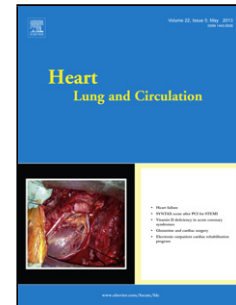


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## **Pathophysiology of Paroxysmal and Persistent Atrial Fibrillation:**

### **Rotors, Foci and Fibrosis**

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### **Abstract**

The current classification of atrial fibrillation (AF) is based mainly on the clinical presentations of the arrhythmia, for example, whether it is paroxysmal or persistent; however, this may not sufficiently reflect the underlying severity of atrial disease. Novel electro-anatomical mapping studies and imaging technology, such as late gadolinium-enhanced MRI (LGE-MRI) could play a major role in guiding therapy, beyond simple clinical classification, by enabling individual patient evaluation of arrhythmic mechanisms such as rotational (“rotors”) and ectopic focal (“foci”) activations, and of the degree of atrial fibrosis. For example, in patients undergoing catheter ablation, increased LGE-MRI detected atrial fibrosis has been linked to higher AF recurrence.

**Keywords:** Atrial fibrillation, Atrial fibrosis, Rotors, ectopic foci, Mapping studies, Imaging, atrial fibrosis

### **Introduction**

Research over the last several decades has led to significant advances in our understanding of the mechanisms underlying the initiation and maintenance of atrial fibrillation (AF). The

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