

Patel, M. et al. 2006. Limited Myocardial Muscle Necrosis Model Allowing for Evaluation of Angiogenic Treatment Modalities. *Journal of Reconstructive Microsurgery*, 22, 611

ABSTRACT

The currently accepted model for creating infarcted cardiac tissue in a rat model involves ligation of the left anterior descending artery (LAD), either proximally or at the bifurcation level. This procedure requires significant technical expertise and, even in skilled hands, commonly results in a 30 percent to 60 percent animal mortality. The authors propose a new model for creating a limited area of myocardial muscle necrosis that can be effectively studied. It involves a distal electrocautery occlusion of the LAD terminal branches and coagulation of the surrounding muscle. The model is consistently reproducible and decreases the morbidity of the study animals. It provides a cardiac muscle necrosis model not dependent on survival, while allowing study of the post injured state of the muscle and surrounding scar. This allows researchers to evaluate neovascularization and healing of the scar and peri-necrotic muscle, to assess improving blood flow with treatment by techniques designed to improve and stimulate angiogenesis, and to measure the outcome of stem-cell transplants for potential clinical use.