

# Online Resource 1

## Assessment of crosstalk influence at different slice gaps

### Background and purpose

The scans conducted in the main part of this study were performed with 4 mm slice thickness and 200 % slice gap. The slice gap was set so that the influence of the MT effect could be sufficiently observed, and at the same time, the signal decay due to crosstalk would be avoided. (Narrow slice gap causes stronger MT effect, but would lead to stronger crosstalk, and vice versa.). The purpose of this additional experiment was to clarify the relation between the slice gap and the crosstalk effect in order to validate that the slice gap used in the study was appropriate, and furthermore, to determine the adequate slice gap for clinics.

### Materials and methods

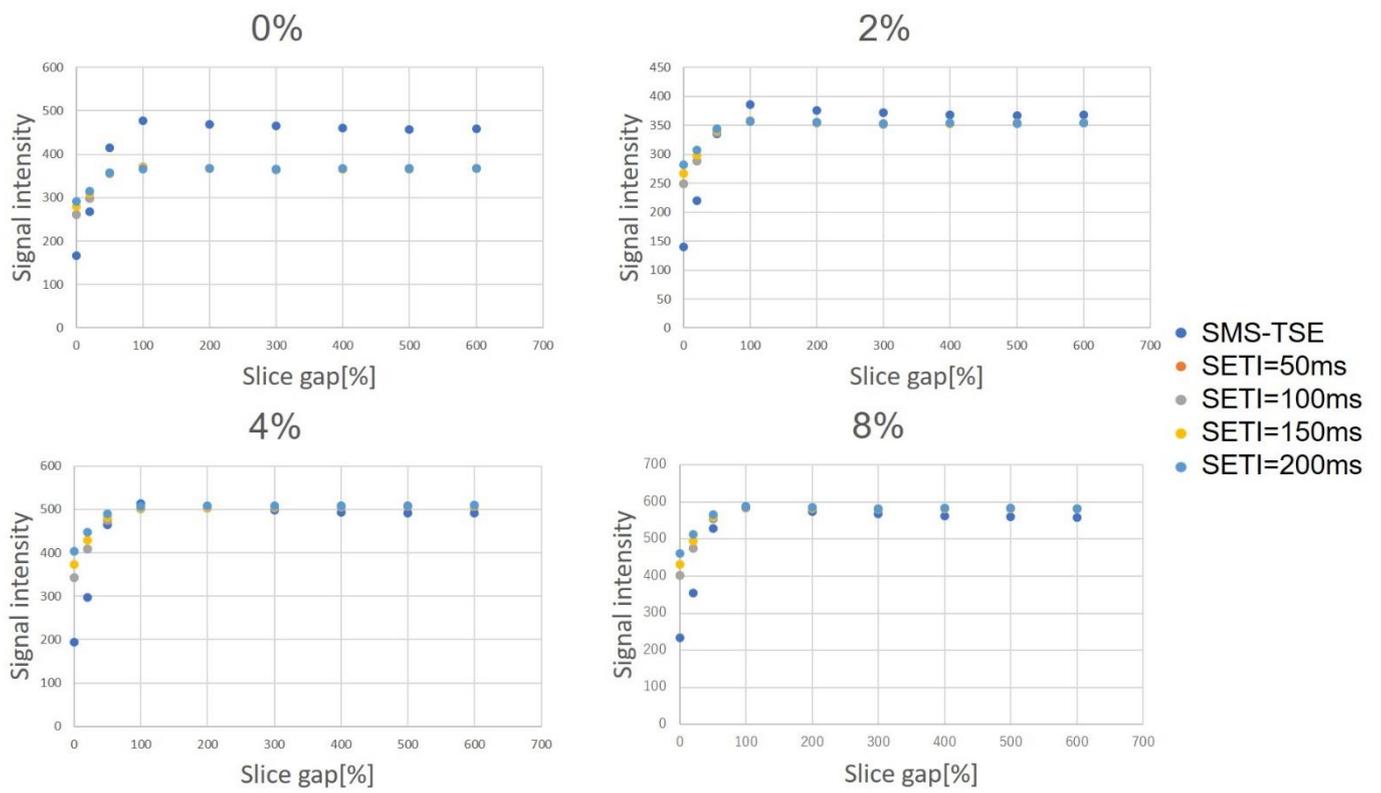
Adjusted-SETI TSE and SMS-TSE scans of the agar phantoms (agar concentrations were same as in the main experiments: 2, 4, and 8%) were performed by changing the slice gap to 0, 20, 50, 100, 200, 300, 400, 500, 600 %. TR was fixed to 400 ms. The other imaging parameters including the slice excitation time interval (SETI) variation for adjusted-SETI TSE (50, 100, 150, and 200 ms) were kept identical with those in the main phantom study. The signal intensity change due to different slice gaps was evaluated for each SETI length and each agar concentration.

### Results

For all agar concentrations, the signal intensity was lower at slice gaps between 0 and 50 % compared to those at slice gaps more than 100 % (Supplementary Figure 1). In addition, the signal reduction in this range was larger when the slice gap was smaller. The signal change was small when the slice gap was 100 % or more.

## Discussion

Signal reduction found at slice gap less than 100 % can be assumed as the effect of crosstalk, because the decrease became larger as the slice gap became smaller. On the other hand, when the slice gap was larger than 100 %, the difference in signal intensity was small; it can be assumed that the effect of crosstalk was decreased to an ignorable level at these slice gaps. Hence, a slice gap of 200 % applied in the main experiments of this study might be adequate. In addition, a slice gap more than 100 % might be suggested as one standard for clinics. Signal normalization was not performed in this scan because the signal of pure water phantom was not appropriate as the standard in this case as it was also affected by the crosstalk.



Supplementary Figure. 1 Signal intensities of adjusted-SETI TSE and SMS-TSE at different slice gaps.