

Cardiac Catheterisation and Interventional Catheterisation

Introduction

Cardiac catheterisation is an invasive investigation to assess patient with heart disease. It is invasive, because a small catheter is introduced into blood vessels and heart chambers, through a small wound at the groin region. The movement of the catheter is guided and monitored continuously by X-Ray. The purpose of the catheter is to record pressure in the blood vessels and heart chambers, to take blood specimens at various sites for analysis, and to inject special dye to show up the anatomy of the heart. Information from the investigation will help make a diagnosis and assess the severity of the heart lesions.

Sometimes, specialized catheters are used to perform certain tests, e.g. catheter with electrodes for recording of electrical activities of the heart, catheter with tiny forceps at the tip for sampling small pieces of heart muscle.

The technique of cardiac catheterisation can also be applied to treat various heart lesions. This is called Interventional Cardiac Catheterisation. During the procedure specialized catheters are introduced into the heart or blood vessels as previously described. Devices to close holes in the heart or to occlude abnormal vessels are then deployed via these catheters. Some catheters have inflatable balloon incorporated to the tip. Inflation of the balloon by fluid will dilate narrowed heart valves and blood vessels. By these methods a lot of heart lesions can be treated without surgery. Since only tiny incisions are made in the groin, hospital stay is shorter and recovery is much faster than conventional surgical operation.

Complications of Cardiac Catheterisation

Cardiac catheterisation is safe if performed by experienced cardiologists in a well-equipped heart centre. In the laboratory the child is monitored continuously by medical and nursing staff with the support of electrocardiography, capillary blood oxygen saturation and blood pressure measurement. However, since the procedure is invasive potential complications may still occur.

The followings are potential complications that may occur during or after the procedure:

Wound related:

Bleeding, infection, blockage of the vessel, nerve injury in the groin

Complications on the heart:

Perforation of the heart chambers, myocardial infarction, damage to heart valves, induction of abnormal heart rhythm, heart block, pulmonary haemorrhage

Complications related to interventional procedures:

Dislodgement of devices, haemolysis, heart block

Other complications:

- Stroke, kidney damage, drug reaction
- Some of these complications may be life threatening but the chance of developing these major events is only 1-2%. There are situations which may increase the risk of the procedure: infant younger than 12 months, body weight less than 10 kg, children with serious or unstable heart conditions, heart failure, pulmonary hypertension and severe cyanosis. All interventional cardiac catheterisations are considered as high risk procedures.

Preparation for Cardiac Catheterisation

1. Children undergoing cardiac catheterization will be examined by cardiologists before the procedure. Simple tests such as electrocardiography (ECG), chest X-Ray, blood tests will be performed. Cardiac ultrasound may be required if necessary. Before catheterisation the doctor will explain the purpose, the risks and possible complications of the procedure to the parents / patients.
2. The child is admitted to the children's ward one day before the procedure. A small catheter is inserted into a vein for injection of medication. No food and drink is allowed 6-8 hours prior to the procedure. Anesthetist will examine the child the day before if general anesthesia is required.
3. Thirty minutes before the procedure, the child will be given medicines to make him/her relax. Sometimes anesthetic cream is applied to the groins to make the small cut in the groin painless.
4. The child is transferred to the cardiac catheterisation laboratory after all preparation works have been done.

Care After Cardiac Catheterisation

1. Back from the laboratory the child will be examined by nurses and doctors. Heart rate and oxygen level monitors will be connected until the condition is stable.
2. Some children may require extra oxygen after the procedure, especially for those who have had general anesthesia or children with cyanotic congenital heart disease.
3. The child is allowed small amount of water 4 hours after the procedure if he/she is fully awake. More food and drinks may be introduced if there is no vomiting.
4. The child is required to rest in bed for 8-12 hours to prevent bleeding from the groin wounds.
5. Doctor will examine the child again the next day. X-Ray of the chest, ECG and cardiac ultrasound may be repeated. If the wounds and other examination findings are satisfactory the child can go home. Preliminary results of the investigation will be explained to the patient/parents before discharge.

After-Care at Home

1. The child can resume normal activities at home. However exercise should be restricted until the wounds are healed. The bruises in the groin usually resolve in 2 weeks.
2. There may be a little blood oozing out of the wound in the groin. Applying pressure on the wound with a finger may stop the bleeding. If the oozing becomes uncontrolled the child should be seen at the nearest Accident & Emergency Department without delay.
3. Redness, swelling of the wound, severe persistent pain of the wounds or leg should be reported to our nursing staff by phone. Examination of the child will be arranged as soon as possible.

Remarks

The list of complications is not exhaustive and other unforeseen complications may occasionally occur. In special patient groups, the actual risk may be different. For any queries or further information, please consult our medical staff.