

The Modern Thyroid Operation

By John A. Menaugh

GOITER—a term provoking fear in the heart of many a human sufferer—might be to a marked degree less terrifying to mankind as a whole if everyone were familiar with the fact that a goiter, after all, is only an enlargement of a gland that lies imbedded in the neck (the thyroid gland), and that in many cases an operation made fairly simple by the magic of modern surgery may make the patient as good as new again.

The thyroid gland, trouble-maker in the case of goiter, is a double-lobed gland, each lobe of which in normal state is about two inches long, up and down, and three-quarters of an inch to an inch across. The gland lies in the front of the neck, a lobe on either side of the trachea, or windpipe.

Brownish red in a healthy state, the thyroid gland is composed of soft, glandular tissue. Its function is to secrete a substance called thyroxin, which regulates the rate of metabolism (burning up of tissue) in the body. It probably has other functions, and it is known by medical men to be closely associated with all other glands of internal secretion and to bear a close relationship to the organs of reproduction. Disturbances, such as obesity, frequently are associated with the thyroid gland.

Diseases of Gland

Diseases of the thyroid gland most commonly encountered in medical practice come under one or another of the five following classifications:

Hyperthyroidism, a condition in which the gland has an excess of secreting cells. Often in this state the gland actually becomes a mass of glandular cells, and usually it is somewhat enlarged. Because of the fact that there is too much secretion, the condition is very dangerous and leads to many and various symptoms, including mental disturbances, nervousness, trembling, nausea, diarrhea, bulging eyes, loss of weight in spite of normal or exaggerated eating, and a greatly increased metabolic rate.

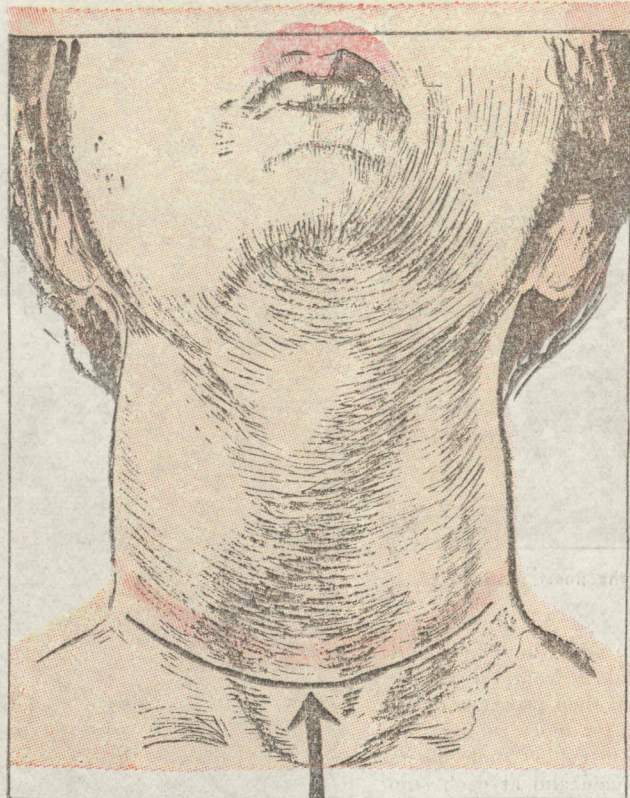
Hypothyroidism, a condition in which there is too little secretion by the gland, which may be normal in size or which may be markedly enlarged. A person afflicted with hypothyroidism presents a metabolic rate below normal, tends to grow obese and lazy, and frequently is troubled by a harshness and dryness of the skin and a loss of hair.

Colloid goiter, an enlargement of the gland, sometimes to great proportions, but as a rule without disturbing symptoms other than a feeling of pressure in the afflicted region. In some instances, however, it may lead to symptoms of hypothyroidism.

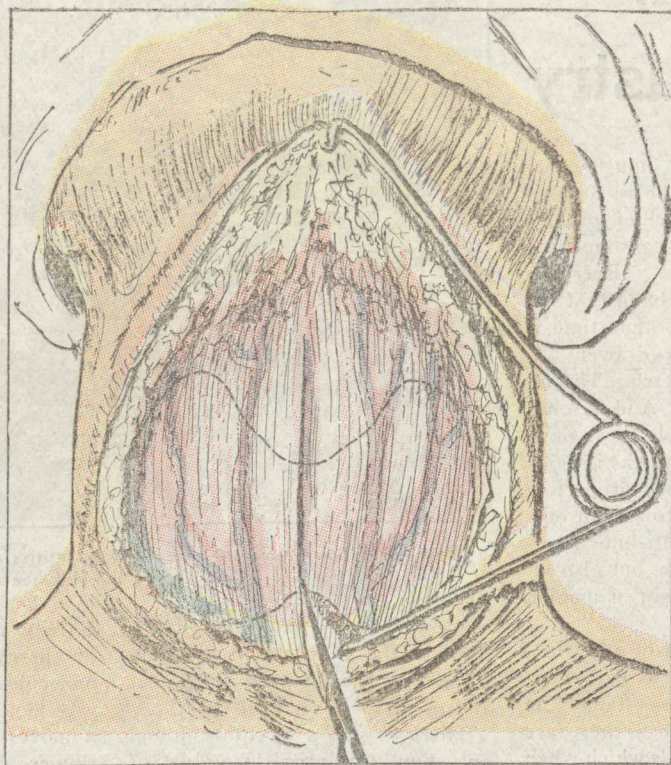
Adenoma, a tumor which, singly or in a group of two or more, is found on and in the gland. This tumor consists more or less of normal tissue, but may consist in some cases of glandular structure, as in hyperthyroidism, and in such cases gives symptoms of hyperthyroidism.

Cancer of the thyroid, a condition in which a cancerous growth attacks the gland, creating different symptoms, depending on direction of growth, rapidity of growth, and type of cancer involved.

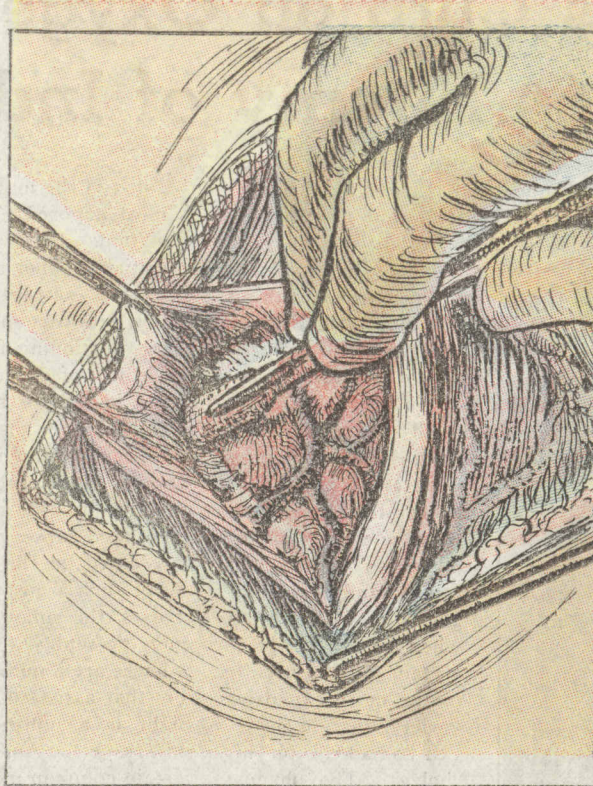
All enlargements of the thyroid gland properly may be termed goiter, though only in the case of hyperthyroidism, in the case of colloid goiter when the gland becomes so large that it causes dangerous pressure, or in case of cancer or suspected cancer is an operation deemed necessary.



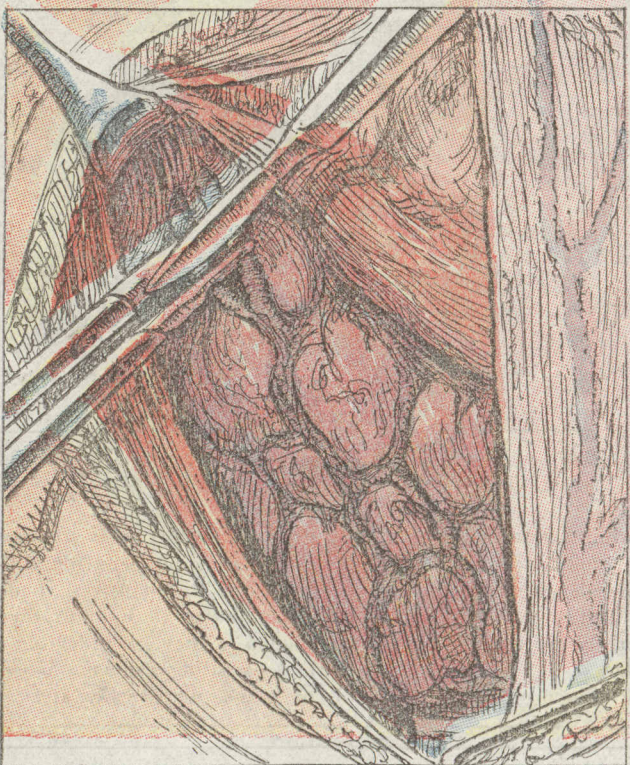
1 The transverse collar incision, the initial step in a thyroidectomy. This incision is made about an inch above the border of the breastbone.



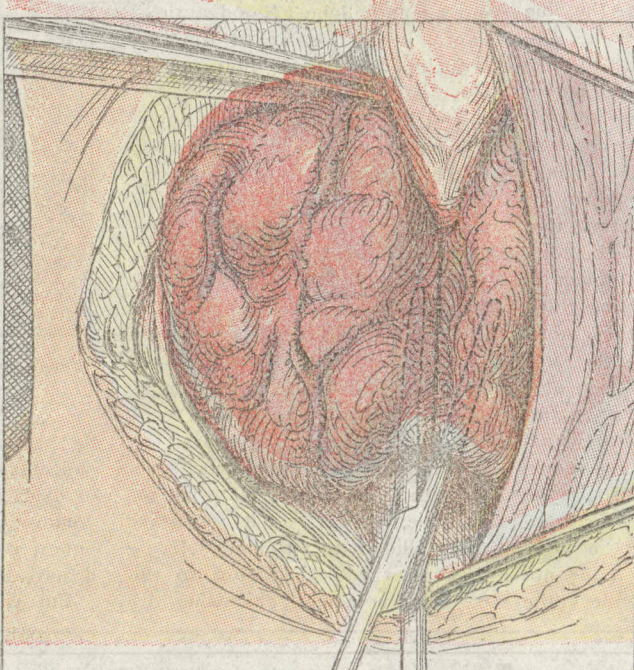
2 Skin flaps are dissected upward and downward and held apart by a spring retractor. The floor of the wound is a membrane containing some large veins and covering underlying muscles. The thyroid gland, somewhat enlarged and underlying the membrane and muscles, is indicated by a dotted line.



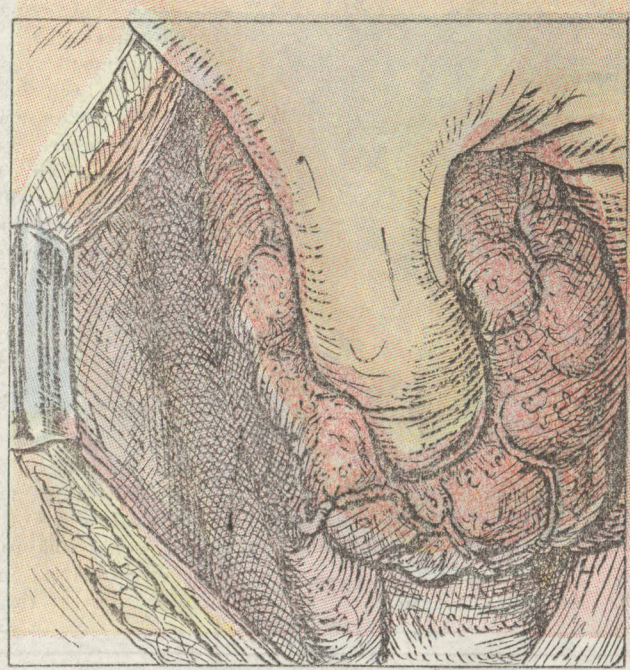
3 The membrane is divided in the midline, exposing the thyroid gland. The capsule of the gland is opened and dissected laterally. The gland is shown being separated from the capsule. Large veins are seen coursing over the surface of the gland.



4 Muscles and capsule of the gland are retracted upward and outward, exposing the upper pole of the gland. At this site a large artery and vein enter the gland. These are clamped and cut, thus freeing the upper portion of the gland and disconnecting a portion of its blood supply.



5 When one lobe of the gland has been freed the isthmus, or connecting neck between the two lobes, is separated from the underlying windpipe (trachea) by a pair of blunt scissors inserted between the gland and windpipe.



6 The lobe of the gland then is rotated toward the midline. This brings into view the inferior thyroid artery, which is ligated. At this stage of the operation virtually all of the blood supply to the one lobe of the gland has been cut off.

In the layman's classification there are two general types of goiters, outgrowing and ingrowing. The first includes all those that grow above the breastbone, the second group those that grow downward under the breastbone. The last named present a more difficult problem to the surgeon, because of their inaccessibility, though not necessarily always a graver problem.

Surgeon Must Be Careful

What the surgeon must be extremely careful of in the removal of a thyroid gland (termed a subtotal removal from the fact that in all cases a small proportion of the gland is allowed to remain in the neck to attend to the important task of secreting thyroxin) is to avoid injuring either of the two laryngeal nerves that control the vocal cords, and the parathyroid glands, that regulate the metabolism of calcium (lime) in the body. If both of the recurrent laryngeal nerves should be injured in a goiter operation the patient would be unable to talk aloud. The parathyroid glands, usually two on either side of the thyroid gland, but sometimes, though rarely, four or more, are about the size and shape of a navy bean and are brown in color. Should these tiny glands be removed or their blood supply be disturbed in the thyroidectomy there is

the likelihood of development of tetany, a disease resembling tetanus, in which intermittent tonic spasms affect most commonly the muscles of the extremities.

The accompanying illustrations portray one of the present-day approved methods of operating for subtotal removal of the gland causing hyperthyroidism. As is shown in the first picture, the initial incision is made about an inch above the border of the breastbone, the approximate length of the incision being revealed in the picture.

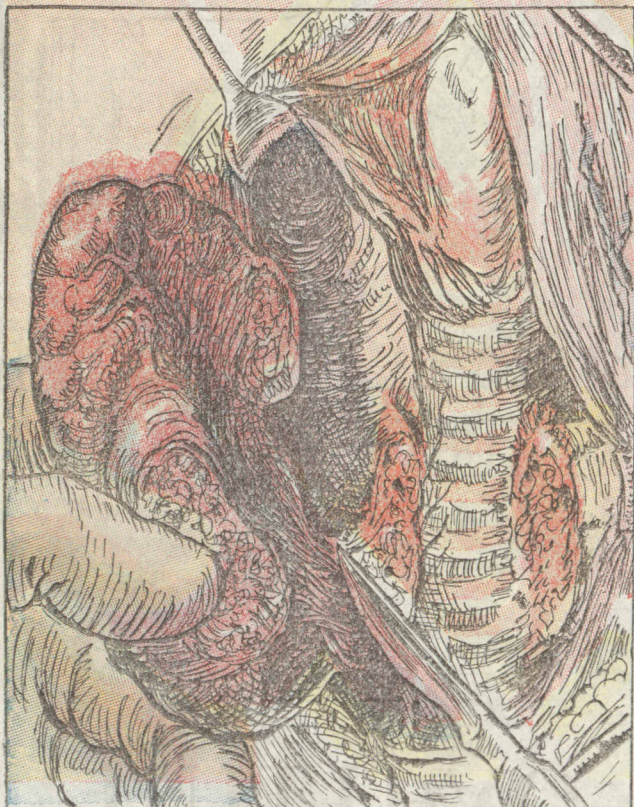
7 With still further rotation of the lobe of the gland there come to view very important structures, the recurrent laryngeal nerve, which is shown as a white band, and the parathyroid glands, usually two in number, on either side. Injury to this nerve or these glands leads to distressing symptoms.

Skin Dissected

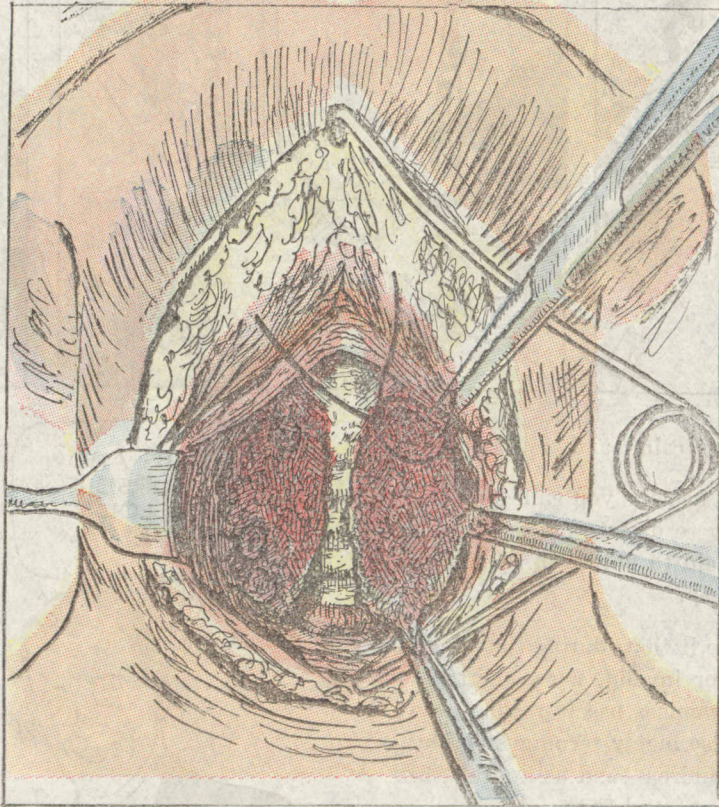
The skin above the incision, as is shown in the second illustration, is dissected upward and that below the incision downward, the two flaps being held apart by a spring retractor. Lying exposed then is a membrane that covers the thyroid

lobe is allowed to remain at the site of the nerve and the parathyroid glands. All bleeding points are picked up with forceps and ligated, and the surgeon then turns to the remaining lobe of the gland, which is taken out in a manner identical to that of the first. With both lobes removed and bleeding points ligated, there are left in the neck the two stumps, as pictured in the ninth illustration. Leaving these stumps, or small portions of thyroid glandular tissue, in the body is extremely important. If both lobes of the gland were removed in total there would be nothing left to attend to the job of secreting thyroxin, a substance highly essential to the proper functioning of the mechanisms of the body.

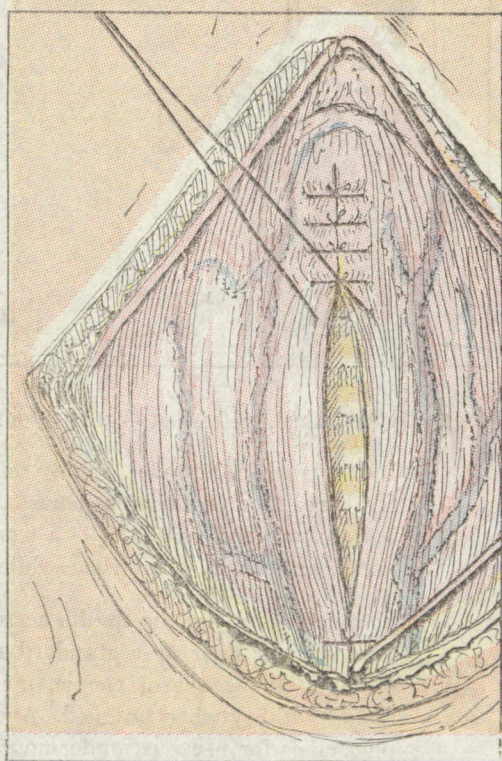
Final steps in the operation are the closing of the wound. First the membrane which covered the gland, and which was divided in a midline, is sutured with catgut, as shown in the tenth illustration. Then the spring retractor is removed and the flaps of skin of the neck, where the first incision was made, are brought together and sewed with silk. Under modern surgical practice, as followed in American hospitals, it is not considered necessary in a majority of cases to leave a drainage tube in the wound, though formerly that was the rule rather than the exception, and in England surgeons are said still to favor the drainage tube.



8 Here is shown the isthmus divided and the gland being cut across, leaving a small portion at the site of the nerve and the parathyroid glands.



9 Bleeding points are picked up with forceps and ligated. The opposite side is treated in the same manner as described above.



10 The membrane which is divided in midline is then sutured with catgut, thus covering the stumps of the gland and the exposed windpipe.



11 The skin then is closed with silk sutures, thus completing the operation.

(Illustrations adapted from Lewis' System of Surgery, Surgical Clinics of Chicago, Annals of Surgery, and Surgical Clinics of North America.)