Cardiac ablation: a game-changer in the treatment of heart rhythm disorders.

Forum Kamdar*

Department of Cardiology, University of Minnesota Medical Center, Minneapolis, USA.

Introduction

Cardiac ablation is a minimally invasive procedure that involves the use of specialized techniques to modify or eliminate abnormal heart tissue that is causing the arrhythmia. It is primarily used to treat two common types of arrhythmias: atrial fibrillation (AF) and supraventricular tachycardia (SVT). Let's delve deeper into the procedure and understand how it works. During a cardiac ablation procedure, a team of highly skilled cardiac electrophysiologists performs the intervention in a specialized cardiac catheterization laboratory. The patient is usually placed under local anesthesia, although general anesthesia may be used in some cases [1,2].

A small incision is made in the groin or wrist, and thin, flexible catheters are inserted into blood vessels and guided towards the heart. Using advanced imaging technologies, such as fluoroscopy or three-dimensional mapping systems, the electro physiologist carefully maneuvers the catheters to the precise location of the abnormal heart tissue. Once in position, various energy sources can be utilized to treat the arrhythmia. The most commonly employed techniques are radiofrequency ablation and cryoablation. Radiofrequency ablation employs high-frequency electrical currents to generate heat, which destroys the abnormal tissue causing the arrhythmia. The catheter tip, equipped with an electrode, delivers the energy precisely to the targeted area. Cryoablation, on the other hand, employs extreme cold temperatures to freeze and destroy the problematic tissue. A coolant is circulated through the catheter, cooling the surrounding tissue and effectively eliminating the arrhythmia-causing cells. The choice between radiofrequency ablation and cryoablation depends on several factors, including the type and location of the arrhythmia, as well as the electro physiologist's expertise and preference [3,4].

Both techniques have proven to be highly effective in treating arrhythmias, with success rates ranging from 80 to 95%. One of the significant advantages of cardiac ablation is its ability to provide long-term relief from arrhythmias. While medications can help manage the symptoms, they often fail to provide a permanent solution. Cardiac ablation, on the other hand, targets the underlying cause of the arrhythmia and aims to eliminate or significantly reduce its occurrence. Studies have shown that cardiac ablation has a much higher success rate in maintaining normal heart rhythm compared to medication alone. Another crucial aspect of cardiac ablation is its safety profile. Like any medical procedure, there are risks involved, but the overall complication rate is relatively low [5].

Conclusion

Serious complications such as major bleeding or damage to the heart or blood vessels are rare. The procedure has evolved over the years, and advancements in technology and techniques have further enhanced its safety and effectiveness. Following the ablation procedure, patients typically spend a night in the hospital for monitoring and recovery. The majority of patients experience immediate relief from their arrhythmia symptoms, although some may require a short adjustment period. Most individuals can resume their normal activities within a few days to a week, although strenuous physical exertion should be avoided for a few weeks to allow the heart to heal fully.

References

1. Conti S. Contact force sensing for ablation of persistent atrial fibrillation: a randomized, multicenter trial. Hear Rhythm. 2018;15:201–208.
2. Borregaard R. Is the knowledge of contact force beneficial in pulmonary vein antrum isolation? Scand Cardiovasc J. 2017;51:129–137.
3. Ullah W. Randomized trial comparing pulmonary vein isolation using the SmartTouch catheter with or without real-time contact force data. Hear Rhythm. 2016;13:1761–67.
4. Masnok K. Relationship of catheter contact angle and contact force with contact area on the surface of heart muscle tissue in cardiac catheter ablation. Cardiovasc Eng. Technol. 2021.
5. Dewhirst MW. Basic principles of thermal dosimetry and thermal thresholds for tissue damage from hyperthermia. Int J Hyperth. 2003;19:267–294.

***Correspondence to:** Ryan Tedford, Department of Cardiac Surgery, Vanderbilt University, Nashville, Tenn, E-mail: TedferdR@musc.edu

***Received:** 01-Jul-2023, Manuscript No. AACC-23-103860; **Editor assigned:** 04-Jul-2023, Pre QC No. AACC-23-103860(PQ); **Reviewed:** 18-Jul-2023, QC No. AACC-23-103860; **Revised:** 21-Jul-2023, Manuscript No. AACC-23-103860(R), **Published:** 28-Jul-2023,DOI:10.35841/aacc-7.7.185*

***Citation:** Kamdar f. Cardiac ablation: a game-changer in the treatment of heart rhythm disorders. J Cell Biol Metab. 2023;7(7):185*