

Carotid Artery Stenosis: The Role of Stenting in High-Risk Individuals

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Description

Carotid stenting is a minimally invasive procedure aimed at treating carotid artery stenosis, a condition characterized by the narrowing of the carotid arteries, which supply blood to the brain. While this procedure is often performed on patients exhibiting symptoms of cerebrovascular disease, there is a growing body of research and clinical experience supporting carotid stenting in asymptomatic patients, particularly those deemed at high risk for future neurological events. Carotid artery stenosis can result from atherosclerosis, where fatty deposits (plaques) build up in the artery walls. This condition not only narrows the artery but also reduces blood flow to the brain, increasing the risk of serious complications, including ischemic strokes. These strokes occur when a clot or debris travels through the bloodstream and obstructs blood flow to an area of the brain, leading to tissue damage. Many patients with significant stenosis may not show any obvious symptoms, which makes it vital to monitor those at risk. Risk factors for developing carotid artery stenosis include high blood pressure, high cholesterol, smoking, diabetes, obesity and a family history of cardiovascular diseases. Because asymptomatic patients may not realize they are at risk, routine screening for those with these risk factors is essential.

Early detection of carotid artery stenosis is vital for effective intervention. Non-invasive imaging techniques such as carotid duplex ultrasound, magnetic resonance angiography and computed tomography angiography, can help identify narrowing in the carotid arteries. These methods allow healthcare providers to assess the severity of stenosis and determine the most appropriate course of action.

The patient is typically given local anesthesia and sedation may be administered to ensure comfort. The procedure usually takes place in a specialized angiography suite. A catheter is inserted into a blood vessel, often in the groin or wrist and guided through the vascular system to the carotid artery. Real-time imaging, such as fluoroscopy, helps visualize the artery and navigate the catheter. Once the catheter reaches the site of stenosis, a small balloon is inflated to widen the narrowed artery. This step is important for improving blood flow. A stent, which is a small mesh tube made of metal, is then deployed at the site of stenosis. The stent expands and remains in place to help keep the artery open. This is often done using a balloon-expandable stent or a self-expanding stent. After the stenting,

patients are monitored for a few hours to ensure there are no immediate complications. Most patients can go home the same day or the next day, depending on their overall health.

The primary goal of carotid stenting, especially in asymptomatic individuals, is to prevent strokes. Several studies suggest that patients with severe carotid artery stenosis, even without symptoms, can benefit significantly from the procedure. For individuals with high-grade stenosis, carotid stenting can dramatically reduce the risk of stroke. This is particularly relevant for those with risk factors such as hypertension, diabetes, or a family history of cardiovascular diseases. Compared to carotid endarterectomy, which is a more invasive surgical procedure involving the removal of plaque from the carotid artery, stenting is less invasive and typically associated with shorter recovery times and reduced hospital stays. Many patients undergoing stenting report improved quality of life post-procedure. By preventing strokes, patients can maintain their independence and functionality longer.

Considerations and outcomes

While carotid stenting has clear benefits, it is not without risks. Ironically, there is a risk of stroke during or shortly after the procedure, primarily due to the dislodgment of plaque or emboli. There is a risk of damage to the blood vessels during catheter insertion and manipulation. In some cases, the artery may narrow again after stenting, necessitating further intervention. Patients may have allergic reactions to the contrast dye used during the procedure. Due to these risks, careful patient selection is vital. The decision to perform carotid stenting on asymptomatic individuals is typically based on a thorough evaluation of their overall risk profile and the severity of stenosis. The long-term outcomes for patients who undergo carotid stenting are generally positive, particularly for those with severe stenosis. Studies indicate that when performed in experienced centers, the procedure has favorable results in terms of stroke prevention and overall survival rates. Regular follow-ups with imaging studies are often recommended to monitor the stent and assess the need for further intervention.

Carotid stenting presents a viable option for asymptomatic patients at risk for stroke due to significant carotid artery stenosis. As our understanding of cerebrovascular disease evolves, this procedure continues to be refined and adapted, providing a minimally invasive means to enhance patient outcomes

and reduce the burden of strokes. As always, the decision to proceed with carotid stenting should involve careful consideration and discussion between the patient and their healthcare care provider, ensuring that the benefits outweigh the risks in each individual case.