

Historical Note

A short history of the thyroid gland

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Goiter is very common in many parts of the world and was recognized long before the thyroid gland itself. Since prehistoric times, the visible outgrowths in the front of the neck have been objects of curiosity and study. Their nature, appearance, cause and treatment have long been the subject of thousands of reports ranging from the tales of travelers of long ago to the learned consideration of our present era of every aspect of thyroid enlargement.

PREHISTORIC AND ANCIENT TIMES

Enlarged thyroids are said to have been known in China in about 2700 BC and the Chinese seem to have used burnt sponge and seaweed for its treatment since 1600 BC. In the Indian "Ayur Vedic" medicine, which came into existence in 1400 BC and lasted until 400 AD, goiters are mentioned by the designation *galaganda* and are described in detail.

The god Bes of ancient Egypt is usually depicted as a dwarf but it has not been conclusively determined whether this affliction was myxoedematosis or achondroplasty. Moreover, a relief has been found representing Cleopatra with what could be an enlarged thyroid.

There is much controversy as to whether goiter is mentioned in any writings of ancient Greece. In his *History and Iconography of Endemic Goiter and Cretinism*, Frank Merk states that there is no reference to goiter in Hippocrates' writings or of anyone else of

the period. However, in his book *De Glandulis*, Hippocrates (460-337 BC) states in relation to the glands: ".....when glands of the neck become diseased themselves, they become tubercular and produce struma.....". The term "struma" is still used in some European countries (e.g. Austria, Italy) as the medical designation of goiter. In addition, in the Hippocratic writings of the 4th century BC, we encounter the term *choiron* which was earlier used by Paul of Aegina (625-590 BC) and most probably signified goiter as well as the word *gongroma*, which, in 1561, Ambroise Pare declared also to refer to goiter. Littré in 1980 concurred with this conclusion.

During the epoch of the Alexandrian School (331-156 BC), the Hippocratics failed to differentiate between the thyroid and the cervical glands. Goiter was simply regarded as a deformity and was attributed to the drinking of snow water.

THE GRECO-ROMAN PERIOD (156 BC-576 AD)

Of great interest is the fact that the best accounts of medicine in Rome at the time of the early Roman Empire derive from two very famous though non-professional physicians, namely Celsus and Pliny.

Aurelius Celsus (25 BC-50 AD) was among the first to differentiate between the various forms of tumor of the neck. He defined the enlargement of the neck as *bronchocele*, describing it as a "tumor under the skin on the larynx, which is fleshy only or may contain some sort of honey-like substance..." He clearly defined cystic goiters and recommended making an incision down to the cyst, which is then bluntly dissected and removed. If that is not possible, he advises it be destroyed with caustics.

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Gaius Plinius Secundus of Pliny (23 BC-79 AD) believed that goiter was caused by dirty water. He wrote: "Only men and swine are subject to swellings of the throat, which are mostly caused by the noxious quality of the water they drink".

The Chinese physician Tshui Chin-thi seems to have been the first who, in 85 AD, differentiated between solid (malignant) neck tumors, which were incurable, and movable (benign) ones, which were curable.

Gallen (130-200 AD) was the most important physician of the Greco-Roman period. He described operations on two boys by ignorant physicians who removed "tubercular" nodes with their fingernails, rendering one boy "mute" and the other "semi-mute". He also mentioned Spongia Usta for the treatment of goiter. Gallen believed that the secretions of the thyroid lubricated the larynx and the cartilage and that the aphonia was provoked by cutting the laryngeal nerves.

The great Chinese alchemist Ko-Hung in about 340 AD recommended an alcoholic extract of seaweed for goiter, and it seems that the association of goiter with certain mountain regions was widespread in Chinese medicine from at least the 5th century AD onwards.

THE BYZANTINE PERIOD (330-1453 AD)

Of the compilers of that long period, four names stand out: Oribasios (325-403), Aetios (527-665), Tralles (525-605) and Paul of Aegina (665-690).

In about 550, Aetios described goitrous enlargement of the neck and apparently regarded exophthalmic goiter as a variety of aneurysm. He also quoted a Greek surgeon, named Leonidas residing in Rome, who recognized very early the importance of avoiding injury to the vocal nerves (recurrent laryngeal) during operations.

Paul of Aegina described goiter, or *bronchocele*.

In 990, the Persian Ali Ibu Abbas deals with surgery of the goiter in his treatise, and Albucasis (1013-1106) successfully operated on a patient with what he termed *elephantiasis of the throat*, which in fact was goiter.

The 12th century saw the publication of *The Bamberg Surgery*, a work in which the removal of the goiter

by surgery is described in as much detail as would be an operation performed in our own age.

In 1110, a Persian doctor named Jurzani associated exophthalmos with goiter, and in 1170 AD, Roger of Palermo prescribed ashes of sponges and seaweed as a conservative treatment of goiter. However, he recommended surgical removal of the gland if this was deemed necessary.

Marco Polo, both father and son, while traveling in Turkestan in 1271, wrote about the province of Karkan, ".....the inhabitants of which are in general afflicted with swellings in the legs and tumors in the throat occasioned by the quality of the water they drink".

During the 14th century, a number of doctors in various countries, including Hussu-Hui in China and A. Villanova (1235-1311) in Italy, treated goiters with marine products such as sponges, seaweeds and mollusks, which were sometimes mixed with saltpeter or antimony. During the same period, the French surgeon Guy de Chaliac (1300-1370) reported that "goiter is frequently considered to be a local and hereditary disease", and recommended surgical removal of the thyroid gland.

THE RENAISSANCE TO THE PRESENT

In about 1475, the Chinese Wang His for the first time suggested that one should dry 50 glands from pigs, the powder of which he used for the treatment of goiter.

The German-Swiss alchemist and physician Paracelsus (1453-1541) attributed goiter to mineral impurities in drinking water, especially iron sulphide, and postulated a hereditary factor.

The thyroid gland was described in great detail by Andreas Vesalius (1514-1564), and it was B. Eustachius (1520-1547) who first used the term *isthmus* for the part connecting the two lobes of the gland.

In his work *Adenographia*, Thomas Warton (1614-1673) described many glands but did not clearly distinguish between the thyroid and the maxillary glands. Nevertheless, based on a wrong deduction, he gave the gland its modern name of *thyroid*.

L. Heister (1683-1758) was the founder of scientific surgery in Germany. He advised initiation of treat-

ment of goiter with ointments but, if no improvement was achieved, he advocated surgical removal and described the procedure masterfully.

A few decades later, C.B. Morgagni (1682-1771) wrote about the thyroid: "The neck has two glands in which moisture is generated.....and by vessels it flows out....."

An outstanding event that occurred at the beginning of the 19th century was the discovery of iodine in 1811 by Bernard Courtois (1771-1838) in Paris.

William Prout in 1838, J.C.A. Lugol (1786-1851) and numerous other doctors round the world described iodine for the treatment of goiters on the basis of a report written by Coindet.

In 1877, Theodore Billroth wrote that iodine, while beneficial in the early stages of goiter, was ineffective for the disease in its established form.

In 1893, Theodore Cocher hypothesized that iodine may occur in the thyroid; however, it was Eugen Bauman (1846-1896) who, in 1896, demonstrated the presence of iodine in organic combination as a normal constituent of the thyroid gland.

Aside from the increasing knowledge concerning the pathology of simple goiter, three types of goiter were recognized and named by Guillaume Dupuytren during the first years of the 19th century: 1) cystic, 2) scirrhus and 3) hyperplastic.

Theodore Billroth believed that most goiters were "chronic, endemic, miasmatic tumors" and "local expressions of general infection".

In 1880, Anton Wolfer added a third group, the *fetal adenoma*. At the beginning of the 20th century, James Berry in London described six types of goiter: 1) parenchymatous, usually occurring in young people; 2) Wolfer's *fetal adenoma*, usually small, solid and encapsulated; 3) cystic adenoma; 4) fibrous; 5) malignant; and 6) exophthalmic.

G. Crile in the U.S. in 1910 recognized three types of simple goiter: 1) hypertrophy, 2) hyperplasia, and 3) involution. In 1953, Selwin Taylor in London described five stages in its evolution.

A few words are in order concerning exophthalmos. In 1110, Jurzani associated exophthalmos with goiter. In 1772, 1800 and 1802, Saint-Yves, 33, respec-

tively, described exophthalmos, palpitations and goiter. In 1786, C. H. Parry (1775-1822) described a patient with goiter, palpitations and protrusion of the eyes.

In 1835, Robert James Graves, the famous Irish physician, described patients with palpitations and thyroid enlargement. Also in the mid-19th century in Merseburg, the German physician, Carl Adolph von Basedow, described three patients with "exophthalmos due to hypertrophy of the cellular tissue of the orbit", goiter and palpitations. This syndrome came to be known as the Merseburg triad syndrome.

However, especial credit should go to C.H. Parry who, in 1813 wrote ".....of some connection between the malady of the heart and the bronchocele".

Finally, to conclude this short history of the thyroid gland, we may refer briefly to the surgical treatment of thyroid disease. Early accounts of operations are unclear. Celsus, Gallen, Leonidas, Aetios, Albuscasis have been tentatively credited with performing operations on goiters. The first known thyroidectomy was described in 1646 by Wilhelm Fabricius in Geneva. The first well documented partial thyroidectomy for a tumor of the thyroid, was undertaken in 1789, during the French Revolution, by P.S. Dessault (1744-1795) in Paris. A few years later, in 1808, Guillaume Dupuytren (1777-1835) performed a total thyroidectomy for a tumor of the gland, and in 1880 Ludwig Rehn (1847-1930) carried out the first successful thyroidectomy for exophthalmic goiter.

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