

Clinical Indication for EP Procedures

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The term EP-procedures includes the diagnosis and therapy of arrhythmias based on catheter guided interventions and the implantation of devices. Arrhythmias may affect young and old patients. Arrhythmias are of different risk for patient's survival and the diagnosis is often very difficult.

An increasing number of patients with atrial fibrillation have to be recognized in the ageing society. Although often being a benign heart rhythm disturbance often affects quality of life and may also lead to an impairment of cardiac function. Whereas atrial arrhythmias are more recognized by the patients, the ventricular origin is much more dangerous and may lead to life threatening situations.

Catheter-based interventions are of growing impact in case of atrial fibrillation or - flutter. The complete treatment is often challenging and in a significant percentage several therapeutic procedures have to be performed.[1]

The ablation of congenital pathways is established, but depending on the location, it is often difficult. The therapeutic strategy in all arrhythmias depends on the underlying disease.

Devices should be also recognized as a part of an EP-procedure. It is well known, that pacemakers, defibrillators and devices for cardiac resynchronization therapy are often implanted. These procedures seem to be routine and should be recognized as such in a high percentage, but several cases would profit from guidance. The background is, that the therapeutic decision is currently not based a personalized decision, but on large trials and/or guidelines. For example, from a pathophysiology point of view cardiac resynchronization therapy can only be successful, if there is viable myocardium. But until now we have conflicting data and so far the therapeutic approach is not helpful in a certain number of patients. The same is truth for a prophylactic application of defibrillators. On the other hand, they may save life and are offering the only potential prevention in dedicated groups of patients.[2]

A better understanding of the underlying injury has the potential to improve the success of EP-procedures and is necessary for advanced risk stratification.

Cardiac Magnetic Resonance is able not only to assess cardiac function, but also to visualize small myocardial lesions and to differentiate myocardial tissue changes, e.g. detection and extension of focal and diffuse fibrosis. That's why, the method has the unique possibility to guide these procedures and to improve the risk assessment

1. European Heart Rhythm, A., et al., *Guidelines for the management of atrial fibrillation: the Task Force for the Management of Atrial Fibrillation of the European Society of Cardiology (ESC)*. *Europace*, 2010. **12**(10): p. 1360-420.
2. European Society of C., et al., *2013 ESC guidelines on cardiac pacing and cardiac resynchronization therapy: the task force on cardiac pacing and resynchronization therapy of the European Society of Cardiology (ESC). Developed in collaboration with the European Heart Rhythm Association (EHRA)*. *Europace*, 2013. **15**(8): p. 1070-118.