Catheter-assisted totally thoracoscopic coronary artery bypass grafting: A feasibility study.

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Abstract:

Background. The purpose of this study is to examine the feasibility of performing totally thoracoscopic internal mammary-to-coronary artery bypass grafting with the assistance of radiologically guided catheter intervention. Methods. Fourteen dogs were subjected to mobilization of the internal mammary artery and anastomosis of it to the left anterior descending coronary artery over an angiographic catheter inserted into the internal mammary artery under fluoroscopy. The anastomosis was completed over the catheter using sutures and the application of fibrin glue. Eight animals underwent the anastomosis after their sacrifice. The other 6 animals were put on dosed chest cardiopulmonary bypass and had their anastomosis done after intraaortic balloon occlusion and cardioplegic arrest of the heart. All animals had an angiographic and pathologic examination at the completion of the anastomosis. Results. Anastomosis was completed in all dogs. Three anastomoses leaked and two were noted to be stenosed at completion of the anastomosis. One leak was sealed by application of fibrin glue. Both stenotic anastomoses were caused by suturing of the back wall when a short angiographic catheter could not be positioned across the anastomosis. Conclusions. Minimally invasive totally thoracoscopic mammary-to-coronary artery bypass grafting with catheter assistance is feasible. Technical improvement and appropriate instrumentation are required to minimize anastomotic failure.