

# THE ORTHOPAEDIC FORUM

## The Pioneering Women of Orthopaedic Surgery

### A Historical Review

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The history of women in surgery originates in ancient ages<sup>1,2</sup>. Pastena divided the history of women in surgery into 3 categories: ancient and middle ages and modern times<sup>1</sup>. Ancient history studies reveal that, in 3500 BCE (before common era), flint and bronze surgical instruments were discovered in the grave of Queen Shubad of Ur<sup>1</sup>. In 1500 BCE, women studied medicine in Heliopolis, Egypt<sup>1</sup>. In about 150 CE, Aetius wrote the *Tetrabiblion*, which described the surgical techniques of Aspasia, a Greco-Roman woman surgeon. In the Middle Ages, however, the male-dominated church gained power and discouraged women from practicing surgery. In 1313, women were banned from practicing surgery in Paris, and in the late 14th century, King Henry VIII was credited with the following proclamation: “No carpenter, smith, weaver, or woman shall practice surgery.” Despite the rules, women continued to practice for centuries in England and North America, but did so without formal training or recognition<sup>2</sup>.

In modern times, James Barry (1795-1865), known as the “beardless lad,” joined the army as a surgeon and practiced for years in England. Only at the time of his death was he discovered to have been born Miranda Steuart<sup>1</sup>. In 1847, Elizabeth Blackwell (1821-1910) was the first woman to be accepted into medical school in the United States, after rejection from most schools; she was never given a residency position in the United States<sup>1</sup>. In 1889, 40 years after her medical school graduation, Dr. Blackwell was recognized as the first female medical doctor in the United States<sup>1,2</sup>. Dr. Mary Edwards Walker (1832-1919) became the first American female

surgeon after years of practice as an army nurse and was awarded the Congressional Medal of Honor<sup>2</sup>.

The women's movement in the 1970s led to an increase in women applying to medical school. In 1970, women represented 5% of all physicians; by 2001, the rate of female physicians had risen to 24%, and eventually, an even distribution of men and women in medical school was achieved. By 2019, women made up 50.5% of medical students in the United States, according to the Association of American Medical Colleges<sup>3</sup>.

The rise of women in medicine is promising. Nonetheless, there remains a dearth of women pursuing surgery and surgical subspecialties, including orthopaedics. In 2017, women made up 15.3% of resident and fellow positions in orthopaedic surgery<sup>4</sup>. In 2020, this rate dropped to 12.9%<sup>5</sup>. The 2018 Orthopaedic Practice in the United States (OPUS) Survey demonstrated a steady increase in the percentage of women, particularly in younger orthopaedic surgeon groups, but women still only made up 5.8% of active orthopaedic surgeons<sup>6</sup>. The purpose of this historical review is to highlight the stories of 6 pioneering women in orthopaedic surgery: Ruth Jackson, Marian Sloane, Jacquelin Perry, Mary Sherman, Liebe Diamond, and Claudia Thomas.

#### **Dr. Ruth Jackson (1902-1994)**

##### *Early Life*

Ruth Jackson (Fig. 1) was born on a farm near Scranton, Iowa, on December 13, 1902<sup>7</sup>. Commonly referred to as a “tomboy,”

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she enjoyed carpentry, shooting, and horseback riding. At the age of 14, she voiced an interest in the medical profession after helping her mother, who was a midwife. However, her father recommended that she pursue sociology upon her enrollment at the University of Texas, Austin. Prior to graduating in 1924, she switched to a premedicine track against her father's wishes. She went on to pursue a medical degree at Baylor College of Medicine and became 1 of 4 women in her class to graduate in 1928. In medical school, she was prohibited from examining male patients and was required to score 10 points higher than male students in order to graduate with equal standing<sup>7</sup>. Ultimately, Dr. Jackson graduated eighth in her class and desired a career in general surgery<sup>7</sup>. At the time, there were no vacancies in general surgery internships, so she enrolled in a rotating internship at Worcester Memorial Hospital, a Massachusetts institution with all women trainees<sup>7</sup>. Later that year she trained in orthopaedic surgery under the mentorship of Dr. Arthur Steindler at the University of Iowa. After working with patients with polio, Dr. Jackson became fascinated with orthopaedics and returned to Worcester to complete an orthopaedic surgery residency<sup>7</sup>.

#### Career

Despite her diminutive stature (5'2"), Dr. Jackson was fearless and remained determined to pursue orthopaedics. She served



Fig. 1  
Photograph of Dr. Ruth Jackson courtesy of the Ruth Jackson Orthopaedic Society. Reproduced with permission from Dr. Julie B. Samora, president of the RJOS. "I'm little but I'm mighty." – Dr. Ruth Jackson<sup>7</sup>.

as a resident physician at the Scottish Rite Hospital for Crippled Children in Dallas from 1931 to 1932. Later in 1932, in the midst of the Great Depression, she opened her office in Dallas, Texas, alongside 5 other physicians. To gain experience, she would often perform reconstructive procedures and physical examinations without pay. In 1933, the American Academy of Orthopaedic Surgeons (AAOS) was formed, after extending invitations to all practicing orthopaedic surgeons except Dr. Jackson, who was denied membership because of her gender. In 1936, Dr. Jackson became one of the founders of the Texas Orthopaedic Association. Dr. Jackson passed her boards in 1937 and became the first woman to be certified by the American Board of Orthopaedic Surgery (ABOS) and join the AAOS<sup>7</sup>. She joined the Baylor University Hospital staff in 1939 and served as a role model for Margaret Watkins, the first female resident to be trained at Baylor University Hospital. Dr. Jackson opened her own private clinic in Dallas in 1945, where she practiced for the rest of her career. In 1956, Dr. Jackson published the book *The Cervical Syndrome* about her experience treating >15,000 patients with neck injuries. During her tenure as chief at Parkland Hospital in Texas, she established the hospital's first orthopaedic residency program. Dr. Jackson practiced for 57 years and was a pioneer in the field of orthopaedics and inspiration to many. The Ruth Jackson Orthopaedic Society (RJOS) was founded in her honor in 1983. While Dr. Jackson stopped operating in 1974, she remained active, seeing patients until 1989<sup>7</sup>. In 1994, Dr. Jackson passed away at the age of 91<sup>8</sup>.

#### Dr. Marian Sloane (1904-1940)

##### Early Life

Marian Sloane (Fig. 2) was born in New York City in 1904 to Dr. Herman Frauenthal and Minnie Rothschild<sup>9</sup>. Her grandfather, Samuel Frauenthal, emigrated from Germany in the 1800s and became a wealthy merchant, enabling his son Herman Frauenthal to become a physician. Herman and his brother Henry Frauenthal trained with Dr. Lewis Sayre and later operated a small clinic. Henry and Herman founded the Jewish Hospital for Deformities and Joint Diseases in 1906. They ran the hospital as a family business, with the plan of passing it to Marian's older brother Frank, who unfortunately died at 9 years of age in 1910. This meant the family business became Marian's responsibility. Her privileged upbringing gave her access to the finest education and medical care. She graduated from Smith College in Massachusetts in 1926 and Bellevue Hospital Medical College of New York University in 1930.

##### Career

Although at this time it was still difficult for women to secure residency slots, Marian pursued an internship at the Hospital for Joint Diseases immediately after graduation. In 1933, while in residency, she married her co-resident David Sloane. They coauthored 2 scholarly articles published in *The Journal of Bone & Joint Surgery* in 1936 and 1937. With those articles and her publications in the *Archives of Surgery* and *The American Journal of Surgery*, Dr. Sloane became the first woman to publish



Fig. 2  
Photograph of Dr. Marian Sloane with permission from Dr. Jessica Hooper. Reproduced, with permission, from Hooper et al.<sup>9</sup>. Marian Sloane's nephew, James Frauenthal, said: "It never occurred to her that she couldn't do it, so she did."<sup>21</sup>

scholarly articles in orthopaedic surgery, with a total of 5 publications in 1937. Dr. Sloane trained in New York City at the same time Dr. Jackson was training in Iowa and became the first licensed female orthopaedic surgeon in the state of New York, and the first Jewish female orthopaedic surgeon in the U.S. She was active in the American Medical Association and received the Henry W. Frauenthal Traveling Scholarship to study in Europe from 1933 to 1934<sup>9</sup>. After having her second daughter in 1938, Dr. Sloane was diagnosed with breast cancer, which took her life in 1940 when she was just 36 years of age. New York University has established the Marian Frauenthal Sloane Clinical Research Award in her honor, and to perpetuate her legacy. Although gone too soon, her journey and legacy have paved the way for other female orthopaedic surgeons.

### Dr. Jacquelin Perry (1918-2013)

#### Early Life

Jacquelin Perry (Fig. 3) was born on May 31, 1918, in Denver, Colorado. By the age of 10, Jacquelin had made up her mind to become a physician. She attended the University of California, Los Angeles (UCLA) for her undergraduate degree in physical education, graduating in 1940. She obtained her physical therapy training at Walter Reed Army Hospital from 1940 to 1941, and went into practice with the U.S. Army as a physical therapist for 5 years during World War II<sup>10</sup>. With funding from the GI bill, she enrolled in medical school at the University of California, San Francisco (UCSF) and graduated in 1950<sup>10</sup>.

#### Career

After completing her orthopaedic residency at UCSF in 1955, Dr. Perry became another pioneer to be certified by the ABOS<sup>10</sup>. She was renowned for her treatment of post-polio syndrome and the analysis of the human gait. In 1967, after the height of the polio epidemic in the United States, she established the Pathokinesiology Laboratory, currently known as Rancho Los Amigos National Rehabilitation Center, to study the biomechanics of walking and gait analysis. She and Dr. Vernon Nickels developed the halo vest, which stabilized the spine of patients with polio and enabled them to sit upright. Dr. Perry became a research consultant at the Kerlan-Jobe Orthopaedic Center and directed projects on kinesiological electromyography and motion analysis for throwing, golf swing, and swimming. She was a mentor to many students, including Dr. Lisa Lattanza, who worked with her as a physical therapist and was



Fig. 3  
Photograph of Dr. Jacquelin Perry reproduced with permission from Dr. Lisa Lattanza. "It really doesn't matter if you're first, it matters if you're good" – Dr. Jacquelin Perry<sup>10</sup>.



encouraged by her to become an orthopaedic surgeon. She continued to operate until the 1960s, when she was diagnosed with cerebral arterial stenosis. She served as chief of the department of pathokinesiology at Rancho Los Amigos until 1996 and published her textbook, *Gait Analysis: Normal and Pathologic Function*, in 1992. During her career she coauthored >400 scholarly articles and became a highly respected role model in the orthopaedics field. Dr. Perry was diagnosed with Parkinson's disease, which ultimately took her life on March 11, 2013, at the age of 94<sup>10</sup>.

In 2009, Drs. Jenni Buckley and Lisa Lattanza founded The Perry Initiative in her honor. This initiative has provided mentorship to >12,000 young women pursuing engineering and orthopaedic careers<sup>11</sup>. Prior to her passing, Dr. Perry was an active supporter of The Perry Initiative, personally attending multiple program events. At the age of 92, she delivered an inspirational speech to students at the Los Angeles Perry Initiative event. Following the event, a line of students and attending physicians formed to receive her autograph on bone models. Her legacy lives on as she continues to be a role model for many women pursuing orthopaedics.

### Dr. Mary Sherman (1913-1964)

#### Early Life

Mary Sherman (Fig. 4) was born on April 21, 1913, to Walter Allen Stuitts and Edith Monica Graham in Evanston, Illinois. She grew up singing opera and studied in Paris at the Institute de Mme Collnot<sup>12</sup>. From 1930 to 1935, she obtained her Bachelor of Arts and master's degrees from Northwestern University, and from 1935 to 1936, she worked as an instructor at the University of Illinois French Institute in Paris. She later decided to go to medical school, earning her medical degree in 1941 from the University of Chicago and then completing an internship at Bob Roberts Hospital.

#### Career

Dr. Sherman was appointed assistant professor of orthopaedic surgery in 1947 at Billings Hospital in Chicago, Illinois, and later relocated to New Orleans, Louisiana, becoming the director of bone pathology at the Ochsner Clinic in 1952<sup>13</sup>. In 1953, Dr. Sherman became an associate professor at Tulane Medical School, and was internationally known for her treatment of and research on bone cancer. Sherman was the first woman to be elected to the American Orthopaedic Association (AOA), in 1954, and she was also the first female ABOS oral examiner<sup>14</sup>.

On July 21, 1964, she was found dead in her apartment in New Orleans. Her autopsy report classified her death as a homicide and described findings of burns from a fire and stab wounds, including one to her heart. Her murder has never been solved, although theories have been put forward regarding her death<sup>13</sup>. No one was ever charged.

Dr. Sherman is honored as an AOA Pillar of the Orthopaedic Profession because of her impact on the orthopaedic community<sup>14</sup>.



Fig. 4  
Photograph of Dr. Mary Sherman with permission from the AOA.

### Dr. Liebe Sokol Diamond (1931-2017)

#### Early Life

The only child of Max Sokol, an attorney, and Anne Hirschhorn Sokol, a Hebrew teacher, Liebe Sokol Diamond (Fig. 5) was born on January 10, 1931, in Baltimore, Maryland<sup>15</sup>. She was born with constriction band syndrome<sup>15,16</sup> and during her childhood required numerous surgeries on her hands and feet, performed by the orthopaedic surgeon Dr. Moses Gellman. At the time, society often labeled individuals with deformities as being intellectually disabled and learning impaired. However, Dr. Diamond persevered with the support of her family and Dr. Gellman to prove her doubters wrong. As Diamond said herself, "I was lucky to have parents who didn't spoil me and made me fend for myself."<sup>15</sup> She excelled academically, graduating from Western High School in 1947, and entered Smith College at the age of 16. She graduated cum laude in 1951 with a bachelor's degree in chemistry and a double minor in zoology and physics. She studied medicine at the University of Pennsylvania and completed her pediatric internship and surgical residency at Mount Sinai Hospital<sup>15</sup>. Dr. Gellman was a major influence in her life and inspired her to pursue orthopaedics<sup>15</sup>.



Fig. 5  
Photograph of Dr. Liebe Diamond with permission from POSNA (Pediatric Orthopaedic Society of North America). “I have always been amazed that I got the surgical residency. After all, I was only 5 feet tall, female, and Jewish, with very strange hands. And they hired me!” – Dr. Liebe Diamond<sup>22</sup>.

### Career

In 1957, she returned to the University of Pennsylvania and became the first woman orthopaedic resident and, later, the fourteenth woman in the U.S. to be certified by the ABOS<sup>15</sup>. In 1959, Liebe met her eventual husband, Earl L. Diamond, a physician working at the Johns Hopkins School of Public Health<sup>15</sup>. Dr. Diamond became a talented pediatric orthopaedic surgeon, and established a practice in the early 1960s focused on the treatment of children with hand and limb deformities. To operate comfortably, Dr. Diamond had surgical gloves custom-made for herself. Because of her personal medical history, she was a role model for many of the children who came in with limb deformities requiring surgery. Dr. Diamond was appointed Professor of Orthopaedic Surgery and Clinical Associate Professor of Pediatrics at the University of Maryland Medical School from 1961 to 1996. Along with 7 other surgeons, Dr. Diamond founded the Pediatric Orthopaedic Society of North America in 1971<sup>15</sup>. In 1983, the RJOS was founded for women orthopaedic surgeons, and Dr. Diamond became its first president. In 1998, she retired after a career that impacted thousands of lives, and she was inducted into Maryland’s Women’s Hall of Fame in 2006. Dr. Diamond passed away from lymphoma at the age of 86 on May 17, 2017<sup>15</sup>.

### Dr. Claudia Thomas (1950-Present)

#### Early Life

Claudia Thomas (Fig. 6), daughter of Charles and Daisy Thomas, was born in Brooklyn in 1950 and raised in Queens, New York. She was inspired by her childhood doctor, Dr. Pearl Foster, to pursue medicine<sup>17</sup>. She excelled academically from a young age, attended the High School of Music and Art in New York City, and received National Merit and New York Regents

scholarships. She attended Vassar College in New York, starting as a math major but eventually graduating with honors in 1971 with a Black studies major<sup>18</sup>. Dr. Thomas led 34 Black women students to take over the main building of Vassar College in 1969, demanding that the college administration accredit the Black Studies program and address the needs of the local African American community. Today, >50 years later, Vassar College celebrates its Black Studies, now the Africana Studies, program as one of the most excellent in the country<sup>18</sup>.

### Career

Dr. Thomas obtained her medical degree from Johns Hopkins University School of Medicine and completed her orthopaedic surgery residency at Yale University-New Haven hospital in 1975, becoming the first woman to complete that residency and first Black female orthopaedic surgeon in the United States<sup>19</sup>. Dr. Thomas completed a trauma fellowship at the University of Maryland and later joined the faculty at the Johns Hopkins Department of Orthopaedics, in 1981, as an assistant professor, leading the department in the recruitment of minority candidates in order to increase diversity and inclusion<sup>19</sup>. She was awarded the AAOS Diversity Award in 2008, published a multitude of scholarly articles, and wrote an autobiography, *God Spare Life*, in 2007. In this book, she talks about her experience with Hurricane Hugo in 1989 and her battle with kidney cancer<sup>19</sup>. In 2004, Dr. Thomas left Johns Hopkins to join Tri-County



Fig. 6  
Photograph of Dr. Claudia Thomas, reproduced with her permission. “*God Spare Life* is a story of achievement and faith; of my struggle as a Black woman to rise above societal expectations of a woman of color.” – Dr. Claudia Thomas<sup>23</sup>.



Orthopaedic Center, a private practice in Leesburg, Florida, where she practices alongside 2 former students, Dr. Isaac Mitchell and Dr. J. Mandume Kerina<sup>19</sup>. She is an active mentor to youth today with organizations such as Nth Dimensions and the J. Robert Gladden Orthopaedic Society.

### Current and Future Goals

Established in 1972, Title IX states, “No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.” Although Title IX and the second wave of feminism led to an increase of women in medicine, orthopaedic surgery lags behind, with the lowest percentage of women among all specialties. On the basis of the current rate of women entering orthopaedic surgery, Acuña et al. estimated it will take 326 years for the field of orthopaedic surgery to reach gender parity with the U.S. population<sup>20</sup>. There are orthopaedic residency programs that have yet to recruit and graduate women residents. However, the stories and contributions of these powerful pioneers have continued to pave the way for women to pursue orthopaedics. Role models and mentors to many, their legacy has lived on and continues to inspire us all. To honor their leg-

acy, we must remain diligent and intentional in the recruitment, mentorship, and sponsorship of women in the field of orthopaedic surgery. ■

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