The history of anesthesia in the scientific world dates back to ancient times when primitive means of diminishing pain were employed during operations. In the 16th century, Paracelsus, a known chemist and physician, described a method of distilling ether [1]. Since then, potent forms of anesthesia have been developed for clinical application. The 19th century served as a milestone for the development of anesthetics as dentists demonstrated the unique effects of nitrous oxide and ether when administered during dental surgery [1]. However, despite these modern landmarks, the first uses of anesthesia predate these events by centuries, originating in the time of the Bible.

Anesthesia causes a reduction or loss of sensitivity to pain either locally or generally. It is used during minimally invasive procedures, as well as in more involved surgeries. Today, anesthesia is administered to thousands of patients daily during medical procedures throughout the world. The purpose is to eliminate the pain felt by the patient while rendering the patient either unconscious or unaware of the procedure. There are four main types of anesthetics: general anesthesia, spinal anesthesia, regional and local anesthesia, and conscious sedation. General anesthesia is composed of three elements: narcosis, relaxation, and analgesia [2]. Sleep is induced, followed by muscle relaxation, and then the administration of an analgesic to eliminate pain. General anesthesia depresses the central nervous system (CNS) by either inhibiting the excitability of presynaptic neurons, or enhancing the inhibitory postsynaptic neurons, or possibly both. The molecular mechanisms of general anesthetics are a source of much debate [3]. Numerous theories have been proposed to account for the varied effects of general anesthesia. The most common are the Lipid Theory and the Protein Theory. The former maintains that the potency of an anesthetic correlates to its lipid-solubility. It is proposed that an anesthetic works by dissolving in hydrophobic areas of the CNS and altering the physiochemical properties of the phospholipid bilayer. These changes may affect the ability of the neuron to undergo excitation in order to transmit an action potential. The Protein Theory suggests that an anesthetic interacts with proteins within the cell membrane, and not solely with lipids [1].

AS EXPLAINED BY RABBI DAVID KIMCHI (RADAK), A RENOWNED BIBLICAL COMMENTATOR, TAR-DEMAH REFERS TO A DEEP SLEEP THAT WOULD MASK THE PAIN DURING THE REMOVAL OF ADAM'S FLESH.

Anesthetics are administered in a variety of ways, depending on the desired effect. Most commonly, general anesthesia is given via inhalation or intravenous injection. Spinal anesthesia involves the injection of a local anesthetic into the canal surrounding the spinal cord through a long thin needle. This provides a regional loss of feeling. Regional anesthesia is introduced subcutaneously into an area of a regional nerve while local anesthesia is injected subcutaneously to the area specific to the procedure. This eliminates pain in the area that is undergoing surgery but does not affect the consciousness of the patient. Finally, with conscious sedation, the patient remains awake but experiences a mild tranquility and amnesia, eliminating any memory of the procedure but not the pain entirely [4]. Therefore, it is imperative that a type of local anesthetic is administered in addition to the conscious sedation to reduce the pain associated with the procedure. Conscious sedation may be preferred for certain procedures, as it eliminates common unpleasant side effects, such as nausea, vomiting, and dizziness, which are associated with general anesthesia.

The earliest mention of anesthesia appears in the book of Genesis (2:21) when G-d fashioned Eve from a rib abstracted from Adam’s body. The phrase states, “and G-d
caused a deep sleep (Hebrew: *tardemah*) to fall upon the man and he slept.” As explained by Rabbi David Kimchi (Radak), a renowned Biblical commentator, *tardemah* refers to a deep sleep that would mask the pain during the removal of Adam’s flesh.

There are several Talmudic references to forms of anesthesia as well. There is an account of the use of alcohol as an anesthetic in tractate *Sanhedrin* 43a. The text describes the procedure concerning a man convicted of a crime and sentenced to execution, “When one is led out to execution, he is given a goblet of wine containing a grain of frankincense in order to numb his senses.” The presumption is that the alcohol would calm the convicted man as he is led to his death and possibly lessen his experience of pain. A second mention of anesthesia in the Talmud is in *Bava Metzia* 83b, with an anecdote about Rabbi Eleazar, the son of Rabbi Simeon, who underwent abdominal surgery; “he was given a sleeping draught (Aramaic: *sama deshinta*), taken into a marble chamber, and had his abdomen opened.” The form of this anesthetic is not further elucidated by the text or by its commentators, but it is assumed to be a sleep-inducing anesthetic to alleviate pain. A final example may be found in *Ketuboth* 77b, which describes a case of cranial surgery. Preparations for the operation are delineated in the text with mention of a possible form of anesthetic, “300 cups must be poured upon his head until his cranium softens.” Weinberg [5] summarizes the preparatory steps listed by the Talmud. Provisions begin with the creation of a potion, followed by the choice of an operating room, the application of the potion, and finally, the conductance of the procedure. While a reading of the text may suggest that this mixture was a surgical agent, an alternate interpretation, proposed by the well-known commentator, Rashi (*Ketuboth* 77b), is that it was in fact two steps; the pouring of 300 cups and then the location of the soft spot on the skull to prepare for its opening [6]. With this reading, the potion is used as an anesthetic prior to surgery.

Although there is mention of anesthesia in both the Bible and Talmud, possible *halachic* issues may exist. For instance, with anesthesia come risks, some of which could be fatal. There is a concept in Judaism that emphasizes the importance of guarding one’s life. We are given the commandment, “*ushmartem meod et nafshoteychem* (take good heed unto yourselves).” While the biblical context does not refer to one’s physical wellbeing, the phrase has been used to demonstrate that one should protect one’s physical self (Maharsha’s commentary on tractate *Brachot* 32b). If this is the case, would one be permitted to make a conscious decision to undergo general anesthesia if potential risks of the treatment exist? It is commonly understood, however, that today’s practice is to permit the use of anesthesia without limitation.

In modern religious practice, there is an instance which demonstrates the use of this medical agent: *brit milah* (circumcision). It was previously thought by physicians that a child would not experience pain during a circumcision performed on the eighth day of his life. However, this opinion has evolved due to scientific data and it is now common practice to utilize local anesthetics prior to the performance of a *brit milah* in an effort to minimize the pain felt by the baby [7]. At times, the *mohel* performing the *brit milah* may provide the baby with a cloth dipped in drops of wine to suck on. This practice, like that of the Talmudists, may relax the baby during the procedure.

The use of anesthetics in modern medical practice is widespread yet its roots originate in biblical and Talmudic literature. Although anesthesia presents risks which could result in significant damage or even death, it is a necessary means for achieving success during operations and in recovery. The use of anesthesia in the Talmud would have included more frequent and severe hazards since scientific knowledge, at that time, was minimal. Nonetheless, the welfare of the patient was always of utmost importance to medical practitioners, as it is today.
ACKNOWLEDGEMENTS
I would like to thank my family for their thoughtful review of this manuscript. I would also like to express my gratitude to Dr. Babich for his continued guidance and dedication to this project and to my education.

REFERENCES