

PFA Catheter Design for Optimal Safety and Efficacy

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Abstract: Various catheter designs to treat atrial fibrillation are appearing in clinical studies and the market, but it is unclear if they have similar safety and efficacy profiles. It is possible to elucidate differences with simple comparative computer modeling that does not rely on precise tissue or waveform parameters. Of particular interest is the production of gas bubbles which may be embolized to the brain. Using assumptions from publications and patents, various catheter designs were simulated to compare the percentage of myocardial target ablated, and bubble production via the current required for 90% transmural. It is concluded that designs with less exposure to blood, and less short-circuiting through blood, had the safest and most efficacious profiles.