2022 ACG-IRG Pilot Grant

Intraoperative fluorescent visualization of sentinel lymph nodes of the oral cavity using novel fluorescent-labeled tilmanoscept

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Abstract:

Emerging evidence is arising to establish sentinel lymph node biopsy (SLNB) as standard of care in early-stage oral cavity squamous cell carcinoma. Recently two randomized clinical trials have shown that SLNB may have equivalent oncologic outcomes to elective neck dissection with decreased morbidity. Currently, the NRG is conducting a national randomized control trial to definitively establish the role of SLNB for early-stage oral cavity cancer.

Within this context, there is a growing need for tools to improve accurate SLN identification in oral cavity cancer. Due to the dense network of lymph nodes in the neck, identification of SLNs can pose a unique challenge. For example, false negative rates are higher for SLNB of floor of mouth lesions. This is particularly important in the oral cavity, as neck recurrences are often inoperable and reduce overall survival. Lastly, accuracy of SLNB varies by surgeon experience, and visualization tools may improve learning curves.

Tc-tilmanocept (Lymphoseek) has been widely adopted for SLNB since its FDA approval in 2013, and has been well studied in the head and neck. This molecule is radiolabeled with technetium-99 and features specific binding to surface mannose receptors (CD206) expressed on macrophages and dendritic cells, which targets the tracer to lymph nodes. Recently, several studies have demonstrated the feasibility of fluorescently labeled tilmanocept as an adjunct for SLNB in bladder, prostate and cervical cancer animal models. Our preliminary work has demonstrated feasibility of fluorescently labeled tilmanoscept for SLNB of the oral cavity. The goal of the proposed work is to establish the clinical utility of this fluorescently labeled tracer to guide SLNB for the oral cavity.