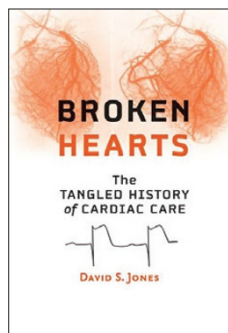


## The heroic era of cardiac care



### Broken Hearts: The Tangled History of Cardiac Care

David S. Jones

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Reviewed by Göran K Hansson

Medical progress often goes through several steps before a disease is controlled. Take peptic ulcers as an example. In the early days, there was little understanding of its etiology or pathogenesis, and therapy consisted of unpalatable diets and prolonged sick leave. In the next phase, ulcers became treatable by surgery that saved lives but created gastrointestinal cripples. This phase was based on an anatomical understanding of the disease but lacked insights into disease mechanisms.

The final phase started when the regulation of hydrochloric acid secretion was unraveled; this led to the development of histamine receptor blockers and proton pump inhibitors that could control the disease. And when *Helicobacter pylori* infection was identified as the cause of peptic ulcers, it was finally possible to completely eradicate the disease. Heroic ulcer surgery disappeared from the therapeutic armamentarium.

Atherosclerotic disease, the cause of myocardial infarction and ischemic stroke, is currently undergoing a similar development. For patients with myocardial infarction, early therapy consisted of rest and drugs that dilated blood vessels. In a second phase, coronary care units permitted surveillance and treatment of arrhythmic complications caused by myocardial ischemia. The epidemic increase in the incidence of myocardial infarction in the post-World War II era prompted development of more advanced therapeutic methods, most importantly coronary artery bypass graft surgery (CABG). As with gastric surgery, this procedure can prevent complications but does not cure the underlying disease.

Cardiology has now advanced to a phase in which preventative measures can be taken. Treatment is focused on two major pathogenic factors, hypercholesterolemia and hypertension, and is combined with lifestyle adjustments and, when needed, prevention of blood clotting (thrombosis). This has helped reduce the incidence of myocardial infarction, ischemic stroke and other feared complications of atherosclerosis in many countries. There is even hope that completely curative therapies may be achieved by attacking inflammatory mechanisms involved in atherosclerosis.

David S. Jones has written a history of the second phase of progress in treating cardiovascular disease, the era of major surgery. It is a fascinating epoch, both because of the magnitude of the medical problem and the egos of some of the people involved. Different approaches to treatment in

different places led to vastly different CABG rates that cannot be explained by medical reasons alone, but perhaps by a combination of reimbursement practices, individual attitudes of physicians, and outright ethnic bias. There were also remarkably different attitudes towards side effects, with the neurological complications of surgery being neglected for too long. Jones's book offers insights into the responses to these problems among clinicians of different specialties.

Unfortunately, Jones's perspective is rather narrow. He focuses on a limited number of surgeons and cardiologists in certain well-known hospitals in the United States. A striking example is his description of technological developments allowing bypass surgery without the use of a heart-lung machine. A suctioning device called the Octopus was particularly important in this process. Jones describes in detail how a Boston surgeon "who had spent most of his college years playing bass guitar" adapted the Octopus for use in his hospital. But more interesting questions concerning who invented the Octopus, what inspired the inventor and how it was originally developed are left without a word. The reason may well be that its inventor Cornelius Borst worked in Utrecht, not in the US.

The most disappointing aspect of "Broken Hearts" is that it provides little insight into disease pathogenesis and prevention. For example, ample space is given to the plaque rupture hypothesis but very little to what causes plaque rupture in the first place.

The most remarkable development in clinical cardiovascular medicine in recent years was the introduction of cholesterol-lowering statins. The cholesterol story is an exciting one, with breakthroughs in basic science leading to pharmaceutical development, convincing clinical trials and new therapy. It is also a controversial one, particularly in primary prevention, where the cost and possible side effects of statins must be weighed carefully against the—often modest—risk of a catastrophic cardiac event.

Jones does not tell us much of this story. The author writes merely that statins were discovered "by a Japanese researcher" without mentioning the researcher's name, Akira Endo. When discussing how statins work, Jones speculates that they might "transform cholesterol into crystals, producing a stiffer lipid core, which is more resistant to rupture." This speculation seems to be based on a misinterpretation of older literature and is at odds with the recent discovery that cholesterol crystals can activate the inflammasome and increase atherosclerosis.

The last chapter of the book is its most interesting. Here, Jones discusses the global epidemic of cardiovascular disease. Although we have seen a reduced incidence in Western Europe and North America, the rate of cardiovascular death and disability is increasing rapidly in other parts of the world. Myocardial infarction, which was called an American disease 60 years ago, today has its highest incidence in Ukraine and its largest number of cases in India. Governments are ill prepared for the new situation. A team of authors cited by Jones found that heart disease "has few of the features that attract international sympathy or support." Such attitudes to cardiovascular prevention have to change globally to control the situation.

It is a pity that these challenges are dealt with only tangentially in Jones's book. However, readers interested in how coronary bypass surgery was introduced in North America will find *Broken Hearts* interesting reading.

#### COMPETING FINANCIAL INTERESTS

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Göran K. Hansson is at the Department of Medicine and Center for Molecular Medicine, Karolinska University Hospital, Karolinska Institute, Stockholm, Sweden.  
e-mail: Goran.Hansson@ki.se