

The Heart Matters



Dr. Arun Gopi

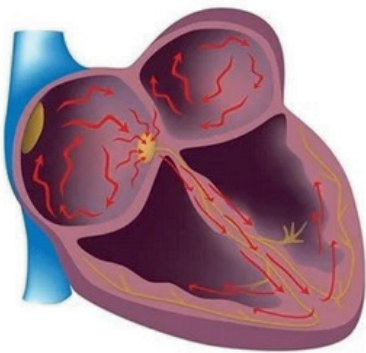
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Panel of Interventional Cardiology :

Dr. P.P. Mohammed Musthafa, Dr. Muhamed Shalooob, Dr. Girish PV, Dr. Ashwin Paul Kooran, Dr. Amira Ali Shaik, Dr. Radhakrishnan

Cryoablation: A Novel Treatment for Abnormal Heart Rhythm

Atrial Fibrillation



WHAT IS ATRIAL FIBRILLATION?

AF is a supraventricular arrhythmia characterized electrocardiographically by low amplitude baseline oscillations resulting in an irregular ventricular rhythm. The f wave has a rate of 300-600 bpm and is variable in amplitude and regularity. The ventricular rate, termed atrial fibrillation with float ventricular rate, during A-fib typically ranges from 100 to 460 bpm.

CLINICAL FEATURES RESULT FROM:

- Irregularly irregular pulse
- Low stroke volume
- Low left ventricular diastolic filling
- Absence of peripheral pulse

SYMPTOMS:

- Shortness of breath
- Fatigue
- Palpitations

HOW IT OCCURS:

Atrial fibrillation (AF) is a type of arrhythmia or abnormal heart rhythm. It is caused by extremely fast or irregular beats from the upper chamber of the heart, usually more than 100 beats per minute. This occurs due to abnormal electrical circuits in the atrial tissue arising from a stretched left atrium or valvular heart disease.

WHAT ARE ALL THE MEDICATIONS USED FOR ATRIAL FIBRILLATION?

A number of agents are effective for maintaining normal sinus rhythm in patients with atrial fibrillation. According to current guidelines, amiodarone, dronedarone, flecainide, propranolol, sotalol, and disopyramide are recommended for rhythm control. Calcium channel blockers, including diltiazem and verapamil, are effective for initial ventricular rate control in patients with atrial fibrillation.

PATHOPHYSIOLOGY:

- Electrophysiological changes occur in the atria within a few hours of the onset of AF, leading to the maintenance of fibrillation: electrical remodelling.
- When AF persists for a period of months, structural remodelling occurs with atrial fibrosis and dilatation, further predisposing to AF.
- Early treatment of AF will prevent this and reinitiation of the arrhythmia, and also prevent the occurrence of stroke.

RISK FACTORS FOR ATRIAL FIBRILLATION INCLUDE:

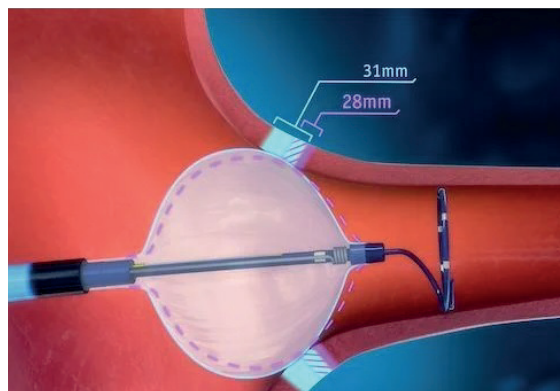
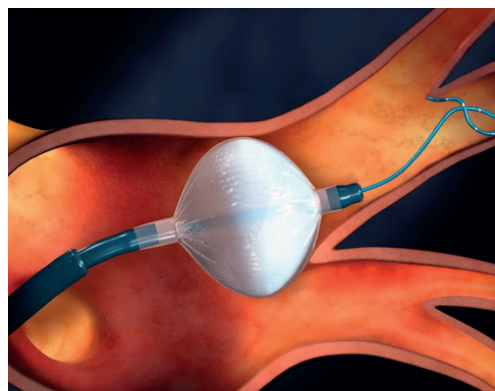
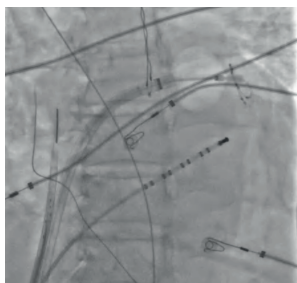
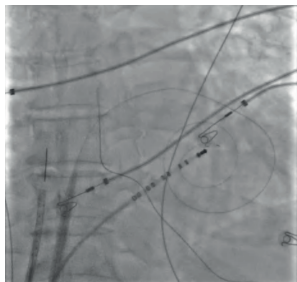
- Hypertension
- Diabetes mellitus
- Obstructive sleep apnea
- Hyperthyroidism
- Heart failure
- Obesity

OUR CLINICAL EXPERIENCE AT MICC:

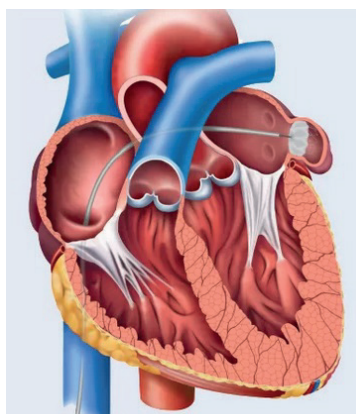
A 68 years old male presented with complaints of recurrent episodes of AF refractory to medical therapy, ECG showed paroxysmal AF, Echo done showed concentric LVH, no RWMA, with normal LV function. he was advised cryoablation and admitted for the same

PROCEDURE:

Patient was brought to the cath lab in sinus rhythm, and the procedure was performed under general anesthesia. An esophageal temperature probe was inserted through right femoral venous access (6 F & 8 F) for CS and Transeptal access, respectively, and left femoral venous access (10 F) for ICE catheter was taken under ultrasound guidance. Transeptal access was achieved under ICC guidance using a BRK needle and surgical electrocautery. The septum was dilated, and a 12 F flex Cath advance (Medtronic) was tracked over the LA wire into LA under ICE and Fluoroscopy guidance. The Arctic Front Advance Pro 28 mm (Medtronic) was inserted into LA through the 12 F flex Cath advance (Medtronic) with an Achieve mapping catheter. The Achieve mapping catheter was introduced into the LSPV under ICE guidance and mapped, showing PV potential.



The Arctic Front Advance Pro 28 mm was tracked over the Achieve mapping catheter into LSPV and inflated. The occlusion was confirmed on fluoroscopy and injection of contrast into LSPV, as well as on pressure waveforms with prominence of V wave post-occlusion. After confirming occlusion, the Achieve catheter was adjusted to ensure good pulmonary vein signals, and freezing was started, achieving a temperature of -54 degrees Celsius. The time to isolation was 60 seconds.



FOLLOW- UP:

He was discharged on the third day post-procedure and is currently following up clinically stable and functionally active. No occurrence of atrial fibrillation was documented even after one year post-procedure. Beta-blockers were continued for 6 months followed by tapering of the dosage.

CRYOABLATION:

We perform cryoablation to restore normal heart rhythm by disabling heart cells that create an irregular heartbeat. During this minimally invasive procedure, a thin flexible tube called a balloon catheter is used to locate and freeze the heart tissue that triggers an irregular heartbeat.