

Sushruta : The Father of Medicine

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Abstract

Ask any person in the world who the father of medicine is and mostly everyone will snap back with the name of Hippocrates, the renowned ancient Greek physician. He contributed a tremendous amount in the areas of clinical observation, and the use of prognosis, and categorized various diseases for the first time in recorded history. Much like the history of the world, which tends to be Eurocentric, it is possible that there may have been someone else that may have contributed as much or more than Hippocrates, but if they were not from the west, it is not uncommon for the modern world to have missed their great achievements.

Very little discussion ever centers on Sushruta, a physician from Ancient India, even remotely being a contender for the title of 'father of medicine'. This paper will delve into Sushruta's achievements and contributions and evaluate if they were enough for him to be known as the father of medicine or at least make it a close contest. To be able to evaluate the value of his contribution, one would also have to understand the age and time of his contribution, which this paper will also attempt to do.

Full Paper

Hippocrates has come to be known as the father of modern medicine. While an exact date for his life is heavily debated, he is believed to have lived sometime around the 5th century BCE. There are no historical records as to the real dates of his existence. Any specific dates claimed by any historian are most likely conjectured.

Hippocrates was a Greek physician from the island of Cos (Kos) as indicated in writings by Plato, and is considered to have made lasting contributions to the field of medicine. Before his time, medicine was grouped together with philosophy and religion. Diseases were believed to have supernatural origins. Hippocrates is considered to be one of the first doctors who practiced the use of prognosis, clinical observation, and patient history. Modern methods of diagnosis and treatment are considered to be based on Corpus Hippocraticum, a collection of around 70 medical works written in Ionic Greek. Some historians believe the collection to be the work of about 19 different authors. This is based on the time during which they may have been written and an analysis of their contents and writing styles.

It is also interesting to note that Hippocrates is not believed to have written a single medical work out of the entire collection. The Corpus Hippocraticum or the Hippocratic Collection is generally accepted to be a compilation of later works, and is falsely attributed to Hippocrates. Some of the works were likely written by other doctors in Cos, and the collection is believed to have been assembled in the Egyptian city of Alexandria. Many today still assume that the collection represents Hippocrates' perspective on illness and healing, and even his observations and insights.

The *Hippocratic Oath* forms the foundation of ethics in modern medical practices even today. Most doctors take this pledge before entering the field of medicine. However, the oath in its current form was written in the 20th century. Hippocrates is believed to have wrote the original version, which is considered to be the earliest write-up on the code of professional ethics for physicians. It also contained within itself, guidelines on the accreditation process for new physicians.

Now, we will take a look at a relatively lesser-known figure, who lived well before the time of Hippocrates. Sushruta was an ancient Indian physician and surgeon who lived and practiced medicine in the city of Kashi (now known as Benaras). He is recognized as the father of Indian surgery and as the father of Plastic surgery. A lot of his achievements are downplayed by some historians, some of whom call him an 'Indian Hippocrates', implying that Sushruta got his knowledge from Hippocrates. This claim can be evaluated by understanding the time period when these two great minds existed, and by evaluating the contributions each had to the field of medicine. We have already discussed Hippocrates' contributions and his time period. Now let us review what is known about Sushruta's contributions and time period.

The Time Period of Sushruta

While 600 BCE is generally considered to be the time period when Sushruta lived, many historians believe that he very likely lived well before that time. In either case, he definitely preceded Hippocrates, who is believed by most historians to have lived in the late 5th Century BCE and the early part of the 4th century BCE. The German Indologist Augustus Frederic Rudolf Hoernlé (1841 – 1918 CE) placed Sushruta at 600 BCE. He came up with this time frame based on the fact that parts of the *Samhitā* were found in the *Śatapatha-Brāhmaṇa*. It is interesting that he incorrectly dated the *Śatapatha-Brāhmaṇa* to 600 BCE, which even at the time was known by some scholars to be from 3000 BCE. Others yet based Sushruta on the basis of the Bower manuscript, which was written in Sanskrit using the Gupta Brahmī script, and translated it into Latin. Since the Gupta Brahmī script was prevalent during the Gupta dynasty, which at the time was assumed to be around the 5th Century CE, Bower automatically assumed the *Samhitā* is from that period.

As a side note, it is interesting to note that the Gupta dynasty is now being dated by some scholars to 8th century earlier than the 5th century CE period, to around the 4th century BCE. Besides, this Bower manuscript could easily have been a translation into the Gupta Brahmī script, from an original *Sushruta Samhitā* that was many millennia older and in another language. Hoernle also noted that the description of the breast bones in the *Sushruta Samhitā* and the *Śatapatha-Brāhmaṇa* was similar, and incorrectly equated the two to be of similar age. He did not bother to do proper research about the genealogy of the *Brāhmaṇa*. It is another story that the same description of breast bones in two documents does not make them contemporary, they could still be millennia apart in either direction.

Nilesh Oak asserts that Sushruta may have lived many centuries before 600 BCE. The evidence he cites is as follows: *Mahābhārata* mentions the family tree of Sushruta, Vishvāmitra, Madhucchandā, and Devarāta. And based on the genealogy, the Sushruta mentioned in the *Mahābhārata* predates *Mahābhārata* (*Anushāsan Parva* of *Mahābhārata* 4:49-58, GP 50-59). *Garuḍa Purāṇa* then mentions the genealogy of Vishvāmitra, Madhucvhandā, and Devarafā (*Garuḍa Purāṇa* 129:8-11). *Garuḍa Purāṇa* does not mention Sushruta by name. But it goes on to mention Sushruta indirectly. It mentions a list of 'Vaidya-Dhanvantari' referring to this family of physicians, and includes Divodās and 'Divodās-Atmaja' (*Garuḍa Purāṇa* 139:10). Now Divodās Atmaja most likely refers to Divodas' son (Sushruta) as we will see next.

In the *Sushruta Samhitā*, it is mentioned that Sushruta was the son of Divodās, and was also one of his many students (*Sushruta Samhitā* 1:3, 10 & 12). Therefore, *Garuḍa Purāṇa* indirectly mentions Sushruta as belonging to the same family and the *Samhitā* thus points to the same Sushruta as the one in *Garuḍa Purāṇa* and the *Mahābhārata*. Therefore, the date of 600 BCE given for the *Sushruta Samhitā*, is at the upper bound. It is very likely to have been composed much earlier. In either case, if anyone copied the other, then it would have to be Hippocrates copying Sushruta because of Sushruta predating Hippocrates. Of course, one can also easily assume that the two came upon the knowledge independently of each other. More research needs to be done to find out if anyone actually copied the other.

Source of Sushruta's Knowledge

Even though Sushruta was a good physician and surgeon, and may have developed new procedures, most of his knowledge is assumed to have come from a long line of physicians. The oldest documentation of this knowledge occurs in the Atharvaveda, and a lot of it is credited to Sage Atreya and his six disciples Agnivesha, Bhela, Jatūkarna, Parāshara, Hārīta, and Kshārapāni. Each of these disciples composed - verse(s) in the Atharva Veda Saṃhitā. And even the father of Ayurveda - Charaka refers to Atreya and his students' works. In fact, Charaka's famous work Charaka Saṃhitā was derived from the works of one of the disciples of Sage Atreya - Agnivesha in the Atharvaveda Saṃhitā.

Sushruta's Achievements

According to M. S. Valiathan, Sushruta wrote Shalya Tantra (also called the Purva-Tantra), which had five parts, and Nagarjuna later expanded it by adding a section called Uttara-Tantra. This new combined work came to be known as Sushruta Saṃhitā, which was used as an instruction manual for students of Ayurvedic medicine.

Sushruta divided his work into several parts, covering all branches of medicine, including hygiene, midwifery, ophthalmology, toxicology, psychosomatic ailments and pharmacology. Specifically, the Purva-Tantra is subdivided into five different books: Sutrasthana, Nidana, Sarirasthana, Chikitsasthānam, and Kalpastham, totalling 120 chapters. Sūtrasthāna deals with basic medical science and pharmacology. Nidāna addresses disease processes. Sharirasthāna covers anatomy. Chikitsasthānam addresses 34 chapters on surgical procedures and post-operative management, and Kalpasthānam is composed of eight chapters on toxicology.

Sushruta considered surgery as the first and foremost branch of medicine. He wrote "Surgery has the superior advantage of producing instantaneous effects by means of surgical instruments and appliances. Hence, it is the highest in value of all the medical tantras." Sushruta was the world's first surgeon and made many advances within the medical field. He was the first known surgeon to conduct a variety of well-known modern surgeries. He classified the various types of surgeries into different categories. These included *Chedyā* (excision), *Lekhya* (scarification), *Vedhya* (puncturing), *Esya* (exploration), *Ahrya* (extraction), *Vsraya* (evacuation) and *Sivya* (Suturing). These formed the basic principles of plastic surgery. With these types of surgeries in mind, Sushruta himself performed and taught many surgical procedures. These included the incision and drainage of abscesses, puncture of the abdomen to remove fluid, repair of anal fistulas, splinting of fractures, amputations, cataract extraction, glaucoma, rhinoplasty, hemorrhoid and prostate removal, among others. Not only did he successfully complete these surgeries, but he did them way ahead of his time, thousands of years ago.

In order to accomplish many of these surgeries successfully, Sushruta needed the proper instruments. Sushruta listed over 100 blunt and 20 sharp instruments made of steel that were used in surgery. Over 125 surgical instruments were mentioned in the Sushruta-Saṃhitā. These included various types of forceps, spatulas, scalpels, scissors, needles, saws, syringes, and catheters. It should be noted that many of these instruments resemble surgical instruments of modern surgery today.

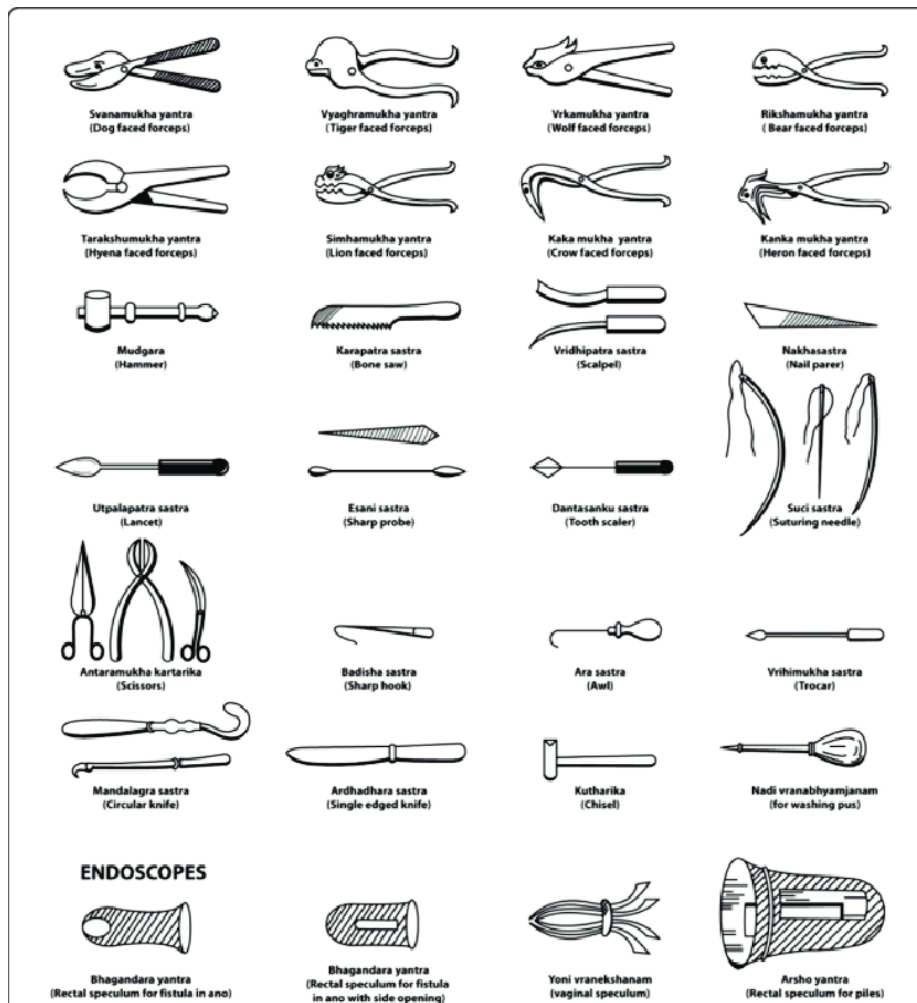


Figure 1. Medical Instruments from the time of Sushruta

https://www.researchgate.net/figure/Surgical-instruments-from-the-Sushruta-Samhita_fig3_339789459

Sushruta also introduced anaesthetics to numb and lessen the pain of a patient. Wine was often used as an anesthetic, and patients were encouraged to drink heavily before a procedure. When the patient was drunk to a point of insensibility, he or she was tied to a low-lying wooden table to prevent movement and the operation would begin with the surgeon sitting on a stool and tools on a nearby table. The use of wine led to the development of an anesthetic involving both alcohol and cannabis incense to either induce sleep or dull the senses during procedures such as rhinoplasty.

Sushruta gave a lot of thought to anatomical structure and function, as he was a proponent of human dissection. He recommended a non-sharp-tool autopsy process this. This allowed for the study of the human body and its structures, or its anatomy. Anatomical knowledge in ancient India was derived principally from cadavers, the sacrifice of animals, and the examinations of patients by physicians.

Sushruta's description of anatomical specimens included over 300 bones, as well as types of joints, ligaments and muscles from various parts of the body. It is often suggested that Sushruta overestimated the number of bones contained in the human body because of the large number of child cadavers that he observed. In children, many bones have not joined together at that stage of development. Thus, it is very possible that Sushruta accounted for individual parts of bones that may not yet have fused. Despite his erroneous accounts of the skeleton, Sushruta offered an in-depth understanding of bones, muscles, joints and vessels that far exceeded the knowledge of that time.

Sushruta recognized and categorized diseases into 4 different types. This included Agantuka (extraneous), Sārira (bodily), Manasa (mental), or Svabhāvika (natural). Using these categories as a basis, Sushruta was able to recognize and diagnose many diseases and disorders pertaining to the body. For example, he identified two types of diabetes, known today as Type 1 and Type 2 diabetes, nearly 3000 years ago. One type began during youth and the other type was caused by injudicious diet and a sedentary lifestyle. Sushruta's concept that sedentary living could cause obesity, diabetes, disease, and death has similarities to the 20th century concept of the Sedentary Death Syndrome of Professor Frank Booth. Both identified inactivity with disease and both included physical activity within their prevention regimens.

Though the discovery of circulation is attributed to William Harvey, it is interesting to note that Sushruta had knowledge of the heart's structure and its role in circulation of vital fluids through the "channels." His vivid account of angina ('*hritshūla*' meaning heart pain) is close to our modern understanding. It embodies all of the essential components of present-day definition. This includes the site, nature, relieving factors, and referral. According to him, angina is chest pain which is precordial, temporary, exertional, emotional, burning like and relieved by rest. He also linked this kind of pain to obesity.

Above is only a partial list of Sushruta's achievements. While his largest contributions were in the fields of General Surgery and Plastic Surgery, he did extensive work in the areas of Ayurveda, holistic health, Ophthalmology, medical ethics, medical students and nurse training, prevention of diseases, toxicology, hygiene, exercise physiology. **A lot of literature has more details on his achievements, and some of it is referenced in our bibliography.**

Summary of Other Achievements

- Rhinoplasty (the repairing or remaking of a nose)
- Removal of a dead fetus
- Lithotomy (surgical incision into hollow organs such as the urinary bladder to remove stones, or calculi)
- One of the first to do cataract, caesarian, brain, and abdominal surgeries
- Invented many surgical instruments used today
- Introduced anesthesia
- Introduced the concept of ethics in medicine well before Hippocrates
- Diagnosed and defined specific diseases of the eyes and ears
- Developed prosthetic limbs
- Established a school of embryology

Conclusion

It is clear that Sushruta predated Hippocrates by many decades, if not by many centuries or even millennia. His is the world's first recorded work in many fields of medicine, and his treatise has formed the basis of many aspects of medical knowledge even today. Therefore, if anyone copied the other's works, it would have to be Hippocrates. The statement by scholars in their early 20th century works, that 'Sushruta was a Hippocrates in disguise' is very misplaced, and, if anything, this assignment would be in reverse. The world may not have been aware of his great achievements due to it being in Sanskrit, and having been lost for many millennia. But an objective evaluation of his work and writings is likely to reveal that Sushruta's contributions quite possibly far outweigh those by Hippocrates. In light of this, it may be time for the world to study and recognize the contributions of Sushruta, and to call him the father of medicine and surgery.

