

FOUR GENERATIONS OF BUCHANANS AND BREAST CANCER SURGERY IN PITTSBURGH

by E. Bayley Buchanan, M.D.

THE YEAR 1993 marked the end of four generations of surgeons from my family practicing in Pittsburgh. These careers spanned 127 years (1866 to 1993), a period in which surgery developed into a medical specialty. Near the turn of the century, surgery became the primary treatment of breast cancer in the United States, and today, the vast majority of women struck by the disease can expect to survive. Contrary to the belief of many Americans' that breast cancer is the recent discovery of the news media, this disease has been the silent scourge of women for many centuries.

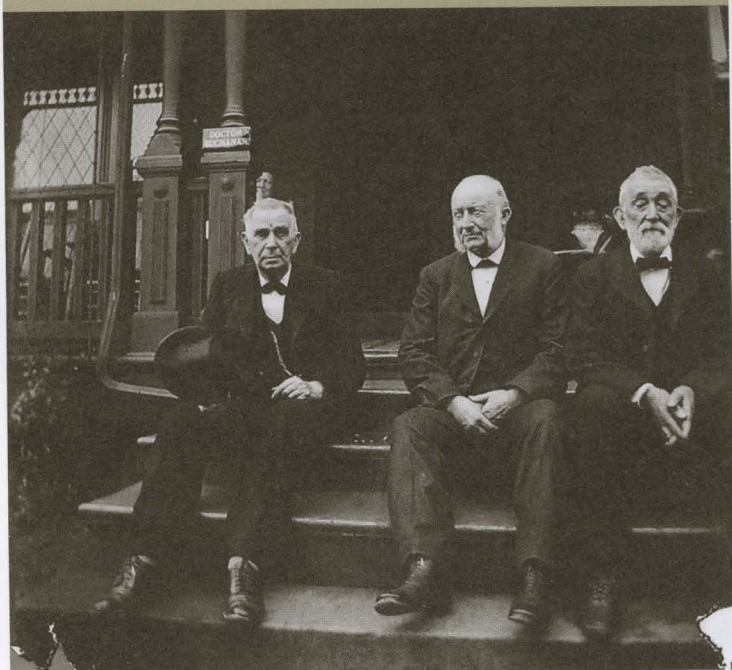
The first doctor in this family had only a casual exposure to the condition in his practice. But, over the past century, the latter three Buchanans surgically treated a total of 1,912 women with the disease. Each probably operated on more patients with breast cancer — all the operations were done at Mercy Hospital — than any surgeon in the area during the same time span. For this reason, a review of the careers of all

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The second in the family line of surgeons was Dr. J.J. Buchanan, far left, talking with Mayo Clinic founder Dr. Charles Mayo outside Pittsburgh's Mercy Hospital in 1924. The other Mercy physicians, from left, are James I. Johnston, W.J. Fetter, Sr., and W.W.G. MacLachlan. Inset: The author, Dr. E. Bayley Buchanan.

Dr. James Buchanan, below right, saw breast cancer cases in his years of practice between 1850 and 1900, but surgery was rarely used then in America for this disease.



the physicians in the Buchanan family seemed a worthwhile historical endeavor.

Dr. James Galway Buchanan (1825-1909), the first of the line, was born in Steubenville, Ohio, and graduated from New York University Medical School in 1847. He settled in Wellsville, Ohio, where he set up practice, married, had one daughter, Mary, and one son who survived, John. Dr. Buchanan was the first surgeon employed by the Pennsylvania Railroad and this service lasted over 50 years. His professional work included all types of medicine and obstetrics, but he personally favored surgery, which consisted primarily of amputations and care of soft tissue trauma and fractures.

As a personal friend of Edwin M. Stanton, Abraham Lincoln's secretary of war, he accepted a prominent post in the Union Army during the Civil War. Politically, James Buchanan was a Democrat who favored the Southern position. He did not care much for Abraham Lincoln.

In 1866, Dr. Buchanan moved his family to Allegheny City, now Pittsburgh's North Side, where he set up practice and continued to work for the railroad. The first house where the family lived was recently restored, at 28 Buena Vista Street. West Penn was his primary hospital, and he frequently took his son, John, on ward rounds and emergency calls.

Dr. James Buchanan saw breast cancer cases in his years of practice between 1850 and 1900, but surgery was rarely used then in America for this disease. The great European surgeons, such as Dr. Volkmann and Dr. Billroth, were reporting unsatisfactory results after mastectomies (breast removals) during this period. In a great majority of their patients, cancer recurred near the operative scars, and patients died within three years. This so discouraged American surgeons of the 19th century that they were reluctant to try surgery, particularly when postoperative wound infections were prevalent.

In his later years, Dr. James Buchanan referred his major surgical cases to his son, John, who became one of the early specializing surgeons of the area. At the time of his death in 1909, James Buchanan was the oldest physician (84) in Allegheny County.

Dr. John J. Buchanan (1855-1937), son of James, was born in Wellsville, Ohio, and came to Pittsburgh's North Side at age 11. In his memoirs, he describes his boyhood in both cities. In 1877, he graduated as class valedictorian from the Western University of Pennsylvania (later known as the University of Pittsburgh), earned an M.A. there the following year, then obtained his M.D. degree from the University of Pennsylvania in 1881. After an internship at West Penn Hospital, he started an unremunerative surgical practice before joining the Mercy Hospital staff in 1890 (after helping the year before to care for victims of the Johnstown Flood). In 1892, he treated financier Henry Clay Frick for gunshot and stab wounds received during an assassination attempt at the time of the Homestead Strike.

During the late 1880s, Dr. J.J. Buchanan was one of the first Pittsburgh surgeons to employ Lister's antiseptic techniques during all of his operations. He did a large volume of all types of surgery, usually on the city's poor immigrant population. His fees

were very low, and patients were given a long time to pay.

In 1901, he and Dr. R.W. Stewart, his Mercy colleague, were named clinical professors of surgery at Western Medical College (renamed the University of Pittsburgh Medical School in 1908). Dr. Buchanan served as professor there for 28 years, until age 80.

He was the city's most renowned surgeon during the first third of the 20th century, receiving many local and national honors. As the long time chief of surgery and staff president of Mercy Hospital, he was largely responsible for the institution becoming the city's most prominent hospital during the first half of the 1900s. He was also a prolific writer, producing an autobiography, 59 surgical articles, and a full-length book about his four-month European tour.

In 1917, and again in 1928, he published articles on his considerable experience with breast cancer patients. The standard operation from 1895 to 1968 was the radical mastectomy (removal of the entire breast, the underlying pectoral muscles, and the glands in the armpit, known as the axillary lymph nodes). This procedure was popularized in 1894 by Dr. William Halsted of Baltimore, who reported results much superior to those obtained by European surgeons a decade or two earlier. As a result, American surgeons began to treat breast cancer by radical surgery.

Dr. J.J. Buchanan performed this operation on 308 women, from 1895 to 1920. Ether anesthetics were administered by his secretary, Nell M. Crider, whom he had trained. His radical mastectomies were done in 65 minutes under aseptic conditions with a mortality rate of 1.3 percent (four patients died within six weeks of surgery). On average, the cancers were large (2 inches in diameter), were known to have been present for 1.4 years, and cancer in the axillary glands showed the disease had spread in 65 percent of the cases. Instruments were crude by today's standards. Bleeding vessels had to be controlled by individual ligatures (ties), and blood and fluids lost by the patient during the operation were not replaced.

In a second article written in 1928, he was able to determine postoperative survival times in 80 percent of his patients (247 of 308). He noted that 29 percent lived five years, and 12 percent survived 10 to 26 years. Such results compared favorably with those of other American surgeons of that era. This demonstrated that women had some hope of cure by surgery, a low rate of mortality from the surgical procedure, and an excellent chance of being rid of the external evidence of cancer (on the surface of the body).

Dr. J.J. Buchanan was a pioneer surgeon with a national reputation, easily surpassing the others in this succession. He was also the father of two sons: John, the older, became a corporate lawyer in the Pittsburgh firm of Buchanan Ingersoll, while **Dr. Edwin P. (Ned) Buchanan** (1890-1955) became a prominent Mercy Hospital surgeon, as well.

A native Pittsburgher, and a graduate of Shady Side Academy (1908), Princeton University (1913), and Harvard Medical School (1917), Dr. E.P. Buchanan served two years overseas in World War I. Returning to Pittsburgh and Mercy Hospital, he worked in partnership with his father for 17 years until the latter's death. Dr. J.J. Buchanan was a good teacher, and his son was his most adept

pupil. Dr. E.P. Buchanan rose in the teaching ranks at the Pitt Medical School to become professor of surgery in 1945.

In the course of his career (1920-1955), Dr. Buchanan excelled as a soft tissue surgeon, performing more breast cancer surgeries (930 cases) than any doctor in the area. The 72 cases in 1946, and the 766 done between 1935 and 1955, represent an experience unequalled in the history of Western Pennsylvania. When we consider that Mercy Hospital, as an institution, had 90 newly diagnosed cases of breast cancer in one recent year (1994), we can better appreciate Dr. Buchanan's 72 cases as a solo practitioner 48 years ago, when the disease was felt to be less common. This indicates how hospitals must rely on individual surgeons to maintain prominence in certain fields.

The average tumor size during this period was smaller, and there was less axillary gland spread (56 percent of cases). Still, the physical examination with palpation of the breast remained the primary method of diagnosis prior to biopsy (removal of tissue for microscopic analysis).

The radical mastectomy was the same operation done a



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generation earlier. Dr. E.P. Buchanan's survival results (with 90 percent follow-up) reflected a sizeable and constant improvement (24 percent survived five years in the 1920s compared to 62 percent in the 1950s). Half of his 930 patients were known to be alive in five years and one-third survived for 10 years after surgery.

Improvements in the operating room included balanced anesthesia (1945), intravenous fluid replacement (1945), and more refined instruments and electrocoagulation (1940) for easier control of bleeding. This enabled surgery to be done on older, higher-risk patients in less time (45 to 60 minutes) and with less mortality (.3 percent — three postoperative deaths). In fact, 16 percent of his patients were in their 70s or 80s.

In the 1930s, surgeons were lecturing to women, encouraging them in self-examination, regular checkups, and submitting to early surgery. The American Cancer Society was busy informing women and physicians about better results with surgery. "Identical Form"

prostheses (artificial breasts) sold on the market for only \$25. There were then a few specialty cancer hospitals with "breast services," where some surgeons did only breast surgery.

In the mid-1940s, penicillin became available, and 10 years
(continued on page 118)

Self examination is important for early detection, but the most effective combination is an annual mammogram viewed at the time of a careful breast exam by a physician.



later there were compression devices for controlling postoperative lymphedema (arm swelling). High-voltage radiation, which caused less burning of the skin than previous therapies, first appeared in the larger centers in the late 1950s.

Dr. E.P. Buchanan was kind, non-political, and respected by his peers. He was a very talented surgeon. Unlike his father, he was well-rounded and enjoyed a social life and wide circle of friends. Surgery was not his *raison d'être*, and he also had a good sense of humor. Dr. E.P.'s general health, however, was impaired during the last five years of his life by emphysema, leg phlebitis, and duodenal ulcer. With his death in 1955, the mantle was passed on to his older son.

The author, **Dr. E. Bayley Buchanan** (b. 1923), graduated from Princeton University in 1944 and Pitt Medical School in 1947. After two years in the U.S. Navy, a shortened surgical residency followed in Boston before he returned home to work with his father for a year in 1954. Apparently this limited period of apprenticeship was sufficient to encourage many breast referrals, including about 20 cancer cases a year. This number remained quite constant during the next 35 years. In addition to the official number of 673 women operated on for breast cancer, 46 cases involved a new cancer of a second breast, and eight patients had other types of malignancies (increasing the total number of cases to 727). Breast surgery (benign and malignant) constituted approximately half of the author's total practice, as compared to about 20 percent for Dr. E.P. Buchanan and 2 percent for Dr. J.J. Buchanan. Such was the increasing specialization seen during the 20th century.

Since 1970, there have been more changes in the operative management of breast cancer than in the entire previous century. From 1895 to 1968, the radical mastectomy remained the most common form of treatment. There has since been a trend toward more conservative surgery. This has developed largely from laboratory studies and clinical trials of Dr. Bernard Fisher, a native Pittsburgher and professor at the University of Pittsburgh Medical School.

About 1969, Fisher advocated a total mastectomy (removal of the entire breast and a sampling of the lower axillary lymph nodes). This procedure, initially suggested by Dr. George Crile, Jr., of Cleveland, was replaced a few years later by the modified radical mastectomy (removal of the entire breast and the axillary glands, but not the underlying pectoral muscles). This became the standard procedure for the next 15 years. In the early 1980s, Fisher's randomized studies indicated that most breast cancers could be treated as effectively by wide removal of the tumor (lumpectomy), removal of the axillary glands, and postoperative irradiation of the breast. This is likely to be the most popular procedure for the next 10 or 15 years. Fisher's studies were financed by grants from the National Institute of Health (N.I.H.) and represented only a small portion of the total expenditure by the federal government on breast cancer during the past 20 years.

In the early 1970s, this author used the more conservative procedures mentioned above. From 1972 to 1982, the modified radical mastectomy was most commonly employed. Later, the lumpectomy with irradiation was used in about half the cases. In

the last 10 years, the individual procedure was done which best satisfied the individual needs of the patient and the characteristics of her cancer. No attempt was made to differentiate the “best” procedure.

The author’s statistics on 673 women with operable breast cancer (1955-1993) reflect the progressive improvement in survival time due primarily to surgery on smaller, “earlier” cancers with only 37 percent axillary node involvement. The judicious use of hormono-chemotherapy has also been a contributing factor. With all patients accountable, the five-year cancer survival rate was 79 percent, and the 10-year rate was 55 percent. Only one patient among the 673 died during the 30-day postoperative period.

Help has come to the modern surgeon in the form of balanced anesthesia, better instruments, improved suction devices, lasers, and cautery machines. Other advances in the past 15 years include specialized studies on the tumor tissue (estrogen and progesterone receptor tests and flow cytometry). Tamoxifen, the anti-estrogen drug, has undoubtedly extended the lives of many older patients. Unfortunately, the ideal drug for all breast cancers has not been discovered.

Special mention should be made of the development of mammography (breast x-rays), first used nationwide around 1965. After slow progress initially, marked improvement in their diagnostic potential was noted after 1985. Probably 10 percent of cancers, mostly in premenopausal women, are missed by this method alone and are later detected by surgical or needle biopsy. Mammography still represents the best single screening modality for detecting the small, curable, nonpalpable cancers. The most effective combination is an annual mammogram viewed at the time of a careful breast exam.

The American woman’s average life expectancy has improved from 51 in 1900 to 81 in 1990. As the breast cancer rate is higher among the aged, the disease is now more common. One in eight women will sometime be afflicted with breast cancer, and the disease is now considered a public health problem, as well as a female rights issue. There is now a “Breast Cancer Awareness” stamp and a “National Race for the Cure,” sponsored by the American Cancer Society, and the huge government expenditure in the past 15 or 20 years has accounted largely for the recent progress.

Until 1960, breast cancer was primarily the disease of the general surgeon, while the radiotherapist treated spreading, incurable cancers. Some gynecologists were trained in breast surgery but represented a distinct minority, and their numbers have not increased in the past 40 years.

In the modern medical center, the disease now involves physicians from diverse disciplines. With the introduction of mammography around 1965, the diagnostic radiologist has assumed a larger role, not only in finding suspicious calcifications (small, white, clustered spots) but also in preoperative needle localization (in which a needle tip inserted close to the calcifications identifies them for the surgeon’s knife). The radiologist often may remove non-palpable lesions by stereotactic biopsy (a fancy x-ray machine that localizes and cuts out little cancers). The radiation therapist also has an expanded function in irradiating

the “lumpectomized” breast (from which the cancerous lump has been removed) in addition to treating the spreading metastatic lesions (as in years gone by).

In the 1960s, the discovery of new cancer-killing drugs gave rise to the specialty of medical oncology (the study and treatment of tumors). These drugs are given shortly after breast cancer surgery as a preventative, or later as a curative agent for a spreading cancer. Because these medications are toxic and require frequent blood tests, such patients subsequently have checkups from the oncologist.

Those not receiving chemotherapy may get their postoperative checkups from their original surgeons. In reality, they go as frequently to their general practitioners, internists, or gynecologists, who order their follow-up mammograms, bone scans (for detecting cancer spread to bones), etc. Thus, it can be seen that the general surgeon is rarely the “doctor in charge” but is utilized subsequently only as the surgical consultant. As the original surgeons usually do the best breast exams, they should maintain this role, supplemented by the annual mammogram.

To better the lot of the woman undergoing mastectomy for breast cancer, plastic surgeons during the 1970s and 1980s improved their techniques of breast reconstruction using musculo-cutaneous grafts (skin attached to underlying muscle). Silicone and saline prostheses and implants also became popular. “Reach for Recovery,” a support system of the American Cancer Society, was first available about 1970 to women who had undergone mastectomies. With the recent popularity of breast-preserving operations, there is less need for such services. In the past 20 years, physiotherapy, psychotherapy, social services, and pastoral care have been helpful in rehabilitating women with breast cancer. The treatment of breast cancer has undoubtedly improved in the past 30 years also as a result of so many specialists entering the field. It is unlikely that a “gatekeeper” or family practitioner can improve further on the after-care of patients.

The general surgeon has been reduced to a subservient role, as well. With recent changes in the marketing of medical care, hospitals or insurance companies may select which surgeons perform the breast surgery. Accordingly, with this fragmentation of services, survival statistics for breast cancer patients will become the responsibility of hospital tumor registries, rather than the treating physicians.

The information for this article about four generations of Buchanan surgeons was compiled primarily from excellent office records and various methods of disciplined followup. Conversely, hospital record room data may be incomplete or unavailable. Followup information in, for example, Mercy Hospital’s tumor registry, starting in 1953, was often deficient.

It is unlikely that there will ever again be four successive generations of surgeons working in Pittsburgh, and even less likely that three surgeons may operate in one hospital with such a large recorded series of breast cancer (1,912 cases). It is certain that the present succession of Buchanan surgeons has come to an end, as the author’s four grown children have moved elsewhere and have chosen different fields of endeavor. ⚙