Chapter

Introductory Chapter: Knowledges on Thyroid Cancer

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1. Introduction

The thyroid gland is located in the neck in front of the trachea. The gland has right and left lobes. The lobes are connected by isthmus. The superior thyroid artery arises from the external carotid artery; inferior thyroid arteries arise from thyrocervical trunks [1].

Superior and middle veins of the thyroid gland drain into the internal jugular vein; the inferior vein of the gland drains into the brachiocephalic vein or directly into the superior vena cava [2, 3].

Superior and inferior laryngeal nerves are important in thyroid surgery.

The superior laryngeal nerve divides into external and internal branches. The external branch stimulates the cricothyroid muscle, so when the nerve is injured, the vocal cord tension is decreased on the side of injury. The internal branch provides sensor innervation to supraglottic and glottic larynx [4, 5].

Another name for the inferior laryngeal nerve is the recurrent laryngeal nerve (RLN). RLN has internal and external branches. The internal branch of RLN supplies sensation of the vocal cords and subglottic areas. The external branch of this nerve sends motor fibres to the intrinsic laryngeal muscles except the cricothyroid muscle. These two nerves may be lacerated in thyroidectomy operations [6].

Thyroid cancer is one of the surgeries often performed in surgical practice. Among thyroidectomy indications, thyroid cancer has an important place. There are significant differences between thyroidectomy due to benign diseases and thyroidectomy due to malignant disease. Complications are also different as the surgical method is different. Oncological rules apply in thyroid cancer surgery. Therefore, the complication rates may be different.

The symptoms of thyroid cancer may be silent as well as may be noticeable. Thyroid cancer can follow a quiet and slow clinical process. Or thyroid cancer can follow a rapid clinical process. Thyroid cancer may be associated with other clinical diseases. Care should be taken in such cases and thyroid cancer should not be overlooked. In general, a palpable nodule is palpated in the neck. Sometimes cervical pathologic lymphadenopathy is palpated or is found on ultrasonographic examination incidentally. In this situation, ultrasound-guided fine needle aspiration biopsy may be needed for histologic diagnosis in the preoperative stage. Thyroid malignancies may progress from the neck into the thorax, so intrathoracic goitre may develop. In general intrathoracic goitre is operated in the neck, but sometimes sternotomy may be needed [7, 8].

Hoarseness can be a sign of thyroid cancer. If the tumour invades the recurrent laryngeal nerve, the vocal cord is paralysed. For diagnosis, thyroid ultrasonography and indirect laryngoscopy may be used [9].

There are noninvasive and invasive methods in the diagnosis of thyroid cancer. Ultrasound-guided fine needle aspiration biopsy can be used as an invasive method. Ultrasonography, one of the noninvasive methods, has been increasingly used in the

diagnosis of thyroid cancer. Ultrasonography, scintigraphy, computerised tomography, magnetic resonance imaging and PET CT can be used for evaluation of the thyroid cancer and metastases. Preoperative evaluation with imaging tests gives us a route for therapeutic modalities [10, 11].

In thyroid cancer cases, a very good thyroid anatomy should be known. It is very important not to damage the anatomical structures during neck dissection. The anatomy of the thyroid and neck should be well known for a good surgical outcome.

Papillary thyroid cancer is the most common type in the thyroid cancers. Others are follicular thyroid cancer, medullary thyroid carcinomas, anaplastic thyroid carcinomas, primary thyroid lymphomas and primary thyroid sarcomas. Last two malignancies are seen rarely. Hurthle cell cancer is often accepted as a variant of follicular thyroid cancer. Thyroid cancer may have metastasis at the time of diagnosis [12, 13].

Nowadays, various technological innovations have been developed to reduce complications during thyroidectomy. Intraoperative nerve monitoring is one of these innovations. The nerve damage was reduced during thyroidectomy with the nerve monitoring. Do not forget that surgical skills are not an important thing for the prevention of nerve injury. Methylene blue dyeing is another method for identifying of the recurrent nerve. Methylene blue may be given intraarterially or by directly spraying on the tissue [14, 15].

In the thyroidectomy operation, different complications can occur such as hemorrhagia, recurrent nerve injury, trachea laceration, oesophageal laceration, etc. It is important that, if these complications are diagnosed in intraoperative or perioperative time, they may be corrected. For example, if the recurrent nerve is lacerated and is diagnosed by the surgeon, the surgeon can suture the lacerated nerve. But if the injured nerve is diagnosed in the postoperative period, nerve suturing cannot be used. So careful surgical dissection is most important for the prevention of the complications [16, 17]. Another important complication is oesophageal laceration. If the lacerated oesophagus is not diagnosed in the intraoperative period, this can lead to cervical sepsis. When esophagus is lacerated in the operation, intraoperative suturing can be performed intraoperatively. If esophageal laceration is minimal and it can not be recognized intraoperatively, endoscopic endoclips may be choosen as an alternative method [18].

In our book, the issues have been examined by the international elite authors. Our book is not a text book where each subject is processed, respectively. Information about thyroid cancer is given from different perspectives with the original approach.

I hope that our book will be useful to all physicians who are interested in the thyroid.

With my love and respect.

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