

# Defeating Surgical Anguish: A Worldwide Tale of Creativity, Hostility, and Discovery

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## In Memoria

There are countless persons who have suffered through the ages around the world but not mentioned in any text or inscription. The following examples are sad but true tales of the journey through experimentation and torture.

Ms. Eufame MacAlyane of Castle Hill Edinburg who, in 1591, was burned alive by order of the ruler of Scotland, King James I, who was an early opponent of “pain free labor”. Her “unforgivable offense” was to seek pain relief during labor [1].

Mrs. Kae Seishu volunteered as the brave first human subject to test “Tsusensan”, an oral anesthetic mixture formulated by her husband Dr. Seishu Hanaoka. The product met great success but she became permanently blind, presumably from repeated experimentation [2].

Their husbands’ agony and anguish is unimaginable! As such, it was a personalized, immeasurable, and unsharable experience. Apropos is a quote from an Urdu poet!

اُن کے پیاروں کے مقابر رہے بے نام و نمود  
آج تک اُن پہ جلائی نہ کسی نے قندیل

Unknown remained their beloveds’ graves,  
Their nameless, traceless sanctuary.  
No somber tapers were ever raised,  
In their fondest memory.

(Urdu Poetry of Sahir Ludhianvi, English Translation by Naeem Ameen)

## Abstract

In the pre-anesthesia era, the anguish of planned surgical maneuver was dreadful and the experience of actual procedure “utterly speechless torture”. Although, the concept of pain relief and even total insensibility was not unfamiliar to medical profession, some of the “Big Giants in Medicine” believed “knife and pain as inseparable” and the efforts to relieve or prevent pain “in vain”. In such a situation the anesthesia, one of the greatest boons of science for mankind, “burst like a revolution on medical profession”. Despite hostility from religious sect, professional colleagues and civil societies the pioneers in discovery of anesthesia stood firm, unshaken by the negative criticism. Although the fate of the active contestant of “Ether Controversy” was mournful, their untiring and dedicated struggle to relieve the sufferings of mankind can never be underscored. Renowned Arab surgeon Ibn al Quff (1232-1286 AD) was the first to suggest anesthesia as independent speciality. However, it took almost 700 years for his dream to come true.

**Keywords:** Anesthesia; Academic History; Poetic Medicine; Horace Wells; William Morton; Charles Jackson; Crawford Long

## Introduction

*“The evolution of anesthesiology as a medical speciality has facilitated the success of modern complex surgical procedures”*

Prof. Charles Beattie (1940-2008 AD)

Anesthesia has been defined by Webster’s College Dictionary, as “general or localized insensibility, induced by drugs or other intervention and used in surgery or other painful procedures”. The basic goals of anesthesia are “to create a reversible condition of comfort, quiescence and physiological stability in a patient before, during and after performance of a procedure that would otherwise be painful, frightening or hazardous” [3]. According to Sir James Young Simpson (1811-1870 AD), the “Foremost Pain Fighter”, the proper anesthetic state is one physiologically and psychologically analogous to natural deep sleep [4]. It has been described in poetry, as follows:

*Please, Mr. Surgeon.*

*I lay on my hospital bed,  
waiting for the anesthesia to kick in.  
Feeling dizzy. Turning sleepy.  
There’s no one there to hold my hand.  
The nurses looking at me,  
waiting to start the procedure.  
Looking tired. Pacing quiet.  
My body starts to go numb.*

*I will soon be out of this world,  
at least for a few hours.  
Running free. Feel no pain.  
My eyes start to lose reality.*

*I wish I could stay numb  
until I have to sleep forever.  
Have no fear. Living strong.*

*So please, Mr. surgeon, leave the anesthesia on.*

*I sometimes wish I could stay numb.  
I’ll enjoy the anesthesia as long as I can.  
See you when I come back.  
(Krusty Aranda, “Hello Poetry”)*

The first historical mention of the concept of anesthesia was described by an Arab surgeon Ibn al-Quff (1232-1286 AD) who, in his surgical treatise “Al Omdah fi sina’at al jiraht,” mentioned the word “Al-Moukhadar” (تخدير) meaning the substance which causes “Takhdeer” (تخدير) -Arabic word for drug induced reversible state of loss of consciousness [5]. At the dawn of the anesthesia era, Richard Manning Hodges (1827-1896 AD), well known for comprehensive description of Pilonidal Sinus, dramatically said, “the anesthesia burst like a revelation upon the medical profession as well as the community, virtually in the fullness of perfection when the first successful demonstration of its practicality was made known” [6]. Dr. James Marion Sims (1813-1883 AD), known as the Father of Modern Gynecology, once proclaimed, “Vaccination and Anesthesia are the greatest boons ever confirmed by Science, on humanity. England gave the one, America the other” [7].

The present study is aimed at appraising the readers of academic history of surgical anesthesia, tale of America's best gift to mankind, journey from hue and cry to calmness and relaxation; and hostility to the wondrous discovery.

## Material and method

The review began with broader questions and a broad search strategy that delved into relevant literature regarding anesthesia. A thematic approach highlighted the common domains and areas in peer reviewed papers and other existing sources.

Guidelines of Hamilton College for “Writing a Good History Paper” were followed [8]. Library immersion, analysis of archives and web search were the mainstay of the sources. The written primary sources of information were letters, diaries, memories, speeches, church records, newspaper articles and government documents of all kind (reports of Commissions, Committees, Petitions, Court Orders). The unwritten sources included buildings, monuments and religious relics. The secondary sources included scholarly

write-ups of “disinterested observers” who were, by any means, connected to the series of events; and also the unbiased historians. The existing evidence was organized according to the following topics to address the broader question.

1. Etymology of anesthesia
2. The Pre-anesthesia Era
3. Evolution of Anesthesia
4. Historical, Geographical and Ethnic Perspective
5. Inhalation anesthesia in Western Medicine
6. Hostility: resistance to use of anesthesia in the west
7. Theological Considerations
8. The Head and Hand Debate
9. Tragic End of the Claimants
10. Monumental Honors
11. Recognition of Anesthesia as an Independent Speciality

To catch enhanced interest of the potential readers, relevant verses from famous poets of English, Urdu and Persian were added, at appropriate places.

## Results

The literature review is comprehensive as it is a result of systematic search strategy described above. It has been separated into major topics and within each topic, the narrative flows from general to specific.

### Etymology of anesthesia

*“Everybody wants to have a hand in a great discovery”*

*Oliver Wendell Holmes (1809-1894 AD)*

The word “anesthesia” (Greek ἀν-, an-, “without”; and αἴσθησις, aisthēsis, “sensation”) was employed first by Greek Philosopher Plato (427 - 347BC), a student of Socrates and later becoming teacher of Aristotle, in philosophical discussions, to mean “the oblivion of the soul from the movements (senses) of the body. Aristotle (384-322 BC) while defining ethics describes ‘anesthesia’ as

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### The Pre-anesthesia Era

*“The first cry of pain through the primitive jungle was the first call for a physician”.*

*(Victor Robinson - “Victory over Pain: A History of Anesthesia”)*

As early as 3,600 BC, the Egyptians were performing tracheotomy and by 1,700 BC they were operating on presumed breast cancer by cauterizing the affected tissue, aneurysms, and subdural hematoma by trephination. Later, The Romans were performing surgical procedures like uvulectomy, cataract extractions, Caesarian sections and amputations in patients. It is difficult to imagine the agony to which these unanesthetized patients were exposed. For the patient, the anticipated pain of the proposed surgical procedure often resulted in denial of access to his body and thus the possibility of cure. In the time of the Roman empire, Lucius Mestrius Plutarchus (46 - 120 AD), a Greek-Roman biographer, recorded the story of the Roman general Gaius Marius (157 BC-86 BC) who was to have an operation on both the legs. He endured pain under the knife for one leg but later declined continuation of the procedure for the other leg saying that he saw the cure not worth the pain [11]. The encyclopedist Aulus Cornelius Celsus (circa 25 BC-50 AD), while discussing the attributes of the pre-anesthesia era surgeon, noted that speed of a surgeon was extremely important and thus he wrote: *“Now a surgeon should be youthful or at any rate nearer youth than age; with a strong and steady hand which never trembles, and ready use the left hand as well as the right; with vision sharp and clear, spirit undaunted; filled with pity, so that he wishes to cure his patient, yet is not moved by his cries, to go too fast, or cut less than necessary; but he does everything just as if the cries of pain cause him no emotion”* [12].

Mental preoccupation was sometimes sought as a means of minimizing the severity of “pitiless surgery”. Professor Richard J Wiseman (of University of Hertfordshire) concluded that the soldiers, in that era, dreaded the loss of a limb much less if it was removed immediately while they were “in the heat of fight” than of the operation postponed until the next day. As remarked by James McManus, the picture of pre-anesthesia era is certainly gloomy. In such a context, the discovery of anesthesia was a eagerly embraced welcome surprise. A unique report, from English novelist Frances Burney (1752-1840 AD), is both factual and moving. In 1811, she had to undergo right mastectomy, because of cancer, without anesthesia. She has described her experience in a letter addressed to her elder sister Esther Burney as: *“utterly speechless torture.....not for days nor for weeks but for months I could not speak of this terrible business without nearly again going through it.....”* [13].

The modern anesthesia is a tetrad of amnesia (unconsciousness), analgesia (insensibility to pain), control of autonomic reflexes and muscle relaxation. Prior to the discovery, it was neither understood nor were all medications available at that time. So the following were the various approaches adopted at that time:

#### Physical methods:

1. pack the limb in ice
2. ischemia by tourniquet
3. Unconsciousness was produced by a blow on head (strong enough to knock the patient down but not too strong to kill him)
4. Compression of carotid artery (Greek Karotos: sleep, stupor) was employed for stupor producing effect (unfortunately, this was also in practice during 16<sup>th</sup> and 17<sup>th</sup> centuries but it proved to be too barbarous and had to be abandoned) [4].
5. The most common practical approach was to restrict the movements of the patient, by strapping him to the operating table, and managing his resistance forcefully, through the professionals.

#### Hypnotic anesthesia:

In Paris, the first documented case took place on April 12, 1829 when a mastectomy was performed by French surgeon Jules Germin Cloquet (1790-1883 AD). In the United States, the technique was applied initially on June 30, 1836, in a case of dental surgery, performed by Dr. Harwood, in Boston. In England, Prof. John Elliotson (1791-1868 AD) was the first to introduce this novel approach by inserting a seton into a patient’s neck [14].

**Pharmacological methods** :Use of alcohol, opium and its derivatives and hashes provided some relaxation. The opium, which comes from the poppy plant, has a long history of use in human culture. Seeds of the poppy plant have been found in prehistoric Swiss Lake dwellings and in Egyptian ruins [7]. It was Ibn Sina (980-1037 AD), generally known as “Father of Early Modern Medicine”, who praised opium as the most powerful of stupor producing substance [15].

#### Evolution of Anesthesia: from Hue and Cry to Calmness and Relaxation

*“The discovery of anesthesia required the flowering of the view that the individual was important and deserved to have happiness”*

*(Professor Emanuel Papper( 1915-2002 AD), the Founding Chairman of Department of Anesthesiology at the University of Miami)*

Defeating surgical pain has been attempted on every spot on the globe with nearly all documented societies seeking its relief in one form or another. As such, the history of anesthesia is as varied as the cultures that contributed to its progress. On May 12, 1847, John Snow, one of the foremost British anesthesiologists, in a lecture on the use of Ether in surgical operations to the medical members of the United Services Institution, said : *“.....The pain of a surgical operation is greater than that of wound itself. Whilst the latter is instantaneous, and its approach unknown, the approach of an operation is seen, and its cuts are necessarily deliberate.....The blessing would be great of merely preventing this pain but I am firmly convinced that the exhibition of Ether will be attended with still greater advantage of saving many lives* [16].

#### Historical, Geographical and Ethnic Perspective

The following narration is an attempt to highlight the pre-anesthetic era from around the world.

**Ancient Mesopotamian Medicine:** Alcohol has the reputation of easing pain of Neolithic humans (last stage of Stone Age) as long ago as 10,000 BC. It was the oldest known sedative, used in ancient Mesopotamia. Intentional fermentation of yeast and honey was used around 5,000 BC. The use of herbal products for sedation dates back to before recorded history. Sumerians (those living in what is now Iraq) were known to cultivate opium poppy “hul-gil”(meaning “joy plant”) ,as early as 4,200 BC [17]. The Babylonians knew the art of combating toothache with Henbane (Hyoscyamusniger). In circa 400 BC carotid artery compression was used to produce unconsciousness for ocular surgery [18].

**Ancient Egyptian Medicine:** The ancient Egyptians were well versed with amazing efficacy of carbonic acid gas which at that time was obtained by moistening carbonate of lime with sour wine. The medicinal plants mentioned in Ebers Papyrus (1550 BC) included opium and cannabis. Some wall inscriptions in the tomb of Ankh-Mahor (known as The Tomb of Physicians-2625-2475 BC) during the performance of circumcision of adolescents, the use of some ointment (interpreted as local anesthetic) is mentioned to make the procedure acceptable. Imhotep, a towering figure in Egyptian history, introduced “Mamfis”, a mixture of crushed marble stone and vinegar as anesthetic [19].

**Ancient Chinese Medicine:** Renowned Chinese surgeon Bian Que (also called Pien Ch'iao – 401-310 BC), to whom the first heart transplant surgery is attributed, used to employ “narcotic wine” (probably containing Indian hemp) for his surgical procedures which have been recorded in Book of Master Han Fei (circa 100 BC) and Records of the Grand Historian (circa 100 BC) Hua Tuo (, circa 140-208 AD), “Chinese god of Surgery”, performed surgery under general anesthesia using a formula he had developed, by mixing wine with a mixture of herbal extracts he called mafeisan. He used mafeisan (literally meaning: cannabis boiling powder) to perform even major operations such as resection of gangrenous intestines [20]. Unfortunately, due to Confucian teaching, the practice of surgery was considered mutilation of the body which was considered sacred. Thus his invention could not get adequate popularity.

**Ancient Greek Medicine:** The efficacy of opium poppy was well known to Greeks. Their gods Hypnos (sleep), Nyx (night) and Thanatos (death) were often depicted holding poppies. In Homer's Odyssey, Circe (the Greek goddess of magic) uses deliriant herb which was probably Mandragora or Datura. Herodotus (circa 484- 425 BC), considered the Father of History, made a mention of Scythian (residents of a region in central Eurasia in antiquity) who were accustomed to produce intoxication by inhaling the vapors of cannabis. Pedanius Dioscorides (40 - 90 AD) was the first to suggest the use of alcoholic extract of the root of Mandragora officinalis to produce surgical anesthesia, in his famous treatise “De materia medica”. His work, though available in illustrated form in 512 AD by Aldus Manutius, was “Englished” by John Goodyer in 1655 appearing in book form in 1934 [21].

**Ancient Roman Medicine:** The famous Roman poet Publius Virgils Maro (?-19 BC) was so much impressed by the efficacy of poppy, as “pain-eraser” and “sleep-causer”, that he remarked “poppies steeped in river of unmindfulness”. Similar were the feelings of another poet Publius Ovid Naso (43BC-18AD). Aulus Cornelius Celsus (25BC-50AD) described sleep inducing drugs as “anodynes” (meaning an ease from pain - an older and convenient term for the anesthesia), in his “De Medicina” treatise [22]. Pliny the Elder (23 -79 AD) not only appreciated the efficacy of oral mandragora but also claimed that the mere smell of its juice will put some people to sleep. He advised it to be drunk before cutting and puncturing, lest they should be felt.

**Ancient Hindu Medicine:** Anesthesia was, unquestionably, employed in surgical procedures by Founding Father of Surgery and Pioneer Anesthesiologists Shusruta (floruit 1500 BC), used henbane (Hyoscyamus niger) and Indian hemp (Cannabis indica) to produce insensibility to pain. In his ever shining treatise “Shusruta samhita” he also advocates the use of alcohol with incense of cannabis for anesthesia [23]. In 527 AD, in a cranial operation on Raja Bhoj, Samohini drug (probably opiate) was used for induction and Sanjivani for recovery [24].

**Ancient Arab Medicine:** *“The Arabs, undoubtedly, deserve the credit of introducing inhalation and local anaesthesia. Their ‘soporific sponge’ was one of the causes of their surgery tending to rise above the level of travelling mountebank”*

(Donald Campbell - “Arabian Medicine and its Influence on the Middle Ages”)

The art of inducing insensibility to pain, by inhalation or oral substances, was known to Arab physicians. The “Arabian Nights” (collection of folk tales believed to be the product of 10th century AD) contains reference to this practice. Lady Burton in her write-up of 1886, giving the account of the Night 263, remarked: *“anaesthetics have been used in surgery throughout the East for centuries before ether and chloroform became the fashion in the civilized west”* [25]. Arabic term “*Al-Murqid*” (- a drug that induces sleep) has been documented to be used, as surgical anesthetic, by surgeons in the Caliphate of Walid bin Abdul Malik (reign 705-715 AD) while describing the procedure of amputating the gangrenous leg in a patient named Urwa bin Zubair. Ali ibn Isa al-Kallah (940-1010 AD), Latinized Jesu Haly, Professor of Ophthalmology at Baghdad, uses the word “*tanweem*” which means “to put somebody to sleep”. Abu al-Qasim al-Zahrawi (936-1013 AD), Latinized as Abulcasis, the “Father of Modern Surgery”, was using local anesthesia in ocular surgery and general in major procedures like mastectomy [26]. Ibn Sina (980-1037 AD), the Father of Early Modern Medicine, while discussing oral substances, said “A patient who wants to have an amputation of one of his organs must have a drink prepared from a mixture of Mandragora and other sleeping drugs” [15]. Ibn Quff (1232-1286 AD) gave detailed description of the drugs described as “sleep and insensitivity inducing substances” including opium, mandrake, Hyoscyamus albus, belladonna, cannabis sativa, cannabis indica and wild lettuce [5].

**European Medicine:** *“When nature has work to be done, she creates a genius to do it”*

Ralph Waldo Emerson (1803-1882 AD)

The first comprehensive description of surgical anesthesia has been traced to the publication of School of Medicine at Salerno (the first Christian European University founded in 1075 AD). The “*Antidotaria parva*” (one of the textbooks from that school) contains the formula for a soporific sponge (Hypnotic Aid) composed of “opium, hyoscyamus, mandragora, hemlock, black berries, lettuce and ivy”. To awaken the patient, the juice of fennel was placed in the nostrils. Magister Salernus (?-1167 AD), an academician at Salerno, in his “*Compendium*” has given an interesting account: *“And it is noted that opium, hyoscyamus and mandragora produce a deep slumber, because of its great humidity, if you make a cataplasm from these and it is placed on the spot on which an incision or an operation is performed, they will abolish sensation completely so that pain in any form is not felt”*.

Gilbertus Salernitan (circa 1180 – 1250 AD) in his “*Compendium*” described “*Confectiosoporifera*” which was a modified form of above formula with addition of dodder. For awakening the patient, he advised inhalation of vinegar. He also suggested a soporific

drink (containing poppy, lettuce and opium) for oral use. Michael Scot (1175 - 1234 AD), an outstanding translator of Arabic culture to Latin speaking Europe, left a similar prescription for the surgeons with the assurance *“the patient will soon sleep so deep that you may do what you wish”*. Theodoric Borgognoni of Lucca (1205 – 1298 AD) made a detailed note of “spongia somnifera”. or sleep sponge in “Chirurgia” which has been described as a “landmark in the history of anesthesia” by medical historians. The formula is identical with Salernitan’s mentioned above.

Guy de Chauliac (1300 - 1368 AD), the most eminent authority on surgery during the Middle Ages, continued to urge the use of inhalation of narcotics. Johannes Lange (1485 - 1565 AD), Chief Physician to the Electors of the Palatinate at Heidelberg, described an identical formula for inhalation while Hieronymus Brunschwig (1450 - 1512 AD) in his famous treatise “Buch der Chirurgia Hantwirckung der Waundartzny – 1497 AD” suggested soporific potion *“give it to him (the patient) to drink all at once and when he sleeps cut him”*. On the basis of the manuscripts dating from 9<sup>th</sup> century, Professor Karl Sudhoff (1853 - 1938 AD), greatest medical historian, described the formula of the “Hynotic Aid” consisting of the constituents already mentioned.

The contribution of Arab anesthetic discovery is best acknowledged in, the assertion of Sigrud Hunke (1913-1999 AD), renowned German scholar, as *“the science of medicine has gained a great and extremely important discovery and that is the use of general anaesthetics for surgical operations, and how unique, efficient and merciful for those who tried it, the Muslim anaesthetic was. It was quite different from the drinks the Indians, Romans and Greeks were forcing their patients to have for relief of pain .....The art of using the anaesthetic sponge is a pure Muslim technique which was not known before”* [27].

**Japanese Medicine:** *“Life is pain and the enjoyment of love is an anesthetic”*

Cesare Pavese-Italian Poet (1908-1950 AD)

Seishū Hanaoka (1760-1835 AD), a Japanese surgeon, well versed with Chinese herbal medicine as well as western surgical techniques introduced “tsusensan”, which could produce a state of general anesthesia with muscle relaxation. It was modified formula of Hua Tao’s “mafeisan” consisting of seven herbs and oils.

It was October 13, 1804 that he employed this preparation while performing a partial mastectomy for breast cancer on a 60 years old lady named Kan Aiya. This was the first reliable, generally recorded, demonstration of general anesthesia. In the later period of his professional career, he used this preparation for different surgical procedures, in addition to 150 cases of breast cancer [28]. He is known as one of the pioneers to use general anesthesia and to dare to operate on breast cancer.

### Inhalation Anesthetics in Western Medicine

Researchers in Europe did a remarkable job working with gases and vapors to isolate an appropriate substance which could ideally cause insensibility to pain during surgical procedures. Following is the list of the agents tested:

**Carbon dioxide:** The story of carbon dioxide was brief. In 1824, British surgeon, Henry Hill Hickman (1800-1829 AD), found in animals that inhalation of Carbon dioxide gas produced insensibility to pain.

In 1824, he submitted the results of his research to the Royal Society in a short treatise titled “Letter on suspended animation: with the view of ascertaining its probable utility in surgical operations on human subjects”. *“.....Something has not been thought of whereby the fears (of the patient) may be tranquilized and suffering relieved”*[29].

In an article entitled “Surgical Humbug”, published in The Lancet in 1826 his work was ruthlessly criticized. Since he had failed to convince his colleagues he wrote to Charles X, King of France, asking for permission to demonstrate his experiment. His Majesty referred the matter to “Academic de Medecine Paris” where the famous French surgeon Dominique Jean Larrey (1766-1842 AD), inventor of “Flying Ambulance”, was the only one to support Hickman’s request. In addition, he offered himself as a subject for experiment. But the others disagreed, and the matter was dropped. Rejected and dejected, he committed suicide at 31 years of age. It was a tragic end of a researcher whose goal was to search for a pain free surgery.

**Nitrous Oxide:** *“I have sometimes experienced from nitrous oxide, sensations similar to no others, and they have consequently been indescribable”*.

Sir Humphrey Davy (1778-1829 AD)

British chemist Joseph Priestley (1733-1804 AD), discoverer of “dephlogisticated air” (later known as oxygen) on August 1, 1774, had the additional honor of isolating Nitrous Oxide in 1772. Sir Humphrey Davy, from Pneumatic Institute in Bristol, expanded the work on his assistants and friends, including the famous poets Samuel Taylor Coleridge and William Wordsworth. Amongst the earlier subjects were Dr. Thomas Beddoes and his wife Anna Edgeworth. She remarked: *“the gas made me feel that I was ascending the ballon”*. The others also reported dizziness, loss of pain, relaxation of muscles and a tendency to laugh (hence the popular name “laughing gas”) and “the dreams of misemployed genius”. Sir Davy, in his treatise published in 1800, remarked: *“As Nitrous Oxide, in its extensive operation, seems capable of destroying physical pain; it may probably be used with advantage during surgical operations in which no great effusion of blood takes place”* [30].

Dr. Horace Wells (1815-1848 AD), an American dentist, attended a Grand Exhibition of “laughing gas” by Dr. Gardner Quincy Colton (Founder of Colton Dental Association) at Union Hall in Hartford, Connecticut on December 10, 1844. He was impressed by the effects of the gas and thought of using it in surgical practice. Dr. Wells discussed with Colton and then planned to become “the first guinea pig”. Eventually Dr. John Riggs of “Riggs Disease” fame extracted his ailing erupting tooth. After waking, Dr. Wells exclaimed: “It is the greatest discovery, ever made. I did not feel as much as the prick of a pain”. A news appeared in “Boston Bee” on January 20, 1845, “A dentist in Hartford has adopted the use of nitrous oxide gas in tooth pulling. It is said that after taking this gas the patient feels no pain”. That was the earliest known announcement of use of nitrous oxide in surgical practice.

Later on, after successful experimentation of its efficacy in significant number of cases, he planned to make a public demonstration on January 20, 1845, at Massachusetts General Hospital. When he pulled the infected tooth, the patient groaned. At that moment the hall erupted with cries of “humbug” and “swindler”. Dejected and depressed, Dr. Wells left the hall. The patient later explained that he “practically felt no pain”. Dr. Wells in his communication on December 7, 1846 to the Editor of the “Connecticut Courant” narrates the event, “*Unfortunately for the experiment the gas bag was, by mistake, withdrawn much too soon, and the patient was partially under its influence when the tooth was extracted. He testified that he experienced some pain, but not as usually attends the operation. As there was no other patient present, the experiment could not be repeated and as several expressed their opinion that it was a ‘humbug affair’ (which in fact was all the thanks I got)*”.

Although the demonstration did not meet the expectations of many, Dr. Pinckney Webster Ellsworth, a prominent Hartford, Connecticut surgeon, wrote an article in support of Dr. Wells’ assertion that appeared in the Boston Medical Surgical Journal June 18, 1845. The other practitioners expanded work on the gas. Unfortunately, reports of suboptimal response and even failure shattered the confidence of the public and the professionals. The gas had been condemned, dead and forgotten as an anesthetic from 1848 to 1863.

In 1863, through long continued efforts of Dr. Colton, nitrous oxide was reintroduced into American surgical practice. He pleaded that the gas was, beyond all comparisons (with ether and chloroform), the safest of all anesthetics as it was pleasant to inhale and the patient was quickly under its influence and quickly over it. He claimed to having given to over 15,000 patients without a single death [31]. In 1868, Edmond Andrews, a Chicago surgeon introduced administration of nitrous oxide in combination with oxygen. The same year nitrous oxide in cylinders was marketed in United Kingdom.

**Ether:** “*The history of medicine has presented no parallel to the success that has attended the use of Ether*”

(*Exeter Flying Post June 24, 1847*)

The following is an account of the historical record of use of ether in the United States and Europe.

There is some disagreement who discovered Ether. Jaber Ibn Hayyan (721-815 AD), an Arab Polymath, known as “Father of Modern Chemistry” was the first to prepare oil of vitriol which we now all sulphuric acid, from distillation of alum [32]. Spaniard Raymond Lullius (1235-1315 AD), known as “Doctor Illuminatus” synthesized a new preparation by distillation of sulphuric acid with spirit of wine. The German herbalist Valerius Cordus (1515-1544 AD), well remembered for authoring one of the greatest pharmacopeia, named it “Sweet oil of vitriol (oleum dulce vitrioli)” [33]. However, Sigmund Frobenius (1700-1741 AD), a German chemist renamed it “Ether” (Latin aether: the upper pure, bright air), in 1729 [34].

Paracelsus (1493-1541 AD), a Swiss physician, described the anesthetic effects of sulphuric ether on chickens. He says, “it quiets all suffering without any harm, and relieves all pain, and quenches all fevers, and prevents complications in all disease” [35].

In 1818, Professor Michael Faraday (1791-1867), discoverer of electromagnetic induction and inventor of induction coil, further studied ether and concluded that its effects were very similar to those of nitrous oxide [36].

The first recorded use of ether anesthesia occurred on January 20, 1842, which was administered by William E Clarke, a chemist (pharmacist) from Rochester, New York to a person referred to as Miss Hobbie while Dr. Elijah Pope extracted a tooth [37]. Clarke, however, did not opt to publish or to pursue this technique any further.

Crawford Williamson Long (1815-1878 AD) gives an interesting account of the story of “etherisation”. In December 1841, some of his friends frequently assembled in the village of Jefferson to experience the exhilarating effects of ether. The practice even became fashionable and an “essential” component of the dinner parties in the locality. He was convinced of the efficacy and safety of the substance, so he decided to employ it for a surgical procedure on March 30, 1842. The patient was Mr. James Venable from nearby Cobb County who presented with two tumors on back of his neck. The first tumor was successfully removed while he “continued to inhale ether during the time of the operation”. The second tumor was excised on June 6, 1842. Both the procedures were reported as being pain free. The third case was a negro boy whose diseased toe was amputated uneventfully, on July 3, 1842.

It was Charles T. Jackson (1805-1880 AD) who suggested to Boston dentist William Thomas Green Morton (1819-1868 AD), that the application of ether could relieve pain in tooth pulling. Having found it successful, Morton thought of trying ether inhalation in other surgical procedures. John Collins Warren (1778-1856 AD), Professor of Surgery at Harvard and Chief Surgeon Massachusetts General Hospital, was kind enough to allow him to make the first public demonstration of “etherisation” on October

16, 1846. The patient was Gilbert Abbott presenting with a congenital tumor on left side of neck extending along the jaw to maxillary gland and into mouth embracing the margin of tongue.

The silence, in that crowded operating room, was broken by the words of Professor Warren *“that a test of some preparation was to be made for which the astonishing claim had been made that it would render the patient operated upon free of pain”*. Dr. Morton asked the patient to inhale vapor “for about three minutes at the end of which he sunk into a state of insensibility. He showed no sign of pain, yet he was alive and breathing”. After the successful removal of the tumor, Professor Warren turned to the amazed audience and exclaimed *“gentlemen! there is no humbug”*. Dr. Henry Jacob Bigelow, an eminent surgeon of that Brigham and Women’s Hospital assisting the operation, remarked: *“I have seen something today that will go around the world”*. The operating room *“Ether Dome”* at Massachusetts General Hospital remains a “memorial” to that moment of a wonderful discovery.

This successful demonstration and appreciation by Professor Warren, a commanding figure in the world of surgery, played a pivotal role in overall acceptance of “etherisation” by the medical profession. The next day, October 17, 1846, another surgical procedure (removal of a fatty tumor from the deltoid region of a female patient) was performed, under ether inhalation, by George Hayward (1791-1863 AD), a forgotten pioneer of reconstructive pelvic surgery.

It was the historic day of December 21, 1846, that the first widely witnessed surgical procedure, under ether anesthesia, was performed by renowned British surgeon Robert Liston (1794-1847 AD) at University College Hospital London on Frederick Churchill, a butler from Harley Street, for amputation of his leg. The Ether was administered by William Squire. Shortly after, On December 30, 1846, James Goodall Lansdown did a successful above-knee amputation in Bristol General Hospital. On January 12, 1847, French surgeon Joseph-Francois Malgaigne (1806-1865 AD) reported to the “Paris Academia de Medecine” three successful cases of “etherisation”. There were similar reports from Professor James Syme (1799-1870 AD), a pioneering Scottish surgeon, and Nikolai Ivanovich Pirogov (1810-1881 AD), a prominent Russian surgeon.

On January 19, 1847, Sir James Young Simpson (1811-1870 AD), Professor of Midwifery at University of Edinburgh, championed etherization in obstetric practice in women with deformed pelvis. On November 19, 1847, he wrote a note of appreciation to the Bostonian Dr. Morton saying: *“Of course, the great thought is that of producing insensibility to pain, and that the world is, I think, indebted to you”*.

The first use of ether in obstetrics, in Germany, was by Adam Hammer (1818-1878 AD) on February 18, 1847. The first patient in United States was Fanny Appleton Longfellow (wife of famous poet Henry Ward-worth Longfellow), to receive obstetric anesthesia, by Nathan Cooley Keep, on April 7, 1847. She wrote: *“I feel proud to be the pioneer to less suffering. This is certainly the greatest blessing of the age and I am glad to have lived the time of its coming”*. That sentiment was echoed by Professor Holmes, while recounting blessings of obstetric anesthesia that *“it lifted the primal curse”*. John Snow (1813-1858 AD), a towering figure in clinical medicine, epidemiology and obstetric anesthesia, started administering ether as early as 1847 [38]. Later on, he switched to chloroform “on the request of the operating surgeons”.

**Chloroform:** *“With a few exceptions, almost all over the earth, nothing else was used to produce anesthesia but chloroform”*.

(Adolf Gusserow (1836-1906 AD)-Professor of Obstetrics)

The story of chloroform involves interesting medical and theological debate. It was isolated in 1831 by three independent investigators, of different countries;

1. Samuel Guthrie (1782-1848 AD) - American physician [39]
2. Eugene Soubeiran (1797-1858 AD) - French pharmacist [40]
3. Justus Von Liebig (1803-1873 AD) - German chemist [41]

Its composition was first accurately ascertained by the distinguished French chemist Jean-Baptiste-Andre Dumas (1800-1884 AD), in 1835 [42]. Marie-Jean-Pierre Flourens (1794-1867 AD), French physiologist, championed to demonstrate its anesthetic properties in animals [43]. Dr. Robert Mortimer Glover (1815-1859 AD), British physician, provided additional evidence [44]. Sir James Young Simpson has the credit of introducing it to routine clinical practice. On November 10, 1847 he presented a paper, in the meeting of Edinburgh Chirurgical Society, discussing the employment of chloroform to replace ether in obstetrical procedures [45].

Chloroform was first used by British Army Surgeons during Crimean War (October 1853-February 1856) [46]. In the United States it was used by Paul Fitzsimmons Eve (1806-1877 AD), who is well remembered for authoring *“A Collection of Remarkable Cases in Surgery 1857”* [47]. The preferential adoption of Chloroform in the army, was because of economy (comparatively small amount required to produce the desired effect), convenient portability (during march or engagement), rapidity of action and value of time (which was of paramount importance for the field surgeons with crowded wounded). Most of the military surgeons had the consensus that it was a “soldier’s best friend during a painful surgery” [48].

**Hostility: resistance to use of anesthesia in the west**

*“It is a lamentable fact that every great improvement and discovery in Medicine and Science has brought persecution upon its author”*.



(Atlantic monthly)

As already pointed out, surgery in pre-anesthesia era was a terrifying procedure. The surgeons were trying to finish their task at break-neck speed certainly compromising the quality. "The quicker the surgeon, the greater the surgeon" was the professional and popular belief during the the first half of (nineteenth) century" [49]. The results were disastrous in significant cases and the hospitals, in those days, were known as "Houses of Death". Although the concept of pain relief and even total insensibility to pain was not unfamiliar to medical profession, it is a melancholic reality that the speed of work on discovery of the anesthetics was far from exemplary. The delay, according to Gray et al, is attributed to the "old belief in the west that pain and suffering was the price paid by humans for sins" [50].

Whatever may be the reason(s), the search of anesthetics was, seemingly, not a priority among researchers of west. Hans von Gerssdorff (circa 1456-1517 AD), author of a traumatic surgery "Feldbuch der Wundarzney- Strasbourg 1517" wrote: "There has been much said and often written how you give a drink and make one sleep whom you wish to cut. I leave it alone. I have never used it or seen it even at that I have cut off a hundred or two members". How pessimistic were the giants of the medical profession can be assessed from the words of Alfred-Armand-Louis-Marie Valpeu (1795-1867 AD), the distinguished French Surgeon and a voluminous writer who, in 1839 wrote: "Excluding pain from surgeries is a chimera which today is no longer possible to pursue. 'Knife' and 'Pain' in surgery are two words which are always inseparable in the minds of the patients, and this necessary association must be conceded." The remarks of Sir Benjamin Collins Brodie 1st Baronet (1783-1862 AD), well known for pioneering research on bone and joint diseases, in 1846, were more disappointing "physicians and surgeons have been looking in vain from the days of Hippocrates (460-370 BC) down to the present time for the means of allaying or preventing pain" [51].

Pain, in the process of parturition, was thought to be "a desirable, salutary and conservative manifestation of life force" [52]. Why they were sensitive on the issue of pain? Why they insisted that pain is a "Must"? needs to be explored. Pain, one of the universalism of existence, has a long and venerable history. It is a personalized, immeasurable and unsharable experience [53]. The word "pain" is derived from "poena", the Roman Spirit of Punishment, who serves Nemesis (the goddess of indignation against and redistribution for, evil deeds and undeserved good fortune). In Greek mythology the goddess of revenge "poine" was sent to punish mortal man who had dared to anger god [11]. This was the philosophy that surgical pain was considered to be the integral part of surgery, as God's Will.

Whereas the "ether" has its origin attributable to United States of America, the "chloroform" is a British product. The battle, against both of them, was fought at both fronts: American and British. Crawford Williamson Long in the United States was the first to successfully operate on a patient on March 30, 1842. The interesting detail of his three cases of painless surgery has already been described. It was unfortunate that he had to face severe opposition, both from the professional and religious sectors. The co-citizens started criticizing him and demanded that he should be prevented from going ahead. They accused him of using "a diabolical drug to insensibilizing the patients". Getting disgusted, he stopped etherisation and reverted to old barbarous surgery which was more acceptable to them and they returned him the trust and esteem which he enjoyed earlier. Neither he did (nor he could do) anything to universalize the revolutionary achievement, for fear of severe public reaction. This was the most important reason for his silence till 1848 when he presented a lucid account of his first case at the annual meeting of the Georgia Medical Society. The statement of Mr. James Venable (the first patient who was operated twice), recorded under oath on July 23, 1849 in the Cobb County, Georgia sworn to before Alfred Mane (Justice of the Peace), "I did not feel the slightest pain from the operation (on March 30, 1842) and could not believe the tumor was removed until it was shown to me", was astonishing. Later on, all his cases were reported in Southern Medical and Surgical Journal in December 1849. This inordinate delay on his part (a blunder ?) made him out of the battle of "Ether Controversy" [54].

An account of the first publicized case of "etherisation" in United States, authored by Professor Bigelow, in "Boston Medical and Surgical Journal November 18, 1846", provoked a debate in "Philadelphia Medical Examiner" accusing Boston surgeons of encouraging quackery adding: "if this tendency was not checked; physicians and quacks will soon constitute a fraternity". The practice of etherisation, despite the negative attitude, continued to flourish. American military doctors began using anesthesia in the battlefield between Mexican-American War (1846-1848 AD) and by 1849 it was officially issued by the United States Army.

Returning to the "battle" in Edinburg; Sir Simpson had to face opposition on two fronts, medical and religious. As rightly pointed out by Dr. Ron Jones, the opposition to anesthesia for laboring women came from the medical community, often disguised in religious terms ..... No objector was a women [55]. The words uttered by mouths of some doctors "Pain serves as a purpose. It is wrong to try to avoid pain" fascinated opposing clergymen who hastened to further sharpen their weapons against Simpson. It is recorded that Simpson's use of chloroform in labour was denounced "as impious and contrary to Holy Writ". Henry Ward Beecher (1813-1887 AD), America's most famous preacher, was a proponent of women's suffrage to say: "The less pain, the less life-capacity. The less pain power, the less life-power". The Scottish Calvinist clergy declared him "An Agent of Evil" because of the "seriousness of his offence", arguing that Lord God had said to Eve ".....In sorrow thou shalt bring forth children..... (Genesis III: 16-KJV)". At this, Simpson referred to John Calvin (1509 - 1564 AD - French Protestant reformer), founder of Calvinism, who himself had written in "Commentaries" - "it ought to be noted, that Adam was sunk into a profound sleep, in order that he might feel no pain". In addition, Simpson (a Bible scholar as well as a physician) brought forward another reference: "And the Lord God

caused a deep sleep to fall upon Adam; and he slept and He took one of his ribs and closed up the flesh instead there of - Genesis II: 21-KJV". Simpson continued his arguments by advocating that "the above was the first surgical operation ever performed on man". Lord God Himself was the first anesthetist of the universe [4].

In addition to opposition at religious front, Simpson had to "fight" with professional colleagues. In a letter to him, published in the *Buffalo Medical Journal* 3:677, Charles Deluceans Meigs, Obstetrician at Jefferson Medical College, also put forward arguments against obstetric anesthesia: "*But should I exhibit the remedy for pain to a thousand patients in labour, merely to prevent the physiological pain...and if I should in consequence destroy the life of only one of them, I should feel disposed to clothe me in sack-cloth, and cast ashes on my head for the remainder of my days. What sufficient motive have I to risk the life or death of even one in a thousand?*"

Fortunately, Sir Simpson proceeded with his work, first with ether and later on with chloroform, unshaken by negative criticism. Fortified by confidence of knowledge, expertise, zeal and enthusiasm he stood firm and undaunted in his battle against pain. Eventually, he was recognized as "the apostle of chloroform". The plaque dedicated to him in Westminster Abbey reads:

*The world owes the blessings derived*

*From the use of chloroform for*

*The relief of suffering*

*"Laus Deo" (Praise be to God)*

April 7, 1853 was a particularly historic day in the specialty of anesthesiology when chloroform (inhaling for 53 minutes from a handkerchief) was given to Her Majesty Queen Victoria for the birth of her 8th child (Prince Leopold) by Professor John Snow. Despite the apparent "cease fire", severe criticism arose; so much so that the editor of *Lancet* showed his anger as "In no case could it be justifiable to administer chloroform in perfectly ordinary labour" [56]. But Her Majesty's joyful remarks "*the effect was soothing, quieting and delightful beyond measure*" were a severe blow to the critics. After the royal approval, the acceptability of the chloroform was enormously elevated. In 1857, at the birth of Princess Beatrice (the 9<sup>th</sup> and the last child), the Queen received chloroform again to the best of her satisfaction [57]. This made the critics silent. Cartwright wrote "it was the acceptance by the Queen herself that changed the minds of opponents [58]. Walker added "it was the Queen who finally settled the ethics of the question" [59].

## Theological Considerations

At the end of the Congress of Italian Society of Anesthesiologist, in October 1956, Prof. Piero Mazzoni, Secretary General, submitted to the Sovereign Pontiff, the following questions [60]

- Is there a general moral obligation to refuse analgesia and to accept physical pain in a spirit of faith?
- Is the deprivation of consciousness and of the use of higher faculties, caused by narcotics, compatible with the spirit of the Gospel?
- Is the use of narcotics licit for the dying or for patients in danger of death, supposing that there exists for that a clinical indication? Can one use them even if the attenuation of the pain is probably accompanied by a shortening of life?

His Holiness Pius XII was kind enough to treat the questions, from religious and moral points of view, on two separate occasions. He addressed the Italian Society of Anesthesiologists on February 24, 1957 and the Austrian Anesthesia Society on November 24, 1957 at an international assembly of 500 physicians and surgeons, as following [61,62]:

### Conclusions and Answers to the First Question

- The fundamental principles of anesthesiology, as science and art, and the end that it pursues, are not objectionable. They struggle with forces that, in many ways, produce harmful effects and block a greater good.
- The doctor, who accepts these methods, enters in contradiction neither with the natural moral order, nor with the specifically Christian ideal. He seeks, according to the order of the Creator (Gen. 1, 28), to subject pain to the capacity of man, and uses for that the acquisitions of science and technology, according to principles which We have stated and which will guide his decisions in particular cases.
- The patient desirous of avoiding or calming the pain can, without anxiety of conscience, use the means found by science and which, in themselves, are not immoral. Some particular circumstances can impose another line of conduct; but the duty of self-denial and interior purification, which falls to the Christian, is not an obstacle to the use of the anesthesia, because one can fill it by another way. The same rule also applies to the supererogatory exigencies of the Christian ideal.

### Conclusion and Answer to the Second Question

The conclusion of the preceding considerations can thus be formulated as follows: within the indicated limits and if one observes

the proper requirements, narcosis involving a decrease or a suppression of consciousness is allowed by the natural moral law, and is compatible with the spirit of the Gospel.

### Conclusion and Answer to the Second Question

The conclusion of the preceding considerations can thus be formulated as follows: within the indicated limits and if one observes the proper requirements, narcosis involving a decrease or a suppression of consciousness is allowed by the natural moral law, and is compatible with the spirit of the Gospel.

### Conclusion and Answer to the Third Question

In short, you ask Us: “is the suppression of pain and of the consciousness by the means of narcosis (when it is demanded by a medical indication), allowed by the religion and morals to the doctor and to the patient (even with death approaching, and with the knowledge that the use of narcosis will shorten life)?”. The answer will be: “If there are no other means and, if, in the given circumstances, that does not prevent the fulfillment of other religious and moral duties: Yes”

As we already explained, the ideal of Christian heroism does not impose, at least generally, the refusal of a justified narcosis, not even with the approach of death; all depends on the concrete circumstances. The more perfect and more heroic resolution can be as well in the acceptance as in the refusal.

## The Head and Hand Debate: The story of the persons behind the discovery; Drs. Morton and Jackson

*“If circumstances lead me, I will find Where truth is hid, though it were hid indeed Within the centre”*

*(William Shakespeare — 1564-1616 AD)*

The successful application of, self-formulated, general anesthetic was first documented on October 13, 1804, by Dr. Seishū Hanaokain Wakayama, Japan, during a breast lumpectomy. It was unfortunate that the amazing news of this tremendous medical achievement could not cross the international borders because “the act of leaving or entering the country of Japan was punishable by death as “Sakoku” (literally “country in chains” or “lock up of country”) Law [28]. The tragic story of his wife’s blindness from “tsusensan” inspired a book and a movie, both entitled “The Doctor’s Wife”.

The emblem of The Japanese Society of Anesthesiology (JSA) features a flower of datura which is the same species of Datura that Seishū Hanaoka had used for tsusensan. It was in 1954 (119 years after his death) that his achievement was presented at a meeting of International College of Surgeons, held in Chicago. His documents are still exhibited in the Hall of Honor there. However, neither he nor any of his admirers ever claimed his priority in discovery of anesthesia. He is, therefore, out of the contest of pride.

When the American Congress, in 1853, decided to offer a prize of a hundred thousand dollars to the discoverer of the anesthetic powers of ether, described as the earliest anesthetic, James Esdaile (1808-1859 AD), a notable surgeon and mesmerist, addressed to the Congress an indignant protest, not claiming the dollars, but denying that ether preceded mesmerism. His claim was based on his experience in British India, where he worked with East India Company for 20 years [63]. His assertion was not unfounded as may be evident from the following incident. On December 21, 1847, at the first successful etherization in University College Hospital London (described above), the surgeon Robert Liston addressed to the amazed crowd in the operation theatre:

*“This Yankee Dodge, gentlemen beats mesmerism hollow”.*

The term “Yankee Dodge” seems to be a nickname or expression coined to describe anesthesia. “Beat something hollow” means to be far better, compared to something else. The notable point is that the surgeon compared ether with mesmerism which was practiced widely in Europe and United States, in those days.

There had been a long debate as to who was the discoverer of surgical anesthesia, the four contestants being Horace Wells (1815 - 1848 AD), William T. G. Morton (1819 - 1868 AD), Charles Thomas Jackson (1805 - 1880 AD) and Crawford Williamson Long (1815 - 1878 AD). Although not involved in the early portions of the Ether Controversy, in 1849 Long reported that he had first administered sulfuric ether during a surgical procedure on March 30, 1842. Long may not have been as much involved in the Ether Controversy as the other claimants, but he is certainly a stakeholder of this historical conflict.

Each one of the three active contestants, had arguments in favor of priority. Since the present paper is intended to be historical rather than judicial, it is therefore, neither possible nor feasible to attempt to give verdict in favor of any of them. Interestingly, in Boston’s Public Garden stands a monument which is called “Ether Monument” or “The Good Samaritan”. At the base of the statue are inscriptions explaining the significance of the discovery of the use of ether as an anesthetic. There are four inscriptions, which include Biblical quotations from Isaiah 28:29 and Revelation 21:4:

“To commemorate that the inhaling of ether causes insensibility to pain. First proved to the world at the Massachusetts General Hospital in Boston, October A.D. MDCCCXLVI

This also cometh forth from the Lord of Hosts which is wonderful and excellent in working. Isaiah.

In gratitude for the relief of human suffering by the inhaling of ether a citizen of Boston has erected this monument A.D. MDCCCLXVII.

Neither shall there be any more pain. Rev”

Notably, no name appears on the monument to give credit for the discovery. During the unveiling Mayor Nathaniel Bradstreet Shertleff, who was a Harvard medical graduate, refrained from mentioning any name, to memorialize the discoverer of anesthesia.

Consequent upon successful public demonstration on October 16, 1846, Morton and Jackson jointly got patented the compound (# 4848 for 14 years) as “Letheon” (Lethe-Greek Spirit of Forgetfulness and Oblivion) on November 12, 1846. It was generally believed that “Jackson was the Head behind the Hands (Morton)” [64]. Professor Emeritus Henry Jacob Bigelow (1818-1890 AD) of Harvard Medical School, on November 18, 1846, published a detailed account of the series of events giving credit of the discovery to both of them. This article, unintentionally, led to a vicious debate that became known as the “Ether Controversy” [65].

#### **Dr. Horace Wells**

When Dr. Horace Wells (Morton’s former teacher and a partner) read this article and saw that Morton and Jackson were taking credit for the discovery, he wrote a rebuttal in the form of a letter dated December 9, 1846 to the Editor of the Hartford Courant. He claimed that it was he who had discovered the property of the compound, two years earlier. In an attempt to strength his assertion, he published a treatise “History of Discovery of Application of Nitrous Oxide – 1847”. Early In 1847, he sailed for Europe where he petitioned the Academy of Science, Academic Royals de Medicine and the Parisian Medical Society, all located in Paris, for his recognition in the discovery of anesthesia. To his misfortune, Wells’s efforts to get him his due were unsuccessful, during his lifetime. He died unaware that just 12 days earlier, the “Parisian Medical Society” had recognized him as the inventor of anesthesia, made him an honorary member and awarded an honorary MD degree [66].

In a letter to Editor The New York Times, published on February 5, 1862, Prof. CH Haywood of Massachusetts General Hospital gave Dr. Wells the credit of discovery saying: “*To the spirit of Dr. Horace Wells belongs the honor of having given to suffering humanity the greatest boon it ever received from science*” [67]. In a Full Meeting of American Medical Association in June 1864, the resolution of American Dental Association that “*Dr. Horace Wells, of Hartford, now deceased, belongs the credit and honor of introduction of anesthetics in the United States*” was unanimously adopted. The Baltimore College of Dentistry awarded him an honorary doctorate, posthumously, on October 10, 1990. The ceremony was organized in Ether Dome, where he had made his first public demonstration of efficacy of nitrous oxide on January 20, 1845.

#### **Dr. William Morton**

In the course of initial joint venture of Morton and Jackson, there was a dramatic twist that Morton demanded exclusive right of the discovery, throwing Jackson out of field. Both Wells and Jackson stepped to challenge him but untimely death of Wells, in 1848, halved the number of rivals and Morton came in a stronger position. Morton and Jackson entered into a protracted legal dispute in their attempts to validate either one’s claim and spent the next two decades fighting bitterly before the Congress.

The French Academy of Art and Science appointed a nine members Commission of eminent scientific and medical men to examine the evidence of the various claimants of the discovery. The decision was in favor of both Jackson (for his observations and experiments on the anesthetic effects of Ether) and Morton (for introducing this method in surgical practices). The verdict was conveyed to both the parties on May 17, 1852 and they gladly accepted the monetary award of francs 2,500 each [68].

The Committee of Inquiry appointed by Massachusetts General Hospital ruled that Morton, not Jackson, should be given the credit for painless surgery. He was also awarded a silver casket containing one thousand dollars, by the Trustees [69]. Moreover, his alma mater, University of Washington (later merged with College of Physicians and Surgeons Baltimore), awarded him honorary doctorate in 1852. The other honors, conferred upon him, were “Cross of Order of St. Vladimir-Russia” the Order of the Red Eagle by King of Prussia and “Cross of Order of Vasa-Norway and Sweden”. The King of Italy and the Sultan of Turkey also decorated him [70]. On July 6, 1868, while reading a column in “Atlantic Monthly”, in favor of Jackson, Morton being extremely agitated, suffered a stroke not to recover. He breathed his last on July 15, 1868, just after a week’s hospitalization.

#### **Dr. Charles Jackson**

On July 18, 1854, Dr. Jackson recorded his protest to the Congress, against the bill provided for recompense of the discoverer of practical anesthesia. He added that the proposed bill would compel him, against his will, to abandon the scientific labors and enter in legal battle [71]. His protest and the legal battle could not get him what he thought of his due. In 1873, Jackson, one day, while walking through the cemetery saw the tomb of Morton, read the inscription and became extremely shocked. He was found raving at the stone and carried out to McLean Asylum where he remained, completely insane, for seven years until he breathed last on August 28, 1880. Wolfe and Patterson recognize Jackson as “one of the most talented scientists of his time”. In addition, they claim to prove beyond a shadow of doubt that “he was the hero and not the villain in all of these controversial and acrimonious affairs” [64].

## Tragic End of the Claimants

The closing chapter of the story of Ether Controversy is disheartening. Wells, Morton and Jackson, all the three furious claimants of the honor of discovery, met tragic end, while at the ages of 33 years, 48 years and 75 years respectively.

Dr. Horace Wells committed suicide, on January 24, 1848, while in a New York detention centre. When discovered, he was quite dead and, on the floor, there scattered papers containing series of events which led to the fatal act. The letters exhibit the state of his mind as: "If I were to go free tomorrow I could not live and be called a villain. God knows I am not.....what more still distresses me is the fact that my name is familiar to the whole scientific world as being connected with an important discovery.....O my dear wife and child whom I leave destitute of the means of support.....O my God protect them.....To Mr. Dwyer: Please to attend my burial and let me be interred here in the most secret manner possible" [72].

This was the dreadful end of a person who was described as having the mind of "uncommon restlessness, activity and intelligence". Although, according to the medical report the cause of death was cutting the left femoral artery with razor, the true cause could have been described by one of the famous Rubaiyat of Omar Khayyam (1048-1131 AD), the Astronomer Poet of Persia, in "Shears of Fate" as:

خیام که خیمه های حکمت می دوخت  
در کوزه غم فکاده ناگاه بسوخت  
مقراض اجل طنابِ عمرش به برید  
دلالت قضا به رائگانش بفروخت

*Khayyam, who stitched the tents of science,  
Has fallen in grief's furnace and been suddenly burned;  
The shears of Fate have cut the tent ropes of his life,  
And the broker of Hope has sold him for nothing!  
[His name means a tent maker.]  
(Translated into English by Edward FitzGerald)*

The long lasting battle of pride and monetary gain impoverished Dr. Morton. His long suffering wife, Elizabeth Whitman Morton, who claimed to have allowed Morton to pour everything in the pursuit of his goal said ".....The greatest personal tragedy in my husband's life was his discovery of ether" [73].

The most distressing aspect, in her opinion, was "In spite of various efforts that were made during subsequent years to obtain recognition from United States Government of Dr. Morton's services to the country and to the world, nothing was ever done". She describes last moments story of Morton in St. Luke's Hospital where he was shifted while unconscious: "The Chief Surgeons at a glance, recognized him as Dr. Morton (and after confirming from me) said to the surrounding group of pupils - "Young gentlemen! you see lying before you a man who has done more for humanity and for the relief of suffering than any man who has ever lived" [73].

Charles Dalton, President of the Massachusetts General Hospital, in his welcome address at "50th Anniversary of First Public Demonstration of Surgical Anesthesia on October 16, 1846 said "Of the infinite blessings which followed this the greatest gift of century to mankind is Surgical Anesthesia" [74]. Although, the fate of three "Giants in Medicine", behind the discovery of anesthesia was mournful, could we (or should we) ever forget the good that has resulted from their untiring and dedicated struggle to relieve the sufferings of humanity?

## Monumental Honor

The details of "Ether Controversy" are very saddening. Certain things were unfairly assumed to be factual, inferences having been drawn from preconceived notions, one-sided reasoning and discussion. At occasions, unethical, impolitic and even pungent remarks, aimed at character assassination, were used for either of the three active claimants. As may be truly gathered, all of them

,at one stage or the other, were severely bruised by their folk men, to meet tragic ends. During their lifetime each one of them publicly argued that he was not given his due. However, their grievances were redressed posthumously, by creating monuments in their honor. How fitting are the lines of an Urdu Poet:

عمر بھر سنگ زنی کرتے رہے اہل وطن  
یہ الگ بات کہ دفنائیں گے اعزاز کے ساتھ  
(احمد ندیم قاسمی)

*My thankless folks held me all my life guilty  
However, on my death they declared me a hero  
(Urdu Poetry by. Ahmad Nadeem Qasmi—English Translation by Naeem Ameen)*

Monuments related to the discovery of inhalation anesthesia were created in honor of the four active claimants to this discovery, by their supporters. Each monument avouches that the distinction for the discovery of surgical inhalation anesthesia belongs to the person it represents [75].

Dr. Horace Wells: The grave site of Horace Wells is equally famous for the relief artwork of the Wells Memorial.

Dr. Horace Wells - Cedar Hill Cemetery - Hartford, CT

Grave of a Famous Person

“HORACE WELLS 1815-1848 Discoverer of Anesthesia”

The sides have statue of a woman with the inscription I SLEEP TO AWAKEN and I AWAKEN TO GLORY. The front has a relief sculpture of an angel delivering anesthesia to a patient with the inscription THERE SHALL BE NO PAIN.

Dr. William Morton: The citizens of Boston erected a monument over the grave of Morton in M. Auburn Cemetery, with following inscription written by Professor Bigelow:

William TG Morton  
Inventor and Revealer of Anesthetic Inhalation  
Before Whom, in All Time, Surgery was Agony  
By Whom Pain in Surgery Was Averted and Annulled  
Since Whom Science Has Control of Pain

Dr.Charles Jackson: The base of Jackson’s headstone includes a passage from Lord Byron’s (1788–1824) poem “Prometheus”:

Thy Godlike crime was to be kind,  
To render with thy precepts less  
The sum of human wretchedness,  
And strengthen man with his own mind.

Ortega et al have shared interesting explanation of the above philosophical lines. Prometheus who is said to have created man, in defiance of the gods, and provided the gift of fire, is considered to be benefactor of mankind, by many.He was a Byronic hero.These lines fit the personality of Jackson who freed the world from darkness of pain,through gift of anesthesia [ 75].

Crawford Williamson Long:Following monument was erected in Jefferson, Georgia by the Jefferson County Medical Society and Georgia Medical Association, on April 21,1910

In the memory of Dr. Crawford W. Long.

The first discoverer of Anesthesia, the Great Benefactor of the human race.

Born in Danielsville, Madison County, GA Nov 1, 1815.

Died in Athens, Georgia June 16, 1878.

Sulphuric Ether Anesthesia was discovered by Crawford W. Long March 30, 1842, at Jefferson, GA.

Administered to James M. Venable for removal of a tumor. Given by Dr. Lamartine Griffin Hardman, in the name of his father and mother.

In 1864, consequent upon the introduction of legislation by Congressman Justin S Morrill (1810-1898 AD) allowing each state

to recognize two individuals to be memorized in Washington DC, Long was one of the two selected for Georgia. The statue was unveiled on March 30, 1926.

The base of the statue reads:

Crawford W. Long, M.D.

Discoverer of the use of sulphuric ether

As an Anesthetic in surgery

On March 30, 1842 At Jefferson Jackson County, Georgia, USA.,

"My profession is to me a ministry from God"— a sentiment that his "parishioners" must have thought described him best.

## Recognition of Anesthesia as an Independent Speciality

*Divinum sedare dolorem*

*(It is Divine to alleviate pain) - Slogan of Royal College of Anaesthetists*

The renowned Arab surgeon Ibn al Quff (1232-1286 AD), in the description of surgical anesthesia advocates: "*Pain relief during surgery should be the responsibility of a second medical man other than the surgeon, performing the operation*" [5]. This is the first known report in literature, on the role of anesthetist. He was the first to recognize anesthesia as an independent speciality. Unfortunately, it took almost 700 years for his dream to come true. Sir Ivan Whiteside Magill (1888-1986 AD) is well remembered for his remarkable contribution to academic anesthesia and its recognition as a Speciality through founding of the Association of Anaesthetists of Great Britain and Ireland, in 1932, by Dr. Henry Featherstone (1894-1967 AD). The first Diploma program in anesthesia (DA) was introduced in 1935, under the auspices of the Royal Society of Medicine.

Lord William Morris Nuffield (1877-1963 AD), justifiably called the "Benefactor of Anesthesia" has the credit to get established anesthesia as an academic subject and creating the first chair of Anesthesia in Britain, the British Commonwealth and Europe. Archibald Daniel Marston (1891-1962 AD) was the Founder Dean of the Faculty of Anaesthetists of the Royal College of Surgeons of England, having its first meeting on March 23, 1948. It was, however, in 1988 that the Faculty became the "College of Anaesthetists" within the Royal College of Surgeons of England. The granting of the 'Royal' accolade by Charter on March 16, 1992 developed an independent body responsible for "Educating, Training and Setting of Standards in Anesthesia in Britain". It is important to mention Joseph Thomas Clover (1825-1882 AD) whose contribution has been acknowledged in the Royal College of Anaesthetists crest (besides John Snow) because of his dedication in training other practitioners, developing equipments and improving safety measures in induction of anesthesia.

March 30, 1933 was a historic day that the first public salute was given to doctors by the ladies of Barrow County Medical Auxiliary in Winder Georgia. Later on, it became the national event, as Doctors' Day. The anesthesiologists feel a proprietary attachment to that event because it was March 30, 1842 that Dr. Long made the first successful public demonstration of etherisation, hailed as "America's Greatest Gift to Mankind". Secondly the national event started from Georgia, the place to which he belonged.

The first National Anesthesia Day, organized by the Royal College of Anaesthetists, was held in Great Britain on May 25, 2000. On a global scale, the World Anesthesia Day takes place every year, on October 16 (originally named 'Ether Day'). It commemorates William Morton's first successful demonstration of ether anesthesia at the Massachusetts General Hospital, on October 16, 1846 [64]. Today, as a "Perioperative Physician", the anesthesiologist has a very important role in fast-track surgery.

## Conclusion

*"The story of Surgical Anesthesia illustrates how long it takes an idea to become effective.....Before October 16, 1846, surgical anesthesia did not exist-within a few months it became a worldwide procedure".*

*Sir William Osler (1849-1919 AD)*

The anguish of painful surgical procedures has been defeated. The long continued battle for "Pain-free Surgery"; extending over centuries, has been won. The horror of surgery is a closed chapter of the past as is evident from the words uttered by Edward H Clark: "*It is impossible to estimate or form any adequate conception of the amount of human suffering which anesthetics have relieved or prevented*" [76]. The cry made by Sir James Simpson "*Can nothing be done to prevent this suffering (of the patients subjected to barbarous surgery).....A patient preparing for an operation was like a condemned criminal preparing for execution*" has met the fruit of success. Professor John Collin Warren's communication to the Board of Trustees of Massachusetts General Hospital, in 1848, embodies the matured results of his own experience "*Who could have imagined that drawing the knife over the delicate skin of the face might produce a sensation of unmixed delight! - that the turning and twisting the instruments in the most sensitive bladder might be accompanied by a beautiful dream.*" [4,77].

Today, once the patient in operation theatre is asleep, the anesthetist repeats the historical words, first spoken by Morton on October 16, 1846: "*Your patient is ready, Sir*"

# سائے میں بیٹھی ہوئی نسل کو معلوم نہیں دُھوپ کی نذر ہوئے پیڑ لگانے والے

*Enjoying the comforting, dense shade,  
Shall oblivious generations ever reckon,  
That those who'd planted these trees,  
Melted away in the scorching sun?  
(Urdu Poetry of Saleem Kausar - English Translation by Naeem Ameen)*

The fitting closing of this tale would be a question raised by Professor Bigelow: "No one will deny that he who benefits the world should receive from it an equivalent. The only question is, of what nature the equivalent be?" [78]. The authors of this article leave the answers with the readers.

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