



HISTORY OF MEDICINE

Jan Mikulicz-Radecki (1850 - 1905) — father of surgical endoscopy

Jarek Kowalczyk

Professor Jan Mikulicz-Radecki was professionally active as a surgeon and inventor in the second half of the 19th century. His research and surgical activity made him one of the most famous and respected surgeons of the time. He developed many new diagnostic methods, operative techniques and surgical instruments, and was the first to introduce abdominal swabs and the abdominal gauze drainage system to the surgical armamentarium. He invented peritoneal forceps, well known in Europe as Mikulicz forceps, and became a pioneer in the field of diagnostic endoscopy of the oesophagus, stomach and abdominal cavity. Mikulicz-Radecki was also a strong proponent of antiseptics in modern surgery.

Jan Mikulicz-Radecki was born in Czernowce, southern Poland, on 16 May 1850. His father, Andrew, a civil engineer, was a General Secretary of the Trade Chamber in eastern Poland. Mikulicz-Radecki attended various schools in Vienna, Prague and Czernowce, where he matriculated in 1869. He studied medicine at the University of Vienna against his father's wish. At the same time he studied music at Vienna Conservatorium. During the period of his medical studies Mikulicz-Radecki played piano concerts to generate funds for tuition and accommodation, as his disapproving father had withdrawn financial support for him.

In 1885, after graduation as a medical doctor, Mikulicz-Radecki started voluntary work in the Surgical Department of Vienna University. The head of the Department was Professor Theodore Billroth, the most famous surgeon of the 19th century.



Billroth appreciated both the scientific and musical ability of young Mikulicz and often invited him to his home for piano concerts and long discussions on medicine. Soon Jan Mikulicz-Radecki became a favourite assistant of Professor Billroth. In 1876 Mikulicz-Radecki published his first scientific paper on rhinosclerosis, describing histopathological data on the disease and explaining its aetiology. Over the next 2 years he produced a number of papers on the aseptic handling of surgical wounds and preventive measures against infections in the surgical ward. At the same time he worked on the pathogenesis of the valgus knee (genu valgum). His work changed the old Hueter's theory of development of the valgus knee and earned him his PhD degree.

In 1878, 28-year-old Mikulicz-Radecki was invited to visit various surgical departments headed by professors Volkman, von Eschsch, Pean and Langenbeck in Germany, France and England to lecture on his discovery. Mikulicz-Radecki worked with Professor Billroth until 1882. During those years he invented a method of scoping the oesophagus and stomach using metallic tubes with a source of light fixed inside them (*Ueber die Gastroskopie u. Oesogastroskopie*, Wiener Medical Press, 1881). Subsequently he performed the first interventional endoscopic procedure by pushing a large bone stick in the oesophagus through the gastric cardia to the stomach, avoiding open surgery. In 1880 Mikulicz-Radecki sutured a perforated gastric ulcer with excellent clinical results. This was the first reported case of what is a fairly common surgical procedure today. He also described a condition of pathological narrowing of the gastric cardia and invented a term for it — cardiospasm. Subsequently he described an operative technique of manual dilatation of the cardiospasm.

At the beginning of 1882 Mikulicz-Radecki returned to Poland where he was appointed a professor of the Department of Surgery at the Jagiellonian University in Krakow, one of the oldest universities in Europe and recognised as a centre of excellence. The Department of Surgery consisted of four small wards, two for female and two for male patients, and a large

Jarek Kowalczyk graduated from Warsaw Medical School, Poland, in 1981 and completed his surgical training there in 1988. He trained in vascular surgery at Grootte Schuur Hospital and is currently head of vascular surgery at Chris Hani Baragwanath Hospital, Johannesburg. His special interests include vascular access surgery for haemodialysis, interventional radiology for vascular trauma, premature peripheral vascular disease, and the history of medicine.



operating theatre, which was used as a lecture hall after hours. Professor Mikulicz-Radecki quickly reorganised and developed the surgical department. He opened three wards for patients, separating septic and clean surgical cases, and established one operating theatre for endoscopic procedures. He operated on the patients, taught junior surgeons and lectured medical students. Within a short period of time Professor Mikulicz-Radecki won esteem and recognition in Krakow for his knowledge and surgical skills. However, the results did not fully satisfy the ambitious surgeon. He tried to organise a very modern surgical department at the Jagiellonian University. Mikulicz's battle for funds for new wards was largely unsuccessful. He became frustrated and finally left Krakow in 1887 for a well-equipped Department of Surgery at the University of Krolewec in northern Poland.

The 5-year period in Krakow had been very fruitful for him. During that time Mikulicz-Radecki described a method of surgical treatment of stenosis of the gastric pylorus due to chronic peptic ulceration, namely pyloroplasty (Heineke-Mikulicz pyloroplasty), and treatment of cancer of the large bowel by exteriorisation of the tumour out of the peritoneal cavity, called the Mikulicz procedure. He was an opponent of complete resection of the thyroid gland in non-cancerous disease. He described a wedge resection of the thyroid in patients with an enlarged thyroid gland (goitre) avoiding postoperative myxoedema due to hypothyroidism. Mikulicz-Radecki was the first surgeon in Poland to perform vaginal removal of a fibromyomatous uterus. In 1886 he introduced drainage of intra-abdominal abscesses using a gauze drain. It is worth mentioning that he had only one case of wound sepsis in 224 elective surgical operations performed. In 1885 Mikulicz-Radecki, using his private funds, established the first fully equipped bacteriology laboratory at the Jagiellonian University. He was a proponent of intravenous replacement of blood loss during surgery with physiological saline solution, avoiding human blood transfusion.

Between 1887 and 1890, during his appointment as a professor of the Department of Surgery at University of Krolewec, Mikulicz-Radecki introduced sterilisation of surgical instruments with hot water and hot steam. Thereafter his interest turned to anaesthesiology. He formed a rule, 'Mikulicz's dictum', saying that anaesthesia should not be performed if the patient's haemoglobin level is below 30% of normal value.

At the end of the 1880s Mikulicz-Radecki was offered a professorship in surgery at various medical institutions in Berlin, Vienna, and Wroclaw. However, due to a persistent emphasis on the adherence to his strong Polish tradition and

culture, the appointment of Professor Mikulicz-Radecki was rejected on political grounds by the governments of Germany and Austria. Finally, in 1890 Mikulicz-Radecki decided to take over a modern surgical department at Wroclaw University in south-west Poland. He worked there for 15 years, until his sudden death. In Wroclaw, Mikulicz-Radecki introduced innovative silk gloves and face masks for surgical procedures. In the Department of Surgery, iodoform became a common agent for the treatment of septic wounds instead of Listerian carbolic acid, which irreversibly damages human tissue. He also spent time inventing a number of surgical instruments and the first prototype of the steam autoclave for sterilisation of surgical equipment. In 1896 Mikulicz-Radecki described a new technique of foot osteoplasty, surgery for nose deformity, and a lateral approach for excision of tonsils. He described a traumatic and inflammatory cause of stiff neck, namely torticollis.

In 1903 Professor Mikulicz-Radecki went to the USA, where he visited 20 universities, lecturing and operating. At the end of 1904 he diagnosed gastric cancer in himself. Mikulicz underwent laparotomy performed by his close friend Professor Eiselsberg of Vienna. The operation revealed an advanced gastric tumour invading the pancreas, not suitable for surgical removal. Professor Jan Mikulicz-Radecki died in Wroclaw on 14 June 1905. He was only 55 years old.

Mikulicz-Radecki was a member of many surgical societies in Poland, Austria, Germany, England and the USA. He spoke and published in three languages, viz. Polish, German and English. During his career Mikulicz-Radecki published about 160 papers and wrote chapters in three handbooks on surgery. He was married to Henrietta Picher and had four children.

It is difficult, indeed almost impossible, to list all the medical achievements of this prominent surgeon. The turmoil of the two devastating World Wars of the 20th century irreversibly erased much documentary evidence. There is no doubt, however, that Professor Jan Mikulicz-Radecki is the father of modern endoscopy, inventor of a number of surgical instruments and pioneer of many surgical procedures in the field of general and orthopaedic surgery and operative laryngology.

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