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Published in:
Europace

DOI:
[10.1093/europace/euaa212](https://doi.org/10.1093/europace/euaa212)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2020

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Brandes, A., Crijns, H. J. G. M., Rienstra, M., Kirchhof, P., Grove, E. L., Pedersen, K. B., & Van Gelder, I. C. (2020). Electrical cardioversion of atrial fibrillation and atrial flutter: manoeuvres and tips to increase its effectiveness-Authors' reply. *Europace*, 22(10), 1602. <https://doi.org/10.1093/europace/euaa212>

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doi:10.1093/europace/euaa212

Published online 5 August 2020

Electrical cardioversion of atrial fibrillation and atrial flutter: manoeuvres and tips to increase its effectiveness—Authors' reply

We read with interest the letter by Panagiotis Korantzopoulos referring to our recent review with practical guidance on cardioversion of atrial fibrillation and atrial flutter.^{1,2}

Korantzopoulos highlights manoeuvres to increase the immediate success of external electrical cardioversion (ECV), including manual pressure augmentation and dual external ECV.^{3–5} We agree that these manoeuvres may be important in special situations, e.g., when (morbidly) obese patients undergo ECV, whereas they are rarely needed in the vast majority of patients, which we focused on in our review. Nevertheless, several important points are worth considering. First, immediate cardioversion success is

determined by the interaction of multiple factors, including transthoracic impedance, electrode position, use of biphasic vs. monophasic shocks, energy selection, electrode pressure, pre-treatment with antiarrhythmic drugs, duration of atrial fibrillation, echocardiographic findings (e.g. mitral regurgitation and dilated left atrium), and the New York Heart Association functional class of the patients.² Second, applying pressure to the defibrillation electrodes is an essential element during standard cardioversion⁶ and is also advocated by guidelines. Therefore, the pressure augmentation studies in fact corroborate previous studies. We agree that applying dual ECV is worth trying if sinus rhythm is needed at all costs but otherwise difficult to obtain. Third, when interpreting the study results it is important to consider the definitions of successful cardioversion. Only two of the three studies provided a clear definition.^{3,4} Interestingly, in the study with the highest success rate, when using manual pressure, two consecutive beats in sinus rhythm were sufficient to be regarded as cardioversion success.³ Although this definition is valid when comparing cardioversion configurations, one should acknowledge that such definition is not so relevant from a clinical perspective and that it might overestimate the effect of ECV. Fourth, particularly dual cardioversion may work well when performed by trained experts or in a controlled study setting. However, dual cardioversion might be challenging in routine daily practice, whereas applying electrode pressure is easy. Fifth, the cited studies applied lower shock energy in the majority of patients than is applied in current routine practice. Protocols applying maximum energy shocks without manual pressure may be sufficient for restoring sinus rhythm also in obese patients as shown in a recent randomized study.⁷

In conclusion, we agree that manual pressure augmentation when using electrode patches or dual external ECV as proposed in the cited studies may be helpful in special situations and that these measures may increase immediate cardioversion success in experienced hands, yet they are hardly necessary for the vast majority of patients scheduled for ECV. Moreover, electrode patches should be avoided in obese patients and handheld paddles used instead.

Conflict of interest: none declared.

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