



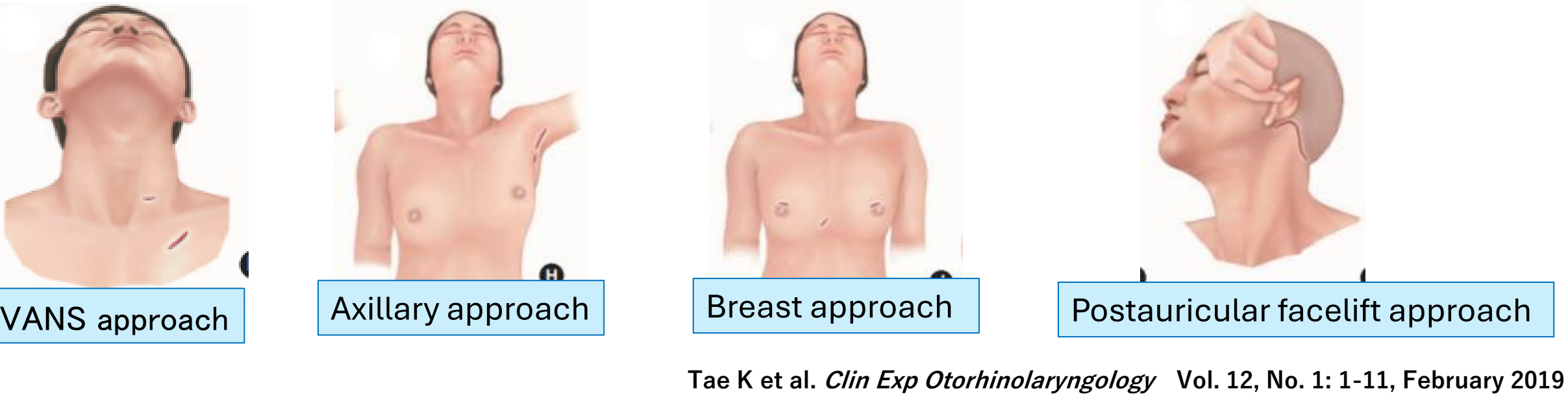
Surgical Outcomes of Endoscopic Total Thyroidectomy for Graves’ Disease via an Anterior Chest Approach

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Disclosure

The authors have no conflicts of interest to disclose.

Introduction

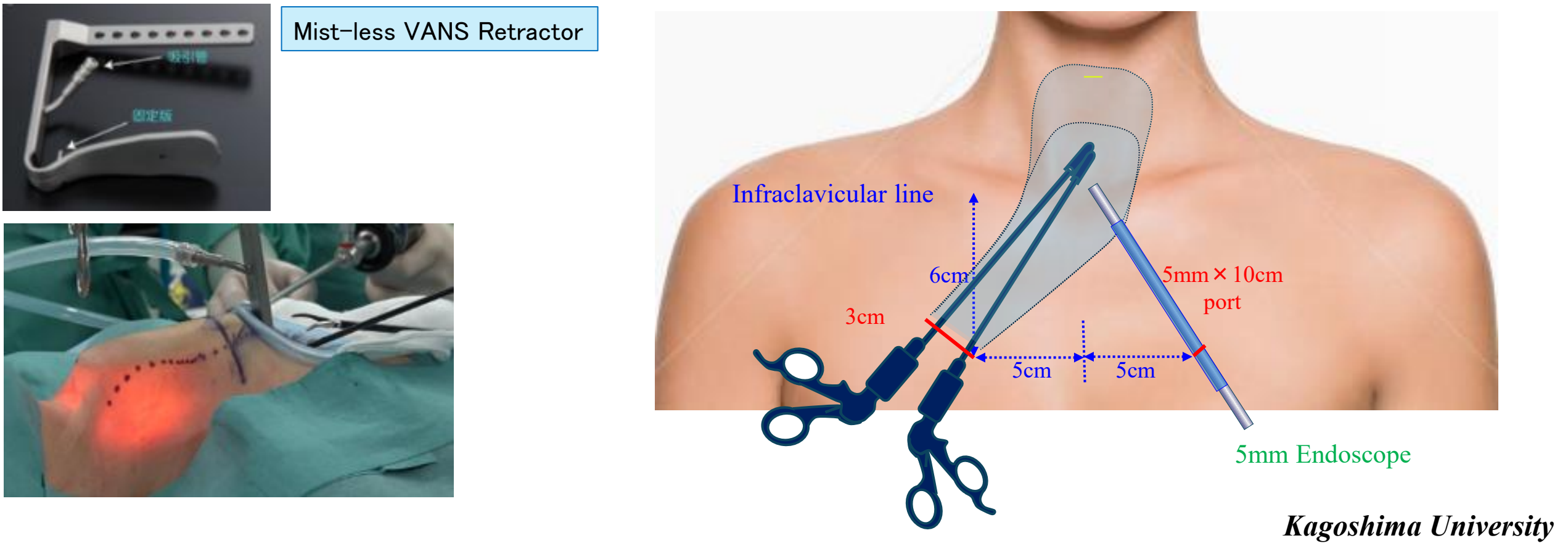


Endoscopic thyroidectomy offers diverse approaches and provides excellent cosmetic results. However, it is a highly challenging procedure due to factors such as (1) a narrow operative field, (2) the highly vascular nature and tendency of the thyroid gland to bleed easily, and (3) the necessity of meticulous surgery to protect the trachea and recurrent laryngeal nerve. This difficulty is particularly exacerbated in Graves' disease, owing to the enlargement of the thyroid parenchyma and increased blood flow.

Surgical procedure

Precordial approach (Modified Video-Assisted Neck Surgery)

- Our primary technique is a lifting, pre-cordial approach based on the VANS method of Shimizu et al.



A skin flap is created beneath the platysma; the strap muscles are divided in the midline and retracted laterally to expose and identify the thyroid. With the KN retractor, the strap muscles are lifted to secure the field, and the lateral aspect of the thyroid is dissected.

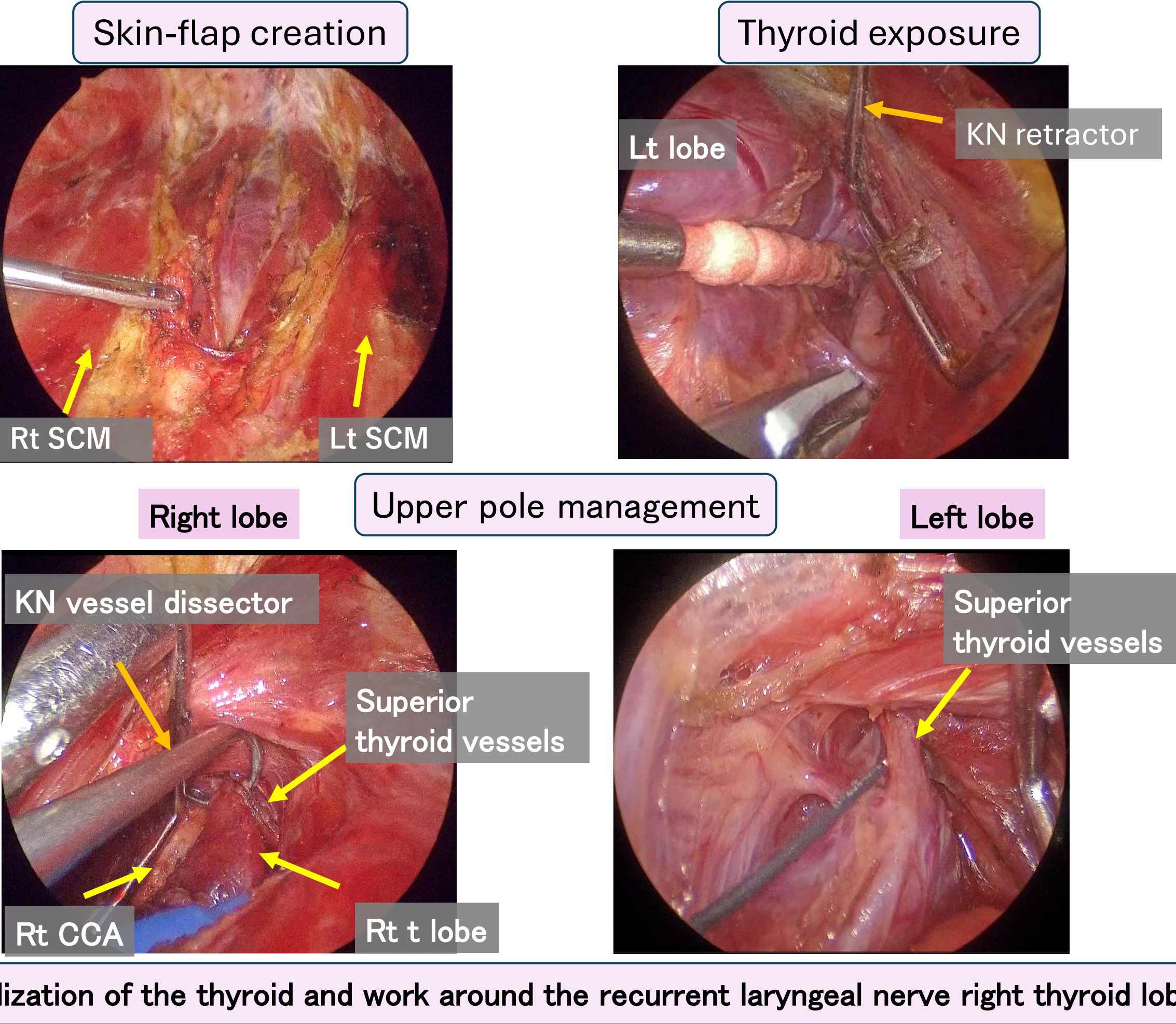
Tissue around the Upper pole is dissected; the superior thyroid vessels are elevated and divided with a KN vessel dissector (usually using an energy device). The external branch of the superior laryngeal nerve is identified and preserved with the aid of NIM.

The thyroid is mobilized; on the dorsal side, the recurrent laryngeal nerve is identified (using NIM) and separated from the thyroid.

After irrigation and hemostasis verification, no drain is generally placed. Hemostatic agent is sprayed. The strap muscles are closed with absorbable sutures.

Methods

- Roughly 80 % of thyroid operations in our department are performed endoscopically, and we also employ this method for Graves’ disease (Indication: preoperative estimated thyroid weight ≤ 150 g)
- We report the practical aspects of endoscopic surgery for Graves’ disease.
- Between July 2021 and October 2025, 95 patients underwent endoscopic total thyroidectomy for Graves' disease.



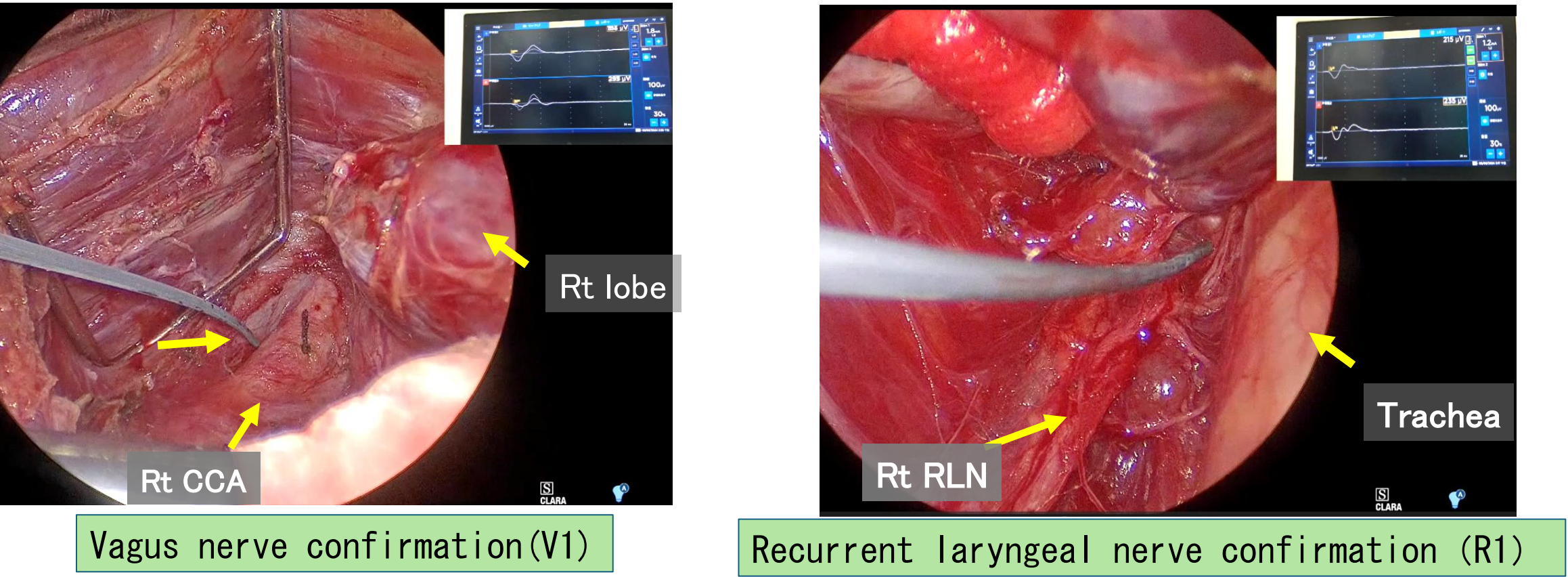
Results

	N=95
Age(years) *	38 (12-86)
Sex male : female	9 : 86
Operative time(min) *	244 (87-559)
Blood loss (ml) *	15.5 (0-959)
Thyroid weight(g) *	42 (10-180)
pathology : incidental carcinoma	9 (9%)
(PTC : FTC : oncocyte carcinoma)	7 (7.4%) :1 (1.0%) :1 (1.0%)
* median values	

Measures to reduce complications

Intraoperative nerve monitoring

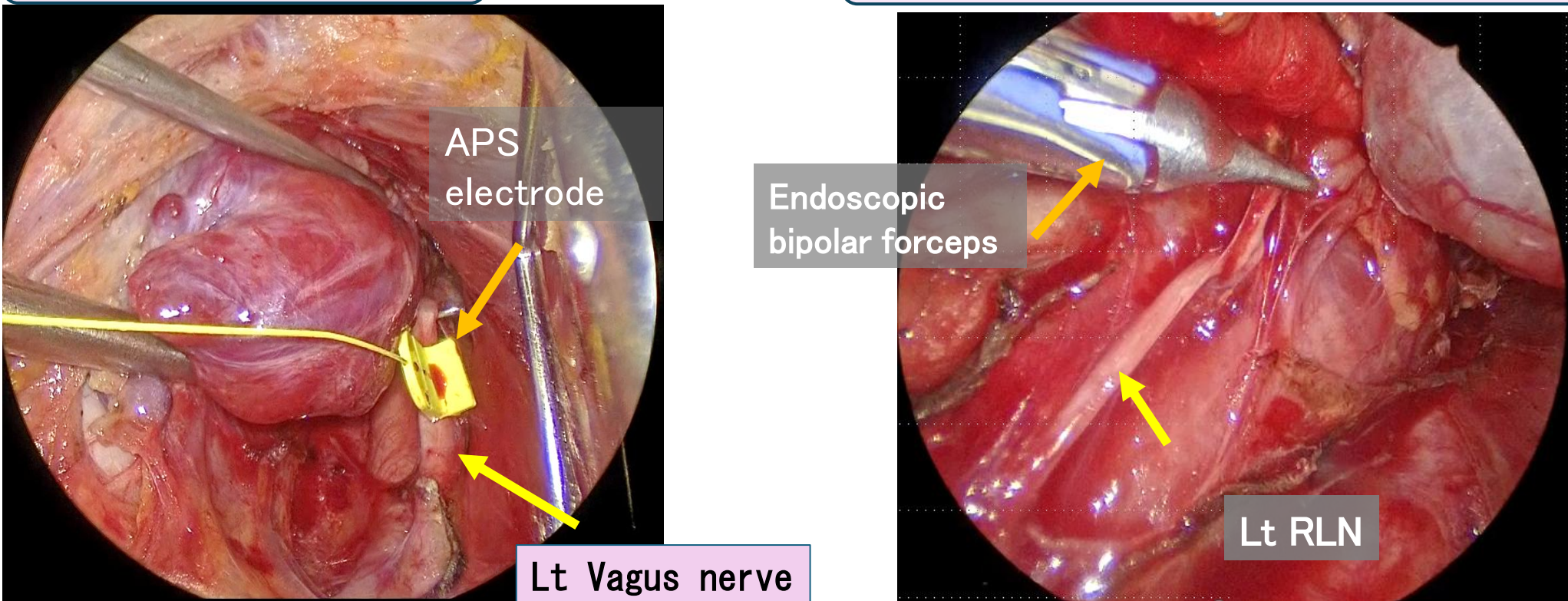
IONM is used to identify and confirm the recurrent laryngeal nerve.



IONM is useful for reliable nerve identification and functional preservation. A four-step procedure (confirmation at the beginning and before completion) and additional checks are performed to enhance safety.

Continuous-IONM

Around the recurrent laryngeal nerve



Continuous nerve monitoring is used to prevent recurrent laryngeal nerve palsy due to excessive traction. Appropriate devices are employed around the nerve, with attention to thermal spread.

Discussion

- A meta-analysis comparing endoscopic and open surgery overseas found no difference in overall complication rates.
- In Japan, reported operative times for endoscopic surgery for Graves’ disease range from about 200 to 277 minutes, longer than for open cervical surgery.
- Contributing factors include surgeon experience and case difficulty (size, maneuvers around the recurrent laryngeal nerve).
- The incidence of recurrent laryngeal nerve palsy is reported to be about 2 %.
- At our institution, seroma occurred in 11% of cases, a rate that is thought to be influenced by our practice of rarely placing drains.
- The operative time was comparable to that reported in previous studies.
- Recurrent laryngeal nerve palsy was observed in 2% of cases; further reductions will require refinement of surgical techniques and improvements in device use.
- We consider that selecting appropriate cases according to the surgeon’s technical proficiency allows endoscopic thyroid surgery to be performed safely

Conclusion

- Endoscopic total thyroidectomy for Graves’ disease using the pre-cordial lifting (modified VANS) approach can be performed safely through a single small incision.
- Nonetheless, challenges such as shortening operative time and overcoming complications remain. Improvements in surgical technique and optimized use of appropriate devices are needed to achieve even safer surgery.