

Nina Starr Braunwald: Some Reflections on the First Woman Heart Surgeon

Eugene Braunwald, MD

Department of Medicine, Harvard Medical School, and the Partners HealthCare System, Boston, Massachusetts

Nina Starr Braunwald was born in New York City in 1928 and died in Weston, MA, in 1992. She received both her baccalaureate and MD degrees from New York University. From 1952 to 1955 she was among the very first women to train in general surgery at New York's Bellevue Hospital. She completed her training in general surgery at Georgetown University Hospital and then joined the staff of the National Heart Institute. In 1965 she was named Deputy Chief of the Clinic of Surgery at the Institute. In 1968 she joined the Department of Surgery at the new University of California, San Diego School of Medicine (UCSD), where she established the program in cardiovascular surgery. In 1972 Nina Braunwald joined the faculty at Harvard Medical School and held appointments in the Cardiothoracic Surgical Divisions of the Brigham and Women's Hospital, Children's Hospital, and the West Roxbury Veterans Administration Hospital (Fig 1).

Doctor Braunwald's major research interest focused on artificial heart valves. She developed a flexible polyurethane mitral valve with Teflon chordae tendinea that she implanted into dogs. In 1960, at the age of 32, she led the operative team that implanted this artificial mitral valve, which she personally designed and fabricated, into a human. The patient survived to leave the hospital and did well clinically for several months. This landmark operation, the first successful human heart valve replacement, was described in a report that she senior authored [1]. This work was placed into historical perspective on a Symposium on the History of Valve Replacement in 1989 [2]. After her work with the polyurethane valve, she developed a totally cloth-covered mechanical prosthesis—the Braunwald-Cutter valve—which was successfully implanted into thousands of patients in the late 1960s and early 1970s. She developed the stented aortic homograft for mitral valve replacement [3]. She also pioneered the use of tissue culture techniques to develop nonthrombogenic cell layers and polymer surfaces to provide nonthrombogenic surfaces of prosthetic valves and circulatory assist devices [4].

At NHI and UCSD Nina Braunwald supervised the training of a number of postdoctoral fellows, some of whom went on to illustrious careers. At UCSD she taught

anatomy to medical students and trained residents in cardiothoracic surgery. At Harvard Medical School and its teaching hospitals she was active in the instruction of medical students and surgical housestaff. For 5 years she was active in the MD/PhD medical scientist program at Harvard.

Doctor Braunwald achieved many firsts. She was the first woman to carry out open heart surgery, the first woman to be certified by the American Board of Cardiothoracic Surgery, and the first woman to be elected to the American Association for Thoracic Surgery. The Association of Women Surgeons presented her with its Distinguished Member Award and subsequent to her passing in 1992 established the Nina S. Braunwald Award as its highest honor.

Nina Braunwald's interest in and determination to pursue a career in clinical surgery developed in college and became intensified in medical school. Like all successful surgeons, she possessed the combination of manual dexterity, an instinct for three-dimensional human anatomy, and a desire for a "hands on" approach to the



Fig 1. Nina Starr Braunwald.

Presented at the Women in Thoracic Surgery Symposium, Thirty-sixth Annual Meeting of The Society of Thoracic Surgeons, Fort Lauderdale, FL, Jan 31, 2000.

Address reprint requests to Dr Braunwald, Department of Medicine, Harvard Medical School, Brigham and Women's Hospital, 75 Francis St, Boston, MA 02116-6195.



Fig 2. Nina Braunwald and her mentor, Andrew G. Morrow.

solution of clinical problems. A fellowship with Charles Hufnagle, a pioneer cardiac surgeon at Georgetown Medical School, sparked her interest both in this new branch of surgery as well as in an academic career. Following the Chief Residency in General Surgery she trained in cardiac surgery at the (then) National Heart Institute under the direction of Andrew G. Morrow. It is difficult to overstate Morrow's positive influence on Nina Braunwald's career (Fig 2). Morrow actively promoted her professionally and provided local and national visibility. He encouraged her work on the prosthetic mitral valve and provided the resources necessary for a successful research program.

At the NIH Nina Braunwald assumed progressively greater responsibility and divided her time approximately equally between the operating room and the animal laboratory. She published more than 110 papers in her lifetime. However, she was first and foremost a "cutting surgeon" who reveled in exercising her considerable operative skills, judgment at the operating table, and coolness under the extreme pressure to which all cardiac surgeons were subjected in the early years of the field.

In the early 1960s she received considerable public attention, following articles in *Life* and *Time* magazines in which she was described as one of the country's young

"movers and shakers." She won numerous awards and, as the first female cardiac surgeon who was also a wife and mother, became a poster child of the emerging feminist movement and a favored subject for Sunday magazines. She did not seek or expect the publicity, but did not shun it and was both surprised and bemused by it. She was not a strident feminist and cared little about titles or income. However, after leaving Morrow's Department, she found it was necessary to struggle incessantly for her professional opportunities. Later, she became increasingly concerned with the serious problems faced by women in academic surgery.

Life was a constant juggle between the incessant demands of cardiac surgery on the one hand and the needs of her husband and three children on the other. She managed both aspects in a similar way, that is, by doing only what she considered to be essential, doing it intensely, and not expending time, energy, or motion on much else. The "mommy track" was never an option for a woman trying to make a place for herself in what in the early 1960s was exclusively a man's world. Nevertheless, she cared deeply for her family, took enormous pride in the accomplishments of her three daughters, and took delight in her grandchildren. She found time to pursue her hobbies of painting and sculpture and found time for horseback riding, her favorite sport.

Had Nina Braunwald attended this symposium she would have been extremely pleased by the growing number of active women cardiac surgeons and surely she would have rejoiced to see the very talented women now training in the field. She would have seen this development as an outstanding example of the improvement of the human condition that occurs when artificial barriers are lifted and all members of society are given the opportunity to live up to their fullest potential.

References

1. Braunwald NS, Cooper T, Morrow AG. Complete replacement of the mitral valve: successful clinical application of a flexible polyurethane prosthesis. *J Thorac Cardiovasc Surg* 1960;40:1-11.
2. Braunwald NS. It will work: the first successful mitral valve replacement. *Ann Thorac Surg* 1989;48:S1-3.
3. Braunwald NS, Fuchs JCA, Boncheck LI. Simplified insertion of aortic homograft valves with nonthrombogenic prosthetic frames. *Surgery* 1968;63:38-43.
4. Schutz L, Bull BS, Braunwald NS. Use of tissue culture techniques to evaluate new materials developed to serve as artificial heart linings. *Surgery* 1971;69:557-62.