



13

# The wisdom of Theodor Billroth: Lessons for today's surgeons



AMERICAN COLLEGE OF SURGEONS

*Inspiring Quality:  
Highest Standards, Better Outcomes*

100+years

AUTHORS

**Sarah J. Armenia, MS<sup>1</sup>**

**Michael P. Lutzko, MD, FACS<sup>2</sup>**

<sup>1</sup>*Rutgers New Jersey Medical School, Newark, NJ*

<sup>2</sup>*Department of Surgery, University of Florida College of Medicine, Jacksonville, FL*

CORRESPONDING AUTHOR

**Sarah J. Armenia, MS**

180 West Market St., Apt. 719

Newark, NJ 07103

347-218-2951

[sjarmenia@gmail.com](mailto:sjarmenia@gmail.com)

Theodor Billroth (1829–1894; Figure), one of the most revered surgeons in the history of the surgery, serves as a model for the modern surgeon. Each year new Fellows of the American College of Surgeons enter a profession rocked with challenges never seen before. They may ask whether they can succeed in an environment of such rapid change and uncertainty. Facing such questions, it may be a helpful exercise to look back to the tests faced by our surgical forefathers for inspiration and guidance. Study of Billroth's life, lived entirely in the 19th century, reveals timeless attributes that have thoroughly 21st century relevance to today's surgeon.



## Challenge convention with transparency

Billroth embraced transparency in communication, today widely recognized as the basis for honesty and trust. He valued honest discourse in medical decision making and the necessity of meticulous documentation. He published his unabridged operative results, including negative outcomes, so that others could benefit from his experiences and to establish baselines for progress<sup>1</sup>. At his inaugural lecture as the head of the Second Surgical Department in Vienna in 1867, Billroth said

*He who cannot quote his therapeutic experiences in numbers is a charlatan; be truthful for clarity's sake, do not hesitate to admit failures as they must show the mode and places of improvement.*<sup>2</sup>

Billroth firmly believed that a school's purpose was not unification and propagation of a uniform school of thought and practice, but serve as a venue of controversy and challenge.<sup>2</sup> Controversy engendered investigation that of necessity created more controversy, a cycle that would never disappear. He said

*The principle, method and the goal of investigations is recognition of truth, even though the truth may be in conflict with our social, ethical and political circumstances.*<sup>2</sup>

New facts that emerge from the most recent research regularly challenge established dogma. Clinicians must be alert to how knowledge shifts in response to new information. In today's environment of electronic media such medical information is readily available. Patients are informed as never before. It is important to respect their knowledge and opinions when coming to any decision regarding their care.

## The power of restraint

Despite his technical gifts Billroth exercised restraint in clinical surgery. He waited years before attempting the operations that would make him famous. His approach was methodical, first establishing an animal model of the condition in the laboratory, then spending time studying the effects of corrective surgery.<sup>3</sup> From more than 61,000 autopsies where he characterized cases of pyloric carcinoma, Billroth carefully noted the cases with metastases and identified those that might have benefitted from resection.<sup>4</sup> He used histology and pathophysiology of disease and tried to correlate the survival benefit of surgery, an approach that was well ahead of the time. While many of his peers were competing to be the first to perform daring procedures, Billroth took care to establish the proper timing and context of surgical intervention.

He was cautious in his career decisions as well. Early in his career he turned down several positions as chair of pathology in several universities, deciding instead to develop his fields of interest and clinical expertise as he waited for the right opportunity in a department of surgery.<sup>3</sup> He published 11

manuscripts on normal and pathological histology as he waited. When Billroth accepted positions at first Zurich then Vienna, the positions were ones that he chose and were appropriate to his reputation. His patience in adhering to his long term goals led to professional success, a paragon for any surgeon first embarking on an academic career.

## The surgeon as a scientist

As important as technical execution is to a surgical operation, Billroth recognized that science is the foundation of surgery. He epitomized the scientific surgeon, the modern attitude that basic science is a necessary component of clinical practice.<sup>5</sup> He boasted that he spent as many hours behind the microscope as at the operating table.<sup>6</sup> He was adamant that a surgical operation required acumen in both pathology and clinical diagnosis. Many scholars attributed his professional success to his command of histology and pathology.<sup>7</sup>

Billroth's reputation as a researcher rests not on the total number of his 156 publications, but the integrity of his work. He emphasized honesty in the use of statistics. He wrote, "Statistics are like women, mirrors of purest virtue and truth, or like whores to use as one pleases,"<sup>8</sup> a blunt metaphor now considered inappropriate but typical for his era. His attitude is relevant in the current era where faculty is under pressure to publish, especially when data fails to undergo appropriate analysis or is falsified entirely.

## Work-life balance outside the operating room

Famed for scientific discovery and technical prowess, Billroth's passion was music. He believed his interest in music was inseparable to his ability as a surgeon.<sup>9</sup> He said, "Science and art are derived from the same source: Fantasy [and] imagination."<sup>10</sup> Part of his daily routine, music appeared to be his source of energy, permeating every aspect of his life, including surgery. The first to perform a laryngectomy in 1873, he undertook the reconstruction of an artificial larynx as a musical challenge.<sup>11</sup>

Billroth's pursuit of activities aside from medicine is an important example for the modern surgeon. Medicine easily can overtake every aspect of a physician's life. Burnout is a widespread phenomenon among doctors. Successful physicians have investments in areas outside of their field. Music served as both an outlet and source of inspiration for the master. In Vienna his day consisted of scientific research and surgery, followed by music in the evening, and finally the completion of scientific manuscripts late at night.<sup>2</sup> "I may have been married to Medicine," Billroth said, "but Music was always my mistress."<sup>6</sup>

## Conclusion

A list of Billroth's achievements reflects creativity, innovation, and technical prowess. Beyond his eponymous procedures reveals habits and ethics that are equally timeless and inspiring. Important parts of his professional success came from outside the operating room. Reminiscent of Shakespeare's famous phrase, "What's past is prologue,"<sup>12</sup> Billroth's accomplishments, but especially the way he approached his life and work, have inspired generations of surgeons and have led to the achievements of today.

## References

- 1 Busman DC. Theodor Billroth 1829-1894. *Acta chir belg.* 2006;106(6):743-752.
- 2 Absolon KB. The surgical school of Theodor Billroth. *Surgery.* 1961;50(4):697-715.
- 3 Kazi RA, Peter RE. Christian Albert Theodor Billroth: Master of surgery. *J Postgrad Med.* 2004;50;82-83.
- 4 Wölfler A. Resection of the cancerous pylorus performed by professor Billroth. *Rev Surg.* 1968;25:381-408.
- 5 Weil PH, Buchberger R. From Billroth to PCV: A century of gastric surgery. *World J Surg.* 1999;23:736-742.
- 6 Kirste H. Theodor Billroth (1829 bis 1894) die ideale Arztpersönlichkeit aus dem 19. Jahrhundert. *Z Allgemeinmed.* 1975;51:1457-1458.
- 7 Absolon KB. Theodor Billroth's formative years (1829-1894), a study in memory of the subject's 150th birthday. *Am J Surg.* 1979;137:394-407.
- 8 Barkan H. Johannes Brahms and Theodor Billroth, letter from a musical friendship. Norman, OK, University of Oklahoma Press, 1954.
- 9 Lewis JM, O'Leary JP. Theodor Billroth: Surgeon and musician. *Am Surg.* 2001;67:605-606.
- 10 Rutledge RH. Theodor Billroth: A century later. *Surgery.* 1995;118:36-43.
- 11 Absolon KB. First laryngectomy for cancer as performed by Theodor Billroth on December 31st, 1873: A hundred anniversary. *Rev Surg.* 1974;31:65-70.
- 12 Shakespeare W. The Tempest, act II, scene i, lines 253-254.

## Legends

Theodor Billroth. Image from National Library of Medicine.