

# EDITORIAL COMMENT

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## Is cardiac surgery dying?

Cardiac surgery is one of the most recent branches of surgery, about 70 years old since the first standardized open-heart surgeries using the cardiopulmonary bypass machine in 1955. When cardiac surgery started it was glorious, challenging, and interesting, but nowadays it is facing major obstacles in practice and training. In fact, with the new and rapid advances in interventional cardiology and lack of awareness of cardiac surgeons, cardiac surgery is facing a great challenge and their volume of cases is rapidly diminishing.

Interventional cardiology is a well-established subspecialty within any major cardiology department and has evolved into a discipline at the boundaries between clinical cardiology and cardiac surgery. Although the list of less-invasive therapeutic interventions in the history of interventional cardiology is long, the discipline has entered into the spotlight and direct competition with cardiac surgery in September 1977 with the advent of percutaneous coronary intervention. Ever since, the impetus to advance less-invasive rather than open surgical correction of cardiac diseases has become more intense driven by the desire to preserve physical integrity and enhance rapid recovery and restoration of quality of life, features that are intuitively attractive to patients, healthcare providers, and payers.

It should be a relief to all physicians that medicine evolves, practice changes and obsolete specialties die. It is incumbent on us to ensure that this is driven by improvements in patient care. However, for those who believe the cardiac surgeon is a dying breed, this is far from the truth and a mere

myth. Interventional cardiologists have become more skilled and adventurous with the catheter-based technologies, but they are limited to that one approach. Cardiac surgery will expand as it encompasses newer technologies. The next generation cardiac surgeons will be equipped at complex bypass grafting, heart transplant and congestive heart failure treatment modalities, percutaneous mitral valvular repair and be equipped with endoluminal vascular surgical skills. A change from an individual treatment approach is also required in the field of cardiac medicine, with a multidisciplinary team comprising of both the cardiac surgeon and the cardiologist. At the end of the day, it is the patient's interest that should be the centre of focus, eliminating conflicts between areas of expertise and allowing the practice of evidence-based medicine.

Modern cardiovascular disease centres will overcome the classic separation of medical and surgical disciplines by hosting cardiology and cardiac surgery services in common organizational entities to fully exploit the entire range of preventive, diagnostic, and therapeutic options in disease-oriented treatment pathways. The incentive to strive for excellence will result in superspecialization that goes along with innovation and will safeguard the need for highly qualified interventional cardiologists and cardiac surgeons.

Future cardiac centres of excellence may be organized into specialized units for the most common cardiac disease manifestations including coronary artery disease, heart failure, valvular heart disease, arrhythmias, aortic disease, and congenital heart disease. In each unit, specialized experts will

provide high-end skills in state-of-the-art diagnosis, imaging, interventional, and surgical treatment.

Certain pathologies will require exclusive surgical skills performed by dedicated specialists for valve reconstruction, minimal-invasive beating heart coronary surgery, aortic surgery, congenital adult surgery, and specialists for heart transplantation and assist devices. An important prerequisite will be the concentration of cardiovascular care in large tertiary care centres that will provide sufficient volume to ensure excellence in outcomes for high-end cardiac surgery. The latter will require super-regional structures that are supported by healthcare authorities in order to replace competition for patients between smaller units by the common goal to ensure adequate training and education while providing excellence in outcomes.

Nevertheless, surgeons must be alert and prepared. Cardiac surgery tentatively stands on a precipice — its future growth uncertain. It has always been a challenging specialty, driven by strong, pioneering leaders. Failure of leadership has always had obvious, devastating consequences and it is clear that the need for reconfiguration of leadership is now mandatory.

The specialty now has limited ability to respond to changing circumstances because of the historic focus of pioneering surgeons on personal development at the expense of training, and the growing separation of cardiac surgery from the diagnostic process, in contrast to other specialties such as ophthalmology or urology which continue to control the entire value chain.

Current cardiac surgery owes much to the pioneering surgeons of past decades and it would be justified for today's surgeons to claim with pride that they stand on the shoulders of giants. However, in the twenty-first century, a professional culture that relies solely on technical innovation to remain viable is considering only part of the equation for success. Cardiac surgery must subscribe to a new paradigm, the systems paradigm. This does not mean relinquishing the role of leader; organizational systems need leadership, after all. Indeed, we should continue to show the exemplary leadership qualities of the past, but genuine leadership that acknowledges its own limitations and enacts the role within a professional culture that recognizes the value of distributive leadership with other stakeholders. Furthermore, the systems paradigm requires a consideration of the diverse and complex interactions necessary for successful cardiac surgery and their potential for strategic advantage. It is through a process of critical analysis and innovation of the system of cardiac surgery, a process led by cardiac surgeons, that offers at least as much potential for future viability as technological innovation.

The leadership cardiac surgeons demonstrate in key areas will determine whether they maintain a central role in the management of ischemic and degenerative cardiovascular pathology or whether they become practitioners of a revered yet essentially peripheral surgical specialty. More importantly, it will determine whether future patients will have access to

interventions with proven long-term efficacy. To be a 'good surgeon' is an important prerequisite of being an effective clinical leader. It is not however the only prerequisite and good surgeons are not necessarily effective clinical leaders.

It is crucial that cardiac surgeons have a robust scientific background in the technologies that will define the future of cardiac surgery. It is no longer acceptable for cardiac surgeons to do research for the sake of doing research, for career progression or to tick a box on the curriculum vitae. The future of the specialty is dependent on cardiac surgeons looking to the long-term future of the specialty when completing their research and being viewed as credible physicianscientists by potential academic collaborators.

Surgeons of all levels of seniority should be encouraged to engage in research and technology transfer that will have an impact on patient care. This presents two challenges: first, if surgeons are to be encouraged to engage in research they must be incentivized to engage in research that is useful and scientifically robust. Second, for surgeons to be effective academics, academic training must be integrated with surgical training. While this may be challenging, it is imperative both to ensure that individual surgeons are equipped to engage in high-impact research and to ensure that the specialty maintains its strategic importance.

Our specialty needs to evolve to avoid being sidelined. It is our duty to ensure that this does not occur. Future patients must have choice and access to the best long-term interventions. Furthermore, the development of cardiovascular science is enhanced by having a spectrum of biological and clinical perspectives.

The need for innovation and leadership in cardiac surgery is considerable but should not be daunting. If we act now these goals are achievable. In our opinion, cardiac surgery has a tangible and promising future. Pioneering cardiac surgeons neglected team development in order to develop individual excellence. If we focus on leadership structures rather than individual leaders, on incremental evolution from the local to the international level and on developing a culture of innovation and investment, the mistakes of the past can be avoided and the challenges of the future can be addressed.

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