

Introduction

1. Carotid artery stenting / angioplasty is a special X-ray procedure for opening-up the narrowed carotid artery, in order to prevent further stroke.
2. Carotid artery stenting / angioplasty is considered in patient with transient ischemic attacks and stroke, diagnosed to have at least 70% internal carotid artery stenosis. Stent restenosis and occlusion rate is below 10% and may require subsequent treatment.

The Operation / Procedure

1. The procedure will be performed under local anesthesia or general anesthesia and aseptic technique.
2. Your vital signs (blood pressure, pulse and oxygenation status) will be monitored throughout the entire procedure.
3. The femoral artery at the groin is punctured by the radiologist and an arterial sheath inserted via a small nick in the skin. It provide an access to the arterial system. An alternative access is from the upper arm.
4. The radiologist then inserts a thin plastic tube (called a catheter) into a blood vessel through the arterial sheath. An X-ray dye (called a contrast medium) will be injected into the blood vessel through the catheter to make the blood vessels visible on X-ray.
5. The X-ray equipment will then be used to navigate the catheter into the neck region and contrast medium will be injected through the catheter and X-rays taken.
6. A cerebral protection device will be placed into the artery to decrease the risk of stroke. It will be removed after the procedure.
7. Stent of appropriate size will be placed within the artery over the neck region.
8. The artery will be dilated by a balloon attached to catheter tip.
9. Patient may feel dizziness and blood pressure may drop during the procedure. Certain drugs may be given to control blood pressure and prevent clots formation.
10. If the procedure is performed under local anesthesia, should not move the head or talk during the procedure.
11. The duration of carotid stenting / angioplasty is different for every patient, it depends on the complexity of the condition. Usually the procedure last for one to two hours.
12. At the end of the procedure, the catheter may be removed or left in the groin region for later removal in the ward.
13. Vital signs and neurological condition will be monitored during and after the procedure. Attention should be paid on the skin puncture site to make sure there is no bleeding from it.

Before the Operation / Procedure

1. A written consent is required.
2. Inform medical staff before the examination if patient is or may be pregnant as the examination involves high dose of X-ray that is harmful to a foetus. Pregnancy test may be necessary in case of any doubt if the examination is to be proceed.
3. Inform doctor of history of allergy to food and drugs, and in particular any previous reaction to contrast medium, asthma, urticarial, eczema and allergy rhinitis etc. Oral or intravenous steroid premedication may be needed before injection of contrast medium.
4. Keep fasting for 6 hours prior to the examination.
5. For diabetic patients on Metformin medication, patient should inform medical staff before examination.
6. Check clotting profile for any bleeding tendency, to be corrected if abnormality detected.
7. Empty the bladder before the procedure.
8. Set up venous access.

Risk and Complication

1. There will be 5% chance that the procedure is unsuccessful.
2. Overall death related to carotid artery stenting / angioplasty is about 2%.
3. Overall incidence of major complications of carotid artery stenting / angioplasty is around 5%.
4. Major complications includes:
 - 4.1 Major stroke results in permanent neurological deficit (permanent limb weakness, numbness, visual loss).
 - 4.2 Groin or retroperitoneal hematoma requiring transfusion or surgery.
 - 4.3 Arterial occlusion requiring surgical thrombectomy or thrombolysis.
 - 4.4 Arteriovenous fistula / pseudoaneurysm at puncture site.
 - 4.5 Breakage and knot forming of catheter or guidewire is very rare, this may require surgical removal.
 - 4.6 Cardiac arrest at time of balloon dilatation.
5. Minor complications includes:
 - 5.1 Groin bruise and pain.
 - 5.2 Transient neurological deficit which is reversible within 24 hours (limb weakness, numbness).
 - 5.3 Transient visual loss.
 - 5.4 Symptomatic bradycardia, temporary asystole.
6. Allergic reaction to intravenous contrast medium.
 - **Mild reactions:** For example, itching, mild skin rash, nausea, vomiting, feeling of warmth, arm pain, sneezing, coughing, etc. These reactions are only temporary and require no treatment.
 - **Moderate reactions:** These are more serious and prolonged. Examples are severe skin rash, fever, chills, palpitation, high or low blood pressure, etc. These reactions usually need medical treatment.
 - **Severe reactions:** These usually require immediate medical treatment and can even cause harm. For example, shortness of breath, irregular heartbeat, chest pain, convulsions, kidney failure, unconsciousness, etc.
 - **Death:** On rare occasion, contrast medium like many other drugs can cause death. The chance of this fatal occurrence resulting from the injection of non-ionic contrast medium is about 1 in 250,000.
 - **Delayed reactions:** Some patients may experience delayed reaction within 24 hours. The symptoms include 'flu' like illness, arm pain, itching, rash, painful or swollen salivary glands, etc.

Should a complication occur, another life-saving procedure or treatment may be required immediately.

Disclaimer

This leaflet only provides general information pertaining to this operation / procedure. While common risks and complications are described, the list is not exhaustive, and the degree of risk could also vary between patients. Please contact your doctor for detailed information and specific enquiry.

Reference

Smart Patient Website by Hospital Authority: Carotid Artery Stenting and Angioplasty (2010)