This study evaluated the efficacy of the VAT technique in reducing metal artifacts caused by metal implants. One such strategy depends on unique metal artifact reduction sequences (MARS). View angle tilting (VAT), in particular, is an FDA approved sequence. VAT applies an extra gradient in the slice selected direction during the readout phase and is able to correct in-plane spatial distortion (1). In combination with other techniques, such as placing the implant parallel to Bo and increasing read out bandwidth, significant artifact reduction is attainable.

On average, Cobalt-Chromium prosthesis produced more artifact than Oxinium prosthesis by 3.28% and 3.97% for T1WI and STIR, respectively.

The VAT technique reduced artifact when compared to conventional 2D imaging. When VAT was implemented, the areas of metal artifacts were reduced by 17.9% in T1WI and 19.0% in STIR images for Oxinium implants.

VAT reduced artifacts by 35.6% in T1WI images and 28.2% in STIR images for Cobalt-Chromium prosthesis.

VAT was shown to reduce metal artifacts in two types of metals and with two types of image contrasts. This represents an important strategy in improving the evaluation of bone and tissue near metal implant devices.

Quantifying area of artifact reduction may prove more reliable with the fabrication of a larger phantom.

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