Special Issue

Surgical Applications of Hyperspectral Optical Imaging

Message from the Guest Editors

Intraoperative optical technologies such as near-infrared fluorescence imaging, multispectral imaging or hyperspectral imaging can all enhance the surgeon's eye and allow for improved visualization of unapparent anatomical structures and to increase the discrimination of tumor tissue. Additionally, optical imaging can visualize tissue metabolic activity, including oxygenation. For these reasons, optical imaging seems an ideal candidate to improve the current state-of-the-art of minimally invasive surgery and particularly of surgical oncology. Hyperspectral imaging (HSI) is an optical modality that combines a spectroscope and a camera. In practice, HSI can perform virtual "samples" of biological tissue in real time without contact and without the need to inject a contrast medium, and has recently been applied to multiple medical applications, including recognition of anatomical structures, organ perfusion and the presence of tumor tissue. In this Special Issue, we will provide relevant examples of use of HSI optical imaging during surgical procedures.

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