

## Scientific Validation of Parasurgical Procedures - A Review Article

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### ABSTRACT

The parasurgical procedures are the specialized procedures which are described by Acharya Sushruta "The Father of Surgery". These are the separate procedures other than major surgical procedures called Ashtavidha Shastra Karmas. These procedures have special indications other than major surgical procedures like children, sensitive patients etc, which are more helpful & effective where medicine & surgery will not give the expected results. These parasurgical procedures include Ksharakarma, Ksharasutra, Agnikarma, Raktamokshana & so on. As these procedures are results oriented & most popular among Ayurvedic fraternity. So there is a need to explore these techniques on the modern scientific background so that these procedures should be well practiced on scientific background with confidence, so that it can contribute more to the present Ayurvedic surgical knowledge. Keeping this in background, here an attempt is made to substantiate the scientific validation of parasurgical procedure is made.

**KEY WORDS:** Parasurgical procedures, Ksharakarma, Ksharasutra, Agnikarma, Raktamokshana- Jalaukacharana, Siravyadha, Prachana, Shringa & Alabu

### INTRODUCTION:

Shalya tantra is one of the most specialized branch of Ashtanga Ayurveda where Acharya Sushruta who is worshipped as the "The Father of Surgery" has described various treatment modalities relating to both surgical and parasurgical procedures. It has widely been practiced in the various clinical settings depending on the training and exposures of the physician. With renewed interest in the parasurgical procedures in the recent times Agnikarma, Ksharakarma, Ksharasutra, Raktamokshana- Jalaukacharana, Siravyadha, Prachana, Shringa and Alabu have gained foremost appraisal to attempt treatment effectively in the management of different surgical conditions.

Kshara is the substance which is obtained by burning some specific medicinal plants & the Ash is processed in a systemic manner. It is of 2 types<sup>1</sup>, 1) Paneeya Kshara, 2) Pratisaaraneeya Kshara. Kshara is best among Shastra & Anushastra<sup>2</sup>. Pratisaaraneeya

Kshara is useful in Dermatoses, Hyperkeratosis, Ringworm etc Skin conditions, Fistula In Ano, Tumors, Hemorrhoids, Indolent ulcers & so on<sup>3</sup>. Along with Pratisaaraneeya Kshara, Ksharasutra & Kshara Varti are widely used for the management of Bhagandhara, Nadivrana & Dushtavrana also.

Agnikarma is used in curing different diseases & has got world wide popularity because of its simple administration & efficacy in variety of disorders. It is unique form of therapy performed with the help of agni<sup>4</sup> which can cure those diseases also, which can't be cured by Bhesaja, Kshara & Shastrakarma<sup>5</sup>. It is described to be superior to Ksharakarma as the diseases treated by it do not relapse & moreover those incurable by medicine, operations & caustic yield to it. It is specially indicated in Hemorrhoids, Tumors, Fistula in Ano, severe pain in skin, muscle, vein, ligaments, joints & bone caused by aggravated vata<sup>6</sup> etc.

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Raktamokshana therapy is the blood cleansing & purification therapy. It is the prime process of blood detoxification. It is one among the shodhana karma according to Acharya Sushruta & Charaka. Skin diseases, Granthi, Shopha, Raktajanya diseases do not occur in those persons who are subjected to proper bloodletting time to time<sup>7</sup>.

The specific indications of Jalaukacharana are Pitta dushta raktaja rogas, Gulma, Arsha, Vidradhi, Kushta, Vatarakta, Galarogas, Netrarogas, Visha and Visarpa<sup>8</sup>.

The specific indications of Siravyadha are Vidradhi except tridoshaja, Arbuda, Granthi, Stanarogas, and Dantapupputa etc Kshudrarogas are indicated. Vagbhata added those conditions arise due to Pitta & Kapha, diseases which do not respond to Sheeta-Ushna, Snighda- Rooksha treatment should be understood as being born of Dushta Rakta & Raktamokshana should be performed<sup>9</sup>.

Prachana is indicated in Pindita Rakta, Twak Rogas, Indralupta, Kshudrarogas, and Utsedayukta Vrana. Shringa is indicated in Vata dushta raktaja rogas, while Alabu is indicated in Kapha dushta raktaja rogas<sup>10, 11</sup>.

## SCIENTIFIC VALIDATION OF PARASURGICAL PROCEDURES

### 1. Action of Kshara in Specific Diseases:

#### Haemorrhoids:

- Causes Coagulation of proteins in Haemorrhoidal plexus (Chemical Cauterization of Pile masses)
- Disintegration of Haemoglobin into Haem and globin → Blackish brownish discharge
- Necrosis of Tissues → Sloughing in 3-7 days
- Fibrosis of Plexus & Scar Tissue Formation
- Adhesions of Mucosal, Sub mucosal coats
- Prevention of further dilatation of veins & Prolapse of regional Mucosa of anus.
- Permanent radical obliteration of Hemorrhoids & wound healing within 21 days.

#### Rectal Prolapse:

- Induces aseptic fibrosis of the rectal mucosa and adheres it properly
- During healing it causes cicatrization, narrowing of lumen and strengthens the anorectal ring.

#### Fistula-in-Ano:

In Low fistulas, after fistulotomy, helpful for quick healing by debridement of fibrous tissue and avoids recurrence.

#### Dushtavrana:

- Best Substitute for Surgical debridement of Ulcer.
- It acts only on the deranged, unhealthy growth & hypertrophied tissues.

- Promotes fast epithelization, increase collagen deposition, reduced exudates and reduced edema and promotes granulation tissue formation.

#### Tonsillitis:

- ❖ Minute burns → Coagulation of mucolymphoid tissues → Reduces the intra-cellular space & aggregates the lymphoid tissues → Stimulates fibrosis of tonsillar tissue → reduces size of the tonsils.

### 2. Action of Ksharasutra<sup>12,13,14,15,16</sup>:

#### Fistula In Ano & Pilonidal Sinus:

- Helps in Cutting, Curetting, Draining and Healing of the fistulous track.
- Caustic action - Destroys and removes unhealthy tissues & Promotes healing of the fistulous track.
- Controls infection by the microbicidal action.
- Facilitate the drainage of Pus in fistulous track and helps in healing.

#### Theories:

- Theory of Chemical Cauterization.
- Theory of Antimicrobial Effect.
- Mere Mechanical cut & Open theory.
- Novel technique of local drug delivery.

#### Action of Ksharasutra:

Days	Action of Ksharasutra
1	Local irritation and discomfort in the anal region.
2-4	Inflammation (local redness, burning sensation).
4	Necrosis: Kshara comes in contact with fistulous tract the stage of micro necrosis begins.
5-6	Shedding of unhealthy granulation tissue due to necrosis (cutting of fistulous tract), fibroblastic proliferation.
7	The Haridra coating of new Ksharasutra comes in contact with the fistulous tract which completes the healing.

Low recurrence: The Ksharasutra allows invisible minor ramifications to drain in to the major tract by healing themselves totally before the major tract is cutoff.

#### Hemorrhoids

- Chemical Cauterization & Mechanical Strangulation of the blood vessels.
- Local gangrene of the pile mass
- Ischemic necrosis and debridement of unhealthy tissue.
- Sloughing of mass & Healing of wound.

### 3. Agnikarma

#### Possible Scientific Explanations:

- Gate control therapy<sup>17</sup>:** Pain sensations are transferred by two types of fibers. "A" fibers (stimulated by heat, cold and touch) and "C" fibers (stimulated by pain). Here the gate mechanism is blocked by stimuli from A fiber, so the pain will not be felt.
- According to scientist Dr. Ven Hanff<sup>18</sup>:** The place where heat burns the local tissue metabolism is improved and thus it leads to increased demand of oxygen and nutrient of the tissue. This causes enhanced delivery of nutrients and more efficient removal of waste products, hence speeding up the natural process of repair.
- Effect of heating on nerves<sup>19</sup>:** Heat appears to produce definite sedative effects. The effect of heat on conduction has still to be thoroughly investigated but a physiological explanation has been offered by Sidney Licht (1965), there is evidence that any sensory excitation reaching the brain simultaneously with a pain excitation results in the pain impulse being more or less attenuated. Pain receptors of skin and motor end plate stimulated at 45°C. Pathway for pain and thermal signals run parallel and ends into same area but only stronger one can felt. Therefore complete exclusion of pain impulse by heat occurs.
- Counter irritation theory<sup>20</sup>:** A counter irritant stimulates sensory nerve endings and relieves pain.
- Effect on muscle tissue<sup>21</sup>:** Heat induces muscle relaxation.
- TENS effect<sup>22</sup>:** Trans-electric nerve stimulation relieves pain by burning superficial nerve endings.

### 4. Rakta Mokshana

#### Siravyadha<sup>23</sup>:

- It is predominantly indicated in Pitta, Rakta & Kaphaja vyadhis or when pitta or kapha is in anubandha to vata dosha.
- Helps to remove the Avarana of Pitta & Kapha dosha giving way for Anuloma Gati of Vitiated vata.

#### Modern View<sup>24</sup>:

- Stimulation to large sensory fibers from peripheral tactile receptors depresses the transmission of pain signals either from the same area of the body or even from many segments. This results in local inhibition.
- It reduces intravascular pressure & volume which will reduce pain and swelling.
- It reduces breakdown of RBC in turn reduces pigmentation & Itching.

### Jalaukavacharana

The main constituents of the saliva of jalauka and their actions are as follows<sup>25</sup>.

Constituents	Mode of action
Hirudin	Most powerful Anti-coagulant, works as Diuretic & Antibiotic. (Other Anti-coagulants: Hementin, Hementerin, Annastatin)
Bdellin	Protease inhibitor like trypsin chymotrypsin or plasmin
Eglin	Digestive protease
Apyrase & Destabilase	Powerful platelet Anti-aggregate factor
Hyaluronidase	Enzyme which breaks hyaluronic acid responsible for connective tissue bonding.
Anti- Elastase	Degrade cutaneous elastastin at the level of Skin
Piavit	Leech prostanoids and has protective antithrombotic effects
Haementin & Orgelase	Have Hyperaemistic effect
Lipase, Estarase	Lipolytic substance

### Varicose Veins:

- Anticoagulant effect: Hirudin by binding to thrombin. Also helps in reducing blood thickness and promotes optimum blood flow. Calin by binding to collagen
- Clot Dissolving effect : Detsabilize → Breakup of Fibrin & Thrombolytic effect
- Anti-Inflammatory Effect : Bdellins & Eglins → Inhibits trypsin & Plasmin
- Bacteriostatic & Anaesthetic effect:
- Anesthetic like Substances → Relieve pain
- Bacteria inhibiting substances → Inhibits growth of Bacteria

**Peripheral Vascular Diseases:**

Constituents	Mode of action
Hirudin	Reduces factor VII -> Easy blood flow
Apyrase (Platelet anti aggregate factor)	Thrombus Destruction
Eglin	Acts as Anti-Oxidant →by Reducing inflammation
Esterase	Prevents Hypercoagulation & Reduce fat flow
Bdellin	Digests foreign protein matrix & also digests undue intimal wall of the blood vessel
Hyalurodinase	Diffuses the blood for free flow and excrets antibiotication
Histaminase	Produces Vasodilatation action & Promotes regeneration

**Dushtavrana:**

- Hirudin →improves Microcirculation
- Hyaluronidase → Facilitates penetration & diffusion of pharmacologically active substances into the tissues
- Trypsin, Plasmin → Reduces pain during bite
- Histamine → Increase blood flow
- Acetylcholine →Vasodilator, Removing abnormal cells, reducing the bacterial load & formation of healthy granulation tissues.
- All together→ Microcirculation within the wound → Bio-debridement →prolonged oozing→ Healthy granulation tissue formation.

**Thrombosed Hemorrhoids:**

Hirudin & Hyaluronidase →capillary tissue exchanging → Improves blood circulation

Thrombolytic action → Dissolution of the organized blood clots

Reduces swelling, Reduces pain.

**Plastic & Reconstructive Surgery:**

- Venous occlusion→ Thrombus Formation→ Flap necrosis
- To relieve venous congestion leeches are used.
- Alleviates tissue capillary pressure & local anticoagulation through
- Active suction
- Secretion of Vasoactive substance(Hirudin)
- Passive oozing from bite wound
- Better acceptance of flap: improving micro-circulation.
- Reduced the rate of resection

**Leech Therapy in Modern Science:**

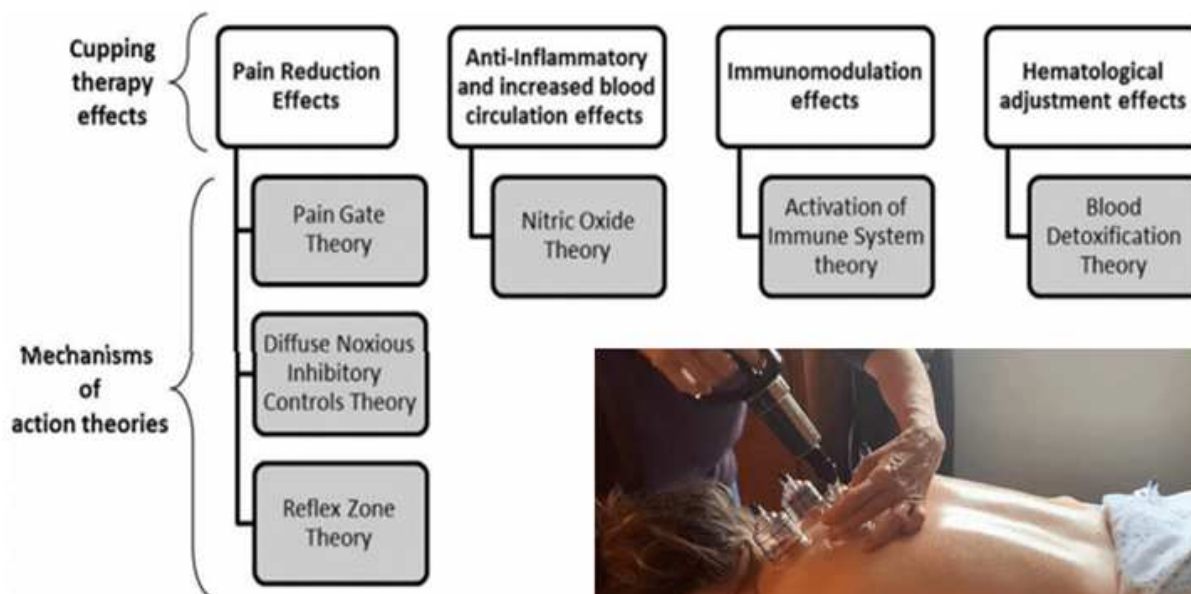
- Anti-Inflammatory Action
- Anti-Metastatic action
- Anti-Hyperglycemic action
- Anticoagulatory effect
- Leech therapy in Dentistry
- Leech therapy in Eye & ENT disorders
- Leech therapy in Reconstructive surgeries

**Shringa & Alabu:**

Negative Pressure → Stimulates circulation → Vasodilatation → Increasing blood supply → Increasing the metabolism → faster elimination of waste substances.

Cupping Therapy<sup>26</sup>:

# Cupping Therapy



**Prachana:**

- Prachana stimulates the accumulation of mast cells at the site & helps in improvement of circulation.
- Prachana damages the superficial layers of skin and thus helps in rapid penetration of drugs.

**DISCUSSION:**

Acharyas have elaborately explained indication, mode of action of these parasurgical procedures in their treatises. But knowledge is only limited to Ayurveda fraternity. For wider acceptance and to explain their efficacy to modern world needs Scientific Validation. In this regard a thorough research by incorporating advanced techniques along with principles of Ayurveda is of paramount necessity. Research based standardization of the procedure helps in global acceptance of Parasurgical procedures

**CONCLUSION:**

Parasurgical procedures are unique and one of the greatest contributions of Ayurveda to the Surgical Field. They come into play where Surgery faces limitations. Scientific Validation of Parasurgical procedures is necessary for the global acceptance of our ancient science.

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