

[William John Little \(1810–1894\)](#) ^[1]

By: Darby, Alexis Ellis, Brianna Keywords: [Little's disease](#) ^[2] [congenital malformations](#) ^[3] [spastic diplegia](#) ^[4]

William John Little was one of the first orthopedic surgeons to research congenital malformations and their causes in the nineteenth century and presented preliminary research on a condition modernly known as cerebral palsy, a condition of varying severity that affects a person's ability to move. Little worked throughout the United Kingdom for the majority of the time he practiced medicine, and eventually founded one of the first orthopedic infirmaries, the Royal Orthopedic Hospital in London, England. Throughout his career, Little studied congenital malformations, which are medical conditions inherited before birth, as well as how certain medical circumstances during delivery affect the neonate. In 1861, he described a condition with motor, behavioral, and cognitive irregularities in neonates, linked with oxygen deprivation during birth. Little's research on that condition, originally called Little's disease, and modernly, spastic cerebral palsy, was one of the first accounts of cerebral palsy in infants.

Little was born on 7 August 1810 to parents Hannah and John Little at the Red Lion Inn in Whitechapel, London. His father owned the hotel in which he was born. Little was the oldest of his siblings, with two younger sisters. During childhood, Little contracted many infectious diseases, including measles, mumps, whooping cough, and polio. Around the time he contracted polio, Little's parents noted he had developed a clubfoot, a defect where the foot turns inward, which his doctors claimed occurred as a result of his polio infection. Because Little had polio so early in life, researchers disagree as to whether he actually acquired the clubfoot from polio or if he was born with a defect. He attended elementary school at Goodman's Fields in London, England, and what was the equivalent of middle school at the time at St Margaret's in Dover, England. At age thirteen, Little attended Jesuit College in St. Omer, France.

According to physician and biographer Richard A. Brand, Little excelled in school. Despite not being a native French speaker, he obtained a prize for an essay he wrote in French while competing with native French speakers. At the age of sixteen, Little then moved back to England to apprentice at a pharmacy, where he formulated and sold drugs for medical use. In 1828 at eighteen years of age, Little began studying medicine, taking courses and attending lectures at multiple sites around London, England. At Guy's Hospital in London, England, he took anatomy classes taught by physician Thomas Hodgkin, who first reported a form of blood cancer modernly known as Hodgkin's lymphoma. At the University of London, Little took zoology and comparative anatomy courses taught by physician Robert Edmond Grant, who also taught and mentored [Charles Darwin](#) ^[5]. before returning to [London Hospital](#) ^[6], where he was appointed as an instructor of anatomy, physiology, and pathology, in 1831. While teaching at the [London Hospital](#) ^[6], Little applied for a surgical position, but was not selected for the role.

After he was denied the surgical position, Little moved to Berlin, Germany, to further his studies at the [University of Berlin](#) ^[7]. While in Germany, Little visited Georg Friedrich Louis Stromeyer, who commonly went by Louis Stromeyer. Stromeyer was one of the first surgeons to perform a subcutaneous Achilles tenotomy, which is a procedure where a physician surgically alters the main tendon in the ankle under the skin. According to Little in a preface in Stromeyer performed the tenotomy on Little to correct his clubfoot, and the operation was successful. Stromeyer also taught Little how to perform that surgery. Little returned to the [University of Berlin](#) ^[7] and shared knowledge on the Achilles tenotomy procedure with his mentors. According to the biographer Seyed Behrooz Mostofi, Little's knowledge impressed his mentors, and they soon thereafter allowed him to perform surgical dissections on deformed fetuses at the Berlin Museum.

He went on to write an academic thesis in which he discussed his experience dissecting deformed human fetuses and included his own personal account of having a clubfoot. With the completion of his thesis, Little obtained his medical degree in 1837. That same year, he married Eliza Tamplin, daughter of another surgeon, Richard W. Tamplin, who also focused on treating deformities. Together, Little and Eliza had eleven children, seven of whom survived past childhood. Little named his third son after Stromeyer, and that son later became a surgeon. Another one of his sons, Muirhead Little, was also a surgeon and later became the president of the British Orthopedic Association.

After graduating medical school in 1837, Little moved back to London, England, where he began to practice medicine. In 1837, Little performed one of the first subcutaneous Achilles tenotomies on a patient. He continued to work on treating patients with deformities. According to biographer Mostofi, previous to Little's work on surgical procedures to correct deformities, there were minimal treatments available for patients. However, once people began learning that Little was performing such procedures, an increased number of people approached Little for help, which allowed him to gain more surgical experience. In 1839, he received the new job of assistant physician at the University of London in London, England, two years after he married Elizabeth Tamplin.

Throughout the late 1830s and into the 1840s, Little began making contributions to orthopedic surgery research. In 1839, he published the book, *A Treatise on the Nature of Clubfoot and Analogous Distortions; Including Their Treatment Both With and Without Surgical Operation*, in which he informed more people about the work he was performing on patients with clubfoot. In

1840, Little opened an orthopedic hospital in Bloomsbury Square, England, to research and treat orthopedic malformations. The hospital was later renamed to the Royal Orthopedic Hospital, which still exists as of 2021.

In the early 1840s, Little started to research and discuss congenital malformations, which are medical conditions that are inherited prior to birth. In 1843, he gave many lectures on congenital malformations at the Royal Orthopedic Hospital. In 1853, he compiled those lectures into a 412-page book, titled *On the Nature and Treatment of the Deformities of the Human Frame*. In his book, Little mentions that scientists knew little about congenital malformations in the nineteenth century. Little then goes on to discuss the different kinds of malformations and the severity of each. He discusses the birthing process of fetuses with malformations and how they are often difficult, due to distortions, or the process of twisting or being in an unnatural position that he claimed often came along with congenital malformations. Little also discusses the effects of congenital malformations during the infancy period and how those malformations affect other factors. Little provides an example of a fetus^[8] with stunted growth in the lower extremities, which means that the legs stopped developing. After delivery, the infant dealt with complications throughout its entire body as a result of its deformed limbs. Those problems included decreased neck muscle tone in comparison to an infant with no congenital malformations, thereby decreasing the mobility of the infant's head. After Little presented lectures on congenital malformations at the Royal Orthopedic Hospital in 1843, his research began to shift from general orthopedics to congenital orthopedic complications.

From the late 1840s through the 1860s, Little lectured at the Royal Orthopedic Hospital, where he was able to present his research findings with a wider audience. His research shifted from the discovery of different types of congenital malformations to how abnormal labor and premature births can cause a deformity in the infant during the birthing process itself. Little states that abnormal labor can be caused by many factors, including the pregnant woman's anatomy, premature birth, or breached neonatal position, all of which can lead to adverse outcomes after birth, which Little calls deformities. One example of such a deformity that can result from premature births is the underdeveloped lungs neonates often have after a premature birth. Another is a deformity to the neonate's brain due to lack of oxygen during a long delivery. Both examples can cause long-term effects on the neonate. Little later published those findings as books and articles in the latter half of his career.

In 1861, Little wrote an article titled "[On The Influence of Abnormal Parturition, Difficult Labors, Premature Birth, and Asphyxia Neonatorum, on the Mental and Physical Condition of the Child, Especially in Relation to Deformities.](#)"^[9] In the article, Little discussed his research on congenital deformities in infants that come from abnormal births, and how those deformities result in physical and mental effects later on in life. Throughout the article, Little provided his observations and opinions as to how those deformities could affect the infants throughout their lives. Broadly, one of the conditions he described throughout the article connected what he called partial suffocation during birth with muscle rigidity, which was later called Little's disease. Modernly, the medical community generally accepts what Little described as what is modernly known as spastic cerebral palsy. Of the different kinds of cerebral palsy, spastic cerebral palsy affects around eighty percent of diagnosed people, and is most often associated with muscle rigidity and awkward movements. People with spastic cerebral palsy are more likely to also have spinal deformities, impaired hearing or speaking, seizure disorders, and learning difficulties, many of which Little described in his article.

Throughout the rest of Little's career as an orthopedic surgeon, he continued to focus on congenital malformations and the effects that abnormal births have on later development of infants. He went on to publish many books and articles, in a wide variety of topics from [neurology](#)^[10] to orthopedics. Little was one of the first orthopedic surgeons to discuss and research the causes and effects of malformations in fetuses, and the ways that abnormal births can affect the physical and emotional development of an infant. In 1877, Little was elected as a fellow of the Royal College of Physicians headquartered in London, England. After almost fifty years of surgical experience, he retired from his position as an orthopedic surgeon in 1884.

On 7 July 1894, Little died from an illness at his home in Ryarsh, England, where he was later buried.

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