Objective: We hypothesized that floor of mouth and tongue base tumors are transoral biopsy performed under general anesthesia in the operating room. Despite being standard of care, transoral biopsy does not rule out cases of tongue base cancer, serving as a surrogate for fine needle aspiration (FNA) and visualizing needle placement and dye injection within the base of tongue, which could serve as a surrogate for FNA.

Methods: Human cadaveric specimens were used to perform ultrasound to visualize the anatomy of the floor of mouth and base of tongue in a midline transcervical approach. Methylene blue dye was injected under ultrasound guidance in the posterior base of tongue, serving as a surrogate for fine needle aspiration (FNA) and visualizing needle placement and dye injection within the base of tongue, which could serve as a surrogate for FNA. Ultrasound was used to image each specimen in a transverse plane from the level of the hyoid bone to the mandible. Visualization of the mylohyoid, genioglossus, geniohyoid, and intrinsic musculature of the tongue base was confirmed. 0.1 cc of 0.25% methylene blue was placed in a syringe attached to a 1.5 inch 22 gauge needle. The needle was placed in the midline neck, halfway between the hyoid bone and the mandible (Figure 1).

Ultrasound was used to guide needle placement and dye injection into the right or left base of tongue, which was randomly pre-determined. Cadaveric needling of the left side of the mandible and inspected the mylohyoid and intrinsic tongue musculature. One specimen was excluded due to dye bleeds after the initial injection into the left side of the tongue base. Two specimens had dye injected erroneously into the geniohyoid and geniohyoid, respectively. Two specimens had dye injected into the lingual nerve, which could serve as a surrogate for FNA.

Results: 25 of 32 (78%) cadaver specimens were found to have correct placement of dye within the posterior genioglossus and intrinsic tongue musculature. 7 specimens had dye injected into the lingual nerve, which could serve as a surrogate for FNA. Of these, 3 had dye staining the walls of the oropharynx and epiglottis. Two specimens had dye injected erroneously into the geniohyoid and geniohyoid muscles. One specimen had dye injected into the lingual nerve, which could serve as a surrogate for FNA.

Discussion: Although our study is encouraging that UGFNATB may have a useful clinical application, to our knowledge there are no trials confirming its feasibility in the living patient. Additional study needs to be carried out to compare the diagnostic yield of UGFNATB with traditional transoral biopsy.

Conclusion: Although our study is encouraging that UGFNATB may have a useful clinical application, to our knowledge there are no trials confirming its feasibility in the living patient. Additional study needs to be carried out to compare the diagnostic yield of UGFNATB with traditional transoral biopsy.

References:

