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Anesthesia for Electrophysiological Studies and Catheter Ablations

Essay
Submitted in Partial Fulfillment of the Master Degree in Anesthesiology

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Diaa El Din Badr Metwally

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List of Abbreviations

Abbr.	Title
ACT	Activated Clotting Time
AF	Atrial Fibrillation
ALARA	As Low As Reasonably Achieved
AP	Action Potential
APC	Atrium Premature Complex
ASA	American Society of Anesthesiologists
AV	Atrioventricular
AVNRT	Atrioventricular Nodal Reentry Tachycardia
BPAP	Bilevel Positive Airway Pressure
CPAP	Continuous Positive Airway Pressure
CS	Coronary Sinus
DAD	Delayed After Depolarizations
DC	Direct Current
EAD	Early After Depolarization
EAM	Electroanatomic Mapping
ECG	Electrocardiogram
EP	Electrophysiology
EPL	Electrophysiology Laboratory
ETCO2	End Tidal Carbon Dioxide
HFJV	High Frequency Jet Ventilation
ICD	Implantable Cardioverter Defibrillator
ICE	Intracardiac Echocardiography
INR	International Normalized Ratio
LAA	Left Atrial Appendage
LMA	Laryngeal Mask Airway
LOM	Ligament of Marshall
LSPV	Left Superior Pulmonary Vein

List of Abbreviations (cont.)

Abbr.	Title
MAC	Monitored Anesthesia Care
MDP	Membrane Diastolic Potential
MV	Mitral Valve
NMDA	N-methyl-Daspartate
PES	Programmed Electric Stimulation
RA	Right Atrium
RF	Radiofrequency
RT	Reciprocating Tachycardia
RUPV	Right Upper Pulmonary Vein
RV	Right Ventricle
SVT	Supraventricular Tachycardia
TA	Triggered Activity
TEE	Transesophageal Echocardiography
TH	Threshold
VF	Ventricular Fibrillation
VT	Ventricular Tachycardia
WPW	Wolff Parkinson White Syndrome

Introduction

Introduction

Providing anesthesia in nonoperating room locations is becoming increasingly common. The field of electrophysiology (EP) and its patient population are growing, resulting in a greater need for anesthesiologists in the electrophysiology laboratory **(Kwak, 2012)**.

The procedures are complex and of long duration with patients who have multiple comorbidities. The electrophysiology laboratory (EPL) is a unique place in that arrhythmias are sought and sometimes even provoked so that they need to be eliminated **(Roger et al., 2012).**

Technologies for the treatment of arrhythmias are rapidly developing and these techniques are associated with unique complications. Also some patients are unable to lie flat, or tolerate the procedure, children, adolescents, and anxious adults, congenital heart disease, and anticipated long and protracted procedures require monitored anesthesia care (MAC) or a general anesthesia **(Calkins et al., 2012).**

It is important for the anesthesiologists to be familiar with the key aspects of EP procedures, and recording techniques and parameters in order to understand the impact of anesthetics or anesthesia techniques **(Mahajan., 2012).**

The following essay will highlight the techniques used by the cardiologists to map arrhythmias and discuss the different procedures involved in ablation. It will consider the anesthetic implications of these procedures and discuss the challenges of delivering safe anesthesia in electrophysiology laboratory.

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The aim of this essay is to focus the light on the anesthetic management of patients with arrhythmias of variable pathophysiology and other comorbidities undergoing electrophysiological studies and catheter ablations in electrophysiology laboratory.

Review of Literature