



CRYOABLATION FOR ATRIAL FIBRILLATION

Atrial fibrillation is a heart condition characterized by an irregular or rapid beating of your heart's two upper chambers (the atria). The condition can be paroxysmal (intermittent), persistent (lasting longer than 12 months), or permanent. Atrial fibrillation is the type of arrhythmia most commonly seen in patients, with the incidence of the condition markedly increasing with age. A patient can be asymptomatic or might present symptoms ranging from palpitations, breathlessness, and dizziness. The condition carries an increased risk for stroke, due to the likelihood of blood clots, which form within the left atrium before embolizing and traveling to the patient's brain.

Atrial fibrillation most commonly occurs without the presence of structural heart disease, however, if this condition is also present, it's usually mitral stenosis.

There are several conservative treatments for atrial fibrillation, including electrical cardioversion used for controlling heart rhythm, and anticoagulants for the prevention of blood clots. Conventional surgical approaches to the condition mainly consist of the Cox maze procedure, which involves creating numerous incisions, strategically placed within both of the atria, in order to isolate and prevent abnormal electrical impulses. There are alternative treatments, including the creation of lesions, by ablation, within the atria, through the use of microwave, radio frequency, and ultrasound.

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Cryoablation for atrial fibrillation will generally be carried out when patients are already undergoing associated open heart surgery. This is most frequently for the repair or replacement of the mitral valve. The heart tissue is frozen using a cryoprobe. Lesions and linear scars are created by the damaged heart tissue, disrupting abnormal electrical impulses as they are transmitted. It's possible to carry out the procedure on both of the atria if need be, or it can be done on the heart's left atrium alone. The procedure can be carried out from outside or within the atrium.

EFFICACY OF CRYOABLATION FOR ATRIAL FIBRILLATION

Studies have compared patients who received cryoablation for atrial fibrillation in conjunction with mitral valve surgery, and those who received the Cox maze procedure for atrial fibrillation in conjunction with mitral valve surgery. The survival rate for patients in the trial, at three years, was 98% for the group undergoing the Cox maze procedure, and 92% for those undergoing Cryoablation. At the time of discharge, 86% (95 out of 110) of those treated using the Cox maze procedure were in sinus rhythm, compared to 85% (94 out of 110) of those treated using cryoablation [1].

In addition to this, two trials that were non-randomised compared patients undergoing cryoablation and heart valve surgery, to those undergoing heart valve surgery alone. Immediately following surgery, the groups treated with cryoablation experienced 78% (25 out of 32) and 100% (36 out of 36) sinus rhythm, compared to 22% (4 out of 18) and 33% (5 out of 15) of those in control groups [1].

THE SAFETY OF CRYOABLATION FOR ATRIAL FIBRILLATION

The procedure appears to be the most efficacious among patients who have experienced the condition for less than a year. Cryoablation is a difficult procedure to differentiate in terms of complications, as it is performed at the same time as open heart surgery, which itself carries a great deal of risk and the possibility of related complications. It's difficult to pin down which complications are specifically related to cryoablation, and which would have occurred regardless as a result of open heart surgery.

Across three studies carried out into in-hospital mortality with the procedure, there was a range of results varying from 0% (0 out of 28) and 3% (3 out of 95, and 1 out of 32). Four additional studies showed that between 3% (1 out of 32) and 14% (4 out of 28) patients undergoing the procedure required pacemakers after surgery [1].

Additional complications can include the need to re-operate, mediastinitis; delayed cardiac tamponade; requiring intra-aortic balloon pumps; low cardiac output; transient ischaemic attack; and dialysis [2].

In addition to this, the Specialist Advisors have noted heart block, oesophageal injury, intra-operative myocardial infarction, and damage to the circumflex coronary artery are all possible adverse effects following cryoablation for atrial fibrillation.

ADDITIONAL INFORMATION

The majority of the data available for this procedure is drawn from patients undergoing mitral valve surgery. At present, only limited evidence is available regarding the treatment's efficacy if it is performed during other procedures, like bypass grafting on the coronary artery.

SOURCES

1. <https://www.nice.org.uk/guidance/ipg123>
2. <https://www.nice.org.uk/guidance/ipg123/resources/overview-of-cryoablation-for-atrial-fibrillation-in-association-with-other-cardiac-surgery2>

Meta Description: Cryoablation for atrial fibrillation is a treatment carried out during related open heart surgery. Find out more.