Flush port with 5 ml of 100 unit/ml heparin flush solution after NS flush when port will not be used again within 24 hours, and prior to deaccessing (removing the Huber needle)
- Flush port with 10 ml NS and 5 ml of 100 unit/ml heparin flush solution every 4 -8 weeks when not in use. Current evidence supports the 8-week interval for maintenance flushing, however the interval still varies depending on patient and provider practices and preferences (Conley, Buckley, Magarace, Hsieh, & Pedulla, 2017)

TROUBLESHOOTING OCCLUDED PORTS

- The first step in assessing a port occlusion is to ascertain that the port needle has fully passed through the septum into the reservoir. If this is the case, the needle maybe successfully manipulated and repositioned without having to withdraw it completely.
- Always ask patients or family members if they are aware of any methods that may have been successful previously in restoring patency.
- Check all external tubing for kinks, and make sure clamps are open if the issue is an inability to flush or infuse IV fluids (Povoski, 2016).
- Inability to withdraw blood from a port while retaining the ability to infuse into it is most frequently caused by a fibrin sheath at the tip of the catheter that produces a one-way valve effect.
- Imaging studies using dye can determine the location of the fibrin sheath.
- This may also be caused by the catheter tip being positioned against the side wall of the vein.
- An occluded catheter should NOT be forcefully irrigated because it could result in catheter dislodgement.
- A Valsalva maneuver or repositioning of the patient (sitting, standing, turning head to each side, coughing, etc.) can sometimes resolve the issue (Povoski, 2016).
- Thrombolytic therapy, using tissue plasminogen activator (Activase), can help to restore the ability to withdraw blood or to clear the catheter of intraluminal thrombosis or intraluminal precipitation of medications.
- Usually, 1 mg to 2 mg of Activase is instilled into the port, then left in place for 30-60 minutes before checking for blood return. If no blood return, check at 30 minute intervals for up to 2 hours.
- Activase must be aspirated from the port prior to instilling any fluids or medications (Povoski, 2016).
- If none of the preceding methods are effective in restoring patency, the removal and replacement of the port is indicated (NursingLink, 2018).

PATIENT AND CAREGIVER EDUCATION

- Provide the patient and/or caregiver with education regarding:
  - Indications for port placement including blood sampling, fluid/medication administration, and injecting contrast media (PowerPorts® only)
  - What the port looks like, where it will be located on the body, and how it is accessed
  - What to expect before, during, and after the procedure, including potential complications
  - Caring for the incision site post-operatively and after healing is complete
  - Recommendations for flushing interval when not in use
- Effective ways to help nurses facilitate clearing an occluded port (changing position, cough, Valsalva, etc.)
    - When to call the doctor or nurse:
      - New or increased pain at the port site
      - Swelling or an enlarging bruise at the port site
      - Pus or drainage from the port site
      - Skin around port site that is red, warm to touch, tender, or irritated
      - A fever of 101°F (38.3°C) or greater (Memorial Sloan Kettering Cancer Center, 2016)

PATIENT EDUCATION LINKS

- https://jamanetwork.com/journals/jamaoncology/fullarticle/2476249
- https://www.cancer.net/sites/cancer.net/files/asco_answers_catheters_ports.pdf
- https://www.cancer.net/navigating-cancer-care/how-cancer-treated/chemotherapy/catheters-and-ports-cancer-treatment
- https://www.mskcc.org/cancer-care/patient-education/your-implanted-port

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