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## Pharmacology of arterial grafts for coronary artery bypass surgery

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Interest has increased in the use of arterial conduits for coronary artery bypass grafting (CABG) significantly in most major cardiac surgery centers around the world, because the number of patients receiving arterial grafts and our knowledge about the biological characteristics of arterial grafts has increased. In addition, more advanced clinical protocols for the use of grafts have been developed and midterm results with alternative arterial grafts are encouraging. The internal mammary artery (IMA) has been shown to have greater long-term patency for coronary artery bypass grafting when compared with the saphenous vein graft. Because of the superior long-term results of the IMA, other arterial grafts which have recently been advocated include the radial artery (RA), the gastroepiploic artery (GEA), the inferior epigastric artery (IEA), the splenic artery, the sub-scapular artery, the inferior mesenteric artery, the descending branch of lateral femoral circumflex artery, the intercostal artery and the ulnar artery. One of the various manifestations clinically observed among these arterial grafts is a different tendency to develop spasm during surgical dissection and during the perioperative period which could be the cause of perioperative morbidity and mortality. For example, there are reports of vasoactive drugs altering IMA graft flow. Moreover, there is accumulating evidence that blood flow in arterial grafts is insufficient in some circumstances. Many vasoconstrictors (spasmogens) may cause arterial grafts spasm. Accordingly, anti-spastic therapy is important in the development of arterial grafts and the nature of constrictor substances that cause arterial graft spasm needs to be determined. In recent years, the problem of graft spasm has become more frequent with the increasing use of new arterial grafts. Therefore, it is essential for surgeons to understand the causes of vascular graft spasm, to improve patency rates and to use the optimal vasodilator in the most appropriate way to counteract vasospasm. Surgeons have studied graft pharmacology by measuring the effects of vasodilators on blood flow through arterial grafts before they were attached to the heart. Pharmacologists have also joined the study of graft pharmacology by evaluating endothelial and smooth muscle function of bypass grafts using their standard *in vitro* method, the isolated vessel ring preparation in the organ bath. However, results from these *in vitro* studies need to be carefully extrapolated to the clinical situations, where the conditions of the arterial grafts are complicated. Even so, the organ bath method can provide very useful information about the effects of vasoactive substances in the arterial grafts. Several vasodilators have been tested and various anti-spastic methods have been suggested to prevent graft spasm; including papaverine, phenoxybenzamine, calcium antagonists and nitrates, etc. Choice of a pharmacological agent to overcome the vasospasm encountered in the arterial grafts must be on the basis of pharmacological studies. Accordingly, current state of knowledge based on experiments to study the pharmacological effect of a number of vasoconstrictor and vasodilator substances and the practical application of this knowledge will be summarized.

### Biography

Oguzhan Yildiz, MD, has completed his PhD from Hacettepe University and Post-doctoral studies from University of California, Irvine. He is a Professor of Medical Pharmacology at the Gulhane Faculty of Medicine. He has published more than 60 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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