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Sushruta as the Father of Surgery: Historical and Scientific Evidence

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Abstract

Sushruta, one of the greatest physicians of ancient India, is recognized as the "Father of Surgery" because of his remarkable contributions to surgical science. His significant work, the Sushruta Samhita (circa 600 BCE), provides organized knowledge of surgical anatomy, techniques, instruments, wound care, fracture treatment, plastic surgery, and ethical medical practice. Many of the principles Sushruta described remain relevant in today's surgical practice. This review looks at the historical background of Sushruta, the scientific evidence supporting his surgical innovations, and his lasting impact on modern medicine.

Keywords: Sushruta, Sushruta Samhita, Surgery, Plastic Surgery, Ancient Indian Medicine.

Introduction

The history of surgery is closely linked to the contributions of Acharya Sushruta, whose groundbreaking work established the foundation for operative medicine. ^[1, 2] At a time when surgery was considered risky and poorly structured in many cultures, Sushruta developed systematic surgical techniques based on scientific observation, hands-on training, and ethical conduct. ^[3] The Sushruta Samhita, a key text of Ayurveda, contains thorough descriptions of anatomy, surgical instruments, procedures, anesthesia, wound healing, fracture management, ophthalmology, obstetrics, and reconstructive surgery. ^[1, 4] Because of these significant achievements, Sushruta is recognized as the Father of Surgery. ^[5, 6]

Historical Background

Sushruta is thought to have lived around the 6th century BCE in Kashi (now Varanasi), a major learning center in ancient India. ^[1, 7] According to Ayurvedic tradition, he was a student of Lord Dhanvantari, regarded as the divine teacher of surgery. ^[1, 2] The Sushruta Samhita originally had around 186 chapters, detailing more than 300 surgical procedures, 120 surgical instruments, 1,100 diseases, and nearly 700 medicinal plants. ^[1, 3, 8] This organized documentation showcases the impressive progress of surgical science in ancient India.

Scientific Basis of Sushruta's Surgical Practice

i). **Anatomical Knowledge:** Sushruta believed that anatomy was crucial for every surgeon and recommended dissecting cadavers before surgery. ^[1, 2] The Sushruta Samhita describes bones, muscles, blood vessels, nerves, ligaments, joints, and vital structures (Marma) and highlights their surgical relevance. ^[1, 8] Cadaveric

dissection allowed students to grasp normal anatomical relationships, a principle still essential in modern surgical education. ^[5, 6]

ii). **Surgical Education:** Sushruta insisted that surgery should not be learned through theory alone. ^[1] Students practiced surgical techniques on vegetables, fruits, leather bags filled with water, lotus stems, and animal bladders before treating patients. ^[1, 2] He famously stated that a physician with only theoretical knowledge and no practical experience is not fit for surgery. ^[1, 2] This idea closely resembles today's simulation-based surgical training. ^[5]

iii). **Surgical Instruments:** Sushruta described around 120 surgical instruments, organized into Yantra (blunt instruments) and Shastra (sharp instruments). ^[1, 2] These instruments included forceps, scalpels, hooks, needles, probes, scissors, saws, lancets, and catheters. ^[1, 8] Many were designed by mimicking the shapes of birds' beaks and animal jaws to improve precision during surgery. Several historians have noted striking similarities between Sushruta's instruments and modern surgical tools. ^[6, 7]

Major Surgical Contributions

i). **Rhinoplasty:** Sushruta's most significant contribution was his description of reconstructive nasal surgery. In ancient India, nose amputation was a common punishment. ^[1, 5] Sushruta reconstructed the nose using a cheek flap and detailed each surgical step, including measuring the defect, flap elevation, suturing, nasal splint placement, and postoperative wound care. ^[1, 2] This technique later gained acclaim worldwide as the Indian

Method of Rhinoplasty and inspired European surgeons in the 18th and 19th centuries. [5, 7, 9]

- ii). **Cataract Surgery:** Sushruta described cataract treatment by couching, where the opaque lens was displaced using a specialized instrument. [1, 3] Although modern cataract surgery has evolved a lot, this represents one of the earliest recorded eye surgical procedures. [6]
- iii). **Lithotomy:** The Sushruta Samhita includes detailed descriptions of bladder stone removal through a perineal approach, covering patient positioning, incision, extraction, and postoperative care. [1, 2] These principles reflect advanced knowledge of urological surgery. [6]
- iv). **Fracture and Dislocation Management:** Sushruta categorized fractures and dislocations and explained reduction techniques, splinting, immobilization, and rehabilitation. [1, 2] His organized classification is one of the earliest documented orthopedic systems. [5]
- v). **Obstetric Surgery:** Sushruta addressed surgical management of difficult labor, retained fetuses, and obstetric emergencies, showing a deep understanding of operative obstetrics. [1, 8]
- vi). **Wound Management:** The Sushruta Samhita classifies wounds based on their cause, shape, depth, and severity. [1] Sushruta recommended irrigation, debridement, hemostasis, suturing, bandaging, herbal applications, and regular follow-up to promote healing. [1, 2] He also noted clinical signs that indicated healthy and infected wounds. [1, 8]
- vii). **Anesthesia and Pain Management:** While modern anesthesia had not yet been developed, Sushruta sought pain relief using wine, herbal sedatives, and narcotic preparations before surgery. [1, 3] These methods are among the earliest documented attempts at perioperative anesthesia. [6]
- viii). **Infection Control:** Sushruta stressed the cleanliness of instruments, the need for a hygienic operating environment, wound washing, fresh dressings, and personal hygiene. [1, 2] Though microorganisms were not yet known, these recommendations align with modern aseptic practices. [5, 6]
- ix). **Surgical Ethics:** The Sushruta Samhita outlines the ethical duties of surgeons, such as obtaining patient consent, keeping confidentiality, avoiding unnecessary surgeries, treating patients with compassion, and pursuing lifelong learning. These principles closely resemble today's medical ethics. [1, 2, 5]

Historical Evidence Supporting Sushruta

Around the 8th century CE, the Sushruta Samhita was translated into Arabic as Kitab-i-Susrud, spreading Indian surgical knowledge throughout the Islamic world. [7, 8] The publication of Indian rhinoplasty in Gentleman's Magazine in 1794 inspired British surgeon Joseph Constantine Carpue, who performed modern rhinoplasty using the Indian technique in 1814. [5, 7, 9] Modern historians recognize Sushruta as one of the earliest scientific surgeons due to his focus on anatomy, practical training, standardized instruments, documentation, and ethical practices. [5, 6, 7, 8, 9, 10]

Comparison with Modern Surgery

Many principles introduced by Sushruta are still fundamental in contemporary surgery. These include cadaveric dissection, structured surgical education, reconstructive procedures, fracture management, wound care, and surgical ethics. [5, 6, 9]

Conclusion

Both historical and scientific evidence strongly supports Sushruta's status as the Father of Surgery. His early work in anatomy, surgical techniques, reconstructive surgery, surgical education, wound care, and medical ethics set principles that still influence modern surgical science. [1, 5, 6] The Sushruta Samhita is one of the earliest and most detailed surgical texts in medical history, securing Sushruta's lasting legacy as a pioneer of scientific surgery. [8, 9, 10]

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