

# RECURRENT VF DURING CHEST COMPRESSIONS

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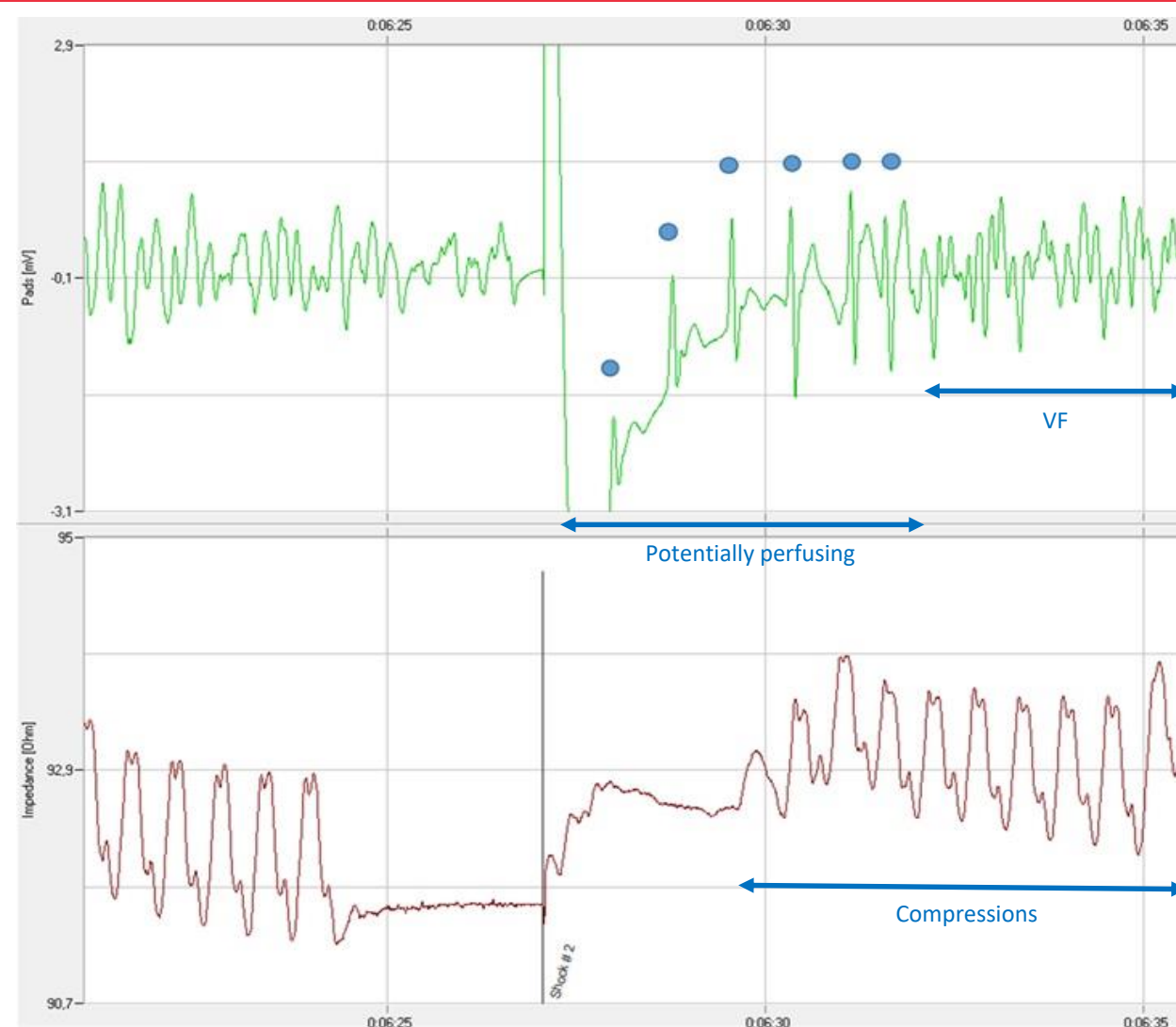


Figure 1: Potentially perfusing rhythm directly after shock

## BACKGROUND

Since 2010, brief rhythm checks and defibrillation followed immediately by restarting compressions is the norm in CPR<sup>1</sup>. Currently, we do not delay or interrupt compressions to determine if a potentially perfusing rhythm is seen after defibrillation.<sup>2</sup> (Figure 1) However, compressions may have negative effects on an underlying, potentially perfusing, rhythm and can cause regression to VF.

Previous research by Hess et al.<sup>3</sup> and Conover et al.<sup>4</sup> suggests recurrence of VF during compressions is independent of compressions, and they support that VF may not to be caused by compressions. However, our observations seem to challenge this.

## PURPOSE

Our hypothesis is that potentially perfusing rhythms can degrade to VF by/during compressions.

## METHODS

Using our database of consecutive in-hospital resuscitation attempts, in which a Philips MRx was used, we reviewed the rhythms after a rhythm analysis pause. Each pause and rhythm assessment, during the following compression period, was evaluated for a potentially perfusing rhythm. The assessment was done by two independent, blinded, investigators.

## CONCERNS

Whether compressions are the cause of degradation to VF, or this would have occurred without compressions, is not clear from our database. However, our experimental data (not showed here) show a strong correlation.

## FINDINGS & CONCLUSIONS

In the investigational period of 3 years, there were 25 usable cases with 47 shockable events suitable for analysis (VF or VT without output). We found 5 cases in which 13 post shock potentially perfusing “sinus” rhythms regressed to VF under compressions, typically within the first 15 compressions.

Our data did not allow us to evaluate whether the rhythm was in fact perfusing, as ETCO<sub>2</sub> was not consistently available, and other signs of output (i.e. change of color, movement, pupil size, SpO<sub>2</sub>) were not registered in the MRx.

While controversial and recognizing potential dangers, we suggest that in the event of strong expectations of ROSC, compressions could be delayed or interrupted briefly to confirm ROSC without waiting for the end of a 2-minute cycle. This to alleviate the potential regression to VF during compressions.

There is need for a method of detecting ROSC / (potentially) perfusing rhythm during chest compressions.

## TAKE HOME MESSAGE

- Recurrent VF during chest compressions is a common finding.
- Performing high quality compressions on a beating heart may have arrhythmic effects.
- Particularly in the unstable, sensitive hearts during arrest, stopping compressions could be considered with clear signs of ROSC, without waiting for the next cyclic rhythm and output check.
- There is need for better method(s) of detecting ROSC / potentially perfusing rhythm during chest compressions.

## References:

- <sup>1</sup> Soar J, et al. Resuscitation 2015;95:100-47
- <sup>2</sup> Ruiz de Gauna S, et al. Biomed Res Int 2014;2014:386010
- <sup>3</sup> Hess E., et al. Resuscitation 2005;66:7-11
- <sup>4</sup> Conover Z, et al. Circulation: arrhythmia and electrophysiology 2014;7:633-9

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