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## REVIEW ON RECENT ADVANCES OF SHALYA TANTRA IN AYURVEDA

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### ABSTRACT

Ancient Surgical science -Shalya Tantra embraces all processes aiming at the removal of factors responsible for producing pain or misery to the body or mind. Sushruta took surgery in medieval India to admirable heights and that era was later regarded 'The Golden Age of Surgery' in ancient India. Shalya tantra offer Aasu kriya karanaath property, this branch involves utilization of Yantra, Sashtra, Kshara, Agni and Shlaka, etc. Sushruta the first surgeon of ancient time known as farther of classical surgery describes various approaches to perform surgical intervention for different therapeutic purposes. Sushruta develop cosmetic surgery and Sushruta Samhita is complete text which possesses information related to the problems of practical surgery. Present article emphasizes Ayurveda and modern aspect of surgery with recent advancement in surgical field.

**Keywords** : Shalya Tantra, surgery , ayurveda

## INTRODUCTION

Regarding the origin of Medicine it is considered that there are no written records. Pre Vedic history would be from the earliest times to the Indus Valley Civilization & then to the Vedic period. During this period disease was considered as magic religious phenomenon. Ayurveda is a system, that helps maintain health in a person by using the inherent principles of nature to bring the individual back into equilibrium with their true self. [1] In essence Ayurveda has been in existence since the beginning of time because we have always been governed by nature's law. Shalya Tantra – The scope of this branch of Medical Science is to remove (from an ulcer) any extraneous substance such as, fragments of hay, particles of stone, dust, iron or bone; splinters, nails, hair, clotted blood, or condensed pus (as the case may be) or to draw out a dead fetus of the uterus, or to bring about safe parturitions in cases of false presentation, and to deal with the principle and mode of using and handling surgical instruments in general, and with the application of heat (cautery) and alkaline (caustic) substances, together with the diagnosis and treatment of ulcers. When we list out the first to contribute in surgery, in all those first's Sushruta's name is seen, like first to describe dissection, absorbable suture material, instruments, operative procedure for specific diseases. Like this the list almost seems to be so much which shows the contribution of Indian sciences in medical field. Sushruta Samhita, a systematic study of surgery (General, Orthopedic, Plastic, Gynaecology, ENT, Ophthalmology, etc) is

the earliest treatise and also the best which deals with the surgery particularly the principles of surgery in detail. Historical background: The Rigveda and Atharvaveda are the chief sources of information regarding medicine during the Vedic period. In Rigveda, we find that legs were amputated and replaced by iron substitutes, injured eyes were plucked out and arrow shafts were extracted from the limbs of the Aryan warriors. In India, curative spells and healing mantras preceded medicine, [2] and the first person of medicine in India was priest, a Bhisag Atharvan, who held a top position to a surgeon in Society. In Rigveda occasional references to the diseases and their causes are found scattered. Kaushika Sutra of Atharvaveda has references regarding Vrana (wound). The patient should be given pepper corns to eat, if wound is open one and if wound is closed, treated by jalasa (cow's urine). A detailed description of Vrana is available in the Sushruta Samhita, Charaka Samhita and Astanga Sangraha. Later authors follow the wordings of triologies. Sushruta has attributed many chapters on the concept of Vrana. Mention of Ayurvedic Shalya Tantra word doesn't complete by without the mention of Great Ancient Surgeon, Sushruta. It is only safe to assert that Sushruta was of the race of Vishwamitra. The Mahabharata represents him as a son of that royal sage. This coincides with the description given of him in the present recession of the Samhita. The Garuda purana places Divodasa as fourth in descent from Dhanvantari, the first profounder of medical science on earth, whereas the Sushruta Samhita describes

the two as identical persons. There is no ground whatever to suppose that Sushruta borrowed his system of medicine from the Greeks. On the contrary, there is much to tell against such an idea -Weber's History of Indian Literature. [3] Hermann Schelenz (1904) in his book 'Geschichte pharmzie' concludes that "The Indians are one of oldest civilized people on earth. Apparently it was they who kindled the light of science for the world." There are coincidences in science as in art and philosophy Gravitation and circulation of blood were known to the Indians long before the births of Newton and Harvey in Europe. [4] The Harita Samhita, which according to certain scholars is older than the Sushruta Samhita, refers to the circulation of blood in describing Panduroga (Anaemia). The disease, he observes, is caused by eating clay which thus blocks the lumen of vein and obstructs the circulation of blood.

Fractures & Dislocations: The major part of surgery was indeed concerned with trauma and its management. Sushruta has clearly distinguished fractures from dislocations and classified them differently. [44] Fractures were known to be associated with swelling, intolerance to touch, severe pain, loss of movement, crepitus and flaccidity of the limbs. The twelve types of fractures included a wide range from greenstick and hairline to compound and comminuted fractures while six numbers of dislocations were also described. The basic manipulations recommended for treating fractures and dislocations are Anchana (Traction), Pidana (Compression), Samskespha

(immobilisation) and Bandhana (bandaging) is nowhere less than the contemporary orthopaedic practice. The application of medicinal plasters using herbs like Vata (*Ficus bengalensis* Linn.), Udumbara (*Ficus glomerata* Roxb.), Ashwattha (*Ficus religiosa* Linn.), Palasha (*Ficus lacor* Buch-Ham.) etc were advocated. In compound fractures local treatment of wound was specified and many formulations cleansing and for the promotion of healing is recommended. Appropriate diet for the patient is suggested in order to heal the fracture early. Sushruta's approach to the treatment of fractures and dislocations was rational, practical and even radical because he was not averse to breaking a neglected and malunited fracture and resetting it. Lithotomic operations: The surgical procedure (Shashtra Karma) depicted in Ashmari Chikitsa (Management of Vesical /Renal calculus). [45] First, the patient should be cleansed of the vitiated dosas. Then the patient, who is strong enough and is not nervous, should be laid flat with upper part of his body resting on the lap of another person sitting on a knee-high plank facing east; the patients' waist should be raised by cushions and his knees and ankles flexed and tied together by straps (lithotomy position). After massaging the left side of the well oiled umbilical region pressure should be applied first below the navel until the stone comes down. Introduce the lubricated index and middle fingers into the rectum below the perineal raphe. Thereafter, with manipulation and force bring the stone down between the rectum and the penis. Keeping the bladder tense

and distended so as to obliterate the folds, the stone is pressed hard by fingers so that it becomes prominent like a tumour. An incision of about the size of the stone is then made just a few millimetres away from the perineal raphe on the left side. Some surgeons prefer the incision on the right side for the sake of technical convenience. Precautions should be taken so that the stone does not get broken or crushed. Even a small particle left behind can increase in size. The stone is then removed with an agravaktra instrument (small-tipped forceps, like mosquito forceps). The operation, perineal cystolithotomy which Sushruta described was performed in ancient times in Arabian countries as well as Europe and was known as 'cutting for stone.' [46] Glimpses of ancient surgical practices: Surgery was advised by Sushruta at the ancient time which is practicing today in following diseases which are quoted with classical references. Jalodar (Ascitis), Mutrajvrudhi (vaginal Hydrocele), Baddhagudodar (Intestinal obstruction), Cchidrodar (Intestinal perforation), Arsha (Hemorrhoids), Bhangandar (Fistula-in-Ano), Mudhagarbha (IUD-intrauterine death) and Kaphaj-lingnas (Cataract). In Jalodar (Ascitis) vedhan karm i.e. tapping is to be performed. Vedhan is done in abdomen below & left lateral to umbilicus with the help of trocher & canula for removing some fluid (Su. Su. 25/10 and Su. Ch. 14/18). Vedhan karm i.e. tapping of fluid collected in tunica vaginalis layer was advised in Mutraj-vradhi (Vaginal hydrocele). The site of tapping is lateral side of sevani of scortum to avoid injury to testis & then remove the fluid with the help

of vrihimukh nadiyantra (trocher and canula). (Su. Ch. 19/19). In baddhagudodar (Intestinal obstruction) incision should be taken like left paramedian (four angul apart from midline) then open peritonium and remove obstruction as possible; lastly see four angul intestine from obstruction site & kept all intestine in abdomen as it is. Then udar sivan (abdomen closer) is to be done (Su. Ch. 14/17). In chhidrodar (Intestinal perforation) application of pipilika (big ants) should be done in the perforated part of intestine is resemble today's advanced staple method for intestinal suturing. Then Sushruta told to close the abdomen layer wise (Su. Ch. 14/17). In Arsha (Haemorrhoids) shastra-karma i.e excision of piles was described by Sushruta in pedunculated, broad & bleeding piles. That means haemorrhoidectomy was performed in ancient time (Su. Ch. 6/3). In Bhangadar (Fistula - in- Ano) after probing in fistula tract it should be elevated & total tract is removed i.e. fistulectomy was practiced during Sushruta's time. Sushruta also stated to do Ksharsutra in child, old and female patients as these patients are comparatively weak (Su. Ch. 17/29). In Mudhagarbha i.e. in case of intra uterine death (IUD) to survive mother Sushruta advised to remove dead part of foetus which can be correlate with removal of dead foetus i.e. craniotomy (Su. Ch. 15/11). In kaphaj lingnasha (Cataract) the incision is taken not below, not above, not laterally i.e. exactly at daivyakrita cchidra (limbal region) which is today's cataractcrouching (Sushruta Ut. 17/59).

Bhavamishra, the celebrated author of Bhavaprakasha, and who is a century older than Harvey, has the above couplets bearing on the subject. [5] The source book of Plastic Surgery-by Frank McDowell aptly salutes and describes "Sushruta as-through all of Sushruta's flowery language, incantations and irrelevancies, there shines the unmistakable picture of a great surgeon. [6] Undaunted by his failures, unimpressed by his success, he sought the truth unceasingly and passed it on to those who followed. He attacked disease and deformity definitively, with reasoned and logical methods. When the path did not exist, he made one." Hence it was obvious that Sushruta was the great plastic surgeon. Dagdha (Burns): The thermal trauma, whether due to extreme cold or heat, wet or dry, [35] chemical or inert fluid, produces damage almost similar and hence has to be managed as one entity. This great value of classification could be realized from the fact that this concept gained validity in modern surgery in recent times. Bloodletting: Bloodletting is practicing in western world which is the contribution of great Sushruta. [36] Two separate chapters (Jalaukavacharan and Siravedha) were devoted for the bloodletting in patients of disorders having vitiation of blood. [37,38] As Sushruta given more importance to the Rakta as dosha because Rakta is main stream of the body so during bloodletting every attempt should be made not to remove more blood as Rakta is pran. [39] Now a day's plastic surgeons are routinely used Jalauka [Leech (*Hirudina medicinalis*)] for the proper acceptance of graft. In case of post trauma hematomas and in ischemic

cases leech application was reported very useful by many surgeons. [40,41] A review article on medicinal uses of Leeches was published by USA scientist but in historical review they did not refer to Sushruta or Sushruta Samhita. [42] In this context one of our Ayurved Scholar written to editor of Journal of Postgraduate medicine about the original medicinal uses of Leeches (Jalaukavacharan) since Sushruta. [43] Ophthalmic Surgery: Among seventy six ophthalmic diseases, fifty one are surgical. The mode of operation which is to be performed in each case has been elaborately described.

Shalyatantra is branch of Ayurveda surgical medicine which works around surgical procedures for health maintenance purpose. Shalyatantra is ancient way of treating diseases by eliminating root cause of pathological problems through surgical and parasurgical procedures along with uses of medicines. Shalyatantra in Ayurveda occupied specific and important position amongst other branches due to its unique approaches and scientific expertise. [1-4] The basis of ayurveda Shalyatantra merely belongs from the quotes and presentation of Sushruta in the form of Sushruta Samhita. The descriptions presented by Sushruta acts as an instruction manual for physicians to perform surgical interventions. It is evident that not only Sushruta but Acharya Charaka also advocated Shalya Tantra to treat some diseases which requiring immediate attention. Bhagandar, Mudhgarbha and Arsha, etc. are major pathological conditions which can be cured effectively using various modalities

of Shalya tantra. Shalya Karma Trividha Shalya Karma involves Purvakarma, Pradhana Karma and Paschat Karma. Purvakarma describes factors which deal with preoperative preparation; Pradhana Karma describes main operative procedures while Paschat Karma deals with post-operative measures. In Purvakarma preparation made related to the surgical procedures including arrangement and sterilization of Shalaka, horns, cotton and Sutra, etc. Sterilization is requiring for Thaila Paayana, Kshara paayana and Udaka Paayana. Light food is advised to the patient before minor procedure while Langhna (fasting) advocated in case of serious complications e.g.; Moodha garbha, Arshas, Ashmari, Udara, Mukha roga and Bhagandara. Pradhana Karma includes utilization of main surgical interventions i.e.; Chedana, Bhedana, Lekhana, Vyadhana, Esana, Aharana, Visravana and Seevana, etc. Chedana helps in Bhagandara, Granthi and Arbuda. Bhedana advised for Vidradhi and Granthi. Lekhana is indicated for Upajihvika. Vyadhana helps in Bahuvridha sira and Mootra vriddhi. Esana is good for sinuses and wounds while Aharana is useful for Ashmari and Moodha garbha. Visravana indicated for Kushta and Palyamaya. Seevana indicated for wound and suturing purpose.

Recently Ayurveda incorporate much advancement in the field of surgery which includes: } Development of training module } Expansion of surgical procedures for different pathological conditions } Innovation in less invasive technique which even require lesser time of suturing }

Utilization of modified instruments/equipments } Novel suturing materials and innovation in Bandhan techniques } Sterilization techniques of surgical equipments to avoid contamination } Maintenance of aseptic condition while performing surgical intervention where chances of infections are more. } Modification of Shalyagar to acquire patient and physician comfort } Informed consent form is another feature of modern surgery in which patients or family members made aware about the procedures and complication of therapy } Advancement in post-operative measure provides early healing effects and patient can join his/her work as earliest. } Diagnostic instruments like Nadiyantra based on the principle of modern diagnostic tools. } Anushastra with minimal invasive surgical measures i.e.; Agnikarma and Jalaukavcharan, etc. } Novel system of drug delivery (nanotechnology) improves drugs bioavailability. } Now a day's Lepas applied locally after pretreatment of skin due to which penetration of drug increases and effectiveness of drug also improved. } Panchakarma acts as less invasive bio-cleansing procedure for surgical diseases. } Cosmetic surgery and adaptation of surgical ethics are major advancement of novel surgeries. } Nasa-Sandhana means rhinoplasty which is advanced forms of Ayurveda surgery and considered as reconstructive surgery. } Karna-Sandhana is reconstructive surgeries of ear lobules which can be performed in case of congenital anomalies or injury related to ear. Ayurveda described technique to repair ear using flap of cheek. } Osth

Sandhana means repairing of lip, this practice performed rarely. Unique surgical techniques such as Langalaka and Ardhalangalaka helps to remove fistulous tract, while perineal lithotomy used to remove urinary stones and modern suturing technique to arrest bleeding. Sterilization & Antiseptic Procedure Sterilization & antiseptic procedures are advocated before and after surgical procedures using heat, steam and radiation, etc. Sharangadhara describes disinfection of sick room using fumes of Neem, Pepper, Asafoetida, Jatamansi and Shalmali, etc. The modern surgery advise surgeon to cut short their hair and nails so to avoid any unwanted injury to the patient due to the hair or nails. It is also advised to wear white sterilized clothes while performing surgery. [7-11]

## CONCLUSION

Shalya Chikitsa performed under the heading of Shalya Tantra branch of Ayurveda which mainly provides therapeutic benefits in Bhagandara, Arsha, Charmakeela, Kadara and Kshara, etc. Different types of Yantra and Upayantra, etc. play vital role in Shalya Chikitsa, these Yantra and Upayantra made from natural materials, metals and animal belongings, etc. Ayurveda Shalya Chikitsa utilizes various procedures including Chedya, Lekhya, Vedhya, Esya, Ahrya, Vsraya and Sivyā for therapeutic purposes.

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