

Shock wave therapy: What really matters

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Device and producing company:

Swiss Dolorclast, EMS Electro Medical Systems SA, Ch. de la Vuarpillière 31, 1260 Nyon, Switzerland

Introduction:

A recent study in the literature (Cleveland et al., *Ultrasound Med Biol* 2007; 33: 1327-1335) suggested that the rise times of the waveforms produced by the EMS Swiss Dolorclast shock wave source (as well as of piezoelectric and electromagnetic shock wave sources from other providers operated at low settings) would be too long for the pulses to be considered shock waves, and this could explain the negative outcome of some clinical studies performed with these sources.

Methods:

We performed a comprehensive literature survey about definitions of the term "shock wave" used in the biomedical field; and the potential significance of the leading positive phase of shock waves for their biomedical effects.

Results:

Several definitions of the term "shock wave" are used in the biomedical field.

Importantly, cavitation consequent to the negative phase of the wave propagation appears to be the most relevant effect of shock waves on tissue.

Discussion:

Focussing mainly on the leading positive phase of shock waves in further basic research on applications of shock waves to the musculo-skeletal system might be misleading.

It appears more effective to evaluate the actual contribution of the positive and negative phases of shock waves to their biomedical effects, and to develop innovative strategies to maximize the exposure of patients to the predominant factor.

Conclusion:

The negative outcome of some clinical studies performed with the EMS Swiss Dolorclast shock wave source was most probably due to other reasons than the relatively long rise time of the leading positive phase of the shock waves generated with this source.