Dr. Kang Dae Lee: my views and stories on thyroid surgery as a surgeon

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Editor's note

The focused issue "*The Management of Thyroid Tumors in 2020 and Beyond*" edited by Drs. Jonathon Russell and Jeremy Richmon is going to be released in *Annals of Thyroid* (*AOT*) in the coming months. This issue aims to review the state-of-art in the management of thyroid pathology, to provide a venue for original research focused on remote access or minimally invasive thyroid management and to review the success at extending proven management strategies into new geographic regions. Taking this opportunity, we have done a series of interviews with the authors discussing the highlights of their articles and sharing their experiences or stories in this field.

Dr. Kang Dae Lee is a professor of Kosin University College of Medicine. His major interests are thyroid surgery. It is great honor for *AOT* to interview Dr. Lee on his stories, research and opinions in his field.

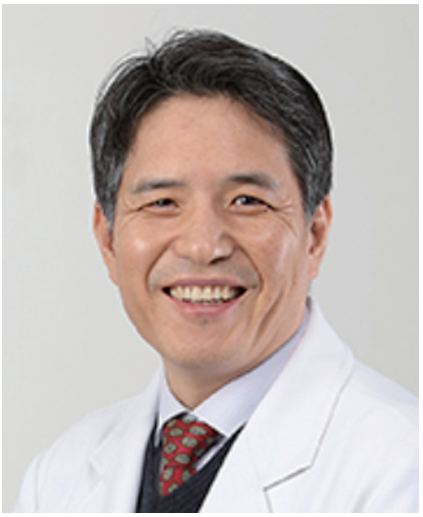

Figure 1 Kang Dae Lee, MD.

Expert's introduction

Dr. Lee (*Figure 1*) is a professor of Kosin University College of Medicine, president of Korean Thyroid Association, president-elect of Korean Intraoperative Neural Monitoring Society, former president of the Korean Society of Thyroid-Head and Neck Surgery (2015.3–2017.2), Inaugural Congress President of the 1st Asia Pacific Society of Thyroid Surgery (2015.11). His major interests are thyroid surgery. He graduated from Busan National University College of Medicine in 1984 and had his residency at Busan National University Hospital from 1985 to 1989.

Interview

AOT: What are your particular interests in the study of thyroid surgery?

Dr. Lee: The aim of surgical management of well-differentiated thyroid cancer has been complete removal of the tumor. However, considering the excellent survival rate, preventing complication is as important as removal of the tumor because post-thyroidectomy complications such as airway obstruction, permanent hypocalcemia, or even temporary vocal cord paralysis can be very painful to both surgeons and patients. Thus, quality of life after surgery may be a critical issue for thyroid cancer patients. In this regard, my principle of thyroidectomy has been to minimize complication. Among the complications, according to the International Thyroid Cancer Patient Survey, hypocalcemia is the most common complication after thyroidectomy, and also the most common unresolved problem after surgery. My interest to minimize post-thyroidectomy hypoparathyroidism led me to study near-infrared autofluorescence (NIR-AF) imaging of parathyroid gland. Nowadays, I'm also interested in applying skin or needle electrode-based intraoperative neuromonitoring (IONM) as well as electromyographic (EMG) endotracheal tube-based IONM.

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AOT: What have you been doing to optimize thyroid surgery?

Dr. Lee: I have tried to avoid surgical procedures conducted with assumption. Important structures in thyroidectomy would be blood vessels, recurrent laryngeal nerve (RLN), external branch of superior laryngeal nerve and parathyroid gland. In my surgery, parathyroid glands and RLN have been clearly identified with NIR-AF imaging and IONM. I have always tried to follow my routine surgical technique to ligate the vessels safely and preserve the vital organs. The first step after lateralization of thyroid gland is to identify the inferior parathyroid gland. I use my NIR-AF imaging system at this step to detect the parathyroid gland even before surgical dissection of fibrofatty tissue covering the parathyroid gland (parathyroid gland mapping). Next step is to identify the RLN which would be located deep to the inferior parathyroid gland. Thus, I prefer inferior approach and dissect the RLN up to the Berry's ligament. Application of IONM would be useful to identify the RLN and preserve its function throughout the surgery. I standardized my surgical technique and described it in a textbook of *Atlas of Thyroid Head and Neck Surgery* (2014, PANMUN, Seoul, South Korea).

AOT: Could you introduce your latest research program to us?

Dr. Lee: My latest research on NIR-AF imaging of parathyroid gland is regarding parathyroid gland mapping before it is identified by surgical dissection. While previous studies showed limitation of NIR-AF imaging of parathyroid gland when the gland is not exposed, our system predicted the location of the parathyroid glands in 92% even when they are covered by fibrofatty tissues.

I'd like to express my special thanks to Professor Sung Won Kim and Hyoung Shin Lee at Kosin University, and Professor Yeh Chan Ahn and Yikeun Kim at Pukyong National University who have collaborated with me.

AOT: What were the biggest challenges and achievements for you as a surgeon?

Dr. Lee: I was honored to serve as the Inaugural congress president of Asia-Pacific Society of Thyroid Surgery (APTS) held in Seoul at 2015. Thanks to professor Kyung Tae and professor Kwang Yoon Jung who are my dear colleagues in South Korea, and with support from many outstanding thyroid surgeons of Asia-Pacific region, I could host a successful meeting. It is always my great pleasure to collaborate with these great surgeons and share the advanced knowledge and techniques of thyroid surgery.

AOT: In the focused issue "The Management of Thyroid Tumors in 2020 and Beyond", you have contributed an article on "Parathyroid autofluorescence". What's the current status and development of parathyroid autofluorescence in the management of thyroid tumors in Korea and around the world?

Dr. Lee: Last year (2018), FDA approved Fluobeam 800® as NIR-AF imaging method and PTeye® as NIR-AF spectroscopy method for the identification of parathyroid gland during surgery. We are now trying to make NIR-AF imaging and spectroscopic device more user friendly. In addition, as preservation of parathyroid gland does not necessarily mean preservation of the function, the research for perfusion test will be necessary.

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appropriately investigated and resolved.

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