One of the Best of a Rare Breed

Melvin Paul Judkins
A Pioneer in Coronary Angiography

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An Exhibit of the OHSU Historical Collections & Archives

For more information about the exhibit and related materials, contact Sara Piasecki, History of Medicine Librarian, 503 418-2287; piasecki@ohsu.edu or Karen Peterson, Archivist, 503 494-3239; peterska@ohsu.edu.

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Melvin Paul Judkins was born May 3, 1922. He grew up in a sparsely populated area near Los Angeles raising chickens, goats and cows. He showed an early affinity for all things mechanical and electrical, building crystal sets, learning Morse code and earning a first class radio operators license. His college aptitude scores were high in engineering and medicine. To pay for his own education at two private church academies, he delivered papers, worked in construction and drove a truck. Later, during WWII, he worked in the Kaiser Shipyards in Long Beach, CA, wiring Liberty ships. His premedical education was at Loma Linda University College of Arts and Sciences in Riverside, CA, where he received a BS in 1945.

He chose a career in medicine and enrolled in an accelerated premedical program at La Sierra College, working as a laboratory assistant to cover school expenses. He was later accepted into an accelerated program at the College of Medical Evangelists. While attending school, he continued to work in the shipyards during school vacations. Like many other medical students at this time, he was eventually inducted into the Army.

Dr. Judkins married Loma Linda student nurse Eileen Cobb (1946). A one-year internship at Loma Linda Hospital (1946-1947) was followed by special training in urology and an appointment to the staff. He graduated from Loma Linda University School of Medicine in 1947.

After a war-time appointment to the Urology Section of the 28th General Hospital in Osaka, Japan, he and Eileen moved to Sumas, WA, a rural town near the Canadian border, where he started a family practice. Eileen was physician's assistant, laboratory and x-ray technician, receptionist and bookkeeper. Their first patient was a dog, treated at no charge. When the antiquated examining table jackknifed and collapsed onto a patient, new equipment got top priority. It wasn’t long before Dr. Judkins had full surgical and obstetric privileges at three area hospitals. The twenty-four hour demands of a solo practice caused both to reevaluate their plans to continue in Sumas. Eventually they returned to California to begin a new family practice in Antioch, CA.

In the late 1950’s, at nearly 40 years of age, Dr. Judkins decided to make a career change as burnout threatened. Though he had established a family practice with a support staff of four nurses, a laboratory and an x-ray technologist, a physical therapist, a receptionist and a bookkeeper, the patient volume continued to grow. With the encouragement of a former family practitioner turned radiologist, Melvin decided to search for a residency program that would accept someone of his age.

After being turned down by the Mayo Clinic, he chose to come to Portland to attend the University of Oregon Medical School as a resident in radiology under

Dr. Judkins was a member of numerous professional organizations, including the American College of Radiology, Inland Radiological Society of North America, American Roentgen Ray Society, the North American Society for Cardiac Radiology, American College of Cardiology, Council on Cardiovascular Radiology, the Society for Cardiac Angiography and the Society of Thoracic Radiology. Besides his many memberships, he was an officer in several national organizations and served on many national committees, he was a member of honor societies and a recipient of numerous awards. Dr. Judkins was a prolific writer and published over 160 articles, monographs, book chapters and major scientific exhibits.

Dr. Judkins died January 28, 1985. Until his death in 1985, he was recognized internationally as an authority on radiologic equipment and on the diagnosis of coronary artery disease.

Sincere gratitude to Eileen Judkins for “Master Angiographer: Melvin P. Judkins”, and Michael Cowely, MD, FSCAI, Medical College of Virginia, for “Tribute to a Legend in Invasive/Interventional Cardiology: Melvin P. Judkins”. 

Dr. Melvin Paul Judkins
P.E. Billimoria, MD and Dr. Charles Dotter, who was already a well known angiographer and innovator of vascular techniques and tools. That year, Dr. Judkins collaborated with Dr. Dotter in the development and introduction of percutaneous transluminal dilatation of narrowed peripheral arteries, subsequently published in a milestone article. Originally scorned by colleagues in the U.S., the technique was the forerunner of today’s transluminal angioplasty techniques.

At this time, coronary arteriography was not being done at UOMS. Dr. Judkins went to the Cleveland Clinic to learn the Sones brachial artery cut-down approach. He returned to UOMS and began to use this procedure of introducing the catheter via a surgical opening of the brachial artery in the arm. This technique required surgery and general anesthesia. Dr. Judkins began to develop a technique that would require neither, and would reduce radiation exposure for technician, physician and patient alike.

In 1965, Dr. Judkins received a National Institutes of Health grant to study at the University of Lund in Sweden, then known as the premier center of selective radiology. Preformed commercial catheters had not yet become available. Catheters were formed at the time of examination from tubing in various diameters. Utilizing preprocedure radiographs to select a suitable size, length and configuration, the stainless steel wire was inserted in the tubing, bent to conform to the anatomy of the patient and then heated. When the assembly cooled, the wire was

In 1968, Cordis Corporation of Miami began fabricating preshaped Judkins coronary catheters and a Portland company began making sets of his shaping wires.

Besides his coronary and pigtail catheters he envisioned catheters with exaggerated curvatures that would consistently enter a target vessel when introduced and manipulated via a transfemoral approach. He created unique catheters for selective femoral cerebral arteriography, small branch visceral catheterization, internal mammary and coronary bypass graft arteriography, and left atrial catheterization, which are now commercially available.

“Although a properly shaped catheter was the key to success, he always emphasized that his technique was not confined to the use of his catheters,” Mrs. Judkins explains. “The Judkins technique embraced a combination of professional skill in transfemoral access and manipulation of unique preshaped catheters, proper patient position for filming, and high-quality radiographic hardware to produce and record optimum information while protecting patient and laboratory team from unnecessary radiation exposure.”

Dr. Judkins suffered a stroke in 1978. Accepting his limitations gracefully, he and Mrs. Judkins worked as a team to author several scientific publications and continue other nonclinical professional activities. Dr. Judkins died in 1985, ending their partnership of 39 years.

“He charted a course followed by radiologists and cardiologists, a tacit tribute to his preeminence in both fields,” Mrs. Judkins writes. “He never sought to patent nor did he ever receive any monetary rewards for any of the cardiovascular tools or devices he developed. When asked once why he did not patent his devices, he replied that he wanted to make safe coronary arteriography available to as many patients as possible. The fact that most catheterization laboratories in the world use the Judkins technique for selective coronary arteriography is evidence that his desire is accomplished.
withdrawn, and the catheter retained its form. A guide wire was introduced into the catheter, which straightened the catheter for percutaneous insertion. It was at Lund that he collaborated in the development and introduction of the “hooktail” (U-shaped) catheter for percutaneous selective cardiography.

Dr. Judkins returned to Portland in 1966, after a new laboratory had been created with the installation of the first commercially manufactured imaging equipment specifically designed for angiography. Melvin was appointed Director of Cardiovascular Radiology for the UOMS Hospitals and Clinics as well as Professor of Radiology in the Medical School. He held both positions until 1970, when he returned to Loma Linda. While at UOMS, he introduced the Judkins Technique of selective percutaneous transfemoral coronary arteriography, a technique which has been used worldwide. He and his colleagues developed safety and safety-J guidewires and pioneered the application of a thin Teflon coating to the guide-springs. Designed with a flexible and broadly rounded leading end, the safety-J guide-spring has a small, strong internal safety wire that prevents loss of the guide tip if breakage should occur. Teflon coating prevents catheter cling, increases maneuverability and minimizes thrombogenicity.

Oregon cardiac surgeon Albert Starr had begun to request that all valve replacement patients over 50 years of age receive routine preoperative coronary arteriography. Dr. Judkins took the challenge to develop a method of consistent selective coronary catheterization, inserting a 100 cm catheter into a coronary artery from a femoral artery, finding that conventionally shaped catheter curvature did not work for coronary vessels.

Dr. Judkins obtained a plastinated human heart and would spend hours molding his own guide wires, with a roll of wire, a wire-cutter, and pliers, using various pipes and faucets at the scrub sink. “He would scrutinize the shape, place the wire over a chest radiograph on the view box, contemplate, and make changes.” If a shape seemed workable, he would thread a catheter over the shaping wire, immerse it in boiling water to set the shape, and experiment on the heart specimen.

Soon Dr. Judkins was using his new catheters on patients, creating preshaped catheters customized to each patient’s anatomy. His ability to conceptualize the anatomical relationship of the aorta and the coronary ostia coupled with his knowledge about catheter materials and mechanics, and his proficiency in manipulation of the Teflon-coated safety-J wires, lead to the development of the Judkins Percutaneous Transfemoral Technique for Selective Coronary Arteriography. Details of his new technique and the outstanding radiographic images it produced were published in Radiology in 1967. In 1968, commercially manufactured preshaped Judkins coronary catheters and shaping wire sets became available.

Radiologists and cardiologists were astonished by the Judkins technique. UOMS was the site of exhibits and demonstrations. He assembled a trained angiography team dedicated to gaining the maximum amount of diagnostic information with a minimum risk to patients and minimum radiation exposure to the team.