High-frequency vibration for the recanalization of guidewire refractory chronic total coronary occlusions.

BACKGROUND: Recanalization of coronary chronic total occlusions (CTOs) remains a clinical challenge, particularly when standard guidewire attempts fail. OBJECTIVES: We sought to determine the safety and efficacy of a novel method that used high-frequency (20 kHz) vibration to fragment occlusive fibrous tissue and facilitate guidewire crossing into the distal vessel. METHODS: A total of 125 patients with CTO, who failed at attempts of conventional guidewire recanalization after more than 5 min of fluoroscopy time, were enrolled in the study. The primary efficacy endpoint was the advancement of the CROSSER catheter through the occlusion and attainment of coronary guidewire positioning in the distal coronary lumen. The primary safety endpoint was the occurrence of death, myocardial infarction, clinical perforation, or target vessel revascularization within the first 30 days. RESULTS: The average fluoroscopy time while delivering the CROSSER catheter was 12.4 min. CROSSER-assisted guidewire recanalization was achieved in 76 (60.8%) procedures and a final diameter stenosis<50% was obtained in 68 (54.4%) of cases. Major adverse events occurred in 11 (8.8%) patients, lower than the predefined objective performance criteria. Angina frequency and quality of life were improved in patients with successful guidewire recanalization.
CONCLUSIONS: We conclude that high-frequency vibration using the CROSSER catheter is a safe and effective therapy for patients with CTO, which are refractory to standard guidewire recanalization.