

Clinical experience with devices for facilitated anastomoses in coronary artery bypass surgery.

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Abstract

Recent developments in minimally invasive coronary artery surgery have been driven by the introduction of new technologies which should facilitate precise surgical maneuvers on the beating heart within confined spaces. Such technologies include coronary stabilizer systems, cardiac positioning vacuum-assisted devices, and telemanipulative systems. Despite these developments, standard suturing techniques using running polypropylene material remains a limiting factor in the surgeon's ability to perform complete revascularization with high quality anastomoses through minimal approaches to the chest cavity. Clinical validation of proximal and distal anastomotic devices has the potential to substantially improve and perhaps revolutionize minimally invasive coronary surgery. Ideal characteristics of such devices would include applicability to all conduit types, all coronary sizes, interchangeable proximal/distal sequencing of the anastomosis, and safe bail out for device malfunction. However there is an urgent need to define the performance objectives of such systems as well as the general criteria for proper and comparable evaluation and validation of different systems in animal models and subsequently in controlled prospective clinical studies. This review summarizes the most interesting systems available in both experimental and clinical settings.