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Ernst Heller and the surgical treatment of esophageal achalasia

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Abstract

The therapeutic approach to achalasia, whether idiopathic or secondary to Chagas disease has undergone significant transformation in recent decades. Initially performed via laparotomy, the procedure transitioned to laparoscopic techniques during the late twentieth century and is now increasingly performed through peroral endoscopic myotomy (POEM). Brazilian surgical groups have garnered considerable expertise in this minimally invasive modality, owing to the high prevalence of chagasic megaesophagus in the region. At the core of this therapeutic paradigm lies the legacy of Ernst Heller, a distinguished German surgeon born in Dębice, West Prussia, whose innovative technique revolutionized the management of the disease. Operating within the constraints of early 20th-century medicine, Heller nonetheless achieved remarkable clinical success. His index patient demonstrated immediate postoperative tolerance to solid foods and maintained excellent functional outcomes thereby establishing a pivotal contribution to esophageal surgery. Heller's legacy persists, as the myotomy bearing his name remains a cornerstone of contemporary therapeutics. This work aims to present a comprehensive biographical overview of Ernst Heller and his seminal contributions to the surgical treatment of achalasia."

Keywords

Achalasia, Surgical myotomy, History, 20th century, Surgery.

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Ernst Heller, born on November 6, 1877, in Dębice, then in West Prussia (1,2) (present-day Poland), was a renowned surgeon best known for his innovative surgical technique for treating achalasia, a disorder of the esophagus that impairs the passage of food (3). Heller's legacy remains inextricably linked to the historical origins and foundational tenets of esophageal surgery. Objective: To present a concise biographical review of Ernst Heller and his seminal contribution to the surgical management of esophageal achalasia through the development of the eponymous myotomy. We discussed biographical aspects of Ernest Heller's life in order to contextualize and retrieve the historical conditions in which he developed his contribution to esophageal surgery, and we briefly covered the evolution of Heller's procedure up to the present day

Early life and training

Dębice, at that time a small town with a significant Jewish community, was situated on the border between Prussia and the Western Galicia, also known as New Galicia, a historical region of the Habsburg monarchy created in 1795 after the third partition of Poland. This town was a vibrant commercial and cultural hub that provided a stimulating environment for Heller's early development. Born into a Jewish family, his cultural and religious background undoubtedly influenced his life and career trajectory (1,2).

While detailed information regarding Heller's youth and family remains scarce, it is evident that he pursued a career in medicine and rapidly distinguished himself as a skilled surgeon. Influenced by prominent surgical figures of the era, such as Gottstein and Heyrovsky, Heller developed a profound understanding of and passion for his field. His service as a surgeon during the First World War (1914-1918), with its attendant exposure to traumatic injuries, profoundly shaped his medical perspective and motivated him to seek innovative solutions for complex surgical problems. It was during this period that Heller conceived the surgical technique that would secure his legacy: the Heller myotomy (3). This procedure involves incising the muscles of the lower esophageal sphincter, thereby relieving the functional obstruction and facilitating the passage of food. The Heller myotomy revolutionized the treatment of achalasia, offering patients a definitive surgical solution for a condition previously considered intractable (4).

Academic career and recognition

Following the war, Heller returned to Germany and assumed the position of chief surgeon at the Saint George County Hospital in Leipzig. In 1949, he was appointed professor at the University of Leipzig, solidifying his standing as a leading German surgeon.

Throughout his career, Heller published over 80 scientific articles, and his surgical technique became the gold standard for the treatment of achalasia. Despite his significant contributions to medicine, Heller did not receive widespread formal recognition or prestigious awards. Nevertheless, his legacy endures through the eponymously named procedure, which continues to be employed by surgeons worldwide. Heller died in Leipzig on November 2, 1964, at the age of 87. Information regarding his personal life, including his burial site, remains unavailable (5).

The Heller myotomy

Heller first described his groundbreaking procedure in 1913 at the age of 36. Inspired by Heyrovsky's published reports of successfully treating two cases of idiopathic esophageal dilatation by surgically creating a subdiaphragmatic esophagogastric fistula, Heller undertook a similar approach in a 49-year-old patient who had suffered from dysphagia since the age of 19, presenting with saccular esophageal dilatation and cardiospasm. The patient's diet consisted primarily of liquefied food, yet he maintained a reasonable nutritional status (6).

The surgical report provides valuable insights into the challenges Heller faced. He recounts that during the operation, owing to "certain difficulties" encountered and subsequent theoretical considerations, he deviated from the initially planned procedure. It is crucial to contextualize this surgery within the limitations of early 20th-century surgical practice. Operating in 1913, without the advantages of modern operating rooms equipped with advanced lighting, specialized operating tables, electrosurgical instruments, and sophisticated anesthesia, undertaking such a pioneering procedure represented a formidable undertaking.

Heller ultimately performed a longitudinal myotomy involving both the longitudinal and circular muscle layers of the esophagus, exposing the submucosa. He described initiating the incision 2 cm proximal to the dilated portion of the esophagus, extending it caudally 8 cm to encompass the cardia and a portion of the gastric fundus. The patient commenced oral feeding on the first postoperative day and soon regained the ability to swallow solid food without difficulty. An eight-year follow-up demonstrated a sustained ability to ingest solid food and maintain good nutritional status. A radiological examination of the esophagus performed prior to the patient being lost to follow-up revealed some degree of stenosis of the cardia. Notably, Heller did not report any postoperative complaints of gastroesophageal reflux (6).

Despite the initial published success, Heller's procedure encountered some resistance within the medical community

before its definitive acceptance as the standard treatment for achalasia of the cardia. Subsequent work by De Bruinen Groeneveldt (7) and Zaaijer (8) demonstrated that anterior myotomy alone was sufficient for achieving successful outcomes. Adoption of the Heller myotomy in the United States and the United Kingdom was delayed by approximately 50 years, primarily due to concerns regarding postoperative gastroesophageal reflux, which was considered a significant limitation (4,7). For this reason, numerous anti-reflux procedures have been developed and associated with the Heller myotomy by various prominent authors, contributing significantly to its refinement; this practice continues to the present day (9,10,11). The Heller myotomy has profound positive implications for patients' lives. By alleviating the symptoms of achalasia, the procedure markedly improves quality of life. Among the most commonly observed benefits are (4,12,13):

- **Reduction in Dysphagia:** Dysphagia, or difficulty swallowing, is a hallmark symptom of achalasia. The Heller myotomy effectively mitigates this difficulty, enabling patients to eat with greater ease and enjoyment.
- **Reduction in Regurgitation:** Regurgitation of undigested food is another frequent manifestation of achalasia. The procedure significantly reduces the incidence of this symptom.
- **Relief of Chest Pain:** Many patients with achalasia experience chest pain. The Heller myotomy can provide substantial relief from this discomfort.
- **Improved Nutritional Status:** By facilitating esophageal transit, the procedure allows for more adequate food intake, preventing weight loss and malnutrition.
- **Enhanced Quality of Life:** The cumulative effect of these benefits results in a substantial improvement in patients' overall quality of life, allowing them to resume normal daily activities and social engagement.

Currently, the Heller myotomy is predominantly performed laparoscopically, and increasingly robotically (14,15,16), achieving comparable outcomes to the open laparotomy approach. Since the advent of peroral endoscopic myotomy (POEM) in 2010, first performed in Japan by Inoue on 17 patients with achalasia of the cardia, this minimally invasive technique has increasingly become the preferred treatment modality (17). In specialized centers with endoscopists proficient in esophageal endoscopic myotomy, the Heller myotomy is now rarely performed for the treatment of achalasia of the cardia.

In Brazil, the Heller myotomy was first employed in 1922 for the treatment of patients with Chagasic megaesophagus (18). Professor Henrique Walter Pinoti, at the Hospital das Clínicas of the University of São Paulo in the 1970s, played a pivotal role in popularizing the Heller myotomy in Brazil, notably by describing his anti-reflux technique as a complement to the myotomy (11).

Ernst Heller was a visionary surgeon whose contributions have left an enduring legacy in the history of medicine. His innovative technique for the treatment of achalasia has transformed the lives of countless patients and remains a cornerstone in the field. Despite his significant impact, details of Heller's personal life and career remain relatively scarce, adding to the intrigue surrounding his figure.

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