內分泌新陳代謝科 Endocrinology

October 19, 2025 (Sun)
Room 302

主　　題：甲狀腺及副甲狀腺的微創技術及診斷進展
Minimally Invasive Technique and Diagnostic Advance in Thyroid and Parathyroid

內容簡述：甲狀腺及副甲狀腺的微創技術及診斷進展: Ablation and Diagnostic Technique

時間 Time	題目 Topic	演講者 Speaker
Moderator:	劉鳳炫 Feng-Hsuan Liu 林口長庚醫院	
08:55-09:00	Opening Remarks	劉鳳炫 Feng-Hsuan Liu 林口長庚醫院
09:00-09:40 EM-S01	Review of Ultrasonography in Diagnosis of Thyroid and Parathyroid Diseases	張宏猷 Hung-Yu Chang 林口長庚醫院
Moderator:	吳明勳 Ming-Hsun Wu 臺大醫院	
09:40-10:20 EM-S02 (Video)	Precision Medicine with Artificial Intelligence in Diagnostic Ultrasound	郭庭均 Ting-Chun Kuo 臺大醫院
10:20-10:40	Coffee Break	
Moderator:	王景淵 Ching-Yuan Wang 臺大醫院	
10:40-11:20 EM-S03	The New Development of Radiofrequency Ablation in Thyroid and Parathyroid Diseases	蔡元祐 Yuan-Yu Tsai 臺大新竹分院
Moderator:	曾芬郁 Fen-Yu Tseng 臺大醫院	
11:20-12:00 EM-S04	Ablation in Lymph Nodes of Metastatic Thyroid Cancer	姜和均 He-Jiun Jiang 義大大昌醫院
12:00-12:05	Closing Remarks	曾芬郁 Fen-Yu Tseng 臺大醫院

EM-S01

Review of Ultrasonography in Diagnosis of Thyroid and Parathyroid Diseases

Hung-Yu Chang
Division of Endocrinology and Metabolism, Department of Internal Medicine, Chang Gung Memorial Hospital, Linkou

Ultrasonography (US) remains the cornerstone for evaluating thyroid and parathyroid diseases, offering real-time, radiation-free, and cost-effective assessment. In thyroid practice, updated risk stratification systems such as EU-TIRADS, ACR TI-RADS and K-TIRADS 2021 have standardized terminology and biopsy thresholds, minimizing unnecessary procedures. Multiparametric approaches—including shear-wave elastography, contrast-enhanced US, and microvascular imaging—have enhanced differentiation of indeterminate nodules and improved cervical lymph node staging.

High-resolution neck US localizes single-gland adenomas with good performance (commonly ~70–85% sensitivity in expert hands). Classic sonographic features include a well-circumscribed, hypoechoic, ovoid, extrathyroidal nodule; Doppler often demonstrates a polar feeding artery. Contrast enhanced US typically shows early peripheral hyperenhancement with central washout, aiding distinction from lymph nodes, while elastography offers supportive (not decisive) stiffness information. In equivocal or intrathyroidal lesions, US-guided fine-needle aspiration with PTH washout provides high confirmatory value. Sensitivity declines with multigland disease, ectopic locations, obesity, and re-operative necks ◦

EM-S02

Precision Medicine with Artificial Intelligence in Diagnostic Ultrasound

Ting-Chun Kuo
Department of Surgery, National Taiwan University Hospital (NTUH)
University of California San Diego (UCSD)

The integration of artificial intelligence (AI) into diagnostic ultrasound represents a pivotal advancement in the field of precision medicine. This talk will explore how AI-driven technologies are reshaping the interpretation, standardization, and real-time utilization of ultrasound imaging in clinical practice.

We will begin by outlining the current challenges in diagnostic ultrasound, including operator dependency, variable image quality, and limitations in reproducibility. We then present AI solutions—particularly deep learning algorithms—that enhance image segmentation, lesion characterization, and disease risk stratification.

Clinical applications will be highlighted across endocrine surgery (e.g., thyroid nodule classification), hepatobiliary-pancreatic imaging, and interventional ultrasound. Case examples will demonstrate how AI can aid in preoperative planning, intraoperative navigation, and post-treatment monitoring. We also introduce pilot studies involving the integration of AI-assisted ultrasound within extended reality (XR) platforms for surgical training.

Finally, we will discuss ethical considerations, data governance, and future directions for AI-enabled ultrasound in achieving truly personalized and predictive care.

EM-S03

The New Development of Radiofrequency Ablation in Thyroid and Parathyroid Diseases

Yuan-Yu Tsai
Division of Endocrinology & Metabolism, Department of Internal Medicine, National Taiwan University Hospital Hsin-Chu Br., Hsin-Chu City, Taiwan

Radiofrequency ablation (RFA) has rapidly advanced as a minimally invasive alternative to surgery in endocrine practice, especially for thyroid

and parathyroid disorders. Originally developed for the management of benign thyroid nodules, RFA's clinical applications have significantly expanded. It is now used to treat autonomously functioning thyroid nodules, select papillary thyroid microcarcinomas, recurrent thyroid cancers, and parathyroid adenomas linked to hyperparathyroidism. This broadened adoption is driven by technological improvements and a growing body of evidence supporting RFA's durable efficacy, safety, and positive patient outcomes.

For thyroid conditions, long-term studies confirm that RFA can achieve lasting reduction in the size of benign nodules, with volume shrinkage continuing for several years. This often leads to relief of compressive symptoms and cosmetic concerns. Patients with autonomously functioning thyroid nodules can frequently achieve normalization of thyroid hormone levels through RFA, thereby avoiding the risks associated with radioiodine therapy or surgical intervention. In patients with low-risk papillary thyroid microcarcinoma, RFA has demonstrated the capability to achieve local tumor disappearance with minimal complications, providing a valuable alternative for individuals who are either unable or unwilling to undergo surgery.

A significant milestone in the acceptance of RFA came with its formal inclusion in international guidelines. The 2025 Korean Society of Thyroid Radiology guideline, for example, provides detailed criteria for utilizing RFA in cases of recurrent thyroid cancer. The guideline recommends RFA for patients with a small number of recurrent lesions where curative ablation is technically feasible and acknowledges its usefulness for palliative care in patients at high surgical risk. These recommendations underscore RFA's position as an established part of multidisciplinary thyroid cancer management, rather than an experimental procedure.

Meanwhile, RFA's role in parathyroid disease is growing rapidly. Although surgery continues to be the standard treatment for primary hyperparathyroidism, there is a subset of patients who are unsuitable or unwilling to undergo surgery. Clinical trials and systematic reviews demonstrate that ultrasound-guided RFA can effectively ablate parathyroid adenomas, leading to normalization of blood calcium and parathyroid hormone levels in a majority of cases. Beyond primary disease, patients with secondary and tertiary hyperparathyroidism—often those with chronic kidney disease—may also benefit from RFA, particularly when parathyroid glands are enlarged and causing symptoms. The minimally invasive approach of RFA allows procedures to be performed under local anesthesia, shortens recovery time, and reduces the risks associated with surgery.

RFA's safety profile in both thyroid and parathyroid treatments is favorable. Complications such as changes in voice, transient pain, or localized hematoma are rare and typically resolve on their own. Major, permanent injuries are uncommon, and the overall rate of complications is comparable to traditional surgeries. The ongoing standardization of RFA techniques and structured reporting—supported by consensus documents and guidelines—continues to improve both reproducibility and safety in clinical practice.

In summary, radiofrequency ablation is solidifying its role as a versatile, minimally invasive tool in endocrine intervention. For thyroid disease, it offers long-term control of benign and select malignant lesions with growing support from clinical guidelines. In parathyroid disease, RFA provides a viable nonsurgical alternative for certain patients. Continued research, multicenter collaboration, and refinement of techniques will further define RFA's role alongside surgery and medical therapy in comprehensive endocrine care.

EM-S04
Ablation in Lymph nodes of Metastatic Thyroid Cancer

He-Jiun Jiang
Division of Endocrinology and Metabolism, Department of Internal Medicine, E-da Dachang Hospital

Cervical lymph node metastasis is a common manifestation of recurrent papillary thyroid

carcinoma (PTC). While surgery remains the standard of care, reoperations are technically challenging and associated with higher complication risks. Ultrasonography-guided thermal ablation (TA), particularly radiofrequency ablation (RFA), has emerged as a minimally invasive alternative for selected patients.

Recent studies and international guidelines support the use of RFA for small (≤2 cm), localized, and non-invasive lesions. It demonstrates high efficacy, with volume reduction rates over 90%, complete lesion disappearance in up to 90% of cases, and significant thyroglobulin reduction. Complications are generally low, especially with techniques like hydrodissection and real-time imaging.

RFA is best suited for patients at high surgical risk, those refusing surgery, or those with limited nodal recurrence. It can serve as a curative or palliative treatment depending on tumor characteristics and patient goals.

In conclusion, RFA provides a safe, effective, and repeatable option for managing recurrent lymph node metastases in PTC, complementing surgery and radioactive iodine in selected cases.