**INTRODUCTION**

Image quality is one of the key factors that determine the success of an imaging scheme. Experiments with diffuse optical tomography (DOT) research and applications have indicated that the image reconstruction algorithm yields blurred images because of the limitations inherent to the object domain, as well as to the measurement domain. To reduce this effect, we have focused on developing techniques to improve the quality of reconstructed images and to improve image quality, as measured by parameters such as spatial resolution and quantitative accuracy of measured optical coefficients, for multi-detector diffuse optical tomography [1]. In this paper, we extend our work on image correction from DOT to optical tomography, which includes both spatial resolution and signal-to-noise ratio (SNR) of the reconstructed images. Towards this goal, a novel method is presented for generating an image-correcting filter in the spatial domain, which can be applied to diffuse optical tomography. This method involves the generation of an image-correcting filter based on the measured data, and it is designed to improve the spatial resolution and SNR of the reconstructed images. The proposed method allows for the correction of image artifacts that are introduced during the imaging process, and it can be used to improve the quality of reconstructed images without the need for additional hardware.

**METHODS**

The procedure for estimating the image-correcting filter is a two-step approach. First, the ideal image of the object is generated from the measured data using a deblurring algorithm. Then, the image-correcting filter is generated by comparing the ideal image with the reconstructed image. The filter is then applied to the reconstructed image to improve its quality.

**RESULTS**

The results show that the proposed method is effective in improving the spatial resolution and SNR of the reconstructed images. The images reconstructed with the proposed method are sharper and clearer than those reconstructed without the filter. The quantitative analysis confirms that the proposed method achieves significant improvements in image quality, as measured by parameters such as the full width at half-maximum (FWHM) and the contrast-to-noise ratio (CNR).

**CONCLUSIONS**

In conclusion, we have developed a novel method for generating an image-correcting filter in the spatial domain. The method allows for the correction of image artifacts and can be applied to diffuse optical tomography to improve the spatial resolution and SNR of the reconstructed images. The proposed method is effective and can be used in a wide range of applications where high-quality images are required.

**REFERENCES**


**ACKNOWLEDGEMENT**

This research was supported in part by the National Institutes of Health (NIH) under Grant R01 HL053676 and R01 HL080050, and by the National Institutes of Health (NIH) under Grant R01 HL083733.

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