Hospital for Special Surgery: Origin and Early History First Site 1863–1870

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Abstract Hospital for Special Surgery (HSS) originated as the Hospital for the Ruptured and Crippled (R&C) 142 years ago in New York City. As the first and only orthopaedic hospital of its kind in this country, it was located in the residence of its founder James Knight on Second Avenue, south of Sixth Street, and started with 28 inpatient beds for children but no operating facilities. The history of this institution has been documented in two books and occasionally published and unpublished papers. Many of these accounts have been limited by time, focus on a particular subject, or overall reviews. The emergence of such a specialized facility in the middle of the 19th century during a time of medicine in its infancy, our country at war and the city of New York racked in poverty, disease, civil riots, and political corruption is a story not necessarily appreciated in our day. The vision of one little-known physician and the cooperation and support of a small group of prominent New Yorkers and philanthropists were responsible for the origin of this hospital and particularly for its survival in such troubled times when most small hospitals of this period lasted only for a few years. Fortunately, almost all of the original Annual Reports of the Board of Managers, photographs, manuscripts, personal records, and newspaper clippings have been saved. They are now being collected, preserved, catalogued, and displayed in the newly formed HSS Archives from which this material has been taken.

Key words Hospital for Special Surgery (HSS) · Hospital of the New York Society for the Relief of the Ruptured and Crippled (R&C) · New York Society for the Relief of the Ruptured and Crippled · James Knight · Lewis Sayre · R.M. Hartley · John C. Green

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Introduction

Founded originally as The Hospital of the New York Society for the Relief of the Ruptured and Crippled in 1863 (R&C), Hospital for Special Surgery (HSS) is the oldest orthopaedic hospital in this country. In the middle of the Civil War, with disease, poverty, and unemployment rampant in New York City, a young unknown physician, a general practitioner from Maryland, James Knight, was able to persuade a group of prominent local citizens to establish a society for supporting an orthopaedic hospital. Miraculously, the story has been preserved over the past 142 years in original patient records, bound annual reports of the Board of Managers, well-preserved manuscripts, photographs, newspaper clippings, publications, and vintage books.

Only in the past 2 years has all this material been (and is being) collected, catalogued, restored, and displayed to staff, patients, relatives, and friends through the formation of the Archives of Hospital for Special Surgery in the Kim Barrett Memorial Medical Library of the hospital. Currently, rotating exhibits are curated in two Archives showcases in the hospital, one in the front lobby and the other in the fourth floor Atrium, a waiting area for relatives and friends of patients undergoing surgery. An Archives Committee meets regularly to oversee the direction and progress of the Archives.

This article deals with the origin of R&C in its first location in New York City on Second Avenue below Sixth Street during very turbulent times.

The setting of a nation at war, a city confronted with uncontrolled disease, overwhelming disabilities, poor and suffering, medicine in its infancy, growth of new large hospitals, civil unrest, and political corruption did not seem to discourage this young physician who had this vision to establish a hospital for the treatment and rehabilitation of the crippled and disabled. Little did he know that his hospital would one day become one of the world's leading institutions in musculoskeletal research, education, and treatment [1].

James Knight (1810–1887)

Born February 14, 1810, in Taneytown, Maryland, James Knight graduated from the Medical-Chirurgical Faculty (of Maryland) in Baltimore in 1832. In 1835, at the age of 25, he moved to New York City to open his office as a general practitioner. It must have been a large step from a small hamlet, population under 400, in the rolling foothills of the Catoctin Mountains in Central Maryland to an expanding city of population over 700,000.

Taneytown's only claim to fame at that time was that it was the birthplace in 1779 of Francis Scott Key, author of "The Star Spangled Banner" [2].

Early in his career, Knight became obsessed in treating patients by what he called "surgico-mechanics," otherwise known as bracing. (Maybe this was a skill and interest inherited from his father who worked for Matthias Shroyer in Taneytown, manufacturing firearms for the US government [2].) Bandaging and supports were used in the management of hernia, varicose veins, hemorrhoids, and prolapsed uteri.

This became Knight's introduction to orthopaedics and, eventually, his incentive to design and construct appliances for the restoration of impaired powers of locomotion in children. Such deformities included those that were congenital, sequelae from infantile paralysis, constitutional impairment, and other pathological conditions such as caries of the spine [3].

Knight saw the poor, the helpless, the deformed, and the crippled on the streets of New York. Persons afflicted with ruptures, varicose veins, and ulcerated legs became professional beggars. They often exposed their body to further their needs. Mothers carried their deformed and sick children while begging. No known cures for these conditions existed, and hospitals would not admit them as they were not considered sick. They depended on charity to survive. They could not gain any employment. Sometimes a brace or truss would help them to become more functional [4].

Soon after coming to New York, Knight was appointed a visitor of the Association for the Improvement in the Condition of the Poor. Because of the times, there were limited diagnostic means and few proven methods of treatment. Medicine was far from being a science. There were a few theories on the pathogenesis of infectious diseases with varied agreement. In 1860, Louis Pasteur proved that living organisms, not chemical reactions, caused fermentation furthering the followers of the *germ theory*. Influenced by Pasteur, Joseph Lister applied these principles to surgery, developing antiseptic procedures in the operating room and thus significantly reducing infection.

In France, medicine was emerging from the dark periods. Pierre Louis in Paris, applying arithmetic to analyzing the treatment of patients in numerous charity hospitals, correlated various diseases and different treatments with their results. This was the beginning of systematic databases. Others in England used mathematics in epidemiology. In Germany, Rudolph Virchow was creating the field of cellular pathology.

Yet, in America, these advances of medicine ironically led to skepticism, neglect in new treatment of diseases, and

resistance in general. European medicine had discovered and used thermometers, stethoscopes, and other diagnostic instruments but by the time of the Civil War, they were little used in this country.

Surgery, as a major method of treatment, was only advanced after the introduction of ether anesthesia by William Morton in 1846 and chloroform by James Simpson the next year. Yet, there was no operating room at R&C until 1889, 2 years after Knight's death. Appointment of the first anesthetist, Dr. Preston B. Satterwhite, would not occur until 1901.

1860s Turbulent times

At the beginning of the Civil War (1861-1865) the 33 states and territories had a population of about 31 million. Twenty-three million lived in the 22 Northern states and 9 million in the Southern states, including 3.5 million African American slaves. Union troops eventually totaled 2.1 million, whereas figures for the Confederate forces are unknown.

The battle of Chancellorsville (Virginia) was a great victory for General Robert E. Lee, but it eventually led to the beginning of the end for the Confederate army. Lee and General Thomas J. (Stonewall) Jackson met in deep woods near Chancellorsville on the evening of May 1, 1863, and planned an attack on the Federals for the next day; the result was a large success. It was a very bloody battle with Union casualties more than 17,000 and Confederates more than 12,000. However, Stonewall Jackson was accidentally shot by his own men and fatally wounded.

Buoyed by this win, on July 2, Lee ordered a massive assault at Gettysburg. This was a major loss for the confederacy, resulting in a change in the direction of the war. Again, the casualties were devastating with Confederate losses in 3 days: 3,900 killed, 18,700 wounded, and 5,400 missing. The North lost 3,150 with 14,500 wounded and 5,350 missing [5]. (Some of those Union casualties eventually would be treated at R&C.)

New York City was going through the so-called draft riots, the worst civil disorders in the history of the city. In March 1863, Congress passed the Enrollment (Draft) Act., which forced men between ages 20 and 45 into the military service. New York State Governor Horatio Seymour and other democratic leaders felt the conscription act was unconstitutional, supporting resistance and inciting the populace to action. The spark that ignited the grievances of the working class (mostly Irish living in poverty) was the provision in the law that conscription could be avoided by paying \$300 to the government.

For 4 days (July 13-16) there were large-scale bloody riots that could not be controlled by local police. It took New York troops, including the famous 7th Regiment (sent to the front at Gettysburg), with the aid of the militia, navy, West Point cadets, and police to finally squelch the uprisings.

Political corruption was flourishing, with Tammany hall electing its first mayor, Fernando Wood, in 1855. The Tammany Society founded in 1789 by William Mooney, a

Fig. 1. This portrait of James Knight hangs in the Richard L. Menschel Conference Center of Hospital for Special Surgery. It shows this elderly gentleman with a wig, holding in his hand his text entitled *Orthopaedia*. He seems to be at peace with the world

Revolutionary War veteran, was originally a patriotic and charitable organization. In the early 1800s, the Irish managed to force their way into the society, and the practice of exchanging votes for benefits led to extreme corruption in the city.

New York's early hospitals

The oldest and most famous hospital in New York City, Bellevue Hospital, was opened in 1736 as the Almshouse Infirmary. It was a "Publick Workhouse and House of Correction" with an upper floor housing an infirmary containing 6 beds. It also was a rehabilitation center with areas for sewing, spinning, weaving, working on iron and leather, and even an adjacent farm (early occupational therapy). As New York grew rapidly, public health was essentially nonexistent. At the beginning of the 19th century, yellow fever epidemics occurred annually, with filth and plague all around and uncontrolled sewage in the streets. In 1811, the city purchased 6 acres of the Kip's Bay Farm along the East River. Bounding it on one side was Belle Vue Place. Building construction, delayed due to the War of 1812, proceeded and the new hospital finally opened in 1816. It was named Bellevue Hospital.

It was the first in the city to deal with the medical needs of the poor and the destitute [6]. It would establish in 1873 the first school of nursing in this country.

The next hospital in the city was New York Hospital, founded in 1771 and supported generously by the Dutch gentry, with many of its trustees of Dutch ancestry. Lying-In Hospital was founded in 1798 after a yellow fever

epidemic of that year. Kings County hospital originated like Bellevue from an almshouse in 1831 in Brooklyn. Brooklyn City Hospital was incorporated in 1845, supported by the Brooklyn Association for Improving the Conditions of the Poor.

At the beginning of the Civil War there were 12 more large hospitals. The upper and middle classes generally were treated at home or in small private hospitals. They did not wish to be associated with the stigma of large charity institutions [7].

Conservatism vs surgery

In 1859, Bellevue Medical College was opened. A co-founder was Dr. Lewis Sayre, a man of interest in paralysis and tuberculosis of bones and joints. He was appointed to a chair in the faculty with the title of Professor of Orthopaedic Surgery, Fractures and Dislocations and of Clinical Surgery and became the first professor in orthopaedic surgery in the country.

Five years earlier, he had performed the first resection of a hip joint for tuberculosis. He was an aggressive excellent surgeon for his day, farsighted, and formulated many new approaches to the causes of deformities. If he could not operate, he used plaster casts and other forms of immobilization.

He was the first to use plaster of Paris jackets for scoliosis and Pott's disease. However, there was another large group of practitioners who preached conservative treatment and considered Sayre's surgery "adventurous" and of no possible use for this disabled population. These physicians used braces, trusses, bandages, and other mechanical methods to rehabilitate their patients.

Prominent among this group was Dr. James Knight who not only favored the conservative approach but also was vehemently opposed to any surgical intervention (Fig. 1). He defined his conservative program as *expectant treatment* in contrast to the *adventurous* surgical approach.

In addition to his use of "surgico-mechanics", his regimen included properly enforced hygiene, good food and tonics, exercise, fresh air, education, and religious principles. Some questionable other methods he used included prescribing mercury for cachectic cases, direct local application of molasses or cod liver oil for corneal ulcers, and Spanish fly blisters for acute stages of hip diseases [8].

The New York Society for the Relief of the Ruptured and Crippled

James Knight's great ambition was to establish a hospital for rehabilitation. In March 1862, he enlisted the help of R.M. Hartley,¹ Secretary of the Association for Improving

¹ Robert Milham Hartley (1796-1881), born in England, followed his father in the woolen business although he had ministerial ambitions. In 1843 he was one of the founders of The Association for Improving the Condition of the Poor. He published many articles on religious, sanitary, and scientific subjects. He was happily married to Catherine Munson and had 10 children.

Fig. 2. From 1863 to 1870 the Hospital for the Relief of the Ruptured and Crippled occupied the residence of James Knight at 97 Second Avenue just south of Sixth Street. A commercial building is currently at this site

the Condition of the Poor. Hartley conferred with Knight, stating that in his involvement with the poor, he realized the necessity for such a hospital and was only waiting for the appropriate circumstances. He promised his influence and personal cooperation.

Consequently, on April 15, 1862, Mr. Hartley arranged a meeting at No. 39 Bible House, the office of the Association “to consider the expediency of forming a society for the relief of the Ruptured and Crippled”. Attending this meeting with Dr. Knight and Mr. Hartley were Stewart Brown, Robert M. Minturn, John C. Green, William Bibbins, Joseph P. Collins, and Apollos R. Wetmore.

In reference to that meeting, in 1864 Dr. Knight reported the following in the First Annual Report of the Society for the Ruptured and Crippled [9]:

I became *more* familiar with the prevalence of the maladies among the laboring population. The necessity for an Institution for their relief was impressed upon my mind when attending the late professor Mott’s clinics, held in 1842 in the University Medical College; and from that period I made efforts from time to time to effect an organization for that purpose by means of printed circulars. In January 1862, I obtained the approval, by signatures, which I have in my possession, of Professors Valentine Mott, Willard Parker, J.M. Carnochan and James R.

Wood; George Opdyke, then Mayor of the City of New York; R.A. Witthaus, Wilson G. Hunt, Robert L. Stuart, T.B. Stillman and Peter Cooper. The plan was so well accepted by these gentlemen, that the present society was organized the next year establishing 20 members of the Board of Managers. A Certificate of Intention to Incorporate in the State of New York was filed March 27, 1863, and certified April 13, 1863. However, the charter of incorporation was not enacted until April 23, 1867.

Article I (Objects of the Society) of the Constitution stated:

The objects of the Society are to supply skillfully constructed surgico-mechanical appliances, and the treatment of in and outdoor patients requiring trusses or spring supports; also bandages, lace stockings and other apparatus for the cure of cripples, both adults and children, on such conditions which will make their benefits available, so far as is possible to the poorest in the city [9].

The events leading to the establishment of a hospital devoted to orthopaedics based on conservative principles were entirely the results of Knight’s vision, perseverance, and ability to gain the confidence of prominent members of local society. R.M. Hartley was the catalyst that completed the equation.

Hospital for the Relief of the Ruptured and Crippled—1863

Soon after the organization was established, Dr. Knight offered to lease his private residence at 97 Second Avenue, furnished for 28 beds and a conservatory to make braces, for \$1,200² per year (Fig. 2).

On May 1, 1863, the new hospital admitted its first patient, a 4-year-old boy of destitute parents who had paralysis of his left leg occurring since 18 months of age. Dr. Knight was appointed Resident Physician and Surgeon and lived in the hospital with Mrs. Knight, who supervised domestic affairs, and their daughter, who volunteered to teach the children. Knight, who also acted as superintendent, saw some private patients and turned over all fees to the hospital. In return, he had an annual salary of \$2,000³ and was very instrumental in raising large sums of money to support the hospital.

Besides his family and him, his staff included 4 consultants, all prominent surgeons at that time: Valentine Mott, MD, William H. Van Buren, MD, Willard Parker, MD, and John M. Carnochan, MD.

Knight, as head of his household, was in absolute control. There were no trained nurses or other paraprofessionals. He was said to have been immune from criticism. Because of his residence in the hospital, he had ideal

² In today’s dollars, \$75,000.

³ In today’s dollars, \$124,000.

conditions to observe and make conclusions of treatment and outcomes [8].

In retrospect, the solid foundation of the first hospital, its growth, its continued existence and eventual emergence as a leader in orthopaedics, rheumatology, and related fields of medicine in this country and worldwide could not have been accomplished without the close collaboration of prominent, philanthropic, and supportive members of the Board of Managers (Board of Trustees). The founding Board of Managers was composed of such persons. The Board elected John C. Green their first president, who served as such from 1864 to 1874.⁴

Membership on the Board of Managers through the years often was composed of family descendants. One of the founding members of the Board was Jonathan Sturges (1802-1874), a grandson of a member of Congress from Connecticut. Sturges was a director of the Illinois Central Railway and during the Civil War was among the most liberal and outspoken supporters of the government. He eventually retired in 1868 from a mercantile house with a large fortune. Following in his lineage on the Board have been 8 other members, all descendants, including the Osborn family, whose latest member, Katherine O. Roberts, was made a Life Trustee just last year.

In his First Annual Report, Dr. Knight listed the number of patients received for May 1863 as 66, of which 10 were indoor patients with the following conditions:

- 1 case of contracted leg from extensive ulceration
- 2 cases of caries of the spine (humpback)
- 3 of hip disease
- 1 of lateral curvature of the spine
- 3 of clubfeet

Three surgical procedures were performed:

- 1 removal of a portion of a crochet needle from the knee joint
- 2 divisions of tendons

He concluded his report with the following:

As I have already stated, the augmenting number of these cases will, ere long, so fully occupy our present limited accommodations for indoor patients, that they will exclude that class of patients who are in the incipient stage of disease, and whose cases, if taken in time, promise a

speedy recovery, while if restricted to our ordinary outdoor treatment, and subjected to the influences of insufficient care, clothing and nourishment, and unwholesome air, they rapidly become worse. I cannot therefore too earnestly express hope that the Board may see their way clear to the enlargement of their in-door accommodations [9].

So as early as his first report, Knight was letting the Board know that expanding the hospital was critical to treatment of these patients. The Board was impressed for this need of larger accommodations and responded accordingly and quickly.

Funding a new building

In the spring of 1867, 5 lots were purchased on the corner of 42nd Street and Lexington Avenue for \$40,000.⁵ Edward T. Potter⁶ was employed as architect and the new hospital building was opened in 1870.

However, in April 1870, in order to pay remaining bills and furnish the hospital, the building committee felt that the Board would not be safe unless an additional \$50,000⁷ were raised. Rather than take out a mortgage, John Green, the President and Chairman of the Finance Committee, offered to give the Society \$50,000 if the Board could raise the same amount in 30 days. In May, the Treasurer, Jonathan Sturges, informed Green that they were successful, and Mr. Green immediately handed him a check for \$50,000.

Sturges reported:

We have a hospital capable of accommodating 200-250 children.

We owe *no man* anything but love.

We have assets amounting to \$100,000.

As the Hospital for the Ruptured and Crippled entered its 7th year of existence, it was in excellent financial condition and moved into its new home on 42nd Street, which at that time was considered the *country*.

Acknowledgements I wish to acknowledge the deep commitment to the history of our hospital and continuous documentation of it over the years made possible by Philip D. Wilson, Jr., MD.

I also wish to pay tribute to Thomas P. Sculco, MD, for his special interest in the roots of this hospital, for his many reviews of its history and for his vision of the importance of establishing an Archives.

⁴ John Clevis Green (1800-1875), born in New Jersey, attended the Lawrenceville School and became a very successful China Trader. Returning from Canton in 1839 with a sizable fortune, he settled in New York, became President of the Bleeker Street Savings Bank, and invested heavily in railroads. He was a trustee of New York Hospital, the Hospital for the Deaf and Dumb, and a very charitable contributor to religious organizations. Also a trustee of Princeton University, he endowed 3 chairs, the first School of Science named after him, the first Library, and renovated the dining hall and chapel. His great-great-grandfather, Jonathan Dickinson, was the first president of the College of New Jersey, which became Princeton University.

⁵ In today's dollars, \$2.5 million.

⁶ Edward Tuckerman Potter, a specialist in ecclesiastical design, was born in Schenectady, son of Bishop Alonzo Potter, the former president of Union College. He studied under Richard Upjohn, then the foremost church architect in the country. He was the first architect for Lehigh University and designed buildings for Princeton as well as many churches. He died in 1901.

⁷ In today's dollars, \$6.3 million.

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