



“Dr. David H. Sewell and the History of Cardiac Surgery in Kingsport, Tennessee”

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Cover Page Footnote

To whom it may concern, Our article “Dr. David H. Sewell and the History of Cardiac Surgery in Kingsport, Tennessee” is our own work, we have no financials, and we have Institutional Review Board (IRB) approval. Authors: George M. Testerman MD* William C. Sumner MS 3 Legends: Figure 1: Dr. Richard L. Lower Figure 2: Dr. David H. Sewell Figure 3: Dr. Richard A. Feit

Dr. David H. Sewell and the History of Cardiac Surgery in Kingsport, Tennessee

George M. Testerman, MD, ETSU and William C. Sumner, MS3, ETSU

A perception of lack of adequate medical care in Northeast Tennessee catalyzed the development of East Tennessee State University (ETSU) James H. Quillen College of Medicine in Johnston City, Tennessee. The first medical school class enrolled 24 students (out of 255 applicants) in 1978.¹ Dr. Lester Bryant, a thoracic surgeon recruited from Tulane Medical Center to become the first Chairman of the ETSU Department of Surgery, saw the need for a cardiac surgery program in northeast Tennessee. Patients in the Tri-Cities region of Tennessee (Bristol, Kingsport, and Johnson City) including the area between Knoxville, Tennessee, and Roanoke, Virginia in need of cardiac surgical services often traveled long distances for treatment. With significant support from Congressman James H. Quillen, medical leaders, and community leaders, Dr. Bryant and Kingsport Holston Valley Hospital administrator John Dodson began the process of establishing a cardiac surgery program at Holston Valley Hospital in Kingsport.

HISTORICAL BACKGROUND OF CARDIAC SURGERY

The maturation of cardiac surgery as a new surgical specialty was a clinical development that epitomized the magnificence of post-World War II surgery. The development of the first heart-lung machine and demonstrations of successful clinical use by Dr. John Gibbon in the 1950s and the advancement of cardioplegia in later years by Dr. Gerald Buckberg allowed surgeons to perform coronary anastomoses on an arrested (nonbeating) heart with a relatively bloodless field, thus increasing the safety and accuracy of the coronary bypass.² In 1965, Dr. Norman Shumway at Stanford Medical Center reported on 450 consecutive open heart operations on 437 patients using cardiopulmonary by-pass.³ The in-hospital mortality was 6.4 percent. He concluded that it was possible to correct nearly all intracardiac and serious vascular defects with the use of extracorporeal circulation and with morbidity and mortality rates low enough so that every person with a cardiovascular defect could be seriously considered for surgical correction. Dr. Michael E. DeBakey performed the first successful coronary artery bypass grafting in 1964 in Houston, Texas. Surgery on the aortic valve under direct vision also followed the development of cardiopulmonary bypass. Dr. Harken, in Boston, in 1960, and Dr. Starr, in Portland, Oregon, in 1963 reported the replacement of the aortic valve with a prosthesis. In 1974 Dr. Carpentier, in Paris, reported superior longevity of the gluteraldehyde-preserved porcine valve; thereafter, their usage was well established.

INFLUENCE OF DR. RICHARD LOWER AND DR. NORMAN SHUMWAY

Dr. Richard L. Lower (Fig.1) and Dr. Norman Shumway developed many of the techniques required to conduct successful heart transplantation, including the use of hypothermia and the orthotopic technique, which became the standard technique for cardiac transplantation.^{4,5} Dr. Lower and Dr. Shumway conducted their research (using dogs, initially) at Stanford. Dr. Lower left Stanford to head the cardiac program at the Medical College of Virginia (MCV) in Richmond and competed with Dr. Shumway and Dr. Christiaan Barnard to conduct the first successful human heart transplant. While the Americans (Lower and Shumway) made preparations to conduct the first successful transplant, they were delayed due to disagreements over the differences between cardiac death versus brain death. Dr. Lower and Dr. David Sewell (then a cardiac fellow working under Lower) were sued for wrongful death of a brain-dead donor in Virginia in 1968, though they were later exonerated by courts in 1972. This legal precedent set the stage for the development of criteria for brain death determination and greatly advanced the field of organ transplantation.⁶ While a solution was being found to these questions in the United States, Dr. Barnard (who used Shumway and Lower's research) conducted the first successful (i.e. not resulting in immediate death) human heart transplant in South Africa on December 3, 1967. Dr.

Shumway performed his first human heart transplantation on January 6, 1968. In May of that same year, Drs. Lower and Sewell performed the first successful human heart transplantation in Virginia. Dr. Richard Lower, assisted by future Kingsport cardiac surgeons Dr. David Sewell (Fig.2), Dr. Richard Feit (Fig. 3) and others, performed over 250 canine heart transplants, and over 800 in humans at MCV. Dr. Lower subsequently developed the procedure of sending surgeons to remote donor facilities, thus negating the previous requirement of transporting a donor's intact body to the same hospital as the recipient. He also pioneered the use of Cyclosporine to prevent transplant rejection and developed a biopsy technique to monitor rejection. Dr. Lower retired in 1989 to Montana, where he raised cattle, though he also volunteered at a Richmond, Virginia medical practice benefitting the poor. He died in 2008 of pancreatic cancer.⁷

DR. SEWELL DEVELOPS A CARDIOVASCULAR SURGICAL CENTER IN KINGSPORT

ETSU College of Medicine and Dr. Lester Bryant recruited Dr. David Sewell (Fig. 2) to develop a cardiac surgery program in Kingsport in 1978. Dr. Sewell graduated from Tulane Medical School, completed surgical and cardiovascular fellowship training at MCV under Dr. Richard Lower, and practiced as an associate cardiac surgeon with Dr. R.J. Cleveland at Tufts New England Medical Center for six years before moving to Tennessee. Dr. Sewell's academic cardiac surgical contributions included investigations into the development of the aortic balloon pump, homograft cardiac valve replacement, and the performance of concomitant cardiac endarterectomy and cardiac surgical procedures.^{8, 9, 10}

Dr. Sewell envisioned developing a world-class cardiovascular center at Holston Valley Hospital (later named Wellmont Holston Valley Medical Center) in Kingsport. He was appointed Professor of Cardiothoracic Surgery in the ETSU Department of Surgery and organized a clinical teaching rotation in cardiothoracic surgery for surgical residents and medical students. He recruited certified cardiac perfusionist Jerry Houchens from the University of Virginia Medical Center to run the heart-lung machine. ETSU College of Medicine appointed Agop Aintablian as the director of the new cardiac catheterization laboratory at Holston Valley Hospital, who was later joined by Kingsport cardiologists Dr. Larry Cox, Dr. Harry Turner, and Dr. Harold Allison. Aurora Arciaga Hensley RN was named director of the cardiac surgical care unit. Holston Valley Hospital medical staff consultants from the Departments of Internal Medicine, Cardiology, Pulmonology, Nephrology, and Blood Bank collaborated with Dr. Sewell's cardiac surgical team.

Dr. Sewell and his associates embraced cutting-edge technology in the 1980s and 1990s: the advent of devices that could atraumatically stabilize the heart provided another pathway for the development of off-pump techniques of myocardial revascularization. Today, an armamentarium of techniques, ranging from conventional on-pump CABG (coronary artery bypass graft) to minimally invasive robotic and percutaneous approaches, is available to manage coronary artery disease.

By 1981, bileaflet mechanical valves were widely implanted in the aortic and mitral positions and largely supplanted the use of ball cage mechanical valves. In the mid-1990s, bovine pericardial valves and both types of bioprostheses became widely implanted. By 2004, most valves implanted in the United States were tissue valves. In 2002, transcatheter aortic valve replacement was performed by Cribier in Rouen, France. Advanced technologies in minimally invasive techniques of valvular repair and replacement, myocardial revascularization, aortic and carotid stenting, and electrophysiologic ablation are performed by cardiovascular specialists in Kingsport who are nationally recognized for quality outcomes.

Dr. Sewell performed over 250 cardiac surgical cases in 1979, including coronary artery bypasses, valve replacements, and pediatric cardiac cases and saw continuous growth of his practice over the next two years. Dr. Richard A. Feit, who also trained under Dr. Richard Lower at MCV, was recruited to Kingsport and joined Dr. Sewell in 1982. In 1985, Dr. Richard Michalik, who trained in

pediatric cardiac surgery at Emory University Medical Center, joined Dr. Sewell and Dr. Feit and enhanced the scope of pediatric cardiac surgical services.

Cardiac surgical units were subsequently developed in Bristol and Johnson City, Tennessee. Dr. Sewell and Dr. Michalek retired from clinical practice and lived in Kingsport. Dr. Feit joined the teaching faculty of ETSU College of Medicine in Johnson City.

The establishment of cardiac surgery in Kingsport, Tennessee in the 1970s owes much to the determined efforts of Dr. David H. Sewell. ETSU College of Medicine grew rapidly during this period. Northeast Tennessee and Southwest Virginia residents are now well served by the development of excellent cardiovascular surgical services in Kingsport, Bristol, and Johnson City, Tennessee.

REFERENCES

1. Williams FB. Tennessee Encyclopedia of History and Culture, Quillen College of Medicine, Tennessee Historical Society, Nashville, Tennessee, 1998, 760.
2. Sabiston Textbook of Surgery, 19th Edition, Saunders, Philadelphia, 2008, 15-17.
3. Pillsbury RC, Lower RR, Hurley EJ et al. Four Hundred and Fifty Consecutive Open Heart Operations. *Calif Med* 1965 Mar; 102:181-4.
4. McRae D, *Every Second Counts: The Race to Transplant the First Human Heart*, Putnam, New York, 2007.
5. Lower RR, Kontos HA, Kosek JC et al. Experiences in heart transplantation. Technic, physiology and rejection. *Am J Cardiol* 1968 Dec; 22(6):766-71.
6. Veith FJ, Fein JM, Tendler MD, et al. Brain Death.1. A status report of medical and ethical considerations. *JAMA* 1977 Oct 10; 238 (15):1651-5.
7. Pincock, S. Richard Rowland Lower, *Lancet* 2008 Aug; 371(9640):712.
8. Payne DD, Sewell DH, Amato JJ et al. Transverse femoral arteriotomy for intraaortic balloon insertion. *Ann Thorac Surg* 1978 Sep; 26(3):263.
9. Kosek JC, Sewell DH, Lower RR et al. Histopathology of orthotopic canine cardiac homografts and its clinical correlation. *Transplant Proc* 1969 Mar; 1(1):311-5.
10. Kougias P, Kappa JR, Sewell DH, Feit RA, et al. Simultaneous carotid endarterectomy and coronary artery bypass grafting: results in specific patient groups. *Ann Vasc Surg* 2007 Jul; 21(4):408-14.

Figure 1: Dr. Richard L. Lower

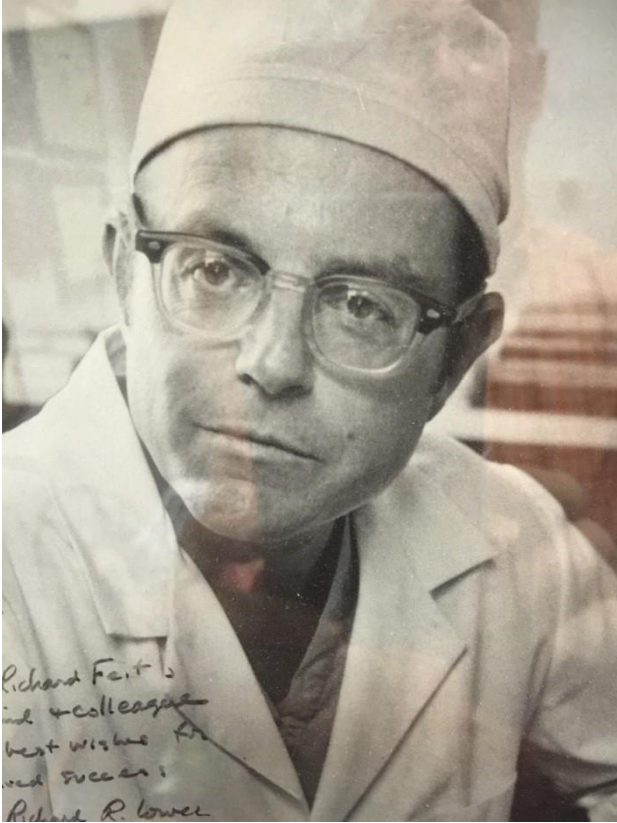


Figure 2: Dr. David H. Sewell



Figure 3: Dr. Richard A. Feit

