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Radiosurgical Ablation of the Renal Nerve: Minimally Invasive therapeutic approach to treat Refractory Hypertension

Patrick Maguire [1]

1. Cardiac/thoracic/vascular Surgery, Cyberheart, Mountain View, USA

Corresponding author: Patrick Maguire, maguireheart@gmail.com

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Abstract

Refractory hypertension remains a serious unmet clinical need. Recent catheter based approaches have used radiofrequency to ablate the renal nerve, delivered through the renal artery. We wished to ascertain if proprietary software, CardioPlan©, (CyberHeart Inc. Portola Valley, CA) could be used to contour and target the renal nerve for radiosurgical ablation. In a pig model, six mini swine were treated using 40-50Gy in a variety of conformal configurations. Norephinephrine (NE) levels decreased during the six month follow-up, suggesting sympathetic blockade, and pathology documented renal nerve ablation effect. Minimal, if any findings, were observed in the renal artery. There were no adverse events. Radiosurgical ablation of the renal nerve can be precisely accomplished, and potentially be used to treat patients that are refractory to other anti-hypertensive therapies.

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65