Theodor Kocher: the first surgeon to be awarded the Nobel Prize

A century ago, in 1909, the Swiss surgeon Theodor Kocher became the first of only a handful of surgeons to be awarded the Nobel Prize, rightly regarded – at least in medicine – as the highest achievable accolade in its six fields.

Alfred Bernard Nobel (1833–1896), a Swedish chemist, was manufacturer of the explosive nitroglycerine. In an accidental explosion, Nobel's younger brother, as well as four others, was killed; the Swedish authorities closed the factory. Nobel set out to develop a more stable and therefore a safer explosive and invented and patented dynamite (nitroglycerine absorbed onto keiselguhr), and then gelignite; he became a multimillionaire. Nobel was a pacifist and hoped that his inventions would be used for peaceful industrial and mining purposes. Of course, they were rapidly used in the production of bigger and more lethal weapons of war.

Nobel never married. He left the bulk of his fortune to establish five annual prizes – in physics, chemistry, literature, peace, and physiology or medicine. To this list an additional prize, in economic sciences, was added by the Bank of Sweden in 1969. The first awards were made in 1901; among the first recipients was Wilhelm Röntgen, the discoverer of X-rays.

Theodor Kocher (1841–1917) qualified in medicine in Berne in 1865. He then studied in Berlin, London, Paris and Vienna, where he worked under Theodor Billroth. In 1872 he was appointed Professor of Surgery in Berne, his native city, and there spent the rest of his career, remaining head of the department for 45 years. Pupils and visitors came to him from all over Europe and the USA to study under a devoted teacher and a calm, meticulous surgeon. He was an early disciple of Lister's antiseptic technique, although he rapidly adopted the more modern aseptic method in his operating theatre.

Kocher was a general surgeon in the widest sense; no part of the body escaped his attention. His many advances were based on his profound knowledge of anatomy. He early devised his method of reduction of a dislocated shoulder, which is standard today, and which bears his name. He described surgical approaches to all the major joints, based on dissecting in the plane between muscle groups, thus avoiding neurovascular injury, described Kocher's manoeuvre for mobilization of the duodenum and head of the pancreas, and devised operations on the stomach, lungs, tongue and cranial nerves. He advocated using the natural skin creases for incisions wherever possible, and his incisions for thyroid and gall bladder surgery bear his name.

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It was Kocher's interest in cranial surgery and physiology that brought Harvey Cushing, later to become one of the fathers of neurosurgery, to work with him as a young man. It was in Kocher's laboratory that Cushing showed experimentally that raising the intracranial pressure was associated with slowing of the heart.

Kocher devised numerous instruments, especially those used in thyroid surgery. His textbook of operative surgery was first published in German in 1892 and was translated by Harold Stiles of Edinburgh into English in 1895. This profusely illustrated and authoritative book is still worth reading today.

It was Kocher's work on thyroid disease which was his greatest contribution and for which he received his Nobel Prize.

Goitres occur, of course, in iodine-deficient areas of the world, as far away from the sea as possible and particularly in elevated inland zones. In England this situation occurs in Derbyshire and, as a young surgeon in Sheffield over 55 years ago, I became well acquainted with 'Derbyshire neck'. In mainland Europe, the inland mountains of Switzerland were infamous for their enormous endemic goitres, now all but abolished, as in other developed areas, by iodination of table salt. These goitre patients, in their large numbers, provided Kocher with his major interest. He introduced his 'collar' incision, devised appropriate instruments and advocated meticulous dissection with avoidance of recurrent laryngeal nerve damage and careful haemostasis. By 1898 Kocher had performed 600 thyroid operations and this number grew to over 5000 by 1912. His mortality rate dropped from 18% in his early cases to less than 0.5%.

In 1882, Jacques-Louis Reverdin (1842–1929) of Geneva reported previously undescribed symptoms of weakness, anaemia and 'facies that resembled cretins' following thyroid surgery. At the same meeting, Kocher reported that he had had a case of depression and weakness following this operation. The following year, Reverdin published in meticulous detail the results of his first 22 goitre operations; no less than five of these patients had developed these untoward symptoms. Reverdin pointed out that these features resembled those described by Sir William Gull at Guy's in 1874, later termed myxoedema by William Ord of St. Thomas's Hospital. Reverdin made the important recommendation that only partial removal of the gland should be carried out.

After the Geneva meeting, Kocher went back to study his own cases and, later in 1883, reported a similar phenomenon at the 12th Surgical Congress in Berlin. He termed this syndrome 'cachexia strumapriva', whereas Reverdin introduced the more apt title of 'operative myxoedema'.

Kocher certainly deserved his Nobel Prize in 1909, but I would suggest that perhaps Jacques-Louis Reverdin might have shared it with him. BJHM

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Conflict of interest: none.