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

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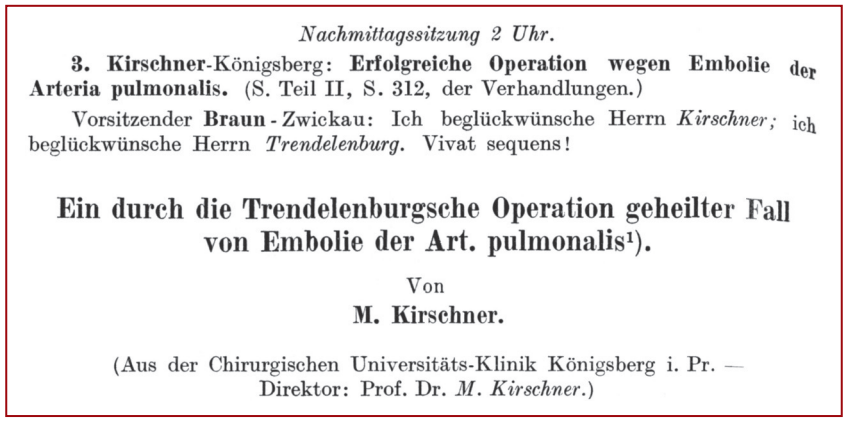
A 38-year-old woman had to be operated in Königsberg on March 14, 1924, for an incarcerated femoral hernia. Four days after the procedure, the alarming symptoms of pulmonary embolism occurred, her condition soon was dramatic. The surgery began a quarter of an hour later. Anesthesia was not necessary because the woman was already unconscious. The Trendelenburg procedure was performed, and after 4 minutes laminar blood flow was restored. Finally, the woman was discharged home and could returned 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 outlived her surgeon [1–3].

Martin Kirschner was a trainee of Friedrich Trendelenburg (1844–1924), who became interested in the 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 the consideration of using this technique in humans. Trendelenburg performed his procedure on 2 patients, but none of them survived longer than 37 hours. Similar procedures were performed in various surgical centers in Europe but all ended in failure. Martin Kirschner achieved success 16 years after Trendelenburg's paper describing his experiences, just a few months before the death of his master [1, 2].

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. pulmonalis[1]).

Von

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

Dr Wiktor Bross, who performed Poland's first 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 US, taking care of 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 the 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: Wroclaw, Poland). His grandfather was a doctor in Freiburg in Schlesien (now: Świebodzice). His father (also Martin Kirschner) was a lawyer and politician (city councilor 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 based on 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 head of a surgery department. In the years 1927–1934, he headed the surgical clinic in Tübingen and was even the rector of the local University. In 1934, he moved to Heidelberg and was elected president of the German Surgical Society. Later, he accepted the position of a consulting surgeon for the Reichswehr and the Wehrmacht [1].

He published over than 240 related to almost every field of surgery, introducing many innovations and technical improvements, including 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 Kirschner had to undergo an ulcer surgery that was performed by his pupil, Rudolf Zenker. The procedure revealed 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 30, 1942. [1, 2].

According to various databases evaluating the outcomes of surgical embolectomies (100 years after the Kirschner's success [Figure 2]) the mortality rate ranges from 15.9% (overall mortality) to 20.6% (operative mortality). In recent years, many factors have contributed to reducing mortality in this group of patients, including novel antithrombotic strategies, organization of the pulmonary embolism response team (PERT), and catheter-directed procedures [4, 5].

Article information

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