This supplementary file presents additional information on the convergence of the numerical simulations of excitation-contraction waves in a pre-stretch slab-like sample with uniform myocardial properties except for a non-excitable "scar" region. Figure S1 shows a comparison of the action potential at one of the nodes of the computational grid located in the right lower part of the Z = 1 surface of the sample for the simulations performed on the spatial grids of 2.5 mm (used for the simulations discussed in our study) and 1.25 mm. The grid size was varied only for the monodomain model equation, while the mechanics was still computed on the 2.5 mm grid.

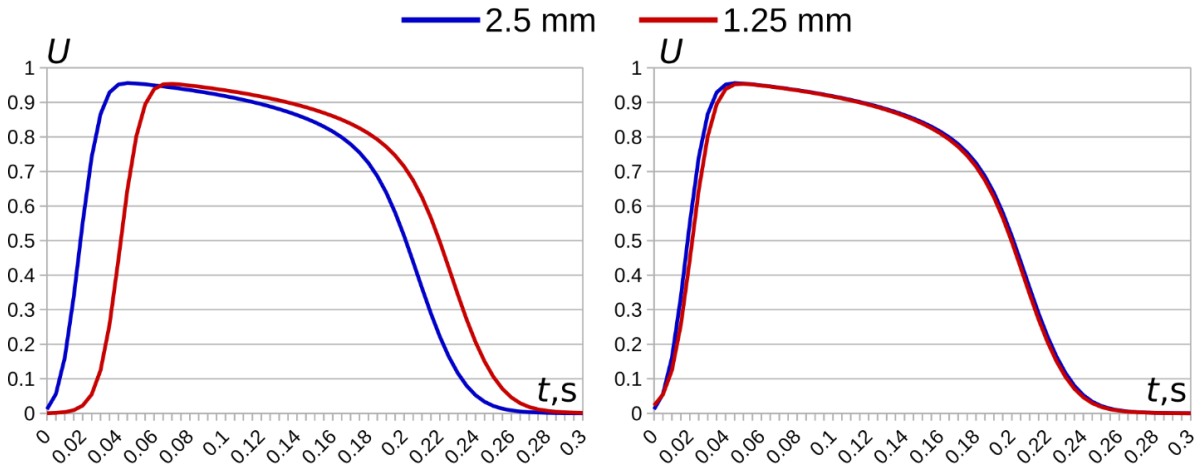


Figure S1. Action potential dynamics at a point of the sample after the passthrough of the "scar" region. The colored lines show the values of non-dimensional AP for the size grid of 2.5 mm (blue) and 1.25 mm (red). The left panel demonstrates the actual values, and the right panel has one of the curves shifted by 20 ms in time for a clearer comparison. X-axis is for time in seconds.

The difference in the spatial grid size led to a difference in the propagation speed of the wavefront up to 6%, which decreased after the wave passed the "scar" area. Presumably, the speed difference resulted in a phase shift of up to 20 ms, while the action potential duration was almost identical. Figure S2 shows the relative error in AP values without taking the phase shift into account.

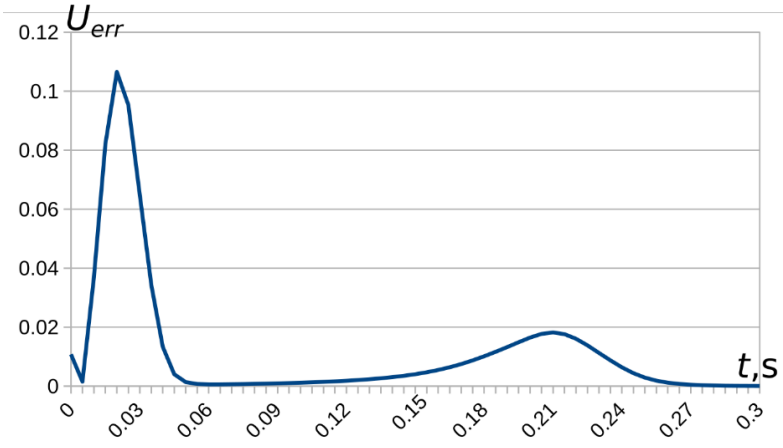


Figure S2. Relative error in the AP values between the results of the simulations on the spatial grid for electrical propagation with sizes of 2.5 mm and 1.25 mm in case the phase delay between the time-courses of AP was ignored. X-axis is for time in seconds.

Although we acknowledge that the difference in the conduction velocity can affect the rotational dynamics of the waves and make our conclusions on the effects of the mechano-electric feedback less reliable, in the test problems presented here we observed very similar wave propagation, except for the phase delay.