

Incidence of residual clot strands in saphenous vein grafts after endoscopic harvest

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Objective: Strands of clot are frequently flushed out of saphenous vein grafts (SVG) during preparation for grafting, particularly those that are endoscopically harvested. However, saline distention at uncontrolled pressures increases graft thrombogenicity and the risk of early failure after coronary artery bypass grafting. The purpose of this prospective investigation was to define the incidence of intraluminal clot within endoscopically harvested SVG and the effect of attempted removal by saline distention.

Methods: Endoscopically harvested SVG were intraoperatively prepared for grafting by using saline distention at uncontrolled pressure ($n=24$) or without distension ($n=20$). Optical coherence tomography, a catheter-based infrared imaging system, was used to identify and characterize intraluminal clot strands in surplus SVG segments (average length for analysis, 4.9 ± 2.6 cm). These segments were also assessed for luminal tissue factor activity and

percent endothelial integrity by CD31-directed immunohistochemistry.

Results: Clot strands were observed in 45.4% (20 of 44) of imaged SVG segments (severity of observed clots: 54%, mild; 32%, moderate; 14%, severe). Compared with grafts distended with saline, vein segments that were not distended displayed significantly higher endothelial integrity ($60.1\% \pm 27.2\%$ versus $24.7\% \pm 24.1\%$, $P < 0.05$) and lower tissue factor activity (1.28 ± 0.95 versus 12.3 ± 5.5 U/cm², $P < 0.001$) despite having a higher incidence of clot strands (65.0% versus 29.1%, $P < 0.02$, Fisher exact test). Static flow was observed in veins during endoscopic harvest.

Conclusion: Clot strands of varying severity are a common finding after endoscopic vein harvest. Saline distention is not completely effective in removing clot strands and increases overall graft thrombogenicity. Therefore, prevention of clot or less traumatic methods of removing clot are indicated.

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