A Review of 128 Cases of Posterior Mediastinal Goiter

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In 9,100 thyroid operations performed between 1935 and 1975, the author treated over 1,300 patients with intrathoracic goiters, 128 of whom had posterior mediastinal goiters. In all patients, the posterior mediastinal goiter arose from the thyroid gland in the neck. The main symptoms were those resulting from compression of the trachea, bronchi, esophagus, and great vessels. Chest x-rays showing displacement of mediastinal structures were the most helpful diagnostic studies. It was possible to remove the goiter entirely through a cervical approach in 122 of the 128 patients. Six patients required a combined cervicothoracic approach after exploration through the neck showed that it was not possible to safely perform a thyroidectomy. There was only one death in this group of 128 patients, all of whom were over the age of 50.

Goiters that descend into the mediastinum are usually located anteriorly beneath the sternum, the so-called substernal goiters. In a small number of patients, however, the goiter descends into the posterior mediastinum, or develops simultaneously in both the anterior and posterior mediastinum. The importance of these posterior mediastinal goiters stems from the fact that they are often erroneously thought to be primary mediastinal tumors, and that surgical therapy may be difficult and occasionally may require a thoracotomy for excision. This is a report of our experience with 128 patients who had posterior mediastinal goiters, and our recommendations regarding diagnosis and treatment.

Patients

We operated on 9,100 patients with thyroid disease at 6 hospitals between 1935 and 1975. Approximately 15% of these patients had goiters of the substernal or partially intrathoracic types. Posterior mediastinal goiters were found in 128 patients or 1.4% of our series. All of the patients were over 50 years of age, and women predominated with a 4-to-1 ratio to men. In 122 of the patients, the goiter was removed surgically through a classical transverse incision in the neck. In 6 patients a combined cervicothoracic approach was required. There was one death, an elderly woman who had a cervical thyroidectomy for a very large posterior mediastinal goiter that was malignant.

Anatomical Considerations

Posterior mediastinal goiters result from downward displacement of a tumor of the cervical thyroid. They almost always receive their blood supply from the inferior thyroid vessels. It is highly unlikely that these intrathoracic goiters develop from embryologically aberrant thyroid tissue. Rather, they arise from the posterior and lateral aspects of the thyroid lobes and descend behind the recurrent laryngeal nerve, inferior thyroid artery, innominate, subclavian and carotid arteries to come to lie in the most posterior aspect of the mediastinum against the vertebral column (Fig. 1). The goiter may displace the trachea laterally (Fig. 2), descend between the trachea and esophagus (Figs. 3 and 4), or develop behind the esophagus (Fig. 5). In addition to compressing the
sure symptoms due to compression of the trachea, esophagus, main bronchi, or great vessels dominated the clinical picture. The most common clinical manifestations were dyspnea, cough, choking sensations, and stridor. Suffocation spells precipitated by the slightest physical effort, or occurring spontaneously at night were not uncommon. Movements such as flexing the head or turning the head to one side tended to increase the dyspnea and trigger suffocation spells. The recumbent position often exaggerated the symptoms so that some patients slept upright in an armchair. Dysphagia due to compression of the esophagus, dysphonia due to compression or stretching of the inferior laryngeal nerve, and cyanosis and vertigo due to pressure on the subclavian and innominate veins or superior vena cava occurred in some patients.

On physical examination, in addition to a mass in the neck, the main signs were fixation of the goiter or reduction in its upward and downward mobility, and the presence of collateral veins due to venous compression. The most valuable sign to demonstrate the nature of the tumor was the sensation of impact, when the thumb was placed over the suprasternal

In our extensive experience with anterior mediastinal goiter, the goiter may exert pressure on a major bronchus, or directly on the upper lobe of the lung (Figs. 3 and 4). Furthermore, the aorta, superior vena cava and base of the heart may be displaced or compressed. On rare occasions, posterior mediastinal goiters have rested upon the diaphragm (Fig. 6).

About two-thirds of the posterior mediastinal goiters in our series appeared on the right side of the thorax, notwithstanding the fact that some of them arose from the left lobe of the thyroid. This is due to the position of the aortic arch and descending aorta, which occupy the left side of the posterior mediastinum. When the goiter descends into the thorax, the path of least resistance is toward the right side (Fig. 7).

Symptoms and Signs

Most of our patients were sturdy with short and strong necks. Thyrotoxicosis was uncommon. Pressure symptoms due to compression of the trachea, esophagus, main bronchi, or great vessels dominated the clinical picture. The most common clinical manifestations were dyspnea, cough, choking sensations, and stridor. Suffocation spells precipitated by the slightest physical effort, or occurring spontaneously at night were not uncommon. Movements such as flexing the head or turning the head to one side tended to increase the dyspnea and trigger suffocation spells. The recumbent position often exaggerated the symptoms so that some patients slept upright in an armchair. Dysphagia due to compression of the esophagus, dysphonia due to compression or stretching of the inferior laryngeal nerve, and cyanosis and vertigo due to pressure on the subclavian and innominate veins or superior vena cava occurred in some patients.

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