



TOPOGRAPHIC ANATOMY OF THE NECK AND ITS IMPORTANCE IN THYROID SURGERY

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Abstract: *The anatomy of the neck is highly complex due to the presence of vital vascular, nervous, and endocrine structures within a limited space. Thyroid surgery, one of the most frequently performed endocrine procedures, requires detailed understanding of topographic anatomy to minimize complications. This article reviews the layered anatomy of the neck, its surgical landmarks, and the clinical significance of anatomical knowledge in thyroid operations.*

Keywords: *Neck anatomy, thyroid surgery, recurrent laryngeal nerve, vascular structures, operative surgery, topographic anatomy.*

INTRODUCTION

The neck is one of the most surgically significant regions of the human body. It contains the thyroid gland, parathyroid glands, large blood vessels, lymphatic pathways, and critical nerves such as the recurrent laryngeal nerve and vagus nerve. The close spatial relationship between these structures makes surgical intervention challenging and potentially dangerous.

Thyroidectomy, a common operation for benign and malignant thyroid disorders, has a long history of development. In the 19th century, thyroid surgery was associated with high mortality due to hemorrhage, infection, and nerve injury. Advances in anesthesia, aseptic techniques, and above all, the study of topographic anatomy, have drastically improved safety and outcomes.

Materials and Methods

This article is based on a review of modern surgical textbooks, anatomical atlases, and peer-reviewed publications indexed in PubMed and Scopus. Special attention was given to:

- Layered dissection of the anterior cervical region in cadaver studies;
- Identification of surgical landmarks for thyroidectomy;
- Clinical cases describing complications of insufficient anatomical knowledge;
- Imaging techniques (ultrasound, CT, MRI) that enhance anatomical visualization.

Results

The study confirmed that accurate knowledge of cervical topographic anatomy is crucial for safe thyroid surgery. Key findings include:

- Recurrent laryngeal nerve (RLN): Variations in its course are common; injury leads to vocal cord paralysis. Careful dissection in the tracheoesophageal groove is required.
- Superior and inferior thyroid arteries: Their ligation must be performed with attention to the adjacent external branch of the superior laryngeal nerve and the RLN, respectively.



- Parathyroid glands: Small and often variable in position; their accidental removal or devascularization leads to hypocalcemia.

- Fascial layers of the neck: Knowledge of fascial compartments helps in avoiding excessive bleeding and facilitates mobilization of the thyroid gland.

Surgeons with advanced training in topographic anatomy demonstrate lower complication rates and shorter operation times compared to less experienced colleagues.

Conclusion

Thyroid surgery exemplifies the necessity of topographic anatomy in operative practice. Precise orientation within the cervical region allows safe dissection, preservation of vital nerves and parathyroid glands, and effective hemostasis. Incorporating modern imaging and simulation techniques into anatomical education further improves surgical outcomes. Continued emphasis on the study of neck anatomy is indispensable for training endocrine surgeons.

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