

Review Article



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“SHALYA TANTRA IN SUSHRUTA SAMHITA: A CLASSICAL AND CONTEMPORARY REVIEW”**Ms. Shital Gaikwad¹****AFFILIATIONS:**

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ABSTRACT

Introduction: Shalya Tantra, or the discipline of surgery, is one of the eight principal branches of Ayurveda, described extensively in the Sushruta Samhita. Sushruta is regarded as the “Father of Surgery,” and his treatise outlines principles of surgical anatomy, operative procedures, instruments, anesthesia, and post-operative care. **Methods:** A narrative review was undertaken by consulting primary Ayurvedic texts (Sushruta Samhita, Dalhana’s commentary), secondary classical resources, and modern peer-reviewed articles indexed in PubMed, Scopus, and AYUSH Research Portal. Studies focusing on historical perspectives, experimental validations of surgical techniques, and contemporary applications of Shalya Tantra were included. **Results:** Sushruta Samhita presents a detailed account of Shalya Tantra, covering 300 surgical procedures, 120 surgical instruments, and descriptions of dissection techniques. Fundamental concepts such as Marma (vital points), Vrana (wounds), Shastra Karma (operative procedures), and Shalya (foreign bodies) management are elaborated. Notably, Sushruta’s accounts of rhinoplasty, cataract surgery, and wound healing remain relevant today. Modern studies highlight the efficacy of Ayurvedic wound management approaches, such as the use of honey, turmeric, and alkali preparations, alongside surgical techniques. Contemporary surgery also acknowledges Sushruta’s role in advancing principles of asepsis, surgical ethics, and holistic care. **Discussion:** The review indicates that Shalya Tantra in Sushruta Samhita represents a comprehensive surgical system, blending operative precision with holistic healing. Although modern surgery has evolved with technological advances, many foundational principles resonate with contemporary surgical practices. Gaps remain in terms of clinical validation, integration, and adaptation of Ayurvedic surgical concepts into evidence-based frameworks. **Conclusion:** Shalya Tantra, as documented in the Sushruta Samhita, demonstrates timeless surgical wisdom. Its integration with modern evidence offers opportunities for complementary approaches in wound care, minor surgical procedures, and holistic patient management. **KEYWORDS:** Ayurveda, Shalya Tantra, Sushruta, Surgery, Wound management

INTRODUCTION

Sushruta Samhita is one of the most authoritative classical texts of Ayurveda, attributed to Acharya Sushruta, widely hailed as the “Father of Surgery.”^[1-2] Among the eight branches of Ayurveda (Ashtanga Ayurveda), Shalya Tantra—the science of surgical interventions—occupies a unique position^[3-4]. It encompasses operative techniques, surgical instruments, wound care, and management of foreign bodies^[5].

The text elaborates on dissection methods, classification of instruments, and operative procedures such as excision, incision, probing, extraction, drainage, and suturing^[6]. Furthermore, Acharya Sushruta described preoperative, intraoperative, and postoperative care, highlighting a comprehensive system comparable to modern surgical principles. Importantly, concepts of Marma Sharira, wound healing (Shashti Upakrama), and reconstructive surgeries illustrate the advanced understanding of surgical science in ancient India^[7-9].

The objective of this review is to analyze the description of Shalya Tantra in Sushruta Samhita, critically evaluate its clinical relevance, and explore its correlations with modern surgical practices^[10].

MATERIALS AND METHODS

This review was conducted using a narrative methodology.

Primary Sources:^[11]

- *Sushruta Samhita* with Dalhana’s commentary (Nibandhasangraha).
- *Charaka Samhita* and *Ashtanga Hridaya* for comparative references.

Databases and Secondary Sources: PubMed, Scopus, Web of Science, AYUSH Research Portal, and Google Scholar were searched between January–August 2025^[12].

Keywords: “Shalya Tantra,” “Sushruta surgery,” “Ayurvedic surgery,” “wound management Ayurveda,” and “Sushruta Samhita surgical techniques.”^[12]

Inclusion criteria: Classical descriptions, peer-reviewed review articles, experimental studies validating Shalya Tantra procedures, and modern adaptations of Ayurvedic surgical techniques^[13].

Exclusion criteria: Non-academic sources, anecdotal references without citations, and articles

unrelated to Shalya Tantra^[14].

Types of Studies Reviewed: Classical expositions, commentaries, experimental animal and clinical studies, systematic reviews, and historical perspectives^[15].

OBSERVATION AND RESULTS

The *Sushruta Samhita* stands as the foremost compendium of surgical wisdom in Ayurveda, providing comprehensive insight into the science of Shalya Tantra. Its contributions span anatomy, physiology, surgical instruments, operative techniques, wound care, and ethics of surgery. The following thematic observations summarize key aspects:

1. Foundations of Shalya Tantra in Ayurveda

Shalya Tantra is one of the *Ashtanga Ayurveda* (eight branches of Ayurveda) and is devoted to surgical practices. The word *Shalya* means foreign body, while *Tantra* implies its removal through surgical intervention. Thus, Shalya Tantra involves both invasive and minimally invasive techniques. The discipline encompasses not only operative procedures but also perioperative care, anesthesia, wound healing, and rehabilitative approaches.

Acharya Sushruta emphasized the necessity of practical training. He introduced methods for dissection and surgical practice on models, such as using vegetables and animal bladders for incision and suturing practice. This systematic training approach highlights Sushruta’s recognition of skill development as essential for surgical excellence.

2. Surgical Instruments and Techniques

One of the remarkable contributions of Sushruta is his detailed description of 120 surgical instruments, classified as *Yantras* (non-cutting instruments) and *Shastras* (cutting instruments). Instruments such as forceps, scalpels, needles, probes, and catheters closely resemble modern surgical tools.

Sushruta categorized 300 surgical procedures under eight headings:

1. *Chedana* (excision)
2. *Bhedana* (incision)
3. *Lekhana* (scraping)
4. *Eshana* (probing)
5. *Aaharana* (extraction)
6. *Vedhana* (puncturing)
7. *Vyadhana* (drainage)
8. *Sivana* (suturing)

These demonstrate the advanced understanding of surgical diversity, comparable to modern classifications. He also described types of sutures and thread materials, indicating awareness of surgical closure and wound approximation.

3. Anatomy and Dissection

The *Sharira Sthana* of *Sushruta Samhita* outlines human anatomy, with emphasis on *Marmas* (vital points). Sushruta recommended dissection of cadavers using water immersion for gradual decomposition, allowing students to study structures. This reflects a scientific approach to anatomical education.

Marma Sharira is particularly significant. Sushruta classified 107 vital points in the body, injuries to which could cause fatal, crippling, or painful outcomes. This classification finds relevance in modern surgical anatomy, trauma care, and military medicine.

4. Vrana (Wound) and its Management

Sushruta provided an elaborate account of wound management. He described Shashti Upakrama (60 measures for wound healing) including cleansing, suturing, application of medicinal pastes, bandaging, bloodletting, cauterization, and use of alkalis.

The principles of asepsis are evident in his insistence on cleanliness, sterile environment, and use of antiseptic herbs like turmeric, honey, ghee, and plant extracts. Bandaging techniques (*Vrana Bandhana*) were classified into various types, tailored to anatomical regions.

Modern validation exists for many agents. For instance, honey is scientifically proven to have antibacterial and wound-healing properties, aligning with Sushruta's recommendations.

5. Notable Surgical Procedures

Sushruta's descriptions of specific surgical interventions stand out for their sophistication:

- **Rhinoplasty (Nasa Sandhana):** The forehead flap technique for reconstructing noses remains the foundation of modern plastic surgery.
- **Cataract Surgery (Lensectomy):** The procedure of "couching" was described in detail, highlighting ophthalmic surgical advancements.
- **Lithotomy:** Surgical removal of bladder stones was documented with precision

regarding instruments and post-operative care.

- **Caesarean Section:** Descriptions of obstetric interventions emphasize his awareness of maternal-fetal care.

These accounts underscore the depth of surgical innovation in ancient India.

6. Role of Anesthesia and Pain Relief

Although modern anesthesia was unknown, Sushruta described the use of wine, herbal sedatives, and cannabis derivatives to alleviate surgical pain. Oils and ghee preparations were also utilized for local analgesia. This reflects a primitive but systematic attempt at anesthesia.

7. Ethical and Professional Guidelines

Sushruta emphasized the surgeon's qualities—courage, steady hands, sharp intellect, and compassion. He highlighted ethical principles: obtaining consent, ensuring patient safety, and avoiding unnecessary interventions. He warned against untrained practitioners performing surgery, equating them to "butchers." These ethical tenets remain foundational in modern surgical practice.

8. Modern Relevance and Validation

Modern research has validated several aspects of Shalya Tantra:

- **Wound management:** Honey, turmeric, and ghee are now recognized for antimicrobial and wound-healing properties.
- **Marma science:** Trauma studies support the clinical relevance of vital points in predicting morbidity and mortality.
- **Surgical training models:** The use of simulations in modern medical education mirrors Sushruta's use of natural objects for skill practice.
- **Reconstructive surgery:** Forehead flap rhinoplasty continues as a gold-standard procedure in plastic surgery.

Thus, the *Sushruta Samhita* provides both historical and practical contributions that still inspire surgical sciences.

9. Limitations in Current Adaptation

Despite its richness, challenges exist:

- Lack of large-scale clinical trials validating classical surgical protocols.
- Ethical restrictions on replicating ancient surgical methods.

- Limited integration of Ayurveda surgical principles into mainstream healthcare.

However, the philosophical and practical elements continue to guide integrative medicine. The *Sushruta Samhita* describes Shalya Tantra as a holistic surgical discipline encompassing theory, practice, ethics, and post-operative care. Its detailed classification of surgical instruments, wound management protocols, reconstructive surgeries, and emphasis on ethical practice highlight its sophistication. Modern evidence increasingly validates its relevance in wound care, surgical training, and reconstructive techniques.

DISCUSSION

The review of *Shalya Tantra* in *Sushruta Samhita* illustrates the remarkable depth of surgical knowledge in ancient India, underscoring why Sushruta is celebrated as the “Father of Surgery.” While modern surgery has progressed with advanced technology, many fundamental concepts echo those in the *Samhita*, reinforcing its timelessness^[16].

Ayurveda Principles versus Modern Evidence^[17]

Sushruta’s classification of surgical procedures resembles modern divisions into excision, incision, and drainage. Similarly, his insistence on sterilization, bandaging, and wound care anticipates aseptic techniques introduced in the 19th century. Modern studies confirm the antimicrobial and healing properties of Ayurvedic wound agents such as honey, turmeric, and ghee. This convergence highlights the empirical basis of Ayurvedic surgical practice.

The concept of *Marma* remains relevant in trauma care. Injuries to vital points in the neck, thorax, and abdomen are well-recognized causes of morbidity in contemporary medicine. This demonstrates how Sushruta’s observations aligned with clinical realities still acknowledged today.

Ethical Dimensions^[18]

One of Sushruta’s unique contributions is his emphasis on surgical ethics. The notions of obtaining consent, ensuring patient welfare, and prohibiting unskilled practice anticipate modern bioethical principles. His advocacy for continuous training mirrors modern residency programs. Such insights reinforce that surgery is not merely technical but also moral and humane.

Gaps and Limitations^[19]

Despite its brilliance, there are gaps in directly applying Shalya Tantra today. Many surgical techniques, such as couching for cataracts or bladder stone extraction, have been replaced by safer, technologically advanced methods. Moreover, limited scientific validation through controlled clinical trials restricts the acceptance of Shalya Tantra in evidence-based medicine. There is also a challenge in reconciling ancient descriptions with modern anatomical terminology.

Future Prospects^[20]

The strengths of Shalya Tantra lie in its holistic perioperative approach—diet, lifestyle, and wound care—that modern medicine can integrate for comprehensive care. Research opportunities include:

- Clinical validation of Ayurvedic wound-healing practices.
- Integration of Marma science in trauma management and physiotherapy.
- Use of simulation-based models inspired by *Sushruta* for surgical training.
- Exploration of Ayurvedic anesthetic and analgesic agents for complementary applications.

An integrative model that preserves ancient wisdom while aligning with modern safety standards may prove valuable in minor surgeries, reconstructive procedures, and chronic wound care.

CONCLUSION

Shalya Tantra as described in the *Sushruta Samhita* represents one of the earliest and most sophisticated surgical systems in human history. With comprehensive detail on anatomy, operative techniques, wound care, and ethical practice, it remains a cornerstone of Ayurveda’s legacy. While modern surgery has evolved with advanced technology, many foundational principles described by Sushruta—such as preoperative preparation, asepsis, surgical instruments, and reconstructive techniques—still resonate in contemporary practice. By systematically revisiting Shalya Tantra, we can enrich our understanding of surgical heritage and explore possibilities for integration in wound care, reconstructive procedures, and holistic perioperative management. Future research should focus on validating classical techniques through evidence-based studies, ensuring the continuity of Sushruta’s legacy in the modern medical era.



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