

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 Procedure

1. The procedure will be performed under local anesthesia or general anesthesia and aseptic technique.
2. The patient's 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. After the arterial sheath is correctly positioned, a slender guidewire is placed through the needle into the blood vessel. The needle is then withdrawn, allowing a fine plastic tube (called a catheter) to be placed over the guide wire into the blood vessel.
5. The X-ray equipment will then be used to navigate the catheter into the neck region and special dye (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.
10. Certain drugs may be given to control blood pressure and prevent clots formation.
11. Duration the procedure, the patient should not move the head or talk.
12. 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.
13. At the end of the procedure, the catheter may be removed or left in the groin region for later removal in the ward.
14. 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 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. Check any bleeding tendency and correct if possible.
6. Empty the bladder before the procedure.
7. Skin preparation on the puncture site.
8. Set up venous access.
9. For diabetic patients on drug – consult doctor concerned for the adjustment of insulin dosage if necessary.

After Procedure

1. After the catheter was removed, the puncture site has to be compressed for at least more than 10 minutes.
2. Continue to watch for evidence of secondary bleeding and swelling at the puncture site.
3. Continue to check blood pressure and pulse, or neuro-observation.
4. The patient may need to have bed rest.
5. The patient may need to continue to fast or take diet as tolerated depending on condition.
6. For diabetic patient on drug – consult doctor concerned for the adjustment of insulin dosage if necessary.

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:
 - Major stroke results in permanent neurological deficit (permanent limb weakness, numbness, visual loss).
 - Groin or retroperitoneal hematoma requiring transfusion or surgery.
 - Arterial occlusion requiring surgical thrombectomy or thrombolysis.
 - Arteriovenous fistula / pseudoaneurysm at puncture site.
 - Breakage and knot forming of catheter or guidewire is very rare, this may require surgical removal.
 - Cardiac arrest at time of balloon dilatation.
5. Minor complications includes:
 - Groin bruise and pain.
 - Transient neurological deficit which is reversible within 24 hours (limb weakness, numbness).
 - Transient visual loss.
 - Symptomatic bradycardia, temporary asystole.
6. Allergic reaction to intravenous contrast medium.

General Risks:

- Mild reactions: For example, itching, mild skin rash, nausea, vomiting, feeling of warmth, arm pain, sneezing, coughing, and chest tightness. A few patients may experience delayed reactions usually within 24 hours, which include pain at injection site, itching, rash, painful or swollen salivary glands. The symptoms are usually transient, requiring minimal or no treatment.
- Moderate reactions: These symptoms are more severe and last for longer duration. Patient may also experience rash or urticaria, fever and chills, an increase or decrease in blood pressure and palpitation. Specific treatment and close monitoring are required.
- Severe reactions: The symptoms include shortness of breath, irregular heartbeat, chest pain, severe kidney failure, convulsion and unconsciousness. If these symptoms occur, the patient will require urgent medical treatment.

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 (2020)
Smart Patient Website by Hospital Authority: Contrast Study of Computer-Assisted Tomography Scan (v2/2020)