

Safety and Risk Management in Modern Endarterectomy Procedures

Rafael S. Oliveira*

Department of Cardiovascular Sciences, University of São Paulo, São Paulo, Brazil

DESCRIPTION

Endarterectomy is a surgical procedure performed to remove atherosclerotic plaque or other obstructions from the inner lining of arteries to restore blood flow and prevent severe cardiovascular events such as stroke, heart attack, or tissue ischemia. While the procedure is highly effective and often life-saving, it is not without risks and potential complications. Understanding these risks is essential for both healthcare providers and patients to ensure proper preoperative evaluation, informed consent and effective postoperative management. By recognizing the potential challenges, patients and surgeons can take measures to minimize adverse outcomes and optimize recovery.

One of the primary risks associated with endarterectomy is Perioperative Stroke Or Transient Ischemic Attack (TIA), particularly in carotid endarterectomy. During the procedure, clamping the artery to remove plaque can temporarily reduce blood flow to the brain, which may lead to neurological deficits. In rare cases, fragments of the plaque or thrombus can dislodge during surgery and travel to the brain, causing an embolic stroke. Surgeons often use intraoperative monitoring techniques, such as Electroencephalography (EEG), transcranial Doppler, or cerebral oximetry, to detect changes in cerebral perfusion and reduce the risk of such events. Temporary shunting of blood around the surgical site is also employed to maintain continuous blood flow during critical stages of the operation.

Another significant complication is bleeding or hematoma formation at the surgical site. The delicate nature of arterial surgery, coupled with anticoagulant therapy commonly administered before, during and after the procedure, increases the risk of excessive bleeding. Hematomas can compress surrounding structures, including nerves, which may result in temporary or permanent neurological deficits. In some cases, urgent surgical intervention is required to evacuate a hematoma and control bleeding. Careful surgical technique, meticulous hemostasis and close postoperative monitoring are essential to minimize this risk.

Nerve injury is another potential complication, particularly in carotid endarterectomy. The surgical exposure of the carotid

artery places cranial nerves, such as the hypoglossal, vagus and recurrent laryngeal nerves, at risk of accidental trauma. Damage to these nerves may lead to complications such as hoarseness, difficulty swallowing, tongue deviation, or facial weakness. Although most nerve injuries are temporary and improve over weeks to months, some may be permanent. Surgeons employ careful dissection techniques and intraoperative nerve monitoring to reduce the likelihood of nerve damage.

Infection at the incision site, though relatively rare, is a recognized complication of endarterectomy procedures. Infection can lead to delayed wound healing, abscess formation, or systemic infection, which may necessitate antibiotics or further surgical intervention. Proper aseptic techniques, preoperative skin preparation and postoperative wound care significantly reduce the risk of infection. Patients are also advised to monitor the surgical site for signs of redness, swelling, warmth, or discharge and to seek prompt medical attention if any of these symptoms occur.

Restenosis or re-narrowing of the treated artery is a long-term complication that may occur months or years after the procedure. Restenosis results from intimal hyperplasia, scar tissue formation, or recurrence of atherosclerotic plaque. Although the risk of restenosis has decreased with advances in surgical technique and the use of patch angioplasty, patients require regular follow-up with imaging studies such as duplex ultrasonography to detect any recurrent narrowing early. Timely intervention, whether with repeat surgery or endovascular procedures, can prevent severe complications associated with restenosis.

Other systemic complications may include cardiovascular events such as myocardial infarction, arrhythmias, or hypotension, particularly in patients with preexisting heart disease. General anesthesia and the physiological stress of surgery can exacerbate these risks, making careful preoperative assessment and perioperative monitoring important. Additionally, patients may experience temporary postoperative complications such as pain, swelling, or bruising, which are generally manageable with supportive care.

Correspondence to: Rafael S. Oliveira, Department of Cardiovascular Sciences, University of São Paulo, São Paulo, Brazil, E-mail: rafael.oliveira@usp.br

Received: 07-Apr-2025, Manuscript No. AOA-25-39758; **Editor assigned:** 09-Apr-2025, PreQC No. AOA-25-39758 (PQ); **Reviewed:** 23-Apr-2025, QC No. AOA-25-39758; **Revised:** 30-Apr-2025, Manuscript No. AOA-25-39758 (R); **Published:** 07-May-2025. DOI: 10.35841/2329-9495.25.13.553

Citation: Oliveira R, (2025). Safety and Risk Management in Modern Endarterectomy Procedures. Angiol Open Access. 13.553.

Copyright: © 2025 Oliveira R. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

CONCLUSION

In conclusion, while endarterectomy is a highly effective surgical intervention for restoring arterial blood flow and preventing serious cardiovascular events, it carries a spectrum of risks and potential complications. These include perioperative stroke, bleeding, hematoma formation, nerve injury, infection, restenosis and systemic cardiovascular events. Careful patient

selection, thorough preoperative evaluation, meticulous surgical technique and vigilant postoperative care are essential to minimize these risks. Understanding the potential complications allows healthcare providers to implement preventive measures, counsel patients effectively and ensure close follow-up, ultimately improving the safety and success of endarterectomy procedures.