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Reply to letter to the editor: Assessment of the spatial pattern of colorectal tumour perfusion estimated at perfusion CT using two-dimensional fractal analysis

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Response to 'The euclidean meaning of fractal abundance in perfusion imaging'

Dear Editor,

We welcome the interest that Peng and Ko have shown in our paper [1] which aimed to assess if perfusion measured at CT demonstrated fractal properties. The measures we evaluated—fractal dimension (FD), fractal abundance (FA) and lacunarity—have been implemented previously in biological studies and are by no means new [2–5]. For example, studies of plant root systems have

employed FD, FA and lacunarity [5]. Fractal abundance has been described as a measure of the volume of space explored by fractal analysis. With 2D analysis we agree that fractal abundance should demonstrate a correlation with the pixel number. Indeed our data show that FA correlates with the natural logarithm of the pixel number ($r^2=0.98$) and also with tissue area ($r^2=0.87$). However it is well recognized that correlation merely demonstrates the presence of a relationship between the two parameters and does not reflect an interchangeability.

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