Research Protocol

Systematic review protocol: surgical ablation versus catheter ablation for atrial fibrillation

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Submitted Nov 04, 2013. Accepted for publication Nov 05, 2013.
doi: 10.3978/j.issn.2225-319X.2013.11.06
Scan to your mobile device or view this article at: http://www.annalscts.com/article/view/2907/3823

Objectives

This review will assess the safety, efficacy and clinical outcomes of epicardial surgical ablation compared to endocardial catheter ablation for management of atrial fibrillation.

Methods

Participants

Patients with either paroxysmal or permanent atrial fibrillation.

Interventions

Surgical ablation techniques include Cox-Maze cut-and-sew, Modified Maze radiofrequency ablation, cryoablation, microwave ablation and epicardial pulmonary vein isolation. Catheter ablation techniques include endocardial pulmonary vein isolation.

Outcome measures

Freedom from atrial fibrillation will be the primary outcome measure of interest. Secondary measures include adverse events such as freedom from anti-arrhythmic medication, pericardial tamponade, pulmonary vein stenosis, permanent pacemaker insertion, myocardial infarction and neurological events.

Search strategy

A systematic review of studies comparing surgical ablation to catheter ablation will be performed. Five electronic databases including MEDLINE, PubMed, Embase, Cochrane Central Register of Controlled Trials and the Cochrane Database of Systematic Reviews will be searched. Appropriate free text and MESH terms will be used to identify studies. The reference lists of all retrieved articles will be reviewed to further identify potentially relevant studies. Only comparative studies will be included in this review.

Three reviewers will independently appraise the studies using a standard form, and extract data on methodology, quality criteria and outcome measures. All data extracted and tabulated will be checked by an additional reviewer. The quality of studies will be assessed using assessment criteria recommended by the Centre for Evidence Based Medicine (University of Oxford). Discrepancies between reviewers will be subject to discussion until a consensus is reached.

Statistical analysis

The odds ratio (OR) will be used as a summary statistic. Both fixed and random effect models will be tested and compared. χ^2 tests will be used to study the heterogeneity between trials. I^2 statistic will be used to estimate the percentage of total variation across studies, owing to heterogeneity rather than chance, with values greater than 50% considered as substantial heterogeneity. If there was substantial heterogeneity, the possible clinical and methodological reasons for this will be explored qualitatively. Statistical significance will be considered at $P<0.05$. All P values will be 2-sided.