Anesthesia: Breaking Frontiers in Medicine

Annotated Bibliography

Primary Sources

Association of Anaesthetists Heritage Center. Replica of Morton's inhaler, used in his first public demonstration. [1846]. Science Direct, www.sciencedirect.com/science/article/pii/S0104001421000361.

This source was retrieved from an informational article detailing the historical background of anesthesia and is used as an image on the website.

Formento, Felix. “Notes and Observations on Army Surgery.” Google Books, 1990, www.google.com/books/edition/Notes_and_Observations_on_Army_Surgery/pdKb2POAZfAC?q=&kptab=overview&gbpv=0#f=false.

This book is a log written in the span of two years by a doctor in a hospital during the time of the Civil War. This source provides information about the use of anesthesia in surgery, specifically in the Civil War setting and timeframe. Using this book, observations about the early forms of anesthesia could be gathered.

Kenney, Linda. Flowers. North Carolina Extension Gardener Plant Toolbox, plants.ces.ncsu.edu/plants/papaver-somniferum/.

This source was used for the image of an opium poppy, which released the product known as opium, which was used frequently as a pain reliever during operations prior to the invention of anesthesia.

The Library of Congress. Depiction of pre-Inhaler application of anesthesia. National Museum of Civil War Medicine, www.civilwarmed.org/anesthesia/.

This image was used from a website article from the National Museum of Civil War Medicine, the picture in question represents a demonstration of anesthesia dosage during the Civil War.

Southworth & Hawes. Use of ether at the Massachusetts General Hospital, 1847. Welcome Collection, wellcomecollection.org/works/b5mn94sk.

This image depicts a procedure where one of the earliest official dosages of anesthesia was used on a patient before surgery. This was a revolutionary moment for the medical field worldwide.

Secondary Sources

American Chemical Society. How Anesthesia Works. Britannica, www.britannica.com/science/anasthesia.

Britannica gives a general overview of the product of anesthesia and details a brief yet compact perspective on the generic history of its development. This source was used for an image of anesthesia, which was utilized on the home screen of the website.

American Society of Anesthesiologists. "Types of Anesthesia." American Society of Anesthesiologists, www.asahq.org/madeforthismoment/anesthesia-101/types-of-anesthesia/. Accessed 23 May 2023.

This website, developed by the American Society of Anesthesiologists, explains the multitude of modern anesthetic treatments in the modern-day medical field, noting in particular general anesthesia, IV-monitored sedation, regional anesthesia, and local anesthesia. The page in particular aids in research of the topic because it provides a view on how anesthesia has developed and branched out in modern-day science and medicine, and shows its usage in a variety of medical operations, including biopsies, tumor removal operations, and surgeries of vital organs. The number of operations anesthesia can aid demonstrates how essential this substance is needed in the medical world.

Chang, Connie Y., et al. "Ether in the developing world: rethinking an abandoned agent." National Library of Medicine, 16 Oct. 2015, www.ncbi.nlm.nih.gov/pmc/articles/PMC4608178/#:~:text=Ether%20was%20safe%2C%20easy%20to,sevoflurane)%20came%20into%20common%20use.

This article explores the usage of anesthesia, specifically ether, on a global scale; looking at not only William T.G. Morton's first practice of anesthesia but how ether developed in the global market as well as what alternatives underdeveloped countries used with a lack of as much budget. Chang also acknowledges anesthetic alternatives including halothane, as well as restrictions limiting the distribution of ether and halothane. She uses this article to demonstrate the change in anesthesia over time and encourages anesthesia to become an even more widespread topic in society by implementing knowledge of the usage of anesthesia in educational curriculums to prepare future anesthesiologists in aiding developing countries. Chang's work is vital to this topic's research due to her elaborate analysis of the financial situation of diethyl ether anesthesia distribution in America, and her vast use of relevant statistics demonstrates her knowledge of the subject of anesthesiology.

Harrah, Scott. "Medical Milestones: Discovery of Anesthesia & Timeline." University of Medicine and Health Services, 11 Nov. 2015, www.umhs-sk.org/blog/medical-milestones-discovery-anesthesia-timeline#:~:text=First%20Surgical%20Procedure%20Using%20Anesthesia,Howard%20Markel%20on%20PBS.org.

Harrah's blog documents the journey from dentist William T.G. Morton's very first usage of anesthesia in 1846 to the establishment and development of expansive anesthesia fields of knowledge, sprouting from a mere experiment to an essential utility in modern medical practices. Additionally, Harrah also narrates the advances made in anesthetic technology, and how such improvements and inventions of new forms result in drastic improvements during more large-scale medical operations. This source yielded great value in the development of this project and the research of the topic in particular due to their explanations as to not just the advancements of anesthetic products alone, but how these changes made tremendous impacts on the medical field, as a large majority of large-scale operations are mollified with the usage of anesthesia.

Markel, Howard. "The painful story behind modern anesthesia." PBS, 16 Oct. 2023, www.pbs.org/newshour/health/the-painful-story-behind-modern-anesthesia.

In this column from PBS News Hour, Dr. Howard Markel describes the first documented dosage of anesthesia to a patient, and how that profound success launched Morton into a tremendous pursuit of the medicinal sciences, but ultimately shortly falling from his glory in his gluttonous intentions of wealth and fame. However, Markel acknowledges the contributions Morton made to the process of utilizing anesthesia, as well as the fact that his publicity of sulfuric ether and his invention of an anesthesia regulation device created the basis for the now expansive field of anesthesiology. The information yielded from this source was crucial in researching the impact of anesthesia due to the expansive details on

how Morton's greed for fame ironically made anesthesia essential in surgical medicines and would bring his name to historians centuries after his death.

National Institute of General Medical Sciences. "Anesthesia." National Institute of General Medical Sciences, www.nigms.nih.gov/education/fact-sheets/Pages/anesthesia.aspx. Accessed 23 May 2023.

This page created by the National Institute of General Medical Sciences provides a well-written overview of anesthesia, notably recounting the definition of anesthesia, forms of anesthesia, and the ever-growing anesthesiologists studying its practices in modern-day medical sciences. The site also displays graphics of the influences of anesthesia on brain activity and lists the implications the field of anesthesiology could entail shortly. Such future possibilities were of the highest interest in reading this article during researching the topic due to several large-scale problems in the medical science world including cancer or tumor operations, future medications with similar properties for consciousness-based medical conditions, automatic machines for anesthetic dosage, and drug-related research. The range of expertise anesthetics can cover is astounding, and will continue to expand in the future.

National Museum of Civil War Medicine. "Anesthesia in the Civil War." National Museum of Civil War Medicine, 22 Jan. 2017, www.civilwarmed.org/anesthesia/.

The National Museum of Civil War Medicine reports the abundant usage of anesthetics, notably chloroform, in the Civil War, and explains how, contrary to

the Hollywood belief of “biting the bullet” to relieve pain from soldiers’ wounds, using anesthesia was rather the accustomed method of pain mollification. The article also compares chloroform and the more outdated sulfuric ether, one of the earliest recorded forms of anesthesia, and explains how chloroform is much more effective, faster, and cheaper, as well as not being flammable whatsoever, considering the vast amount of fire and explosives used in the war. This source was very beneficial in gathering information on the topic because it described a large, real-life scenario where anesthesia was not just applicable, but tremendously effective in relieving pain, as nurses needed methods to comfort the wounded engaging in battle. It also explains how anesthesia developed into a drastically superior form and would remain as an important medical advancement for decades.

“The Art of Anaesthesia.” Science Museum, www.sciencemuseum.org.uk/objects-and-stories/medicine/art-anaesthesia#:~:text=the%2019th%20century.-,Anaesthetic%20gases,the%20pain%20of%20his%20toothache. Accessed 23 May 2023.

This web article documents the vast amount of forms of anesthesia invented and test over the years, from herbal mixtures in Ancient China to pharmaceutical anesthetics in current surgeries and other medical operations. Additionally, the site also compares each form over time, justifying the continuation of certain compounds including sulfuric ether, nitrous oxide, or “laughing gas”, and modern solutions that are injected rather than vaporized for inhalation. This article

provides tremendous aid in researching the implementations of anesthesia as the website lists the methods of usage for each form, as well as uses several documents to provide worldwide lists of anesthetic products. The growth from mysterious herbal potions to advanced and clinically sound anesthetics that are simple, effective, accurate, and known around the globe is tremendous, and with rapidly advancing anesthetic inventions, more operations in the future can be covered by anesthesia.