



Inside the Heart: The Role of Cardiac Catheterization in Diagnosing Heart Disease

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DESCRIPTION

Local anesthesia is administered to numb the area where the catheter will be inserted, usually the groin (femoral artery) or wrist (radial artery). In some cases, mild sedation may be given to help the patient remain relaxed and calm during the procedure. A small incision is made in the chosen access site, and a sheath is inserted into the artery or vein. The catheter is then guided through the blood vessels to the heart using advanced imaging techniques such as fluoroscopy (real-time X-ray). In some cases, multiple catheters may be inserted to examine different parts of the heart. Once the catheter reaches the heart, various diagnostic tools can be used. A contrast dye is injected through the catheter to make the coronary arteries visible on an X-ray, allowing the doctor to identify blockages or narrowing in the arteries. The catheter can measure the pressure inside the heart chambers and vessels, helping to assess how well the heart is pumping and if there is any dysfunction. In some cases, a small tissue sample may be taken from the heart muscle to assess for signs of disease. If any abnormalities are found during the procedure, treatment can be performed immediately. If a blockage is identified in a coronary artery, a balloon is inflated to widen the artery and restore blood flow. A stent, a small mesh tube, may be inserted into the artery to keep it open after angioplasty. The stent may be drug eluting, releasing medication to prevent future blockages. In cases of arrhythmia, the catheter may be used to deliver radiofrequency energy to destroy abnormal electrical pathways in the heart. After the procedure, the catheter is carefully removed, and pressure is applied to the insertion site to prevent bleeding. The patient is monitored for a few hours, and in some cases, overnight hospitalization may be required.

While the general concept of cardiac catheterization remains consistent, there are several types based on the areas of the heart being examined or treated. This is the most common type of cardiac catheterization, specifically used to examine the coronary arteries for blockages or narrowing. This type of catheterization involves inserting the catheter into the veins and advancing it to the right side of the heart. It is commonly used to evaluate heart failure or pulmonary hypertension. This involves advancing the catheter into the left side of the heart to assess the function of the left ventricle, measure pressures, and evaluate coronary arteries. This is used to examine the veins, particularly for conditions like deep vein thrombosis or venous insufficiency. IVUS involves using ultrasound through the catheter to provide detailed images of the inside of the arteries, which can help in the assessment of plaque buildup and guide interventional procedures. This is another imaging technique which is used during cardiac catheterization to obtain high resolution images of the coronary arteries. Unlike the traditional surgery, cardiac catheterization is minimally invasive, meaning smaller incisions, less pain, faster recovery times, and lower risk of infection. It provides a direct and accurate view of the heart, allowing doctors to identify the coronary artery disease, heart valve issues, and other heart abnormalities with high precision.

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CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

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