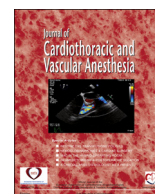




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Special article

History of Cardiac Anesthesia in India

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Before the 19th century, the heart was considered as a “no-go” area, although minor and superficial procedures were performed in the early 1800s. It was only in the later part of the century that surgical repair of the wounds of the cardiac chambers was attempted. Cardiac surgery came to India in the mid-20th century and the operations performed were minor and extracardiac. Initially, the surgeries were performed at a select few centers located at Mumbai, Vellore, Delhi, Chennai, and Kolkata. The anesthesiologists of an earlier era in India worked with limited facilities, and with their interest and devotion contributed immensely to the growth of the specialty of cardiac anesthesia. The progress was somewhat modest until the 1980s, when it started increasing rapidly and India caught up with the Western world by the turn of century. The progress was seen not only in the clinical field, but also in technology, teaching, and academic fields. This article presents an account of the progress in the field of cardiac anesthesia in India, and highlights the contribution of some of the dedicated anesthesiologists because of whom the specialty has reached the present stature.

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The Early Global Period

HISTORY OF CARDIAC anesthesia is relatively recent because surgical foray into the human heart started toward the very end of the 19th century (Table 1). The first heart suture in a human was the repair of a stab wound of the left ventricle performed on September 4, 1895, by Axel Hermansen Cappelen through a left lateral thoracotomy.¹ Likewise, a stab wound of the right ventricle was successfully sutured by Ludwig Rehn of Frankfurt on September 9, 1896. Many consider this to be the beginning of cardiac surgery.² There is no record of the anesthetic used for these surgeries, but it is reported that ether was used in some cases³ and surgeries also were performed without any anesthetic.⁴ The first modern median sternotomy was performed during the same period by Herbert Milton⁵ using chloroform anesthesia.⁶ It is perhaps during this time that the concept of cardiac surgery became accepted and paved the way for future developments in the century that followed.

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The Historic Indian Era

The history of anesthesia in India dates back to the era of Susruta, the great surgeon of ancient India around 600 BC. During this period, surgeries were performed using opium, wine, and Indian hemp (Cannabis).⁷ Much later, in AD 980, Raja (king) Bhoj underwent a cranial surgery under the anesthetic influence of a plant called Sannohini. A drug called Sanjivani was administered to revive the king and help him regain consciousness.⁸ In the modern era of anesthesia, ether was used in India for the first time on March 22, 1847.⁹ Later, chloroform was also used until the early 20th century.

The Early Period of Cardiac Anesthesia, 1950-1970

The discovery as well as the progress of anesthesia has generally followed the progress of surgery. Hence, it is prudent to briefly consider the cardiac surgical developments in India. There are no records to suggest that cardiac surgery was performed in the 19th century or the first half of the 20th century in India, however, a few reports of vascular surgery are available. One of them is a report of ligating an axillary

Table 1
Details of Some of the Important Institutes That Performed Cardiac Surgery in the Early Period

Serial number	Name of Institute	Year Cardiothoracic Surgery Department Established	Beginning of Cardiac Surgery (type of surgery)
1	CMC Vellore	1948	1950 (closed-heart) 1961 (open-heart)
2	AIIMS, New Delhi	1956	1964 (open-heart)
3	BYL Nair Hospital Mumbai	N/A	1961
4	KEM Mumbai	1950	1956
5	PGIMER Chandigarh	1962	1972 (open-heart)
6	Govind Ballabh Pant Hospital (now GIPMER)	1964	1968 (open-heart)
7	SCTIMST	1976	1976 (open-heart)
8	Railway Hospital Perambur	1977	1979 (open-heart)

Abbreviations: AIIMS, All India Institute of Medical Sciences; CMC, Christian Medical College; GIPMER, Govind Ballabh Pant Institute of Postgraduate Medical Education and Research; KEM, King Edward Memorial; N/A, not available; PGIMER, Postgraduate Institute of Medical Education and Research; SCTIMST, Sree Chitra Thirunal Institute of Medical Sciences and Technology.

artery following trauma in 1880.¹⁰ Chloroform or ether might have been used as anesthetic agents as they were the only agents available at that time.

The 1950s was the immediate post-independence era in India and the government's focus was on several other pressing political issues. Therefore, development in the field of health care may have taken a backseat. Despite that, the following developments took place. The first cardiothoracic surgery department was started by Dr. Amar Sen in 1944 at Carmichael Medical College (now RG Kar Medical College) at Kolkata, with Dr. Barat as the anesthesiologist. It is not clear whether cardiac surgery was performed here in the initial period, but a few thoracic procedures were performed. Thereafter, another thoracic surgery department (which became well known in later years) was established by Dr. Reeve Betts (Fig 1) at Christian Medical College (CMC), Vellore, in 1948, and it was there that cardiac surgery was initiated by performing the ligation of a patent ductus arteriosus (PDA) on March 2, 1950.¹¹ Thereafter, the first Pott's shunt was performed on February 27, 1951, a Blalock-Taussig shunt on February 17, 1953, and coarctation repair on November 7, 1956, all at Vellore.¹¹ Drs. Gwenda Lewis, George Varkey, Martin Isaac, and Ruth Mansfield were the anesthesiologists at that time (Fig 2).

In the Western world, after the initial daring attempts in the late 19th century, the next 4 decades witnessed only modest growth in the field of cardiac surgery in the form of closed valvotomy, pericardiectomy, and closed pulmonary embolectomy. The first transauricular approach to the mitral valve and the first intracardiac manipulation by the human hand was performed by Henry Souttar on May 6, 1925.¹² A mixture of absolute alcohol, chloroform, and ether was administered by

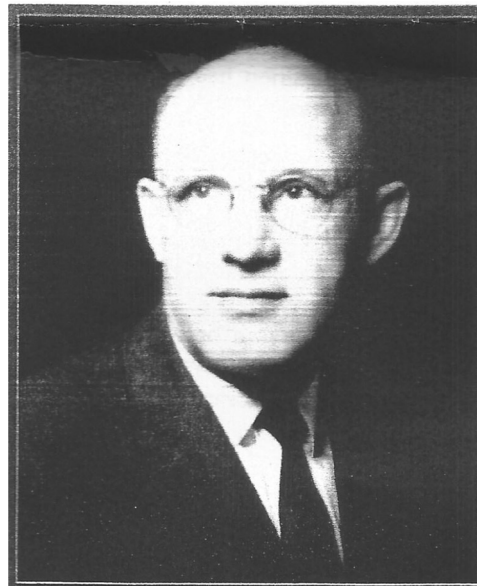


Fig 1. Dr. Reeve Betts.

Eric Lindsay, one of Souttar's surgical colleagues, and the patient breathed spontaneously during the procedure.¹²

On February 19, 1953, in India, the first closed mitral commissurotomy was performed at the CMC, Vellore.¹¹ Around the same time, Mumbai (earlier known as Bombay) also was trying to establish cardiac surgery, and in 1954, a closed mitral commissurotomy was performed at King Edward Memorial (KEM) hospital and GS Medical College. The surgery was performed by a general surgeon Dr. P.K. Sen and the anesthesia was administered by Dr. Ambardekar (Fig 3) and Dr. B.N. Sirkar. Strangely, a wooden tub was used to induce hypothermia. No anesthetic details are available but it is likely that sodium thiopental, suxamethonium, tubocurarine, trichloroethylene or ether, and nitrous oxide may have been used, as these agents were available in India during this time.

Around the same time, developments in cardiac surgery were taking place in different parts of the country. All India Institute of Medical Sciences (AIIMS) was commissioned in 1956. Dr. A.K. Basu and Dr. B.P. Chatterjee started cardiac surgery in Kolkata (earlier Calcutta). Dr. K.M. Cherian at Chennai, and Drs. George Cherian and Stanley John at Vellore



Fig 2. The Vellore team: left to right: Dr. Jairaj (surgeon), Dr. Lalla, Gwenda Lewis (seated), Ruth Mansfield.

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