

SURGICAL TARGETING OF RECURRENT THYROID CANCER USING NOVEL MIXTURE OF 99M TECHNETIUM-RADIOCOLLOID AND INDOCYANINE GREEN (TIGMA)

Jung, Yuh-S.¹; Kim, Seok-Ki²; Ryu, Junsun³; Lee, Eun-Kyung³; Kim, Seok Won³; Lee, You Jin³; Lee, Jia³

¹Department of Otolaryngology, Center for Thyroid Cancer, National Cancer Center, Goyang, Gyeonggi-do, Korea, Republic of; ²Department of Nuclear Medicine, National Cancer Center, Goyang, Gyeonggi-do, Korea, Republic of; ³Center for Thyroid Cancer, National Cancer Center, Goyang, Gyeonggi-do, Korea, Republic of

Background/Purpose: Accurate targeting becomes an integral part of the surgery for recurrent differentiated thyroid cancers (DTC). Various methods are currently used for targeting, but each has its own weaknesses. We designed a novel targeting technique using 99mTc-macroaggregated albumin (MAA) and indocyanine green (ICG) (TIGMA) to alleviate shortcomings of conventionally used tracers. TIGMA is designed to enable dual targeting: near infrared fluorescence (NIR-F) targeting by ICG and radio-targeting using 99mTc-MAA.

Methods: Seven patients with recurrent DTC were retrospectively enrolled. Precision intraoperative ultrasonography-guided injection of 50 µl of TIGMA was performed to the target lesion in the operating room. Resection was completed under the dual guidance of gamma probe and specifically designed NIR-F camera.

Results: The injection was well tolerated and technically easy for surgeons. All aimed recurrent lesions (n=24) were detected and confirmed by gamma probe and NIR-F camera intraoperatively (100%). Two out of seven patients reported pain in the neck area (28.6%), but no other major postoperative complications are noted from all cases. Postoperative ultrasound and off thyroglobulin level confirmed the removal of the lesion in all patients.

Discussion & Conclusion: The dual guidance using TIGMA facilitates more precise targeting of recurrent lesions without any shortcomings of conventional tracers. The whole procedure was feasible with a high rate of success. This method would help safer, more oncologically complete surgery for recurrent DTC.