
The Hunt for the Parathyroids

Jörgen Nordenström

Professor of Surgery
Karolinska Institute
Stockholm, Sweden

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Anatomy Department, August Hammar, recalled that Sandström made his discovery during a microscopic examination of the thyroid of a dog. Thus it seems that he came upon the parathyroids via the microscope rather than on the dissecting table. The fact that electric light did not exist in Uppsala at the time of his discovery also suggests that Sandström did not initially see the gland during dissection – to be able to see a parathyroid gland *in situ* requires lighting that was hardly possible to achieve at that time. When Sandström realised that what he saw in the microscope was a new cellular structure he immediately ran to Professor Clason's room with his specimen. The professor was not there but Sandström caught sight of the microscope in the room. He was taken aback when he saw a slide with cells of similar appearance under Clason's microscope. At that instant, Clason appeared and Sandström wondered whether the professor had already seen what he wanted to show him. This was not the case, for Clason had in his microscope a slide specimen of cells from a pituitary gland – an organ which, with the deficiencies in histological staining techniques of those days, had a cellular structure very similar to that of the parathyroid gland. Today Sandström is most known as an anatomist; however his histological knowledge of the microscopic images of tissues and cells paved the way for his discovery. Sandström should therefore be considered outstanding both as a histologist and as an anatomist.

Sandström's discovery of the parathyroids was based upon the fact that he continued with studies on other animals and humans as a result of his first observations in dogs; and also that he systematically and carefully described both the microscopic image and the location of the glands and thus could establish that he had actually discovered a new organ. Even though others had observed the parathyroids before Sandström, they had not followed up on their observations nor had they understood that they were dealing with a novel organ. For this reason, Sandström has to be considered the person who discovered the parathyroids. Referring to Sandström's work, D. A. Welsh wrote:

“I cannot too strongly emphasise the admirable precision and accuracy which characterise this earliest record of these glands in man.”

While Sandström is arguably the first person to describe the parathyroids in humans, it turns out they had been observed earlier in a somewhat unlikely animal. In 1905, S.G. Shattock published a report which clarified that the parathyroids had in fact been observed prior to Sandström's discovery in the one-horned Indian rhinoceros (*Rhinoceros unicornis*). Before 1830 there were only a very few single-horned Indian rhinoceros that had survived more than a few years in captivity. Clara was a spectacular exception. In 1738 this rhinoceros calf was captured when she was only a few months old after her mother had been killed by Indian hunters. Soon Clara was purchased by

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the Dutch sea captain Douwe Mout van der Meer who shipped the young rhinoceros to Holland. Clara became used to humans early on and she developed a taste for tobacco and beer, probably as a result of misdirected kindness on the part of the Dutch sailors. The creative van der Meer organised a travelling menagerie where Clara was transported around Europe on an enormous cart pulled by eight horses. The project was an economic success and Clara was on exhibition for over seventeen years in many different places throughout central Europe, admired by both ordinary people and high society including Frederick the Great and Louis XV. Clara became the source of inspiration for poems and musical compositions, and was immortalised in paintings, copper engravings, and on medallions and porcelain. Clara was a true celebrity. Jan Wandelaar, who illustrated Bernard Siegfried Albinus' monumental anatomical atlas (1747), was given a free hand to choose the background motif and he portrayed Clara on several pages grazing in a park-like landscape in order to make the anatomical drawings more attractive.

The English anatomist and zoologist Sir Richard Owen had convinced the Zoological Society of London to purchase an Indian rhinoceros in 1834 for the considerable sum of 1000 guineas (approximately €60 000 today). The rhinoceros had been a huge attraction at the zoo for 15 years when it died after breaking a rib and injuring a lung in a fight with an elephant. It was reported that the rhinoceros coughed up oxygenated blood – a sure sign of a lung injury. Owen was given the opportunity to dissect the cadaver. It must have been a gigantic project to dissect the cadaver of the rhinoceros that

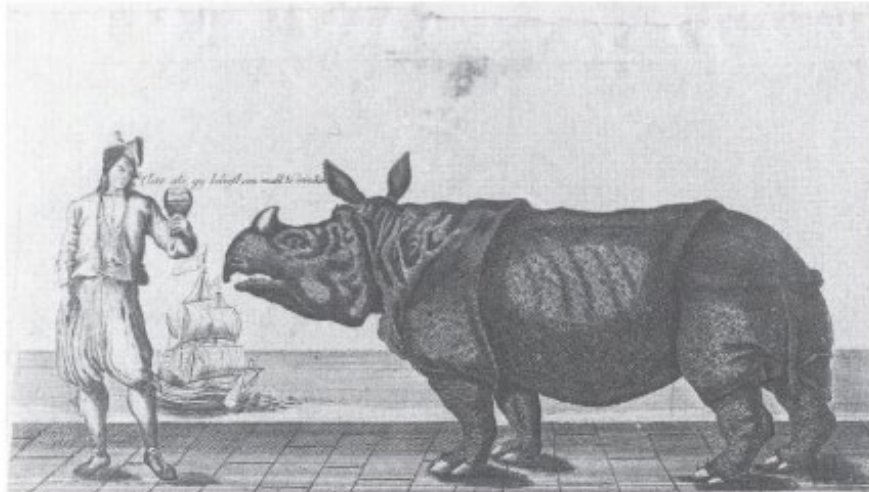


Figure 1.3 The Indian rhinoceros Clara being offered a glass of wine. Illustration on a poster, around 1748. (From L.C. Rookmaaker, 1998. Reproduced with permission, Kugler Publications, Amsterdam)

weighed almost 2 tons. Owen noted in a report on the dissection that the stench from the continually rotting cadaver did not exactly make the work any easier. In any event, he found a small, compact yellow structure in the expected location in the neck of the rhinoceros. In all probability, this was the very first observation of a parathyroid gland.

"Publish or perish" is the advice given to all young researchers by their mentors. Reporting scientific discoveries constitutes the foundation of an academic career. Research that has not been published has no value. Sandström knew this and he therefore sent his report to the local medical association's periodical, *Uppsala Läkareförenings Förhandlingar*. This rather obscure publication contained announcements from the meetings of the medical association, debate articles and congratulatory speeches, abstracts from international journals, and case reports, as well as original medical findings. The publication's local character and readership is evident from the fact that it even published charts of the weather in Uppsala.

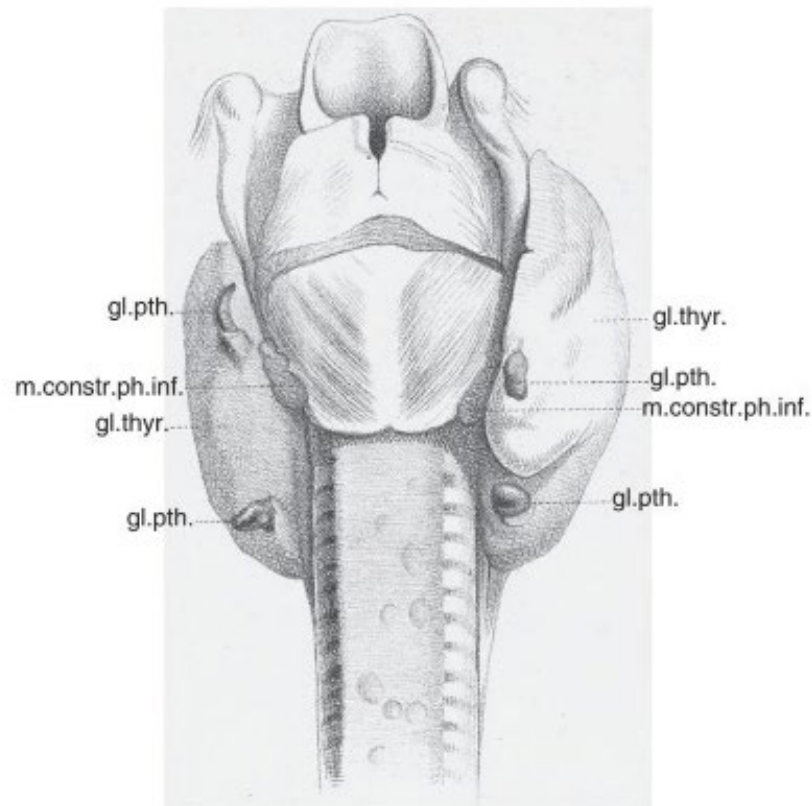


Figure 1.4 The parathyroid glands. Four parathyroid glands are depicted (gl.pth.) on the back of the thyroid. Drawing from Sandström's publication in *Uppsala Läkareförenings Förhandlingar*, 1880.

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