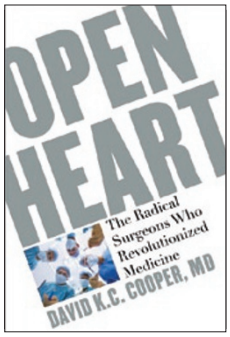
The heart of the matter



Open Heart: The Radical Surgeons Who Revolutionized Medicine

David Cooper

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Reviewed by Roger J Hajjar

The golden age of innovation in cardiac surgery was marked by unprecedented medical risks, a high level of academic competition and the determination of key personalities who dared to test the boundaries of healing the human heart. With the sixtieth anniversary of the first open heart surgery under hypothermia upon us, the book *Open Heart* provides a chronological map of the last 70 years in cardiac surgery, with an emphasis on the field's leading surgeons and their quests to cure diseases that were, at the time, considered incurable.

Through firsthand interviews with the field's pioneers, the story of cardiac surgery is told from an immediate and personal point of view. This adds an intriguing dimension to what would otherwise be a history of medical successes. The writer of *Open Heart*, David Cooper, was a surgical trainee during the time when breakthroughs in cardiac surgery were taking place, and he knew many of the pioneers first hand. Cooper's detailing of the rivalries, risks and dramas that peppered the rise of cardiac surgery allow the reader to be privy to the deeper tumults and personalities that fueled an uncommonly fruitful time in medicine. Although the details make a compelling story in most cases, at times Cooper gets lost in a game of 'he said, she said' and therefore muddles the reader's overall understanding of key achievements.

It is interesting to consider the role of rivalry as a motivator in scientific research, and *Open Heart*, without necessarily intending to, illuminates the crucial role of competition as a catalyst in solving surgical challenges and specific disease states. The back stories the author reveals about the development of surgical correction for certain congenital heart diseases and the initial attempts at relieving mitral stenosis (narrowing of the orifice of the mitral valve of the heart) exemplify how racing to the ticking of a competitor's clock may be frustrating but efficient.

One of the striking features of the story of cardiac surgery is the careful courting that occurred prior to surgery's foray into the heart itself. When modern cardiac surgery began in earnest in the late 1930s, surgeons began addressing problems in the large vessels around the heart and left the primary muscle untouched. Then, when the heart itself was addressed surgically, it was done blindly until the development of the heart-lung machine allowed for the visualization of inner structures. Any medical student or practicing surgeon can imagine the boldness it must have required to operate on the heart muscle for the very first time with what must have felt like a blindfold on. To get to know the personalities and motivations behind the individuals who took those first large steps is one of the pleasures afforded by this book.

One of the characters who begins the story of modern cardiac surgery is Richard Gross, of Boston's Children's Hospital, who performed the first closure of a patent ductus arteriosus in 1938, despite the ardent objection of his chief, William Ladd. While Chief Ladd was away in Europe, Gross went ahead with his surgery and, despite his great success, was dismissed from his post, only to be rehired a few months later. The next milestone took place in 1944, when Gross's rival, Swedish surgeon Clarence Crafoord, performed the first operation on aortic coarctation (a congenital condition whereby the aorta narrows, occurring most commonly just beyond where the arteries to the head and arms take off).

Cooper then concentrates on the Blalock-Taussig procedure for tetralogy of Fallot, a congenital heart disease that is commonly referred to as 'blue baby syndrome'. The very first surgical procedure for this disease involved a one-year-old girl who was being kept stable while Blalock's lead technician, Vivien Thomas, carried out further research in preparation for surgery. The little girl's condition suddenly began to deteriorate, and Blalock, along with a large team of observers and assistants, rushed into surgery. Despite issues with bleeding and anesthesia that threatened the girl's life, Blalock was able to successfully complete the surgery. Notably, the trainees observing this novel procedure became some of the leading pioneers in cardiac surgery.

One cannot help but wonder whether the lack of surgical oversight was directly correlated to the great speed of medical advancement that occurred in the mid-twentieth century. In looking back at the early attempts to correct mitral stenosis in the late 1940s, it seems as though surgeons were allowed to almost experiment while conducting surgery—it is difficult to draw another conclusion when the surgeries on the mitral valve by the rivals Bailey and Harken yielded a mortality rate of 90%. With today's strict institutional review boards, the early surgical breakthroughs in mitral stenosis would probably have been cut short.

One of the most colorful characters described in the book is Walt Lillehei. Cooper paints him as a doctor who took great risk and believed in breaking the rules, both in and out of the operating room. He made cardiac surgery into what it is today: an almost routine procedure. Despite Lillehei's many indiscretions and run-ins with the law, it is hard for the reader not to find his actions endearing.

In closing, Cooper offers us insights into the history of cardiac surgery at a time when we can truly look back and celebrate the story. Glimpsing the people behind the breakthroughs is not only interesting but also instructive. At a time when cardiac surgery is poised for another era of advancement, it is perhaps most wise to consider the lessons of the past before moving on into the future.

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