

## **Patient Information Pamphlet: Peripherally Inserted Central Catheter (PICC) Insertion**

### **Introduction**

Central venous catheter is plastic catheter inserted through a skin puncture to a central vein with the use of metal guidewire. It is a common procedure in PICU and NICU.

### **Indication**

Central venous catheter provides a reliable, high volume and durable intravenous access for critical patients. It avoids irritation to peripheral veins and repeated venous punctures.

#### **1. Therapeutic**

- Administration of intravenous medications and blood products
- Administration of Intravenous fluid and parenteral nutrition
- Renal replacement therapy

#### **2. Monitoring**

- Monitoring of haemorrhage, e.g. in gastrointestinal bleeding, major trauma
- Monitoring fluid balance and haemodynamic status (changes in the flow of blood in blood vessels)

### **Procedure**

Several sites can be used according to clinical situation: internal jugular vein, femoral vein, subclavian vein and from peripheral veins of upper and lower limbs.

- 1 Disinfect the puncture site. Apply local anaesthesia or sedation depending on clinical situation.
- 2 Through a skin puncture, insert a catheter into the per-chosen site with the help of a guidewire.
- 3 Remove the guidewire and fix the catheter onto the skin.
- 4 Take a post procedural Chest or Abdominal X ray to confirm the position of catheter.

## Complications

### Common/Mild Complications

- **Haematoma and bruise** – there may be some bruises and haematoma formation around the insertion site. It will resolve spontaneously in a few days.
- **Non-optimal catheter position** – catheter may need to be repositioned if the position is not optimal.
- **Blockage of catheter** – the lumen of the catheter is very small and prone to blockage. The catheter may need to be replaced if blocked.
- **Local infection / oedema** – the tissue surrounding the catheter can have infection due to micro-organism or inflammation / odema due to irritation by the catheter. It may require removal of the catheter or antibiotic treatment.
- **Artery puncture** – the adjacent artery can be punctured and cause bleeding during the procedure. It can be stopped with application of pressure.
- **Perforation of catheter** – the catheter can be worn off and broken on prolonged usage. The catheter has to be removed.

### Uncommon / Severe Complications

- **Pneumothorax** - an abnormal collection of gas in the space between the lung and chest wall and causes the separation of them. It may interfere with normal breathing.
- **Cardiac arrhythmias** – abnormal heart beat rhythm may be caused by stimulation of the heart by the tip of the catheter. Adjustment of the position of the catheter is needed.
- **Thrombosis of blood vessels** – formation of blood clot inside a blood vessel, obstructing the flow of blood through the circulatory system.
- **Extravasation** - IV fluid or medication can leak into nearby areas of the body through a damaged blood vessel wall causing inflammation of the tissue.
- **Septicaemia** – Infection of the blood by micro-organism. Antibiotics treatment is needed. The catheter may need to be removed.

### Rare / Life-threatening Complications

- **Haemothorax** - an abnormal collection of blood in the pleural space affecting respiration and leading to blood loss.
- **hydrothorax** - an abnormal collection of fluid in the pleural space affecting respiration.

- **Pericardial effusion / Cardiac tamponade** –collection of fluid or blood in the sac encasing the heart causing impairment of cardiac function.
- **Air embolism** - gas bubbles go into the circulation and obstruct the blood flow causing end-organ damage.
- **Disseminated intravascular coagulopathy** - widespread activation of the clotting mechanism leading to multiple blood clots formation in the small blood vessels throughout the body. This can lead to multiple organ damage and severe bleeding.
- **Nerve damage** – Nerve tissue can be damaged due to the placement process or the **Extravasation** of fluid.
- **Retention of severed catheter** - the catheter may be broken inside the blood vessel. It may need to be removed surgically.
- **Left over of guidewire** - The guide wire may be broken or retained inside the vessel. It may need to be removed surgically.

**Remark:**

***It is impossible to list all the possible complications and the above is only a few important complications which may occur. Before consenting to the procedure, you must realize that no matter how ideal the situation may be, these complications can still occur and can have a serious sequela and may result in death. If major complication occurs, the patient may require another procedure to deal with the complication.***