

Electrophysiology: it is time to simplify!

Lluís Mont* and Josep Brugada

Arrhythmia Section – Cardiology Department, Thorax Institute - Hospital Clinic, Institut d'Investigació Biomèdica August Pi i Sunyer (IDIBAPS), University of Barcelona, Villarroel, 170, Barcelona 08036, Catalonia, Spain

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This editorial refers to 'A randomized-controlled trial comparing conventional with minimal catheter approaches for the mapping and ablation of regular supra-ventricular tachycardias' by R. Liew *et al.*, on page 1057

For many years, electrophysiology has been regarded as a kind of mysterious knowledge. The only people able to understand were its Shamans: the electrophysiologists. To become a shaman, novices tread a tough path of initiation, full of difficulties and anguish. The early practitioners of electrophysiology had to explore a new world, with limited tools. Over time, they managed to explain most of the underlying mechanisms of tachycardias, using many catheters, and performing complex pacing manoeuvres to prove the origin or characteristics of an arrhythmia.^{1–3} Thanks to this long heritage, modern electrophysiologists know which arrhythmias they may encounter and how to treat them. However, despite this tremendous leap in knowledge, electrophysiology studies and ablation procedures are often tedious and redundant, due to the complexity of the methodology used. Despite some studies showing the feasibility of performing EP studies and ablations with a much more simplified approach,^{4–6} many groups are still using more than three catheters in standard procedures, and are reluctant to adopt faster and simpler approaches.

Imagine somebody trying to demonstrate that a Giraffe is a Giraffe and not an Elephant by describing their characteristics step by step: long neck, brown spots, skinny legs, no trunk, etc. Most arrhythmias can be immediately diagnosed and localized by pattern recognition on the surface ECG as WPW syndrome, intranodal tachycardias, or ventricular tachycardias.^{7,8} The paper presented by Liew *et al.*⁹ is the first to analyse the feasibility of performing a simplified approach in a randomized study. The authors have proved that most procedures can be done using just three catheters, achieving the same success as with more. As a matter of fact, in our practice we seldom use more than two catheters in EP studies and ablation procedures, except for atrial fibrillation ablation. We use a rather 'dynamic approach', moving

the catheter to several positions during the study, rather than a 'static approach', taking all the electrograms simultaneously. But why do we need a fixed catheter in the CS? If we need to record an electrogram from the CS, we just have to explore with our ablation catheter and then move it to the next position.

Why are many groups reluctant to simplify the procedures? Is it only a matter of adherence to the traditional approaches and resistance to change, or is it based on real difficulties? One of the arguments often presented in favour of the 'orthodox approaches' is that new generations of electrophysiologists must be taught and must learn the fundamentals. Another argument is that the use of many electrodes simplifies the diagnostic task, while diagnosis and ablation with only two catheters requires the high expertise that can only be attained by highly experienced electrophysiologists.

In fact, we would argue that simplification goes much further than reducing the number of catheters. Simpler tools can be used and personnel requirements can be reduced. In most laboratories, one physician manages the catheters while a second physician is in charge of recording and pacing from outside. However, these tasks can be accomplished by one person, just by using a keyboard that is operated by the same physician who is moving the catheters and applying radiofrequency with the 'pedal'. On the other hand, if one becomes familiar with PA projection, multiple X-ray projections are seldom needed. This has the added benefit of decreasing X-ray exposure.

It is of course true that the use of more catheters and more operators is considered a kind of 'safety net' for less-experienced operators who feel safer if their diagnoses are confirmed by more than one operator, after performing several manoeuvres and using multiple catheters and X-ray projections. In our practice, we have the experience of more than 7000 ablation procedures of supraventricular arrhythmias, (excluding atrial fibrillation), most of them performed with only two catheters, without routinely placing a CS catheter. We would affirm that

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* Corresponding author. Tel: +34 93 227 5551, Fax: +34 93 451 3045, Email: lmont@clinic.ub.es

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with enough experience, it can be done safely—and there are important benefits.

Electrophysiology studies and ablation procedures can become simpler, faster, cheaper, and safer. The most important argument in favour of simplification is safety. Using only two catheters to ablate most supraventricular tachycardias will diminish complications by avoiding subclavian puncture to place a CS catheter and multiple femoral punctures and reducing the probability of cardiac perforation and X-ray exposure. Another very important consideration is improved safety in paediatric ablation. Learning to work with fewer catheters will also allow confident use of simpler approaches in children, in whom the placement of multiple catheters is risky or simply not feasible, depending on the size of the child. The second argument in favour is cost-effectiveness: reducing the number of catheters, number of physicians and nurses, and length of the procedures results in highly significant cost savings. In this sense, simplification would also allow us to expand the population that receives this therapy.

It seems that it is time to simplify the ablation and leave the complexity for more demanding procedures such as atrial fibrillation.

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