



Aortic surgery in India: steadily developing over the years

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Aortic surgery had tremendous growth in the early 1950s and 1960s by the platform laid by the likes of Dr. Debakey, Dr. Cooley, and Dr. Crawford. India was not far behind—when the first aortic surgery in India was performed in the late 1950s at KEM Hospital, Bombay. Surgery involving the thoracic aorta and innovative techniques in aortic arch surgery were also described as early as the 1960s and 1970s by Dr. P. K. Sen and Dr. G. B. Parulkar [1, 2]. This later led to an increase in awareness and interest among a few focal centres and surgeons in other parts of India. But later as years progressed, the progression and expansion of aortic surgery in India became stagnant. The interest was again rekindled in the late 1990s and the early 2000s. Several surgeons ventured into aortic surgery, but dissipation of the knowledge was lacking.

Slow progression

There are several factors which could possibly be reasons for the slow progression in aortic surgery in India.

- (i) *Expertise*: There was decreasing interest in the field of cardiac surgery and only a few surgeons chose cardiac surgery as their career. This coupled with the expanding indications for interventional cardiology has posed a challenge over the years to train cardiac surgeons. These became more demanding when we wanted to train young brains for aortic surgery.
- (ii) *Finance*: There are two aspects with regard to finance. The first part is that of the patient, where they had to spend out of their pocket, if they were not covered by insurance. In an Indian scenario, the patients and their kin are not always willing to accept

a higher expenditure for a high-risk surgery. This is more relevant when the patient is elderly. The other aspect is that of remuneration for the surgeon and his team. Many surgeons felt that the remuneration with regard to finance and time for a complex aortic surgery was not as rewarding as a coronary artery bypass grafting procedure. It had to be noted that surgeons choose their super speciality keeping their work-life balance and financial security in mind [3].

- (iii) *Team support*: The “aortic team” is very vital as compared to the other subspecialities in cardiac surgery. It is just not the surgeon, a lot depends upon the assistants, anaesthesiologists, intensivists, staff nurses, and perfusionists. A study from Germany highlighted the importance of team [4]. They gave a scoring system based on the experience of the surgeons and showed that team with lower score raised the risk of postoperative complication.
- (iv) *Long operating hours*: The long operating hours in aortic surgery was not a cup-of-tea in every surgeon’s life. This needed a lot of determination and team effort.

Kindling the interest

In the last one and half decades, there is a growing interest in aortic surgery. In this regard, we took a baby step and organised a biennial International Aortic Summit (IAS) (November 2022—10th Edition). Surgeons from other parts of the country also organised Aortic Conference, to promote education to the younger surgeons. A few of them include LiveSURGE, (Coimbatore), Heart Conclave (Kochi), and Eastern India Aortic Conclave (Durgapur). The organisers of these meetings made all-out efforts to invite renowned international faculties from across the globe to share their knowledge and experience with the Indian surgeons. Earlier, the annual conference of the Indian Association of Cardiovascular and Thoracic Surgeons (IACTS) did not have a dedicated session for aortic surgery. The trend has changed

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in the recent four to five years, where there is a dedicated session of 4 to 8 h for “aorta”.

The impact

The impact of these can be felt with the increase in the number of delegates participating enthusiastically over the years in all these focal meetings. Aortic procedures are also on an increasing trend as evident from the fact that there is 5 to 6% increase in the sale of vascular grafts (personal communication). A simple search in PubMed with the search terminology “Aorta India” will reveal close to 750 manuscripts from 1910 to 2010 as compared to over 1600 articles from 2010 to 2023 [5]. The *Indian Journal of Thoracic and Cardiovascular Surgery*, the official publication of IACTS, has taken out two special issues dedicated to “Aorta” in the last 4 years. The “Cardiology Update”, a textbook published by the Cardiological Society of India, has started to include chapters on aortic surgery in the recent past. With growing interest among youngsters, the All India Institute of Medical Sciences, New Delhi, is running an aortic fellowship program. The IACTS is keen to start an Aortic fellowship and a structured national database for aortic surgery under its banner.

The special issue—frontiers in aortic surgery

This special issue contains a few selected topics which were presented at the 10th IAS, November 2022. The issue begins with the Keynote lecture delivered by Professor Coselli during the 10th IAS. The complete video of the lecture can be accessed using this URL (<https://youtu.be/d91cR1jeEGs>). He dwells on his journey in thoracoabdominal aortic (TAA) surgery describing the yesteryear techniques of core body cooling and the use of the first Dacron graft. He has briefly presented his four-decade experience in TAA repair.

The data from Slisatkorn, Thailand, compared the outcomes of limited resection to that of an extended resection in patients with type A aortic dissection. The reintervention after the frozen elephant trunk with thoracic endovascular aortic repair (TEVAR) in eloquently dealt with by the Bologna team. Nimrat and team analysed the thickness of the aortic wall and have shown that the intimal thickness is one of the key elements in aortopathy and its related complications.

The team from Sri Lanka has provided a comprehensive overview of aortic valve anatomy, while Nimrat and the team have dwelled on the bicuspid aortic valve. Reimplantation of the aortic valve has been performed for over three decades now. Edward Chen in his article has stressed that the

assessment of valve and technical aspects are more important than the Dacron graft used for the reimplantation (straight graft or Valsalva graft). The autologous pericardial reconstruction of the trileaflet aortic valve within the native annulus and root, popularly known as the Ozaki procedure, has been gaining popularity in the last one and half decades. Lansakara and his team have presented a comprehensive review of the procedure with a surgical video.

Acute dissection is a lethal disease even in the present era. The geography, transport, time of presentation, and facilities in the hospital determine the outcome of the patient. Three authors from Japan, Malaysia, and India present their perspectives on aortic dissection in their countries. Reintervention after a procedure is a complex issue, which needs more attention and effort to deal with them. Murali has explained the importance of preventing reintervention through proper selection of patients, timing of treatment timing, and preoperative planning. Carlos Mestres and the team have dealt in detail the subject of reinterventions after graft infection.

The special issue has multiple video articles of surgical procedures including the aortic root enlargement (Bo-Yang), minimal invasive aortic root procedures (Minatoya), and surgery in the infected aortic root (Eusanio). The esteemed authors (George Matalanis, Shiv Choudhary) have presented various techniques for aortic arch surgery through surgical videos. Surgical techniques of TAA repair in various scenarios including dissections after TEVAR has been eloquently presented by the authors.

Conclusion

Aortic surgery has evolved by leaps and bounds in recent years, but there are ample areas of concern where evidence and expertise are still lacking. The enthusiasm of the younger generation for aortic surgery is very encouraging. We wholeheartedly appreciate the efforts and time taken by the authors in contributing to this special issue. Our sincere thanks to the faculties and delegates who attended the 10th IAS, Chennai.

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Data Availability The data that support the findings of this study are openly available in PubMed.

Declarations

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Conflict of interest Nil.

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