

DENTON ARTHUR COOLEY

1920-2016

Denton Arthur Cooley, the greatest and the most famous cardiovascular surgeon in the world and, among other things, also the foreign member of the SASA and the oldest member of the SASA Committee on Cardiovascular Pathology, died in his home in his native Houston aged 96.

He was born August 22, 1920 and died November 18, 2016. He came from a wealthy family: his father was a successful dentist and his maternal grandfather was a physician. He used to say that he had “*a complicated relationship*“ with his father. His father and older brother both died of chronic alcoholism-related effects. He was married to Louise Goldborough Thomas from Baltimore who died only a month before him. They had 5 daughters the youngest of which passed away.

After he finished high school (excellent student, talented athlete, handsome, blond, over 190cm tall), he graduated from the Texas College of Medicine in Galveston and he received his MD degree in 1944. He specialized in surgery at the famous Johns Hopkins School of Medicine in Baltimore where he became the main resident and worked with famous surgeon Dr. Alfred Blalock. He assisted him in 1945 when Blalock made history by performing the first Blalock-Taussig procedure in “Blue Baby“ with tetralogy of Fallot. He spent two years in the US Army Medical Corps as the chief of surgery in the hospital in Linz, Austria and he was discharged with the rank of captain. Then he spent a year in London working at the Brompton Hospital.

In 1951, aged 31, he returns to the USA and works at the Baylor Medical School in Houston with the chief – pioneer of the world cardiovascular surgery Dr. DeBakey (who, at the invitation of our Prof.Dr. Vojislav Stojanovic implanted mechanical aortic valves in a patient in Belgrade and he was the consultant during the treatment of President Tito in Ljubljana).



It is impressive and almost unbelievable that he was practically performing almost all existing cardiosurgical procedures in adult patients and also in children and infants with congenital heart defects on a daily basis, for years, on a huge number of patients.

By 1982 he had performed 1,200 aortocoronary bypass surgeries, numerous implantations of prosthetic cardiac valves, around 10,000 open heart surgeries.

In 1955 DeBakey, Colley and Creech published the paper on aneurysms and aortoiliac occlusive disease: 203 patients were treated by resection and homograft replacement. Cooley personally operated on around 12,000 patients with aortic aneurysms. He is the author of many innovations and devices used in heart surgery and used for heart support while waiting for heart transplant.

He performed the first heart transplantation in the USA in 1968. He implanted the beating heart of a 15-year old girl, whose brain function was ceased after she attempted suicide, into a 47-year old Everett Thomas, who later on got the second transplant and he was able to go home and lived for another seven months. Cooley was both praised and criticized for this because some believed that the cessation of brain function while the heart is still beating is not death and the heart of such patient cannot be harvested for transplantation. In the following year he performed 22 heart transplantations and on one occasion he even completed three in a single five-day period. In 4 cases – he performed simultaneous heart and lung transplantation.

In 1969 he also conducted total artificial heart implantation for the first time in the world. Due to this case he came into conflict with his superior DeBakey. The case was as follows: a patient, Haskell Karp, was dying and Cooley “in the act of despair“, took the total artificial heart from DeBakey's laboratory (he developed this artificial heart with Argentinean doctor Domingo Liotta) and implanted it into the patient. The patient lived 64 hours with this implanted device and then another 32 hours when this device was finally replaced with the donor's heart (he died of pneumonia). The procedure was heroic and humane, but chief DeBakey who was away then, was enraged, because Cooley, apart from the patient's consent, obtained no other required consents. The relationship between DeBakey and Cooley was terminated. Cooley left the Baylor University and the widow of the deceased patient brought a multi-million dollar malpractice suit which was dismissed by the Federal Court.

Cooley was also facing major problems with social and medical community regarding his greatest achievements: (1) The first heart transplantation in the USA in 1968 and (2) the first total artificial heart implantation in the world in 1969!

Cooley and DeBakey finally reconciled after 39 years just before DeBakey's death in 2008 - three months before his 100th birthday.

Due to his exquisite administrative skills, Cooley founded the Texas Heart Institute and its medical journal – the THI Journal. The Institute consisted of St. Luke's Episcopal Hospital and Texas Children's Hospital all within the Baylor Institute in Houston. He managed his associates rather by setting a personal example than by being strict.

By 2001 around 100,000 open heart surgeries were performed at the Texas Heart Institute. Cooley supervised around 30 operations a day, out of which 8-10 the most difficult ones he performed personally.

He is the (co)-author of over 1,400 papers in various journals and 12 books. He was a member of the New York Academy of Sciences and the Texas Academy of Science.

He was fascinated by the heart as *“the only organ in the body that you can really witness its function. Adequate replacement of the failing heart, in his opinion, will be a major challenge for the generations of researchers to come”*.

He used to say *“I find I'm luckier when I work harder because I think work is a privilege.... It keeps you alive, spiritually.”*

He played the bass in a medical orchestra, he liked horseback riding, he played golf, tennis and he competed in basketball. He used to say *“my exposure to competitive sports helped me a great deal in the operating room because it teaches you endurance, and it teaches you how to cope with defeat and with complications of all sort.... and you have to make decisions promptly.”*

He had a great sense of humor. For example, when in 1967 Christiaan Barnard sent him a telegram that he completed the first heart transplantation in the world, Cooley replied: *“Congratulations on your first transplant, Chris. I will be reporting my first hundred soon.”* Likewise, when involved in a defense case in court the lawyer asked him: *“Do you consider yourself the best heart surgeon in the world?”* Cooley replied *“Yes”*. *“Don't you think that's being rather immodest?”* the lawyer asked. *“Perhaps,”* Dr. Cooley responded. *“But remember I'm under oath.”*

He received the René Leriche Prize – the greatest honor awarded by the International Society of Surgeons.

Former US President Ronald Reagan presented him in 1984 with the Presidential Medal of Freedom which is the highest civilian award of the United States; George W. Bush, who lived in Houston, said that *“Denton's pioneering contributions to medicine are, of course, legend”* and Bill Clinton presented him with the National Medal for Technology in 1998.

The relationships between Serbian cardiologists and their institutions with Dr. Cooley were manifold. Our leading heart surgeon, academician Izidor Papo, was Cooley's personal friend. Cooley operated on him in Houston (aortocoronary bypass and aortic aneurysm). During one of his visits to Belgrade at Papo's invitation, the Cooleys luggage did not arrive at the Belgrade airport, so during his entire stay in Belgrade Cooley wore Papo's shirts. Papo regarded Cooley as the best living heart surgeon in the world.

At the proposal of academicians I. Papo, G. Nikolis and V. Kanjuh, the SASA at the Electoral Assembly Meeting held on December 15, 1988 elected Denton Cooley a foreign member of the SASA. It can be evidenced from the proposal that by that time Cooley had already *“published 1,054 professional and research papers in renowned medical journals in the USA and worldwide, 4 textbooks and 23 chapters in medical textbooks”*. Furthermore, the sentence *“all of the above makes Prof. Cooley a person who will last and be remembered in the history of surgery”* – is a prediction that completely came true!



Due to the engagement of the cardiologist, Prof.Dr. P. Seferovic, the SASA corresponding member, who was then specializing in Houston, an extraordinary Agreement for Professional and Scientific Cooperation in Cardiology between Houston and Belgrade was signed in 1991 with significant financial support granted to Belgrade. The Houston delegation also paid a successful return visit to Belgrade. However, the cooperation on the American part had to be suspended due to the sanctions imposed on Serbia.

In 1996 Cooley visited the Institute for Cardiovascular Diseases “Dedinje” in Belgrade at the invitation of the then Director, Prof.Dr. M. Bojic. He made a written statement about the Institute’s highly professional and scientific qualities. On this occasion he performed his two thousandth open heart surgery: he successfully implanted an artificial aortic valve in a 65-year old patient. At the Institute, towards the end of a meeting, Cooley was approached by 18-year-old Nikola Novakovic who underwent heart surgery at the age of 4 which was performed by Dr. Cooley himself. Looking at this healthy young man almost two meters tall, Cooley told him: “*You must be playing basketball for some time now*”.

At the Sixth Session of the University Council in Belgrade held on October 14, 1996 Cooley was presented with the Grand Plaque of the University of Belgrade for his extraordinary merits, and the School of Medicine in Belgrade elected him a visiting professor.

Our best journalist covering the field of medicine and sports D.P. Gregoric interviewed Cooley and here I would like to quote some of Cooley’s thoughts that Gregoric recorded in his book “Doctors Are Also Humans”: “*The moment when the heart is removed from the deceased’s body is fascinating for everybody because that quivering heart in the hands of a surgeon will soon come alive again in somebody else’s chest after being exposed to a brief electroshock*”; “*For me it was fascinating when for the first time in my life I saw someone’s heart beating in another man’s body*”; “*Don’t smoke. Nicotine is poison. There are so many other pleasures that can give you satisfaction, and good health is the greatest happiness of all!*”; “*Older people often overdo jogging because they abuse their bodies by*

trying to make from the body of a sixty-year-old a body fit for their grandchildren. It is impossible.”

Cooley told the writer of these lines in Houston and then repeated it in Belgrade (learning that cardiovascular pathologist V. Kanjuh spent two years as a research associate of the greatest cardiovascular pathologist in the world, American doctor Jesse E. Edwards (1911-2008), who was also a foreign member of the SASA and its Committee on Cardiovascular Pathology) that he *highly appreciates the cooperation with cardiovascular pathologists and that in case of death of any of his patients he thoroughly discusses with them every cause of death and whether such death was the result of any fault on his part.*

With Cooley's passing away, who was “the living legend“, the last representative of the famous group of cardiac surgeons in the world departed (John Kirklin, C. Walton Lillehei, Christiaan Barnard, Rene Favaloro, Michael DeBakey and Norman Shumway), who in the second half of the 20th century with the invention of the cardiopulmonary bypass i.e. “heart-lung“ bypass machine (which enabled circulation of blood to be maintained out of the patient's body and operation on a stopped and dry heart to be performed) were the creators of the modern world cardiosurgery.

Denton A. Cooley, Michael DeBakey (1908-2008), George Reul etc. are the representatives of the “**Houston Cardiologistical School**“ at which our heart surgeons also underwent specialization, namely, Prof. Dragos Nedeljkovic, Prof. Mihajlo Vucinic, Prof. Bosko Djukanovic etc. and cardiologists M. Ostojic, P. Seferovic, V. Hadzi-Tanovic etc.

Clarence Walton Lillehei (1918-1999), “the father of open heart surgery“, cardiovascular pathologist **Jesse E. Edwards (1911-2008)** – (who, by conducting histopathological analysis of pulmonary muscular arteries in congenital heart defects with a left-right shunt, discovered that their severe obstructive fibrosis and the occurrence of the plexiform lesion were crucial contraindications for surgical closure of the shunt from Minneapolis); **John Kirklin (1917-2004)** and associates (who accepted John Gibbon's heart-lung machine and largely developed open heart surgery at the Mayo Clinic) in Rochester were the representatives of the “**Minnesota School of Cardiology**“. In this School the following doctors continued their professional development (with C.W. Lillehei and J.E. Edwards): D.A. Cooley, C. Barnard, N. Shumway, Ivo Popovic – Djani, a heart surgeon at the Clinical Hospital Center “Dr Dragisa Misovic - Dedinje“ and at the Institute of Oncology of Serbia, the MASA academician, and Vladimir Kanjuh, a cardiovascular pathologist, the SASA academician etc.

Christiaan Barnard (1922 – 2001) performed the first heart transplantation in the world in 1967 at the Groote Schuur Hospital in Cape Town, South Africa.

Argentinean **Rene Favaloro (1923-2000)** performed the first aortocoronary bypass with the saphenous vein at the Cleveland Clinic, USA in 1967.

Norman Shumway (1923-2006), Palo Alto, California, Stanford University School of Medicine, a brilliant surgeon, spent many years performing and analyzing heart transplantations in dogs and thus he was thoroughly prepared for heart transplantations in humans. However, he was beaten by C.Barnard who used his surgical technique (Shumway and Lower). After him he performed many successful heart transplantations and he was the first one in the world who in 1980 used cyclosporine – a medicine used in heart transplantation to prevent donor's heart rejection. M. Billingham investigated (non)rejection

of a transplanted heart by analyzing endomyocardial biopsies. In 1981 together with Reitz he performed the first successful simultaneous heart and lung transplantation in the world.

It was a great honor and privilege for the SASA, Serbian heart surgeons, cardiologists and their institutions to have been able to cooperate with Professor Cooley.

Academician Vladimir Kanjuh
Belgrade, SASA, November 28, 2016