

A career in cardiac anaesthesia in India: The heart of the matter

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ABSTRACT

Cardiac anaesthesia is a demanding, but fulfilling speciality which challenges the skills, knowledge, professional and personal competence of cardiac anaesthesiologists on a daily basis. This article outlines the brief history of the subspecialty of cardiac anaesthesia in India, its growth and progress over the decades, reasons for choosing it as a career option, variations in practice standards and how the speciality has been affected by the coronavirus 2019 pandemic.

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“Non omnia possumus omnes” (“We can’t all do everything”) - Roman poet Virgil (70-19 BC)

INTRODUCTION

Rumination over choosing a speciality as a career option involves many considerations, including the prospects of employment, challenges in the nature of work, work-life balance, equations at work place and last but not the least, the remuneration. The subspecialty of cardiac anaesthesia deals with the care of patients with acquired or congenital cardiovascular diseases undergoing surgical or percutaneous interventional procedures. Cardiac anaesthesia is a demanding, but fulfilling speciality which requires a comprehensive understanding of the structural and functional aspects of the heart as well as a thorough knowledge of the pathophysiology and consequences of extracorporeal circulation.

History of cardiac surgery in India

The history of cardiac surgery in India is relatively young. While the first heart surgeries were

documented in the West in the late 1800s, in India, the first cardiothoracic surgery department was started in the erstwhile Carmichael Medical College (now R.G Kar Medical College) in 1944, though the initial few years were probably spent in performing thoracic surgeries.^[1,2] Subsequently, other centres such as Christian Medical College (CMC), Vellore started performing the initial cardiac surgeries in the country.^[1] Ligation of a patent ductus arteriosus (PDA) was performed on 2nd March, 1950 at CMC, Vellore marking the initiation of cardiac surgery in India.^[1,3] This was followed by the first Pott’s shunt in 1951, Blalock–Taussig shunt in 1953, closed mitral

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commissurotomy in 1953, and repair of coarctation of the aorta in 1956, all of these surgeries being carried out at the CMC, Vellore.^[1,3] Vellore was not alone, however, as developments in cardiac surgery were happening at other places in India. Closed mitral commissurotomy was carried out around the same time in Mumbai at the King Edward Memorial (KEM) Hospital and Seth GS Medical College.^[1] Similarly, cardiac surgery was started in other cities such as Kolkata and Chennai. An important contribution in training a number of cardiac surgeons and cardiac anaesthesiologists was that of the Railway hospital in Perambur, where the cardiac surgery department was established in 1977. However, the initial 3 decades from 1950 to 1980 witnessed a slow growth in cardiac surgery with the bulk of operations being closed mitral commissurotomies, PDA ligation, pericardiectomies, etc.^[1] The first coronary artery bypass graft (CABG) surgery was probably performed in the year 1975, with Mumbai and Chennai being the first cities in India to perform this operation. Although the first MCh program in cardiac surgery started in 1967 at AIIMS New Delhi, it was not until the late 1980s and early 1990s that cardiac surgery witnessed an exponential growth in the country, which coincided with the entry of the corporate sector into this field.^[1]

Growth of cardiac anaesthesia as a speciality

This exponential growth in cardiac surgery towards the late 1980s created a need for dedicated cardiac anaesthesia specialists. Initial training programs were in the form of one-year certificate courses like the one initiated by the Sree Chitra Tirunal Institute of Medical Sciences & Technology (SCTIMST) at Thiruvananthapuram and the Sanjay Gandhi Postgraduate Institute (SGPGI) at Lucknow. The AIIMS New Delhi set up the first department of Cardiac Anaesthesia in 1986 and Doctor of Medicine (DM) in cardiac anaesthesia was started here in 2002.^[1] The National Board of Examinations (NBE) started a 2-year fellowship program (Fellowship of National Board) in 2002, which subsequently transitioned into a 3-year DNB Super speciality program. Presently, there are about 50 DM and 40 Diplomate National Board (DNB) seats in cardiac anaesthesia. The Medical Council of India recognised cardiac anaesthesia as a separate speciality on 24th July, 2009.^[1] It is vital that cardiac anaesthesiology teaching programs are aligned to the aspirations of the trainee, in terms of the duration and intensity of training, which should be in consonance with the career path that he/she wants to chalk out. This would help attract and retain the best of talent in

the field of cardiac anaesthesiology at various levels of competence, to take up a multitude of roles in expanding the scope and reach of the subspecialty.

Other major developments in cardiac anaesthesia took place with the creation of the Indian Association of Cardiovascular and Thoracic Anaesthesiologists (IACTA) in 1997, thanks to a few self-respecting cardiac anaesthesiologists who were piqued at the unfair treatment meted out to them by their surgical colleagues (as candidly declared in the IACTA website; www.iacta.co.in). Today, the IACTA is a robust society with more than 1700 members. Its own society journal, the Annals of Cardiac Anaesthesia which was launched in the year 2002 is one of the few journals exclusive to the field of cardiac anaesthesia. The society also conducts fellowship examinations (FTEE) in transoesophageal echocardiography (TEE). Similarly, fellowship examinations in cardiac anaesthesia i.e., Fellow of Indian association of cardiovascular and thoracic anaesthesiologists (FIACTA) are conducted by the Indian College of Cardiac Anaesthesia (ICCA), an academic body under the aegis of the IACTA. The IACTA also has an online echo library (www.iactaecholibrary.co.in), which is a forum for all members as well as non-members to collaborate, and share their knowledge of TEE.

Developments in cardiothoracic anaesthesia also took place in terms of improved skillsets and competence required to manage the critically ill subset of patients undergoing cardiac or thoracic surgeries. The advent of TEE into the cardiac operating rooms provided a wonderful opportunity for cardiac anaesthesiologists to gain competence and mastery in a field that was previously the domain of cardiologists.^[4] Real-time cardiovascular imaging with TEE allows the cardiac anaesthesiologist to communicate effectively with the surgeon and guide the course of surgery leading to shared decision making and greater involvement. Another development has been in the field of regional anaesthesia that was traditionally considered out-of-bounds for the cardiac anaesthesiologist. Systemic anticoagulation or antiplatelet drugs such as clopidogrel essentially precluded performing a thoracic epidural as the risk of epidural hematoma was considered greater than the benefits of postoperative analgesia therefrom;^[5,6] thus, systemic analgesia with opioids was the main option. However, presently, a variety of chest wall fascial blocks such as paravertebral block,^[7] erector spinae plane block,^[8,9] serratus anterior block,^[10] pectoral nerve block,^[11] and pre-incisional

parasternal intercostal block,^[12] are increasingly being used under ultrasound guidance for postoperative analgesia and have added the much-needed variety to the cardiac anaesthesiologist's practice. Thus, this speciality now offers the wonderful opportunity of being a master in advanced haemodynamic management and at the same time, maintaining dexterity in regional anaesthesia practice.

The lure of cardiac anaesthesia as a career option

Throughout much of the past decade and a half, cardiac anaesthesiology retained its pride of place in being one of the earliest subspecialties to have branched off anaesthesiology. There were many reasons to choose cardiac anaesthesiology. There was a perceived wide gap between the competence of the average MD in anaesthesiology and the skillsets required for anaesthetising patients for cardiac or thoracic surgical procedures. Cardiac anaesthesia in that regard came across as a 'hands-on speciality' with much skill required to be exercised, added to the thrill of being part of bailing a patient out of a high mortality situation on a day-to-day basis. It also was a subspecialty that was better paid, along with a certain 'glamour' added to it. That probably has changed a bit in recent years, with the coming-of-age of several other lucrative subspecialties in anaesthesiology. Coupled with a change of perception of freshly certified anaesthesiologists that has increasingly started valuing work-life balance as an important career objective, some of the original sheen associated with cardiac anaesthesiology has definitely unravelled; given the awareness of it being an extremely demanding branch to practice, and long working hours with 24X7 accessibility. This probably has paralleled the erosion of cardiac surgery as a preferred career destination for young surgical post-graduates due to the growth of interventional cardiology. Truth, however, is that cardiac anaesthesiology, despite being one of the busiest of anaesthesia subspecialties, is still well-balanced, compared to cardiac surgery, where the overall process of gaining substantial competence is a lot more prolonged and arduous. So, one could have a reasonably decent lifestyle as a cardiac anaesthesiologist. To a large extent, this could also be centre-specific; and that's probably true for most countries globally.

Cons of choosing cardiac anaesthesia as a career option

The main disadvantage of choosing this speciality, especially in the corporate sector is that the cardiac

surgery team is often surgeon driven and surgeon dependent and thus, changing jobs, hospitals and cities may often be at the surgeon's discretion. Other disadvantages are long and odd working hours (especially in heart transplant units), lack of visibility in the public, high job stresses and professional liability. Thus, it is no surprise that of the 1700 odd members of the society, the number of female cardiac anaesthesiologists is only around 300. Though this may not represent the true numbers of practising female cardiac anaesthesiologists in the country, the apparent gender disproportion in the society reflects the fact that stresses in this subspeciality are perceived to be higher than other subspecialties. However, this may truly be no different from the standard job stress faced by colleagues in general anaesthesia where situations such as difficult airway, cardiac arrest, life-threatening situations and night calls are routine, in addition to demanding superiors, lack of adequately trained manpower and resources and overbearing surgeons; and this often leads to a feeling of worthlessness and low self-esteem.^[13,14]

Cardiac anaesthesia practice: Different folks, different strokes

India is synonymous with diversity. And diversity is an aspect that permeates standards of care in medical practice as well, all over the country, and for almost all specialities. It is no surprise therefore that there is a considerable difference in the practice of the speciality of cardiac anaesthesia within the country, as well as a lot of it, being at variance with international standards of care. In fact, the expression 'standards of care' itself lacks clarity. One could perceive it as being 'defined by the evidence base, by what clinicians of identical professional stature do, by what groups of clinicians agree upon as the justifiable level of care, or by what expert panels enunciate as best practices'.^[15,16] Thus, there is room for significant variation in practice even within what may be broadly defined as 'standard of care'. Nothing exemplifies it better than a survey carried out by the ICCA that identified significant variations in the practice of TEE amongst a sample of cardiac anaesthesiologists drawn from across the country.^[17] It is conceivable that similar differences in practice patterns exist for many aspects of cardiac anaesthesiology. This, despite the fact that cardiac anaesthesiology is a highly protocol-bound science, and therefore, an ideal case study in medical science to at least 'harmonise procedures if not standardising' those.^[18] Such an approach has been employed by cardiac anaesthesiologists from all over the globe.

Standardising anaesthetic protocols for valvular heart surgery or CABG surgery, two of the biggest contributors to case loads in cardiothoracic operating rooms, performing a standardised perioperative echocardiographic evaluation,^[19,20] management and weaning from cardiopulmonary bypass (CPB), institution of early recovery after cardiac surgery protocols, acute pain management etc., are examples where a 'bundled approach' to care could be established, and yet, has not been. Most cardiothoracic operating units rely on their individual experiences to develop care pathways that may be at variance with others. With the advent of robotic cardiac surgery, the role of the cardiac anaesthesiologist has further evolved with him/her responsible for guiding percutaneous cannulation for CPB with TEE, for lung isolation with double-lumen endobronchial tubes and practice of nerve blocks for postoperative pain management.^[21-23]

The coronavirus disease 2019 (COVID-19) pandemic and cardiac anaesthesia

The COVID-19 pandemic has subjected healthcare systems the world over to unprecedented pressures, and cardiac surgery obviously was no outlier in this regard. Cardiothoracic operating units have had to improvise for delivery of cardiac,^[24] and thoracic anaesthesia,^[25,26] that is safe for the patient as well as the healthcare providers. Risk stratifying measures have had to be deployed, ensuring triage of the most high-priority cardiac surgical patients to operating rooms, and those have been decisions that have been extremely difficult to make for cardiac anaesthesiologists.

However, where the cardiac anaesthesiologist's role has been most gratifying, is as a cardiovascular intensivist, translocating skills honed over tortuous operating hours into critical care locations, to be at the forefront of the provision of mechanical cardiac as well as respiratory support to the sickest of COVID-19 patients.^[27] The role of cardiac anaesthesiologists as intensivists in management of cardiogenic shock, the institution of intraaortic balloon pump (IABP) support and deployment of extracorporeal membrane oxygenation (ECMO) exemplifies what healthcare teams of the future would look like, in tackling pandemics of the scale that we are currently experiencing, where subspecialty categorisations blur, and multidisciplinary cohesion with collaborative interests take over.^[28] At many centres, cardiac anaesthesiologists are primarily responsible for driving the ECMO programmes.

Teamwork: A sum of the individual parts

A good cardiac anaesthesiologist ought to have specific non-technical skills including leadership qualities, as well as being articulate to take the team along. All this, apart from the fact that the cardiac anaesthesiologist has to exude supreme assurance about the skillset that he/she practices. With echocardiography becoming an integral part of the practice over the last decade, upgrading skills in cardiac imaging is now a must for all cardiac anaesthesiologists.

These are exciting times for cardiac sciences. Percutaneous valve interventions have been coming up in a big way. With a population in India increasingly willing to spend more for quality treatment as also a large population with heart failure complications, the use of ventricular assist devices is on the verge of expanding, although, at the moment, price considerations do limit their widespread deployment. The cardiac and lung transplantation numbers look up, what with a conscious policy for organ retrieval being strongly encouraged by the Government. Electrophysiology and arrhythmia management, both surgical and non-surgical, continue to evolve. All these require the cardiac anaesthesiologists to refashion their traditional involvement in operative coronary revascularisation or open valvular heart surgery to play a pivotal role as part of the 'Heart Team'.

This kind of multi-disciplinary collaboration comes at a price. It places immense pressure on the cardiac anaesthesiologist as he/she finds increasingly drawn into the decision-making conundrum, where the success or otherwise of the procedure could be affected by his/her recommendation. Traditionally, this has been an arena the anaesthesiologist has not been very comfortable with. But, in cardiac anaesthesia, there is a certain inevitability to it. And hence, it is absolutely vital that anaesthesiologists working in cardiac sciences, have to acquire new soft skillsets, exude the confidence to deploy those, and take responsibility for the overall outcomes of the team they are working with.

A speciality like no other

The prerogative of caring for the heart, the most vital organ of a living organism, is unequalled by any other. The compassionate commitment that the speciality lays claim to, elevates the cardiac anaesthesiologist to his/her own salvation while guarding the warehouse of all emotions. Therefore, even sans all justifications and appraisals of appropriate career options, cardiac

anaesthesiology would still be the right direction to tread in; an avenue onerous, yet fascinating. In the eventual analysis, it is only the zeal, the intensity of yearning for excellence, which should count for the clinician. As *John Abernethy (1764 – 1831), English Surgeon, St. Bartholomew's Hospital*, proclaimed at the *London Hunterian Oration in 1819*, 'There is no short cut, nor "royal road" to the attainment of medical knowledge'.

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REFERENCES

1. Tempe DK, Malik I. History of cardiac anesthesia in India. *J Cardiothorac Vasc Anesth* 2018;32:2344-55.
2. Ramachandran TR, Ranjan VR. From the pages of history: History of cardiac anaesthesiology. *Chettinad Health City Med J* 2015;4:78-82.
3. Muralidharan S. Department of cardiothoracic surgery. Christian Medical College Hospital. Vellore-63 years and running. *Indian J Thorac Cardiovasc Surg* 2013;29:220-2.
4. Kneeshaw JD. Transoesophageal echocardiography (TOE) in the operating room. *Br J Anaesth* 2006;97:77-84.
5. Horlocker TT, Wedel DJ, Rowlingson JC, Enneking FK, Kopp SL, Benzon HT, *et al.* Regional anesthesia in the patient receiving antithrombotic or thrombolytic therapy: American Society of Regional Anesthesia and Pain Medicine Evidence-based Guidelines (Third Edition). *Reg Anesth Pain Med* 2010;35:64-101.
6. Kowalewski R, Seal D, Tang T, Prusinkiewicz C, Ha D. Neuraxial anesthesia for cardiac surgery: Thoracic epidural and high spinal anesthesia- why is it different? *HSR Proc Intensive Care and Cardiovasc Anesth* 2011;3:25-8.
7. Scarfe AJ, Schuhmann-Hingel S, Duncan JK, Ma N, Atukorale YN, Cameron AL. Continuous paravertebral block for post-cardiothoracic surgery analgesia: A systematic review and meta-analysis. *Eur J Cardiothorac Surg* 2016;50:1010-8.
8. Macaire P, Ho N, Nguyen T, Nguyen B, Vu V, Quach C, *et al.* Ultrasound-guided continuous thoracic erector spinae plane block within an enhanced recovery program is associated with decreased opioid consumption and improved patient postoperative rehabilitation after open cardiac surgery- A patient-matched controlled before-and -after study. *J Cardiothorac Vasc Anesth* 2019;33:1659-67.
9. Krishna SN, Chauhan S, Bhoi D, Kaushal B, Hasija S, Sangdup T, *et al.* Bilateral erector spinae plane block for acute post-surgical pain in adult cardiac surgical patients: A randomized controlled trial. *J Cardiothorac Vasc Anesth* 2019;33:368-75.
10. Kelava M, Alfirevic A, Bustamante S, Hargrave J, Marciniak D. Regional anesthesia in cardiac surgery: An overview of fascial plane chest wall blocks. *Anesth Analg* 2020;131:127-35.
11. Kumar KN, Kalyane RN, Singh NG, Nagaraja PS, Krishna M, Babu B, *et al.* Efficacy of bilateral pectoralis nerve block for ultrafast tracking and postoperative pain management in cardiac surgery. *Ann Card Anaesth* 2018;21:333-8.
12. Padala SRAN, Badhe AS, Parida S, Jha AK. Comparison of preincisional and postincisional parasternal intercostal block on postoperative pain in cardiac surgery. *J Card Surg* 2020;35:1525-30.
13. Larsson J, Rosenqvist U, Holmstöröm I. Enjoying work or burdened by it? How anaesthetists experience and handle difficulties at work: A qualitative study. *Br J Anaesth* 2007;99:493-9.
14. Sanfilippo F, Noto A, Foresta G, Santonocito C, Palumbo GJ, Arcadipane A, *et al.* Incidence and factors associated with burnout in Anaesthesiology: A systematic review. *Biomed Res Int* 2017;2017:8648925. doi: 10.1155/2017/8648925.
15. Annachhatre AS, Janbure N, Gaddam N, Shinde D, Annachhatre S. Anaesthesiologists and job satisfaction in cardiac cath lab: Do we need guidelines? *Ann Card Anaesth* 2020;23:116-21.
16. Parida S, Kundra P, Mohan VK, Mishra SK. Standards of care for procedural sedation: Focus on differing perceptions among societies. *Indian J Anaesth* 2018;62:493-6.
17. Borde DP, George A, Joshi S, Nair S, Koshy T, Gandhe U, *et al.* Variations of transesophageal echocardiography practices in India: A survey by Indian College of Cardiac Anaesthesia. *Ann Card Anaesth* 2016;19:646-52.
18. Chakravarthy M. Quality in cardiac anesthesia: Is there an alternative to its practice? *Ann Card Anaesth* 2015;18:130-2.
19. Muralidhar K, Tempe D, Chakravarthy M, Shastry N, Kapoor PM, Tewari P, *et al.* Practice guidelines for perioperative transesophageal echocardiography: Recommendations of the Indian association of cardiovascular thoracic anaesthesiologists. *Ann Card Anaesth* 2013;16:268-78.
20. Nicoara A, Skubas N, AdN, Finley A, Hahn RT, Mahmood F, *et al.* Guidelines for the use of transesophageal echocardiography to assist with surgical decision-making in the operating room: A surgery-based approach: From the American Society of Echocardiography in Collaboration with the Society of Cardiovascular Anaesthesiologists and the Society of Thoracic Surgeons. *J Am Soc Echocardiogr* 2020;33:692-734.
21. Fitzgerald MM, Bhatt HV, Schuessler ME, Guy TS, Ivascu NS, Evans AS, *et al.* Robotic cardiac surgery Part I: Anesthetic considerations in Totally Endoscopic Robotic Cardiac Surgery (TERCS). *J Cardiothorac Vasc Anesth* 2020;34:267-77.
22. Bhatt HV, Schuessler ME, Torregrossa G, Fitzgerald MM, Evans AS, Narasimhan S, *et al.* Robotic cardiac surgery Part II: Anesthetic considerations for robotic coronary artery bypass grafting. *J Cardiothorac Vasc Anesth* 2020;34:2484-91.
23. Sharma KK, Arora D, Mehta Y, Mishra Y, Wasir H, Trehan N. Perioperative considerations in total endoscopic atrial defect repair with robotic assistance. *Indian Heart J* 2006;58:144-8.
24. Moka E, Paladini A, Rekatsina M, Urits I, Viswanath O, Kaye AD, *et al.* Best practice in cardiac anesthesia during the COVID-19 pandemic: Practical recommendations. *Best Pract Res Clin Anaesthesiol* 2020;34:569-82.
25. Şentürk M, El Tahan MR, Szegedi LL, Marczin N, Karzai W, Shelley B, *et al.* Thoracic anesthesia of patients with suspected or confirmed 2019 Novel Coronavirus infection: Preliminary recommendations for airway management by the European Association of Cardiothoracic Anaesthesiology Thoracic Subspecialty Committee. *J Cardiothorac Vasc Anesth* 2020;34:2315-27.
26. Misra S, Behera BK, Elayat A. Novel closed-loop bronchoscopy barrier sheath: Valuable addition for one-lung ventilation during the Coronavirus Disease 2019 pandemic. *J Cardiothorac Vasc Anesth* 2020; S1053-0770 (20) 30612-1.
27. Shelton KT, Wiener-Kronish JP. Evolving role of anaesthesiology intensivists in cardiothoracic critical care. *Anesthesiology* 2020;133:1120-6.
28. Mehta Y. Is cardiac anaesthesiologist the best person to look after cardiac critical care. *Ann Card Anaesth* 2015;18:4-7.