Evaluation of different marker sets for motion artifact reduction in breast dynamic infrared imaging.

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Abstract
Dynamic infrared imaging is a promising technique to be applied to early breast cancer diagnosis. It is based on the acquisition of hundreds of consecutive thermal images with a frame rate ranging from 50 to 200 frames/s, followed by the spectral analysis of temperature time series at each image pixel. To improve the time series signal-to-noise ratio, it is useful to realign the thermal images of the acquisition sequence. Our previous studies demonstrated that a registration algorithm based on fiducial points is suitable to both clinical applications and research, when associated with a proper set of skin markers. In this paper, we evaluate the performance of different marker sets by means of a model that allows estimating the signal-to-noise ratio increment due to registration, and we conclude that a 9-marker set is a good compromise between motion artifact reduction and the time required to prepare the patient.

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