

# Sushruta: The father of surgery



The definition of an ideal surgeon according to the great surgeon Sushruta is “A person who possesses courage and presence of mind, a hand free from perspiration, tremor less grip of sharp and good instruments and who carries his operations to the success and advantage of his patient who has entrusted his life to the surgeon. The surgeon should respect this absolute surrender and treat his patient as his own son.”

Surgery forms a major role in general medical training. The ancient surgical science was known as Shalya Tantra. Shalya means broken arrow or a sharp part of a weapon and Tantra means maneuver. Shalya Tantra embraces all processes, aiming at the removal of factors responsible for producing pain or misery to the body or mind. Since warfare was common then, the injuries sustained led to the development of surgery as refined scientific skill.

All the four Vedas are in the form of Shlokas (hymns), verses, incantations, and rites in Sanskrit language. This treatise contains detailed descriptions of teachings and practice of the great ancient surgeon Sushruta and has considerable surgical knowledge of relevance even today.

The Rigveda - the earliest account of ancient Indian civilization - mentions that Ashwini Kumaras known as Dev Vaidya were the chief surgeons of Vedic periods, who had performed rare legendary surgical operations which included the first plastic surgery to re-join the head and trunk of saint Chyavana when Dakshya cut his head. Their other classic work included an eye operation of Reejashva, the implantation of teeth of Phushna in the toothless mouth, and the transplant of head of elephant on Ganesh whose head was cut by Lord Shiva. They transplanted an iron leg on Bispala - the wife of King Khela who lost her leg in war. Ashwini Kumaras had performed both homo- and hetro-transplantation during the very the ancient time of Rigveda which is estimated about 5000 years ago; such miraculous magical surgical skill of the Rigvedic period may seem mere legends or mystery to modern medical sciences. The surgical skill has traversed through the ages ranging from

the Ashwini Kumaras, Chavana, Dhanvantari through Atereya Agnivesh and Shushruta. Craniotomy and brain surgery were also practiced in a more sophisticated way.

They do reflect some special surgical skills which laid down the foundation of Ayurveda - the fifth Indian Veda, the classical medical system of India. However, the realistic and systematic earliest compendium of medical science of India was compiled by Charak in Charak Samhita. It describes the work of ancient medical practitioners such as Acharya Atreya and Acharya Agnivesh of 800 BC and contains the Principle of Ayurveda. It remained the standard textbook of Ayurveda for almost for 2000 years. They were followed by Sushruta, a specialist in cosmetic, plastic, and dental surgery (Sandhan Karma around 600BC).

There are many Granthas and Samhitas dealing with Ayurveda; among them, Charak Samhita, Sushrutaa Samhita, and Ashtanga Sangraha are the three main pillars of Ayurveda. Charak Samhita and Ashtanga Samhita mainly deal with medicine knowledge while Sushrutaa Samhita deals mainly with surgical knowledge. Complicated surgeries such as cesarean, cataract, artificial limb, fractures, urinary stones plastic surgery, and procedures including per- and post-operative treatment along with complications written in Sushrutaa Samhita, which is considered to be a part of Atharva Veda, are surprisingly applicable even in the present time.<sup>[1]</sup>

Sushruta is an adjective which means renowned. Sushruta is reverentially held in Hindu tradition to be a descendent of Dhanvantari, the mythological god of medicine or as one who received the knowledge from a discourse from Dhanvantari in Varanasi.<sup>[2]</sup> Sushruta lived 2000 years ago in the ancient city of Kashi, now known as Varanasi or Banaras in the northern part of India. Varanasi, on the bank of Ganga, is one of the holiest places in India and is also the home of Buddhism. Ayurveda is one of the oldest medical disciplines. The Sushrutaa Samhita is among the most important ancient medical treatises and

is one of the fundamental texts of the medical tradition in India along with the Charak Samhita.

Sushruta is the father of surgery. If the history of science is traced back to its origin, it probably starts from an unmarked era of ancient time. Although the science of medicine and surgery has advanced by leaps and bounds today, many techniques practiced today have still been derived from the practices of the ancient Indian scholars.

Sushruta has described surgery under eight heads: Chedyā (excision), Lekhya (scarification), Vedhya (puncturing), Esya (exploration), Ahrya (extraction), Vsrāya (evacuation), and Sivya (suturing).

All the basic principles of surgery such as planning precision, hemostasis, and perfection find important places in Sushruta's writings on the subject. He has described various reconstructive procedures for different types of defects.

His works are compiled as Sushrutaa Samhita. He describes 60 types of upkarma for treatment of wound, 120 surgical instruments and 300 surgical procedures, and classification of human surgeries in eight categories.

To Sushruta, health was not only a state of physical well-being but also mental, brought about and preserved by the maintenance of balanced humors, good nutrition, proper elimination of wastes, and a pleasant contented state of body and mind.

For successful surgery, Sushruta induced anesthesia using intoxicants such as wine and henbane (*Cannabis indica*).

He treated numerous cases of Nasa Sandhan (rhinoplasty), Oshtha Sandhan (lobuloplasty), Karna Sandhan (otoplasty). Even today, rhinoplasty described by Shushruta in 600 BC is referred to as the Indian flap and he is known as the originator of plastic surgery.

He described six varieties of accidental injuries encompassing all parts of the body. They are described below:

- Chinna - Complete severance of a part or whole of a limb
- Bhinna - Deep injury to some hollow region by a long piercing object
- Viddha Prana - Puncturing a structure without a hollow
- Kshata - Uneven injuries with signs of both Chinna and Bhinna, i.e., laceration
- Pichchita - Crushed injury due to a fall or blow
- Ghrsta - Superficial abrasion of the skin.

Besides trauma involving general surgery, Sushruta gives an in-depth account and a description of the treatment of 12 varieties of fracture and six types of dislocation. This continues to spellbind orthopedic surgeons even today. He mentions the principles of traction, manipulation, apposition, stabilization, and postoperative physiotherapy.

He also prescribed measures to induce growth of lost hair and removal of unwanted hair. He implored surgeons to achieve perfect healing which is characterized by the absence of any elevation, induration, swelling mass, and the return of normal coloring.

Plastic surgery and dental surgery were practiced in India even in ancient times. Students were properly trained on models. New students were expected to study for at least 6 years before starting their training. Before beginning the training, the students were required to take a solemn oath. He taught his surgical skills to his students on various experimental models. Incision on vegetables such as watermelon and cucumber, probing on worm-eaten woods, preceding present-day workshop by more than 2000 years are some instances of his experimental teachings. He was one of the first people in human history to suggest that a student of surgery should learn about human body and its organ by dissecting a dead body.

Sushrutaa Samhita remained preserved for many centuries exclusively in the Sanskrit language. In the eight century AD, Sushrutaa Samhita was translated into Arabic as "Kitab Shah Shun al-Hindi" and "Kitab - I - Susurud." The first European translation of Sushrutaa Samhita was published by Hessler in Latin and in German by Muller in the early 19<sup>th</sup> century; the complete English literature was done by Kaviraj Kunja Lal Bhishagratna in the three volumes in 1907 at Calcutta.

Sushruta was also known as a medical authority in Tibetan literature.

Sushruta considered surgery the first and foremost branch of medicine and stated that surgery has the superior advantage of producing instantaneous effects by means of surgical instruments and appliances and hence is the highest in value of all the medical tantras. It is the eternal source of infinite piety, imports fame, and opens the gates of heaven to its votaries. It prolongs the duration of human existence on earth and helps human in successfully completing their missions and wearing a decent competence in life.

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