

Dr. Gianluigi Bisleri

From Brescia to Toronto | Advancing Minimally Invasive & Robotic Cardiac Surgery

An international journey

Dr. Gianluigi Bisleri is an Italian-born cardiac surgeon, inventor, clinical investigator and international surgical educator. Originally from Brescia, he trained in medicine and cardiac surgery in Italy, with additional international experience including Columbia University in New York. In 2016, he moved to Canada to join Queen's University in Kingston. In 2021, he joined St. Michael's Hospital in Toronto to establish a dedicated minimally invasive cardiac surgery program that has since expanded into a comprehensive minimally invasive & robotic cardiac surgery service.

He is Director of Minimally Invasive & Robotic Cardiac Surgery and Surgical Director of the Structural Heart Program at St. Michael's Hospital; Joseph Vitale & TLN Media Chair in Minimally Invasive Cardiac Surgery; and Associate Professor of Surgery at the University of Toronto.

Clinical milestones: building a program, 2021–2025

From its inception, the program broadened access to complex heart operations through small incisions and, increasingly, robotic-assisted techniques. Milestones documented in Dr. Bisleri's program presentation include:

- Introduction of minimally invasive mitral valve surgery at St. Michael's; first-in-Toronto minimally invasive mitral program milestone.
- Ontario's first minimally invasive surgical Maze procedure to treat atrial fibrillation.
- Ontario's first minimally invasive mitral repair using the PhysioFlex annuloplasty ring.
- Ontario's first minimally invasive left atrial appendage clip procedure.
- First minimally invasive redo cardiac surgery milestone in the Greater Toronto Area.
- First minimally invasive repair of anomalous pulmonary venous return (RAPVR) in the Greater Toronto Area.
- Introduction of the IntraClude endoaortic balloon system, a first-in-Central/Western Canada program milestone.
- Canada's first use of the Tri-Ad ring and minimally invasive CODA approach for tricuspid valve surgery.
- Development of a hybrid atrial fibrillation ablation program integrating surgical and electrophysiology expertise.
- More than 250 minimally invasive cardiac surgical procedures completed by the end of 2024.
- March 2025: Toronto's first robotic mitral valve repair; subsequent robotic mitral reconstruction using the SimuPlus system.
- 2025: Toronto's first robotic atrial septal defect closure.
- 2025: Ontario's first right anterior thoracotomy aortic valve replacement using the Perceval sutureless valve.
- November 2025: a world-first totally endoscopic robotic repair of cor triatriatum, a rare congenital cardiac anomaly.

Further robotic firsts in 2026

- June 2026: Toronto's first robotic coronary artery bypass procedures, expanding the program into robotic coronary revascularization.

- September 2026: Canada's first robotic hybrid ablation for atrial fibrillation, combining robotic surgery and catheter-based electrophysiology in collaboration with Dr. Paul Angaran and the cardiac arrhythmia team. The achievement received Global News coverage in October 2026.

Together, these developments have extended minimally invasive & robotic cardiac surgery across valve disease, coronary artery disease, congenital abnormalities, and difficult-to-treat arrhythmias. The clinical significance is not the technology alone, but the potential to reduce surgical trauma and accelerate recovery for appropriately selected patients.

Inventor and medical technology entrepreneur

Dr. Bisleri is an inventor or co-inventor on three granted U.S. design patents involving specialized surgical instruments developed in collaboration with Karl Storz. He also co-founded Archetype Biomedical, a Canadian medical technology company developing realistic surgical simulation tools for minimally invasive and robotic cardiac surgery education. His innovation work connects practical clinical problems with instrument design, realistic training, and technology transfer.

Clinical research and scientific contributions

Dr. Bisleri has an extensive international academic record, with more than 200 indexed scientific publications and documents and more than 180 scientific presentations at national and international conferences. His work includes clinical research, reviews, scientific contributions and collaborative investigations; the indexed total is not a verified count of peer-reviewed journal articles alone.

He has served as a principal investigator and collaborating investigator in multiple research studies assessing emerging less-invasive and transcatheter approaches for mitral, tricuspid and aortic valve disease; surgical, robotic and hybrid therapies for atrial fibrillation; stroke prevention; and new imaging, artificial-intelligence and simulation technologies. The goal is to determine which innovations translate into safe, durable improvements in patient care.

Educating surgeons in Canada and internationally

As Associate Professor of Surgery at the University of Toronto, Dr. Bisleri teaches residents and fellows and mentors surgeons adopting advanced minimally invasive & robotic techniques. Internationally, he contributes as invited faculty, speaker and educator at specialist congresses, workshops, advanced courses and surgical simulation activities. This work shares expertise in robotic and minimally invasive valve reconstruction, complex reoperations and hybrid arrhythmia treatment, helping teams beyond Canada develop the skills and infrastructure needed to offer these approaches.

Italian roots, Canadian impact and the IC Savings donation

Dr. Bisleri maintains strong professional and personal ties to Italy. His journey and the personal commitments behind his work have been portrayed in TLN Media's documentary Rhythm of Life: The Dr. Bisleri Journey. On October 28, 2026, IC Savings celebrated a \$100,000 donation supporting minimally invasive & robotic cardiac surgery at St. Michael's Hospital through the hospital foundation. The gift connects the generosity of the Italian-Canadian community to clinical innovation, education, and better access to advanced heart care for Canadian patients.

Vision

His ambition is to build an internationally connected centre in which minimally invasive & robotic cardiac surgery, clinical trials, technological invention and education reinforce one another—so that increasingly sophisticated heart operations can become less invasive, safer and more accessible.

Editorial fact-checking notes

Geographic firsts and early milestones above are drawn from Dr. Bisleri's own program milestone presentation; individual dates for some 2021–2024 achievements should be confirmed against institutional operative records before publication. The “more than 200” figure encompasses indexed scientific documents of differing publication types and should not be paraphrased as “more than 200 peer-reviewed papers” without a filtered publication audit.

Relevant background: Unity Health minimally invasive cardiac surgery program; Global News reporting on the September 2026 robotic hybrid AF treatment; Dr. Bisleri's program presentation “Building a Robotic Cardiac Surgery Program in Canada.”