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A success of Martin Kirschner (1879–1942): The 100th anniversary of the first pulmonary embolectomy survival

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A success of Martin Kirschner (1879–1942): The 100th anniversary of the first pulmonary embolectomy survival

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A 38-year-old woman had to be operated in Königsberg on March 14, 1924 for an incarcerated femoral hernia. Four days after the procedure, the alarming symptoms of the pulmonary embolism occurred, her condition soon was dramatic. The surgery began a quarter of an hour later. Anesthesia was not necessary because the woman was already unconscious. The Trendelenburg procedure was performed and after 4 minutes the laminar blood flow was restored. Finally, the woman was discharged home and could return to work. The surgeon, Martin Kirschner (**Figure 1**) presented his case during the Congress of Surgeons in Berlin. Alton Ochsner (from the US), recalled that the audience was excited by this report. It is worth mentioning that the patient survived his surgeon [1–3].

Martin Kirschner was a trainee of Friedrich Trendelenburg (1844–1924) who became interested in sudden deaths of several patients with pulmonary embolism treated in a hospital in Leipzig in the 1870s. He conducted research on calves and developed the technique of embolectomy. The success of the therapy allowed to think of the using this technique in humans. Trendelenburg performed his procedure on 2 patients, but none of them survived longer than 37 hours. The similar procedures were performed in various surgical centers in Europe but all ended in failure. Martin Kirschner achieved his success 16 years after Trendelenburg’s paper describing his experiences, just a few months before the death of his master [1, 2].

Dr Wiktor Bross, who performed the first in Poland open heart surgery, in his textbook “Surgery” (1954) wrote: *Although the initial results were completely unfavorable, this procedure [...] found wider application and was performed with full success in a few cases.*

According to Eichelter's statistics (1932), out of 132 cases in which Trendelenburg's procedure was performed [...], in 9 cases complete recovery was achieved. The mortality rate of embolectomy was therefore 93% at the time. In the USA, keeping watch over patients at risk of death due to a pulmonary embolism was the task of young physicians. One of these residents was John Gibbon, who, moved by a tragedy of a patient who underwent embolectomy and died, devoted a quarter of a century of his life to construct the world's first heart-lung machine. In 1934, after 10 consecutive unsuccessful embolectomies, Edward Churchill stated that sometimes a more appropriate term for this procedure would be an autopsy exam rather than a surgical procedure [1, 2].

Martin Kirschner was born on October 28, 1879 in Breslau, Germany (now: Wrocław, Poland). His grandfather was a doctor in Freiburg in Schlesien (now: Świebodzice). His father (also Martin Kirschner) was a lawyer and politician (city councillor of Breslau and later mayor of Berlin). Martin Kirschner studied medicine in Freiburg, Strasbourg and Munich, devoting his doctoral thesis to syringomyelia and tabes dorsalis. He habilitated in 1911 thanks to his thesis on the transplantation of fascia and tendons. In 1913 he moved to Leipzig. Three years later he married Eva Knapp (they had 2 daughters and a son, Hartwig, later a professor of surgery in Hamburg) [1, 2].

During the World War I, Martin Kirschner served as a surgeon, then returned to Königsberg as a head of surgery department. In the years 1927–1934, he headed the surgical clinic in Tübingen, he was even a rector of the local University. In 1934, he moved to Heidelberg and was elected president of the German Surgical Society. Later, he accepted a position of a consulting surgeon for the Reichswehr and the Wehrmacht [1].

He published over than 240 papers touching almost every field of surgery, introducing many innovations and technical improvements, also in anesthesia. He invented the so-called Kirschner wire, i.e. a thin and stiff wire used by orthopedists to stabilize bone fragments. On his initiative ambulances were introduced in 1938. [1, 2].

In 1942, Martin Kirchner had to undergo the ulcer surgery that was performed by his pupil, Rudolf Zenker. The procedure revealed the inoperable stomach cancer infiltrating the pancreas with metastases to the liver, but Zenker hid this diagnosis by showing the results of histological examinations of another patient. Kirschner continued to work until his death on August 30th, 1942. [1, 2].

According to the different databases evaluating the outcomes of surgical embolectomies (100 years after the Kirchner's success [Figure 2]) the mortality rate range from 15.9% (the overall mortality) to 20.6% (the operative mortality). In recent years, many factors have

contributed to reducing mortality in this group of patients, among others the novel antithrombotic strategies, the organization of the pulmonary embolism response team (PERT) and the catheter-directed procedures [4, 5].

Article information

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Figure 1. Martin Kirschner (source: public domain; accessed October 2, 2024)

Nachmittagssitzung 2 Uhr.

3. Kirschner-Königsberg: Erfolgreiche Operation wegen Embolie der Arteria pulmonalis. (S. Teil II, S. 312, der Verhandlungen.)

Vorsitzender **Braun-Zwickau**: Ich beglückwünsche Herrn *Kirschner*; ich beglückwünsche Herrn *Trendelenburg*. Vivat sequens!

**Ein durch die Trendelenburgsche Operation geheilter Fall
von Embolie der Art. pulmonalis¹).**

Von
M. Kirschner.

(Aus der Chirurgischen Universitäts-Klinik Königsberg i. Pr. —
Direktor: Prof. Dr. *M. Kirschner*.)

Figure 2. Kirchner's landmark paper (source: public domain; accessed October 2, 2024)