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# **THE CONTROVERSIAL CONQUERING OF PAIN**

by

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## **Abstract**

**Before the extensive use of anaesthesia, great surgeons were measured by how little pain could be caused to patients in the shortest possible time. Simple operations, such as the extraction of rotting teeth, were terrible nightmares to patients. Some people compared surgery to the Spanish inquisition and there are many accounts in the literature of yells, screams, panicking and resistance in the operating room. Because of this, before anaesthesia, surgery was mainly restricted to amputations and external growth removals and little advancements could be made over hundreds of years.**

**Five men make the claim to have conquered the horror of surgery in the operating room by discovering ether as an anaesthetic agent: William T.G. Morton, Charles T. Jackson, Crawford W. Long, Horace Wells and William Clarke. However, only William T.G. Morton is credited with discovering ether as an anaesthetic agent. Mr. Morton publicly used ether during the excision of a tumour from a patient's neck on October 16, 1846, at the Massachusetts General Hospital in Boston.**

**But William T.G. Morton was not the saint that he portrayed himself to be. There are various controversies surrounding whether he was actually a dentist or doctor, or where his family came from or when he was born. So, for many reasons, various people felt that he was a great deceiver and pathological liar. All this led several people to question his intentions and claims surrounding his "discovery" of ether as an anaesthetic agent, and then his desire to have sole credit, including monetary reward, for this discovery. There is no doubt that he made the first public demonstration of anaesthesia but there is doubt as to whether it was because of his great knowledge and research in the field or because he took advantage of an opportunity to display this borrowed method to the public.**

William Thomas Green Morton's tombstone at Mount Auburn Cemetery in Boston, Massachusetts Henry J. Bigelow has inscribed:

Before whom, in All Time surgery was Agony; By Whom, Pain in Surgery was averted; Since Whom, Science has Control of Pain.

### **Before Whom, in All Time Surgery was Agony**

By today's standards of care, any surgical procedure which might be painful or uncomfortable for the patient ideally involves some form of local or general anesthetic. It is difficult for most people to imagine undergoing even routine procedures without some anesthesia or pain control; however, this was not always the case. For thousands of years patients would undergo invasive, traumatic surgeries with minimal or even no pain management. Evidence of pre-historic surgeries, or surgical attempts, on human skulls date back as far as 10,000 BC (Davison 1965). Thus, for more than 10,000 years, human beings underwent surgical procedures fully conscious and aware, able to feel, hear and see every action that the surgeon made to or within their bodies.

The horrors of surgery were widespread and have been well reported in the literature. There are countless stories of yells, screams, patient panic and resistance in the operating room. Fanny Burney, an artist in the 1800s, described in vivid detail the mastectomy procedure she underwent on September 30, 1811 (Sullivan 1996). Ms. Burney was given solely wine to act as a mild anesthetic and resultantly had to be restrained by seven surgical assistants (Smith *et al.* 2006). Ms. Burney describes being in "utterly speechless torture" as she felt the surgeon's knife cut through her skin, vessels and nerves and scraping on her bone. She felt that the surgery was "condemnation" by the doctors. She describes her screaming and residual ringing in her ears from her own screams even much later, "So excruciating was the agony," (Carey 1997). Many patients described their surgical experiences as feeling like "condemned criminals." Sir James Young Simpson, a physician, asked if he could have a week to prepare for an amputation of his limb due to his views that, "It was so probable that the operation would be followed by a fatal issue." He later described his surgery saying, "Suffering so great as I underwent cannot be expressed in words ... the particular pangs are now forgotten; but the blank whirlwind of emotion, the horror of great darkness and the sense of desertion by God and man...I can never forget" (Sullivan 1996).

Since 10,000 BC when Incan shamans opened skulls to relieve pressure via trephination and 2,600 BC when Egyptian physicians extracted rotten molars, very few advances occurred in surgical technique (Keys 1963). Prior to 1846, surgery was primarily restricted to amputations of limbs and the removal of uncomplicated external growths. Surgical skill was measured based on how quickly surgeons could perform the

procedures. Sir Clifford Allbutt recalled that surgeons were “pitted one against the other like runners on time” and that the best surgeon “broke the three minute record in an amputation or a lithotomy” (Sullivan 1996). Amongst surgeons, the act became one of showmanship. A surgeon during the Napoleonic era, Dr. James Langeback, arrogantly claimed that he was able to “amputate a shoulder in the time it took to take a pinch of snuff” (Sullivan 1996). In no way was patient comfort a factor in surgical approach and advancement and thus undergoing surgery remained a horrific ordeal for many thousands of years.

In an effort to calm and silence their patients, surgeons tried various methods that were far less potent and more harmful than current anesthetic agents. To minimize the pain that was experienced during trephination, Incan shamans exploited the pain relieving effects of the native coca plant by chewing the leaves and allowing their saliva to drop into the affected area (Keys 1963). Pictographs dating to 3,000 BC depict ancient Egyptians utilizing rudimentary nerve compression during an operation in attempts to block or nullify the sensation of pain. These compression techniques were later used by military surgeon, Ambrose Pare, in the sixteenth century and were ultimately combined with opiod therapy by James Moore in the 1870s (Smith *et al.* 2006). The first documented pharmacological agent used for anesthesia was mandragon, which was harvested from the mandrake plant and administered by Dioscorides in the first century (Keys 1963). This discovery was later refined into “soporific sponges” which contained morphine and scopolamine in addition to mandrake leaves, poppies and other herbs. These poultices were used from 800-1200 AD as the primary method of anesthetic during surgery (Smith *et al.* 2006). During the Middle Ages, surgeons attempted to develop novel anesthetic methods through the use of refrigeration anesthesia (Smith *et al.* 2006). This technique was primarily available in the winter months and involved applying ice, snow or cold water to the incision site in order to “render a surgical site insensate.” Mesmerism was the next anesthetic technique to be developed by Charles Dupotet and Jules Cloquet in France in the late 1820s and also by John Elliotson in the 1830s and 1840s in England (Davison 1965 and Smith *et al.* 2006). Alternative methods of pain control throughout history include those developed by Chinese Taoist medical practitioners who utilized acupuncture to relieve pain during surgery since 100 BC (Smith *et al.* 2006). Alternatively, alcohol was commonly used, as previously mentioned, as an anesthetic agent because it “induces stupor and blunts the impact of pain” (Smith *et al.* 2006). The primary limitation with the use of alcohol as an anesthetic was that, to truly be effective, in blocking pain and inducing amnesia, huge quantities of alcohol had to be administered to the patient.

The use of general anesthesia in surgery has only been widespread for one hundred and seventy years. The development of generalized anesthesia could only be attempted through either ingestion or inhalation as these were the only routes available in the nineteenth century. In 1820, Henry Hill Hickman attempted to use carbon dioxide as an

anesthetic agent with limited success. Ultimately, it was not known if carbon dioxide actually had anesthetic properties or if it solely blunted the response to pain by inducing hypoxia (Smith *et al.* 2006). Nitrous oxide was also used and its effects were described by Humphrey Davy in 1800 and by Horace Wells in the extraction of teeth in 1844 (Davison 1965). Interestingly, the complete anesthetic properties of nitrous oxide were not realized or demonstrated at this time due to ineffective administration and dosing. Davy missed his opportunity to discover inhalational anesthesia but did coin the phrase “laughing gas” and documented that nitrous oxide “appears capable of destroying physical pain [and] may be used with advantage during surgical operations.” Horace Wells attempted to publicly show the anesthetic properties of nitrous oxide that he himself experienced during a tooth extraction; however, Wells was not successful (Keys 1963). At his public demonstration in January 1845 in Boston at Harvard Medical School, the patient cried out in pain. Wells was mocked by his audience and still no one recognized the full potential of nitrous oxide as an anesthetic agent for many years.

Theoretically, when administered the perfect anesthetic agent should have analgesic properties, induce unconsciousness, prevent memory formation, relax the patient to prevent unwanted movement and be reasonably safe to use. The first agent that was demonstrated to have all these qualities was sulphuric ether. Ether was considered ideal due to the fact that low concentrations are required to anesthetize patients, ether does not cause hypoxia when administered, does not cause respiratory depression while acting as an anesthetic and it has a slow induction in the patient. Moreover, ether was easily transported, was much more versatile than nitrous oxide and was easily inhaled because it is so volatile. Ether was therefore a very safe and useful anesthetic, even when used by untrained and uneducated administrators (Smith *et al.* 2006). However, its discovery and widespread use as a general anesthetic took centuries to develop and was fraught with controversy.

### **By Whom, Pain in Surgery was Averted**

Jabir ibn Hayyan, an Arabian philosopher, is credited with the creation of diethyl ether in the eighth century (Davison 1965). In 1540, Valerius Cordus was the first person to describe the medical use of ether, known as “sweet oil of vitriol,” made from distillation of sulphuric acid and alcohol (Davison 1965). This was used for a variety of remedies including ulcers, pneumonia and headaches. In 1742, Matthew Turner, a surgeon in Liverpool, described the antispasmodic and stimulatory effects of ether in his book, *An Account of the Extraordinary Medical Fluid called Ether* (Smith *et al.* 2006). Ether was also utilized as a therapy for bronchitis, hay fever, hysteria, nausea, cramping, colicky biliary pain and seasickness. Despite its widespread applications, the use of ether was also cautioned against. Henry Jacob Bigelow, a surgeon at the Massachusetts General Hospital in the 1840s, once stated that, “Ether exhilaration was familiar, but, on the other

hand, it was well understood that ether stupefaction was in certain cases dangerous. Physiologists had found that the smaller animals very frequently died of it.” Similarly, Benjamin Collins Brodie, a chemist of the same era, commented that he had “heard of this before and had tried it out on guinea pigs, whom it first set asleep, and then killed. The great question is, is it safe?”(Wolffe 2001)

William E. Clarke, a medical student from Rochester, first administered ether as a general anesthetic in January 1842 to young woman named Hobbie who had a tooth removed by Elijah Pope, a dentist. Despite the fact that the procedure was successfully completed without pain, neither Clarke nor Pope published this discovery or made any claim to it until 40 years later (Keys 1963). Similarly, on March 30, 1842, Dr. Crawford W. Long from Jefferson, Georgia, administered ether via inhalation from an ether soaked towel to James M. Venable before removing two small tumors from his neck. Long also proceeded to conduct a comparative trial to prove that, “insensibility to pain was caused by ether and was not simply a reflection of the individual’s pain threshold or as a result of self hypnosis.” Despite his ground breaking methodology and research, Dr. Long did not publish his findings until 1849. By this time, the use of ether as an anesthetic had been widespread for three years and thus Dr. Long was also not credited with the discovery of the first inhalation anesthetic (Smith *et al.* 2006) .

On October 16, 1846, William Thomas Green Morton publicly demonstrated that diethyl ether was that perfect agent that possessed all the theoretical qualities previously mentioned. Dr. John Collins Warren invited W.T.G. Morton to demonstrate his claims of anesthesia, with permission, on Edward Gilbert Abbot as a vascular lesion was excised from the left side of his neck. Morton arrived late to the Bullfinch amphitheatre at the Massachusetts General Hospital in Boston after assembling an apparatus whereby to deliver the ether to the patient. He brought with him his anesthetic apparatus which he called the “Letheon,” so named after the river Lethe in classical Greek mythology which seemingly obliterated painful memories. The apparatus consisted of a tube, placed in the patient’s mouth, connected to a glass globe with a hole on the opposite side of the tube designed to drag air over a rag soaked in sulphuric ether. The patient then inhaled ether gas through the apparatus for four minutes until he fell asleep. At this point, Warren was able to perform surgery while the patient was both unaware of his surroundings and experienced no pain. When the procedure was over, it is claimed that Warren turned to his audience and exclaimed, “Gentlemen, this is no humbug.” (Keys 1963, Maltby 1998, Smith *et al.* 2006)

Dr. Charles T. Jackson, a teacher of Morton’s at Harvard Medical School, claims to have been aware of the analgesic properties of ether by February 1842, because he himself had used it to alleviate his own pain. Jackson then claimed that he had taught Morton about the possible anesthetic use of ether and encouraged him to use ether in his dental practice (Davison 1965). Morton had also previously learned from both Horace Wells and Charles

Jackson through a shared a dental practice with Wells and had studied with him at Hartford between 1841-1843. The partnership broke up when Wells left after financial losses and Morton went on to attend Harvard Medical School in Boston in March of 1844 (Wolffe 2001). While attending medical school Morton lived with and was taught by Charles Jackson. Morton saw the analgesic properties that ether possessed when applied directly to the skin and started experimenting on dogs, and later used ether in his dental practice when extracting rotten teeth. It was these experimentations and through this reputation that Morton was invited to publicly demonstrate his claim to having discovered a safe anesthetic agent (Smith *et al.* 2006).

### **Since Whom, Science has Control of Pain**

After the first trial at Massachusetts General Hospital, Morton went on to demonstrate the anaesthetic property of ether on October 17, 1846, when surgeon George Hayward successfully removed a tumour from a woman's arm without pain (Maltby 1998). Following this second demonstration, Morton wanted to profit from his discovery and thus refused to tell anyone what his letheon mixture consisted of. It was only under threat of not being allowed to administer any further anaesthesia that Morton disclosed that the compound was, in fact, sulphuric ether (Smith *et al.* 2006). On November 7, 1846, George Hayward performed a leg amputation and a lower jaw removal under ether anaesthesia at the Massachusetts General Hospital with the third and fourth documented administration of ether as a general anaesthetic. Henry Bigelow officially announced the discovery of ether as an anaesthetic in the *Boston Medical and Surgical Journal* in the November 18, 1846 issue (Maltby, 1998). Bigelow also sent a letter to Robert Liston, professor of clinical surgery at the University of London, and to Francis Boott in Great Britain, announcing the discovery. Boott subsequently gave his niece, Miss Lonsdale, anaesthesia on December 19, 1846, when she had a tooth extracted by British dentist, James Robinson. Boott wrote to the *Lancet* explaining, "the whole process of inhalation, extracting and waking was over in three minutes" (Davison, 1965). Following this publication, ether as a general anaesthetic was documented in Dumfries, England, on December 19, 1846, by James Frazer as William Scott operated on a patient and subsequently on December 21, 1846, by Robert Liston at the University College Hospital for the amputation of a thigh and avulsion of a toenail (Davison 1965). Following the operation Liston is quoted as stating, "This Yankee dodge beats mesmerism hollow" (Maltby, 1998). The use of ether as an anaesthetic quickly spread throughout Europe and had continued use throughout Russia, South Africa and Australia by the summer of 1847.

Following Morton's public demonstration of ether on October 16, 1846, it did not take long for the "ether controversy" to ensue (Smith *et al.* 2006). Morton, Wells, and Jackson all sought to claim the discovery as their own (Wolffe 2001). Morton applied for a patent for the Letheon, which he was granted on November 12, 1846. Jackson had previously

contacted Morton demanding that he was entitled to ten percent of Morton's profit, which Morton reluctantly later agreed to. In 1847, the French Academy of Medicine awarded the Monthyon prize of 5,000 Francs jointly to Morton and Jackson. However, Morton refused to accept his half of the reward maintaining that the discovery of ether as an anaesthetic was his and his alone (Maltby, 1998). Morton spent most of the remainder of his life fighting for the claim to his discovery and for financial compensation. The matter ultimately came before the US Congress where the House of Representatives agreed to compensate Morton an undetermined amount. However, this compensation was ultimately dismissed by the senate and thus Morton was never given any official financial reward in his lifetime (Smith *et al.* 2006). Ultimately Morton's refusal to accept anything but full claim to the discovery of ether anaesthesia impeded his recognition and acceptance in the medical community. Many of his peers did not like him and judged him more on his character than his discovery. In his book, *Tarnished Idol*, Richard J. Wolfe says of Morton:

Although Morton was responsible for bringing ether anaesthesia into everyday surgical use, he was motivated to do so not by scientific or humanitarian reasons but out of a desire to find a way to perform painless tooth extraction in order to fit more patients...and thereby increase his income considerable, and afterward to patent the process and profit even more from it by leasing its use to other dentists and medical professionals.

[Morton was ] unpolished, a poorly educated man, with little scientific knowledge and possessed of an unscrupulous character...perhaps even a criminal mind that led him to lie, steal, and commit gross misdeeds in order to achieve his goals...the pursuit of money, no matter how gained. He forged ahead ruthlessly, appropriating the ideas of others, in order to prove the pain-alleviating properties of ether, not in the service of humanity or science, but because in his view, the patenting of such a discovery would bring him a fortune....clearly it is another of the bitter ironies of history that fate chose such an unworthy and ill prepared agent to preside as midwife at the birth of the death of pain. (Wolffe, 2001)

In a letter to his mother, describing why their partnership broke up, Horace Wells writes of Morton:

A fellow without any principle whatever...it was reported that he had taken to drinking...aside from that he was the most deceitful man I ever knew, he would not scruple to tell direct falsehoods when he knew he must be detected in a lie within a few hours ( Wolffe, 2001).

Despite his vilification by those who also contributed to the use of ether as a general anaesthetic, ultimately it was Morton who successfully searched for an inhalation anaesthetic through experimentation on animals and on patients in his dental practice (Smith *et al.* 2006). Morton was the first to successfully demonstrate the anaesthetic properties of ether in public and subsequently publish his findings; therefore, he remains credited as the sole discoverer of the first successful general anaesthetic, ether.



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