

Carotid Artery Stenosis

What is the role of carotid artery in a stroke?

Stroke is the third most common cause of death and disability. According to WHO Survey of 1990, out of 9.4 million deaths in India 6,19,000 were due to stroke. Most of the strokes (approximately 75%) are ischaemic in nature and large vessel diseases account for approximately 40% of ischaemic strokes. It has been estimated that about 20-30% of strokes are caused by stenosis of carotid artery.

What are the various means to diagnose carotid artery stenosis?

- **Carotid Doppler** is a non-invasive & accurate method to assess carotid stenosis
- **MR Angiography (MRA)/CT Angiography (CTA)** provides excellent quality imaging of carotid artery non invasively
- **Digital Subtraction Angiography (DSA)** is the “gold standard”, however it is an invasive investigation and is usually reserved to evaluate stenosis detected in non-invasive investigations, as well as, when the non-invasive investigations are non-conclusive.

What are the treatments for carotid artery stenosis?

Medical treatments are given for the risk factors of atherosclerosis such as hypertension, diabetes mellitus & dyslipidemia. Patients are also told to stop smoking. Anti-platelet drugs (aspirin, clopidogrel) are useful to prevent embolic events. Patients with marked stenosis require revascularization which can be achieved by surgical (endarterectomy) or endovascular means (angioplasty & stenting)

What are the indications for carotid revascularization (stenting/ endarterectomy)?

Symptomatic carotid stenosis

- More than 70% carotid stenosis should be revascularized
- With 50%–69% carotid stenosis, revascularization is recommended for patients who have had recent transient ischaemic attack or stroke depending upon patient-specific factors such as age, gender, co-morbidities and severity of initial symptoms
- With less than 50% carotid stenosis there are no visible benefits of surgery for patients

Asymptomatic carotid stenosis

Treatment of asymptomatic carotid stenosis is more controversial. The guidelines indicate that patients benefit from treatment if the operator has a low complication rate

How does carotid stenting compare to surgical endarterectomy?

- Patients who have coexisting medical problems or advanced age (>80) are better suited for stenting rather than endarterectomy.
- Patients with certain anatomical features such as prior ipsilateral endarterectomy, prior neck irradiation, contralateral internal carotid artery (ICA) occlusion & high cervical stenosis are also better suited for stenting as compared to endarterectomy.

- Patients with marked tortuosity of the common carotid artery, ICA or contraindications to anti-platelet therapy, endovascular therapy may not be very suitable

What is a protection device and what is its role in carotid stenting?

Filter protection devices are umbrella-shaped devices that are placed temporarily in the internal carotid artery beyond the site of stenosis during the procedure. These devices have small pores designed to exclude particulate debris embolization to cranial circulation during the procedure.

Can stenosis of other cranial arteries such as vertebral and intracranial arteries be treated?

Many cases of stroke occur due to stenosis in vertebral & intracranial atherosclerotic disease. Recent studies have shown that these patients with intracranial stenosis have high risk of stroke despite medical treatment. Recent advances in technology have made angioplasty and stenting possible in these patients

