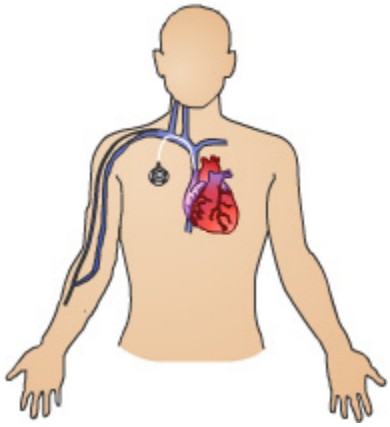
Port Catheter Insertions

Introduction

Subcutaneous ports like the Vital-Port®, PORT-A-CATH®, Smart Port® and Power-Port® are devices placed in a big vein that allow doctors, nurses and healthcare providers easy access to a patient's blood stream repeatedly and safely.



In this summary these devices will be referred to as "ports." Ports are used when a patient needs intravenous treatment for a long time.

A port is made of plastic, stainless steel, or titanium. The port is usually about the size of a quarter, but thicker. A long, thin, hollow, flexible tube called a catheter runs under the skin from the port and is inserted into a large vein of the neck or chest. It is long enough to reach the large vein that enters the heart.

Subcutaneous ports, also known as implanted ports, have a reservoir. It is placed under the skin on the upper part of the chest under the collarbone, or arm. This reservoir makes accessing the big veins easy and reliable.

Sometimes ports are placed in the abdomen which allows access to the peritoneal cavity, the liver and the central nervous system.

Your doctor may have recommended that you have a port surgically implanted. The decision to have this procedure is also yours.

This reference summary explains the benefits and risks of ports. It also discusses how to take care of them.

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Anatomy

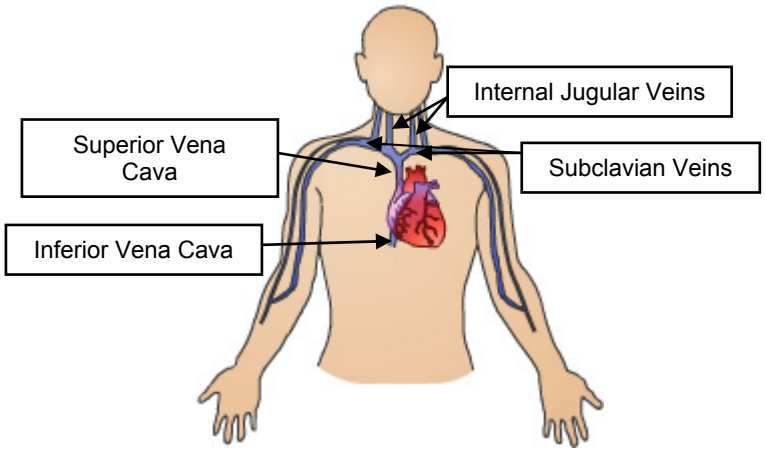
This section reviews a few basic parts and functions of the body to help you understand where and how a port is placed.

Blood carries nutrients and oxygen to all parts of the body. The heart pumps blood loaded with oxygen through arteries.

The cells and tissues of the body use oxygen. When blood doesn't have much oxygen in it anymore, it returns to the heart. The superior vena cava, also known as the SVC, is the main vein that blood flows through from the arms and head to get to the heart.

Blood on its way to the heart from the head goes through two big veins in the neck called the Internal Jugular veins, or IJs. There is a right IJ and a left IJ.

Blood on its way to the heart from the arms goes through two big veins under the collar bone called subclavian veins. There are 2 subclavian veins just like there are 2 IJs, one on each side of the body.



The IJs and the subclavian veins both flow into the superior vena cava.

The inferior vena cava is the main vein that blood flows through on its way to the heart from the abdomen and legs.

The heart pumps blood poor in oxygen to the lungs. In the lungs, the blood gets loaded back up with oxygen and proceeds through the body. It then returns to the heart, and the cycle starts again.

Port

IV stands for intravenous. *Intravenous* means into the veins. IV therapy is treatment that is delivered directly into the veins. This allows medications, fluids and nutrients to circulate immediately in the blood.

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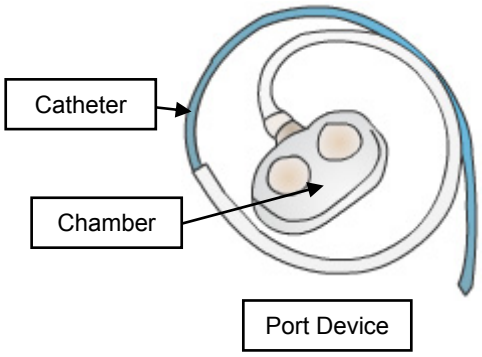
A port placed in the abdomen is called an intraperitoneal port, or IP for short. Ports placed in the abdomen allow fluids or chemotherapy to be given directly into the abdomen.

A port has 2 parts:

1. A chamber, or reservoir covered by the septum which is a silicone bubble in the center of the port
2. A thin hollow flexible tube called a catheter.



The chamber is placed under the skin. The catheter is threaded into either the IJ or the subclavian vein all the way to the superior vena cava, the large vein that enters the heart. A port may have more than one chamber/septum. A special needle called a Huber ® needle is used to access the port. The needle is placed in the center of the septum and that allows access to the patient's blood.

Like other IVs, it is used to administer or give medications, fluids and nutrients. It can also be used to draw blood.

A port has several advantages over other IVs. Ports last much longer than regular IVs; a port can last a few years. A port rarely gets infected, blocked or quits working, whereas a regular IV sometimes does.

A port is usually surgically placed in the hospital, outpatient surgical clinic, or in the diagnostic imaging or X-ray department.

Procedure

A port is usually inserted in an operating room setting or a special procedure room in the interventional radiology department. A port can be inserted under local anesthesia, conscious sedation or general anesthesia.

The choice of anesthetic depends on the doctor's preference and the patient's condition. Usually the port is inserted by either an interventional radiologist or a general surgeon under either local or general anesthesia.

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Using a special needle, the doctor threads the catheter into either the IJ or the subclavian vein. This is usually done with x-ray or ultrasound guidance to make sure that the tip of the catheter reaches the superior vena cava.

Once the doctor is satisfied with the position of the catheter, she or he connects it to the reservoir. The reservoir is placed under the skin through a small incision. The reservoir looks like a bump under the skin. This helps the healthcare providers find it when they want to access it.

After the procedure the patient is taken to a recovery room to wait for the anesthetic to wear off. Most patients go home the same day unless they need to stay in the hospital for other medical reasons.

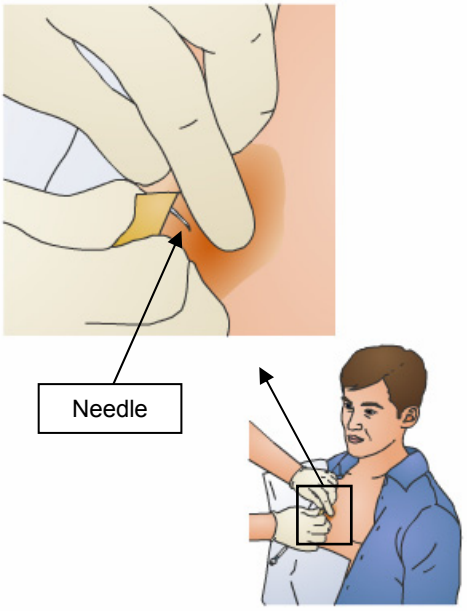
A chest x-ray may be taken after the procedure to make sure the catheter tip is in the right place, and to also make sure that the lungs were not injured during the procedure.

You may feel some tenderness after the procedure. This usually goes away in 24 to 48 hours.

When a healthcare provider wants to withdraw blood or give a medication intravenously, she or he will just clean the skin over the reservoir and insert a special needle in it.

The patient may feel a small needle prick but this is not really painful. Inserting a needle into a port is much easier on the patient than trying to find a vein in an arm when the patient has very small and difficult veins.

A port has to be flushed with a special solution (normal saline and heparin) every month to make sure it stays open.



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Risks and Complications

Inserting a port is a safe procedure. However, like any surgical procedure, it has some risks.

Risks of general anesthesia include nausea, vomiting, urinary retention, cut lips, chipped teeth, sore throat and headache. More serious risks of general anesthesia include heart attacks, strokes, blood clots, and pneumonia. Your anesthesiologist will discuss these risks with you and ask you if you are allergic to certain medications.

Blood clots in the legs can occur due to inactivity during and after the surgery. These usually show up a few days after surgery. They cause the leg to swell and hurt. Blood clots can become dislodged from the leg and go to the lungs where they will cause shortness of breath, chest pain and possibly death.

It is extremely important to let your doctors know if any of these symptoms occur. Sometimes the shortness of breath can happen without warning.

The best way to prevent blood clots in the legs is to walk as soon as possible after surgery.

Other risks are common to most surgical procedures. These include:

- Bleeding that may require a blood transfusion
- A scar that may be painful or unsightly
- Infection that may require long term antibiotics and possibly removal of the port

Other risks are specific to this surgery. These complications are very rare. They include injury to internal body parts along the path where the catheter is threaded in.

The lungs can be punctured which may lead to a leak of air around the lungs. This is called pneumothorax. If this happens, your doctor may have to place a tube that goes from the space around the lungs to the outside of the body. It sucks out that extra air and gives time for the lungs to heal. This tube is called a *chest tube*.

Other structures in the neck or upper chest could be injured. These structures include the carotid arteries that take blood to the brain, the feeding tube, the breathing tube and other nerves that go to the face or arms.

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This can result in breathing problems, swallowing problems, strokes, pain in the face or arms, weakness, paralysis and death. These complications are rare. Further surgeries may be needed to fix some of these complications.

Other risks relate to the fact that a port is a mechanical device that can break off, get plugged, get kinked or injure the veins it's in. Any of these problems may require the removal and replacement of the port. If part of the catheter should break off, it could float along in the bloodstream and get lodged in the lungs where it might need to be taken out surgically.

A very small number of patients who have a port develop blood clots along and outside of the catheter. These clots can cause veins to become narrow which leads to swelling in the face, neck or arms. Blood clots along and outside of the catheter could also move into the lungs.

After the Procedure

The incision should be kept clean and dry until it heals. Sutures or staples may have to be taken out about a week after the surgery. A special skin glue may be used by interventional radiologists or surgeons to connect the skin together where the incisions were made. The port can be accessed with special needles to draw blood or give fluids and medications.

Flushing the Port

After using the port, and once a month if the port is not being used, the nurse will flush the port with normal saline and heparin. Heparin is a blood thinner. This prevents the port from getting clogged. Other than these routine flushes, ports do not need any special maintenance.

If you have a port, be careful to prevent injury or trauma to the area where the reservoir is.

You should call your physician if you develop:

- Signs of wound infections such as redness, tenderness and or drainage
- High fever
- Chills
- Swelling in the face, neck or arms
- Shortness of breath

Summary

Subcutaneous ports like Vital-Port, PORT-A-CATH, Smart Port and Power-Port are devices placed in a big vein that allow doctors, nurses and healthcare providers easy access to a patient's blood stream repeatedly and safely.

Inserting a port is a simple and very safe procedure. A port makes drawing blood and giving medication through an IV much easier on patients.

A port facilitates treatment and significantly improves a patient's quality of life.