ORGAN PROTECTION IN MAJOR VASCULAR SURGERY

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More than 50% of vascular surgical patients present evidence for coronary artery disease (CAD) and cardiovascular complications are important causes of morbidity and mortality following vascular surgery. Adequate preoperative risk assessment and perioperative management may modify postoperative mortality and morbidity and improve long-term prognosis. The objective of this review is to examine the present day knowledge regarding the preoperative evaluation and perioperative management of patients undergoing noncardiac surgery, focusing specifically on abdominal aortic aneurysm (AAA) repair.

Clinical markers combined with ECG findings and surgical risk assessment can effectively divide patients in a truly low-risk, intermediate and high-risk population. Low-risk patients can probably be operated on without additional cardiac testing. Notably, due to the surgical risk, AAA patients are never low-risk patients. Intermediate-risk and high-risk patients are referred for cardiac testing (myocardial scintigraphy, exercise stress testing, stress-echocardiography) to exclude extensive stress-induced myocardial ischemia, since in this case, beta-blockers provide insufficient myocardial protection and preoperative coronary revascularization might be considered.

Whether patients at intermediate risk without ischemic heart disease should be treated with statins and/or beta-blockers is still controversial. In high-risk patients, it is strongly advised to administer beta-blockers with heart rate determined dose adjustment, while the effects of preoperative revascularization remain subject to debate. In addition, perioperative statin therapy may stabilize coronary plaques due to pleiotropic effects and results in a further reduction of perioperative cardiovascular complications. Patients
presenting contraindications to beta-blocker therapy (severe asthma, high-grade conduction blockade, unstable heart insufficiency) might benefit from the administration of alpha-2-agonists (clonidine). Intra-and postoperatively, continuous thoracic epidural blockade has been shown to provide optimal analgesia and cardioprotective effects by blunting the activity of the sympathetic nervous system and by modulating the prothrombotic state.

An increasing proportion of patients with CAD are currently treated with drug-eluting stents (DES) that require a dual antiplatelet treatment (aspirine and clopidrogel) for 6-12 months following insertion to prevent intra-stent thrombosis. Elective surgery should be postponed within 6-12 months following DES insertion and the planned surgical procedure should be performed under aspirine treatment while clopidrogel therapy is discontinued. If revascularization is required within one month of planned surgery, simple balloon angioplasty or coronary bypass surgery might well be preferred options. If surgery is planned between 1 and 12 months, particularly if complex anatomy is present, then bare-metal stent implantation may be preferable. If surgery is planned after 12 months, DES implantation may be an acceptable option. Awareness, prevention, and early treatment of perioperative stent thrombosis are best achieved by collaboration between surgeons, anesthesiologists, and cardiologists.