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 irritatoin 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 accorinding to clinical situaion: internal jugular vein, femoralvein, subclavian vein and from peripheral veins of upper and lower limbs

1 Disinfect the puncture site. Apply local anaesthesia or sedation depeneding 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 resolved spontaneously in a few days
- **Non-optimal catheter position –** catheter may needed 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 needed to be replaced is 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 presessure.
- **Perforation of catheter** – the catheter can be worn off and broken on prolonged usage. The catheter has to been 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 needed to be removed

Rare / Life-threatening Complications

- **Haemothorax** - an abnormal collection of blood in the pleural space affection 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 encasting the heart causing impairment of cardiac function
- **Air embolism** - gas bubbles go into the circulation and obstructing 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 damage 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 complication which may occur. Before consenting to the procedure, you must realize that no matter how ideal the situation maybe, 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.