



Title	A Systematic Review of Intraoperative Ablation for the Treatment of Atrial Fibrillation
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Aim

To assess the safety and efficacy of intraoperative surgical ablation techniques in treating atrial fibrillation (AF) compared to other surgical procedures, including cardiac surgery (CS) alone, or the Maze-III procedure, the current 'gold standard' surgical treatment for AF.

Conclusions and results

Sixty-nine studies using intraoperative ablation were identified, plus 15 studies with Maze-III surgery as a benchmark. Evidence was mostly limited by the many variations of energy sources and ablation patterns used in the studies. The primary efficacy outcome was conversion to normal sinus rhythm (SR), which was greater with cryotherapy ablation (CA), radiofrequency ablation (RFA), and microwave ablation (MWA) versus CS alone. Conversion to SR was at least 68% for all the different energy sources and lesion sets. There were no consistent differences in efficacy between CA versus Maze-III, and insufficient evidence for this comparison using other energy sources. There were no consistent differences in mortality when ablation was compared to CS or Maze-III surgery, and there did not appear to be any greater risk of bleeding with CA or RFA versus CS. Evidence was insufficient to draw conclusions about stroke incidence. Small numbers of esophageal perforation and circumflex artery stenosis were reported, mostly in case reports. All esophageal perforations were associated with unipolar nonirrigated RFA.

Recommendations

The ASERNIP-S Review Group agreed on the following classifications and recommendations:

Evidence rating – The available evidence was assessed as being poor.

Safety – There was insufficient evidence to determine if intraoperative ablation was more or less safe than cardiac surgery alone, or the Maze-III procedure. Associated risks relating to longer bypass times, plus the possibility of esophageal perforation and circumflex artery injuries,

are potential concerns. No studies compared intraoperative ablation with medical management of AF, hence, safety could not be evaluated.

Efficacy – Intraoperative ablation is at least as efficacious as cardiac surgery alone, or the Maze-III procedure. No studies compared intraoperative ablation with medical management of AF, hence, efficacy could not be evaluated.

Methods

Medical literature databases from inception to January 13, 2004 were searched as were conference abstracts, references in retrieved studies, and studies using the Maze-III procedure for benchmark data. Studies selected were randomized controlled trials (RCT), non-randomized comparative studies, and case series that included intraoperative ablation using any of the available energy sources and any standardized lesion pattern. Data from studies were extracted by a researcher using standardized data extraction tables developed a priori and checked by a second researcher. See monograph for details.

Further research/reviews required

RCT of intraoperative ablation, designed and powered sufficiently to measure long-term survival and stroke rate. The comparator would be cardiac surgery alone. Surgeons performing intraoperative ablation in treating AF should participate in a national audit.