

Evolution of Cardiovascular Surgery. The Brazilian Saga. A History of Work, Pioneering Experience and Success

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The cardiovascular surgery was and has been intensely scrutinized and evaluated. Cardiac surgeons have, in turn, consistently directed the efforts in collecting, analyzing and applying the surgical results in order to improve quality and reassess conducts and procedures¹. In this context, the Brazilian cardiac surgery is one of the most respected in the world, with 116,821 procedures in 2008 according to DATASUS², allowing an renowned institution, such as The Heart Institute (InCor), to have performed more than 71,000 procedures only between 1984 and 2007, as reported by Lisboa et al³, at "Evolution of Cardiovascular Surgery at the Instituto do Coração: Analysis of 71,305 Surgeries", published on page 162.

Few medical specialties have contributed so much to the development of knowledge as the Brazilian cardiac surgery. Thus, in the field of myocardial revascularization surgery, the two contributions that best improved surgical results worldwide were introduced by Brazilian surgeries, i.e., the beating-heart myocardial revascularization technique (known as off-pump myocardial revascularization surgery) and the use of Double Internal Mammary Grafting. The currently used techniques for the surgical treatment of heart failure were developed by Brazilian cardiovascular surgeons.

This abundance is not an accidental feat, but the result of hard work developed during decades by pioneering doctors such as Euryclides Zerbini, Adib Jatene and Hugo Felipozzi, who endeavored to obtain national technology that would allow open-heart surgery, almost simultaneously with the experience carried out in North-American Centers by Gibbon, Kirklin and Lillehei. Only two years after John Gibbon had developed the first extracorporeal circulation (ECC) equipment in the USA, Dr. Felipozzi and his team were able to perform, on October 15, 1955, an open-heart surgery in Brazil using equipment that had been developed in our country, at the Institute of Cardiology Sabbado D'Angelo. In the following year, the first procedure with total ECC was carried out⁴.

Key Words

Cardiovascular surgical procedures/history/trends.

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In 1958, Zerbini, Jatene and team also developed the ECC equipment, using it in surgeries carried out in Hospital das Clínicas. In 1968, Zerbini performed the first heart transplant in Brazil, only one year after Christiaan Barnard.

Decades later, the Brazilian cardiovascular surgery has a solid establishment, with professionals and centers that are respected inside and outside the country, national industries that export equipment such as ECC machines, oxygenators and biological and mechanical valves worldwide, saving us dollars and generating jobs. Considering this picture, it is crucial to constantly take stock of the number of operations, the successes, the shortages, in order to implement more efficient public policies that will shorten the way to universalized health care, the objective of SUS (the Brazilian Public Health System).

Therefore, studies like these are extremely important. This one, in particular, has the merit of taking into account the evolution of the number of cardiovascular surgeries performed at InCor during a 24-year period. The total number is an remarkable one, after all, the mean is of 2,971 procedures/year – or more than 8 procedures a day. It is noteworthy the fact that the number has been increasing. If we take myocardial revascularization as an example, the 856 procedures/year in the 80s have currently increased to 1,106/year. This increase is also seen in valvular operations and the correction of congenital cardiopathies.

A decrease in the mortality rate occurs in these procedures (in myocardial revascularization surgery, the current mean mortality rate is 4.8%; in valvular operations, 8.5% and in the correction of congenital cardiopathies, 5.3%). The mean mortality, which in the start was 7.5%, decreased to 7.0% in recent years, of which 4.9% were elective procedures. Interesting figures, but which, as pointed out by the authors themselves, could be even lower.

Several factors lead to the decrease in mortality, among them, the improvement of the professionals, the development of new drugs and the improvement in the quality of life of the population. The matter has been the object of discussion in several studies and among them the study by Brown et al⁵, which analyzed 108,687 patients submitted to valvular replacement between 1997 and 2006, to conclude that there was a decrease in the morbimortality in spite of the gradual increase in patients' age range⁵. Other studies have addressed the subject, also showing a trend towards improved survival⁶⁻⁹.

In 2007, the study carried out by Antonio Luiz Ribeiro, a cardiologist and Professor at the Federal University of Minas Gerais, Brazil, generated controversy. Containing data from the

years 2000 and 2003, the study showed that 8% of the patients died before being discharged from the hospital. Reference hospitals for cardiovascular surgery in the United States and England, for instance, present a mean mortality rate of 4%.

Mortality rates have been compared among databases from several countries and continents. The mortality outcomes after cardiovascular surgeries carried out in SUS hospitals in Brazil have shown to be higher when compared to the data from databases of the Society for Thoracic Surgeons (STS) in the United States of America. However, it is necessary to consider the fact that the North-American database is voluntary, encompasses the outcomes of reference hospitals that receive patients with better socioeconomic indicators and represents less than 10% of the total surgeries carried out annually in the USA.

Gomes et al¹⁰ emphasized that it would be interesting to make the comparison based on more “comparable” data, such as those from the Public Health System of European

countries, which are divergent. In the United Kingdom, the Cardiac Surgery Registry shows a myocardial revascularization surgery mortality rate of around 3%, whereas in Spain, it increases to 7.3%^{10,11}.

The conclusion of the article remains extremely valid, both at the institutional and national levels. Cardiac surgeries remain on the rise and the patient demand should increase in the following years, with the improved access of the population to the healthcare system and also due to the acceleration of global population aging, with the consequent increase in the incidence of cardiovascular diseases. The healthcare policies created for this area must be necessarily capable of tending to these needs.

Surgical procedures in septuagenarian and octogenarian patients have been increasingly more common. If the InCor data are available, a new study could be carried out, showing the evolution in the number of surgeries per age range throughout the assessed period.

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