

Monstrous craws and horrid butchery: a concise history of thyroid surgery

BY JENNY WALTON

Prior to the foundation of our speciality, thyroid surgery had a dubious reputation and universally dismal outcomes. Jenny Walton casts a critical eye over this dark chapter.

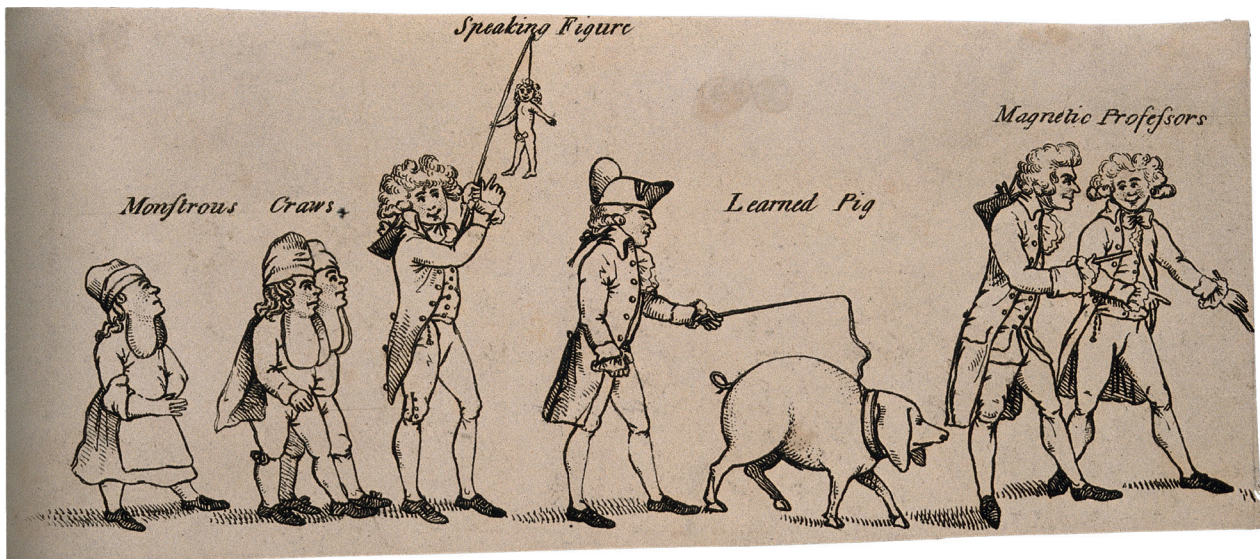


Figure 1: A group of entertainers parading: the monstrous craws, a ventriloquist, a learned pig and two mesmerists. Etching, 178. Source: Wellcome Collection. <https://wellcomecollection.org/works/v3nzsqdr>

Diseases of the thyroid gland have been referenced in historic texts for well over 3000 years, despite a lack of knowledge of the function of the gland [1]. Goitre was depicted in artwork as both an attractive feature in women and as the subject of ridicule and entertainment (see Figure 1). The first successful thyroidectomy was carried out by Albucasis in the 10th century, but it wasn't until the second half of the 19th century that a credible description of safe thyroid surgery was proposed. This article takes a light-hearted look at the journey.

Early management of goitre

Put yourself in the shoes of a patient with a large goitre in the Middle Ages. Whilst being the subject of public ridicule was probably miserable, arguably your most pressing issue would have been the prospect of imminent airway obstruction and impending death. Not ideal. So, what were your options? Well, there were not many. You might have been offered the milk or serum of thyroidectomised animals or suffer the administration of caustic powders or injections of steam or boiling water into the gland [1]. Not only did your symptoms not abate, you probably developed

significant burns and were substantially worse off than where you started.

When these home remedies made no difference to your symptoms, surgery was your last option. In the 12th century, you could expect such treatment as "assistant holds patient, surgeon cuts goitre from patient's neck" (clearly rated 'inadequate' by the CQC), and even some years later in the 15th century, the technique had not moved on much, with pictorial representations of goitre removal involving the use of such instruments as a Turkish sabre [2]. Little apparent concept of precision surgery and more of a slash-and-grab approach, really. Attempts at controlling massive haemorrhage involved tying a bootlace around as much of the gland as possible and cutting it out [3]. You probably had to supply your own bootlace. Early attempts at thyroidectomy eventually led to the imprisonment of a surgeon in the 17th century.

During this time, anaesthesia was non-existent; the limits of pharmacological adjuncts to surgery coming in the form of alcoholic spirits or opiates (if you could afford it). A good slug of whiskey or gin and the hands of a strong assistant might be all that would stop you making a run for it at the earliest opportunity, assuming of

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course you weren't in for a leg amputation at the same time. Being drunk may have had the added benefit of diverting your attention away from the old bloodstains on the filthy apron worn by the surgeon, seen at the time as a harrowing mark of diligence and skill.

So, when did things move forwards? Evolving techniques in the 19th century were described by Druitt [4]. He detailed three operations: "setons", he writes, "should be of silk and large enough to fill the wound made by the needle so that there may be no fear of bleeding". A seton is a piece of material fed through the gland and manipulated at regular intervals up to the skin: you would have unfortunately swapped your suffocating neck mass for significant bleeding and an ugly wound, perhaps only just the better option. Druitt's other two operations involved either ligation of the arteries that supply the gland, or "extirpation": ligation of vessels followed by tying a ligature around the gland and cutting the tumour out. This method was crude, with no recognition of the importance or preservation of the recurrent laryngeal nerve or the parathyroid glands.

19th century progress

Back to your unfortunate situation then: if you were unlucky enough to need a thyroidectomy prior to 1849, your predicted mortality rate would have been in excess of 40% [5]. This actually led to the procedure being banned by the French Academy of Medicine in 1850. Prominent surgeons of the time backed this stance, with Samuel D Gross saying, "If a surgeon should be so foolhardy as to undertake it... every step he takes will be followed by a torrent of blood, and lucky will it be for him if his victim survives long enough to enable him to finish his horrid butchery... No honest and sensible surgeon would ever engage in it". As we do like to think of ourselves as honest and sensible, the operative technique needed to take giant strides to become the approach we recognise today.

So, what changed? A number of key advances in the 19th century greatly improved the safety of surgery [3]. Perhaps the most significant of these was the introduction of general anaesthesia, with the first successful demonstration of inhalational ether in 1846 for a dental extraction; the technique was later employed in thyroid surgery in 1847. Another key factor was Lister's concept of antisepsis. This was adopted by the pioneers of thyroid surgery, Kocher and Billroth in the 1870s, with the introduction of the surgical cap and gown by Neuber in 1883. Development of precision surgical instruments, followed by steam sterilisation in 1886 was another big step forwards.

Theodor Kocher, the Swiss surgeon often referred to as the father of thyroid surgery, was awarded the Nobel Prize in 1909 for his outstanding contribution to the field of thyroid surgery. One of the patients he successfully operated on can be seen in Figure 2. Over his career, he reduced the mortality rate from thyroidectomy to 0.2%, a truly outstanding feat. Renowned as an extremely meticulous and talented surgeon, Kocher recognised the importance of the identification and preservation of the recurrent laryngeal nerve and parathyroid glands (despite his not knowing their function at this point) with evidence of improved results for the high-volume surgeon [1]. He is also credited with describing the technique of capsular dissection. By the early 20th century, your prospects of getting through the surgery unscathed are looking considerably better!

The future

Modern thyroid surgery has an extremely low mortality rate; innovation and advancing technology continue to drive the development of new techniques. Minimally-invasive, robotic, and transoral scarless approaches have come to the fore over recent years; proof of just how far we have come since the bad old days of horrid butchery.

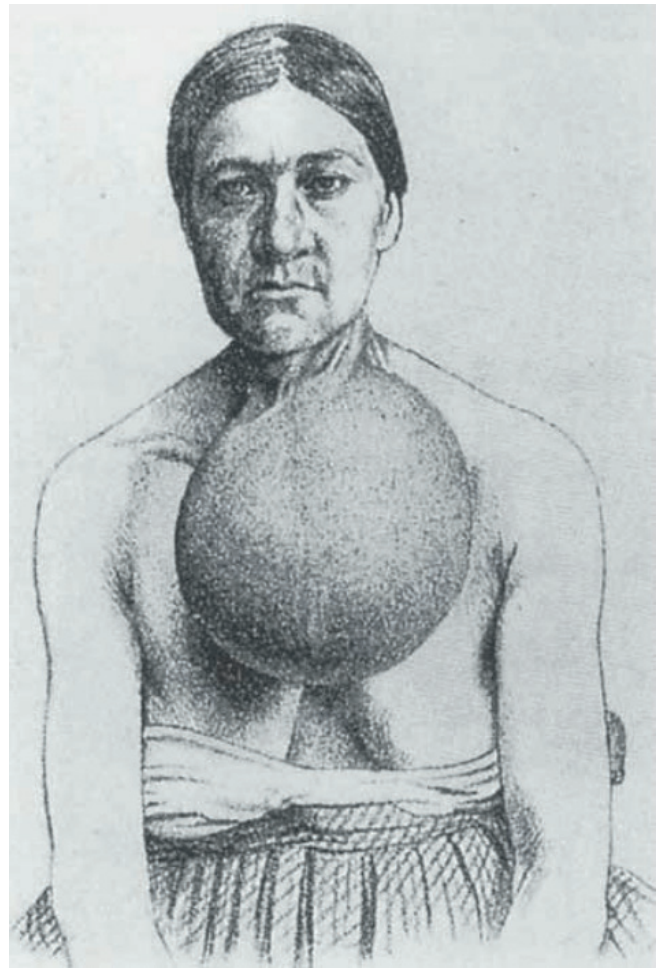


Figure 2: Large goitre in a woman from Bern, Switzerland. Source: Wikimedia Commons.

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