One Hundred Years of History at Stanford University: Thoracic and Cardiovascular Surgery

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The history of thoracic and cardiovascular surgery at Stanford spans a century long period, beginning not long after the founding of Stanford University. Pioneering Stanford surgeons have made landmark discoveries and innovations in pulmonary, transplantation, thoracic aortic, mechanical circulatory support, minimally invasive, valvular, and congenital heart surgery. Fundamental research formed the foundation underlying these and many other advances. Educating and training the subsequent leaders of cardiothoracic surgery has throughout this century-long history constituted a mission of the highest merit.

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New Stanford Adult Hospital

Central Message

Stanford: Upon a foundation of rigorous scientific investigation and dedicated teaching, Stanford thoracic and cardiovascular surgeons pioneered discoveries and innovations in pulmonary, transplantation, aortic, minimally invasive, and congenital heart surgery.

PRE-STANFORD UNIVERSITY

Lineage tracing of the history of Stanford Cardiothoracic Surgery could be extended back to 1857, even before the founding of Stanford University. Elias Samuel Cooper, a San Francisco surgeon, authored "Report of an Operation to Remove a Foreign Body from Beneath the Heart" published by the San Francisco Medico Chirurgical Association. The following year in 1858, Cooper founded the first medical school in the western United States, named after himself, which then underwent a variety of name changes, moves, expansions, a "spin-off" that would later become University of California, San Francisco, and a reorganization to eventually become the Stanford School of Medicine.[1]

EARLY STANFORD SCHOOL OF MEDICINE AND LEO ELOESSER

Stanford University was founded in 1891, and in 1908, acquired Cooper Medical College. By 1914, Stanford had reorganized this college into 10 divisions, including surgery, and renamed it the Stanford School of Medicine. Affiliations to a variety of hospitals in San Francisco existed over the subsequent 45 years (Fig. 1). Leo Eloesser, born in San Francisco in 1881, educated at the University of California and University of Heidelberg, trained in Europe and in San Francisco, joined the Stanford Faculty in 1914 and led the Stanford surgical service at the San Francisco General Hospital[2] (Fig. 2). Although he practiced a broad spectrum of surgery, much of his clinical and experimental work and scholarly publications were in the arena of chest surgery. He became renowned for innovative therapies for empyema.[3] Eloesser served as the 19th President of the American Association for Thoracic Surgery (AATS) and as Editor-in-Chief of the Journal of Thoracic Surgery, predecessor of the Journal of Thoracic and Cardiovascular Surgery. He was highly regarded for his teaching and became a world traveler, working in China from 1945-1949.[4] It is of particular importance to note that even 100 years ago, Stanford was acclaimed for its teaching of trainees.

EMILE HOLMAN AND FRANK GERBODE

In many respects, the rise of cardiovascular surgery at Stanford paralleled, with minimal lag, the developments eastward, of Gross (PDA Ligation), Crafoord (Coarctation Repair), Blalock (Blalock-Taussig Shunt), Bailey and Harken (Closed Mitral Commisurotomy or Valvuloplasty), and others. Emile Holman, educated at Stanford and Johns Hopkins and trained by Halsted and later Cushing, served as the head of surgery at Stanford from 1926-1955 and performed many of the extracardiac and closed heart procedures. Holman served as the 33rd AATS President.[5] He was also instrumental in facilitating the career development of Frank L.A. Gerbode. Born in 1907 in Placerville CA, Gerbode was educated at Stanford and trained in Europe and at Stanford. He had a close association with pathologist Max Borst and family in Germany and was instrumental in Hans Borst's brief training at Stanford

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Figure 1. Stanford Medical School circa 1914. Courtesy of Stanford Medical History Center.

(Fig. 3). As topical hypothermia, cross-circulation, and cardiopulmonary bypass, with bubble and disc oxygenators ushered in the era of direct intracardiac surgery, Gerbode was intricately involved clinically, performing the first open heart operation on the West Coast in 1954 and experimentally, in the research laboratory refining the membrane oxygenator.[6,7] Active in many fields within cardiac surgery, his name is associated with the defect of a left ventricular to right atrial fistula.[8] Gerbode served as the 53rd AATS President.[9]

Figure 2. Leo Eloesser. Courtesy of Stanford Medical History Center.

Figure 3. Frank Gerbode. Adapted with permission from Bull.[9]

NORMAN SHUMWAY AND STANFORD CARDIOPULMONARY TRANSPLANTATION

Among these myriad connections with other cardiac surgery programs, the intersection with the University of Minnesota and C. Walton Lillehei would become the most important to Stanford's future—from here came Norman Shumway.

Norman Edward Shumway was born in Kalamazoo Michigan on February 9, 1923. He was known for his oratory skill and led his high school debate team. He completed a year of pre-law studies at the University of Michigan and was drafted into the Army in 1943. After basic training, he completed 6 months of engineering training followed by premedicine training. He then attended Vanderbilt University School of Medicine and graduated in 1949. Shumway served 2 years as a flight surgeon in the U. S. Air Force. He joined Owen Wangensteen's Department of Surgery at the University of Minnesota as a resident and was drawn to the work of F. John Lewis (Total Body Hypothermia) and C. Walton Lillehei (Cross Circulation). Shumway participated in Lillihei's original open heart surgeries in 1954 utilizing cross-circulation to repair more complex congenital defects. Shumway's research studies of hypothermia resulted in a PhD during training.[10]

Upon completing his training in 1957, Shumway joined an established surgeon in private practice in Santa Barbara, CA. It was an unhappy partnership, and in a few months, he was searching for a university position. When an interview with the Chairman at the University of California, San Francisco, did not go well, he decided to accept a position