

A review on Agnikarma and its Physio-anatomical Effects

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Abstract

The art of healing of the ailments has been known from the time immemorial. Many indigenous ways and methods have been followed for the relief of suffering of mankind since Vedas. Agnikarma is one among the Para surgical procedures which have been mentioned in Ayurvedic literature.

Acharya Sushruta has preached, practiced and documented the details of Agnikarma which is followed by many renowned authorities till date. Agnikarma is mainly indicated in Ruja Pradhana, Vata and Kaphaja vyadhis. 'Agnikarma' was an asset of Ayurvedic surgeons which has been used widely in the clinical practice since time immemorial. The profound influence and utility of Agnikarma becomes clear from the extensive descriptions about this Para – surgical procedure in various Ayurvedic texts belonging to both Samhita and Samgraha period. Dahana Upkarana, Agnikarma classification, Dagdha Bheda, Samanaya- Vishesha Lakṣaṇa, Pluṣṭa dagdha, Dur dagdha, Ati dagdha, Agnikarma Kala, Agnikarma Anaraha and Agnikarma Vidhi etc i.e. nearly every aspect is defined broadly in Classical texts.

The various therapeutic modalities of tissue heating that produce tissue heating differ from one another in their effects due to the site of tissue heating rather than any difference in its nature. Living tissues appears to be affected by temperature changes so need arises to study the various actions of Agnikarma on principles of Physiology and Anatomy of Contemporary Science to prove the worth of procedure in more scientific way so that lost trust in procedure is regained both by clinicians and academicians, thus proving at par knowledge of use of heat or Agni as part of treatment since Samhita Kaala in this modern era.

Keywords

Agnikarma, Agnikarma Vidhi, tissue heating



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INTRODUCTION

The art of healing of the ailments has been known from the time immemorial. Many indigenous ways and methods have been followed for the relief of suffering of mankind since Vedas. The method of *Agnikarma* is prevalent in our country since many centuries. *Acharya Sushruta* ^[i] has preached, practiced and documented the details of *Agnikarma* which is followed by many renowned authorities till date. With advent of modern sophisticated surgical techniques the popularity of *Agnikarma* is declining.

'*Agnikarma*' was an asset of Ayurvedic surgeons which has been used widely in the clinical practice since time immemorial. "Agnina Krutva Yat Karma, Agne Sambandhi Va Yat Karma, Tadagnikarma". *Agnikarma* is mainly indicated in *Ruja pradhana*, *Vata* and *Kaphaja vyadhis*. It is of two types viz *Ruksha Agnikarma* (performed with dry substances) and *Snigdha Agnikarma* (performed with oily/sticky substances). *Pancha dhatu shalaka* has been used on a regular basis for the purpose of *Agnikarma* irrespective of the structure involved or level of the pathology. But according to the classic, specificity of

Dahanopakarana ^[ii] depends on the disease level concerned.

Most of the painful conditions are related to musculoskeletal system which comprises bones, joints, tendons, ligaments etc ^[iii]. The *Dahnopakaranas* mentioned for the diseases of these locations are *Snigdha dravyas* such as *Kshaudra*, *Guda*, *Taila*, *Vasa*, *Madhuchista* etc., as they have the deep heat penetration capacity with a greater latent heat period.

AGNI KARMA

Agnikarma is one among the Para surgical procedures which have been mentioned in Ayurvedic literature ^[iv]. The term *Agnikarma* has evolved from two words viz. *Agni* + *Karma* = *Agnikarma*. A conceptual search through the terminology will be important to get a better understanding of this widely practiced Para surgical procedure.

Nirukti of Agnikarma

The following can be taken as definitions of the terminology '*Agnikarma*'.

"Agnaukarma Home Agnihotradau Agni Karma Tatah Krutveti Smruti, Agnikaryadayo Anyatra"

"Granthiyadin Rogeshu Dagdha Śalākadibhi Prayojye Dāhakarye"

"Agninā Krutva Yat Karma, Agne Sambandhi Vā Yat Karma, Tadagnikarma"

From the above *Śloka* it can be understood that the term “*Agnikarma*” was used in multivariate meanings in all the conditions in which the use of *Agni* was unexceptional. It also points towards the normal and usual, physical behavior of *Agni* i.e. burning.

Agnikarma in Ayurvedic classics

The profound influence of *Agnikarma* becomes clear from the wide descriptions about this Para-surgical procedure in various Ayurvedic texts belonging to both *Samhita* and *Samgraha* period.

Caraka Samhita

- *Carakacarya* has mentioned about *Agnikarma* as treatment modality in *Sastra prafidhana*.
- In *Vividhasita pitiya Adhyaya* as a treatment in *Manasa roga*.
- In *Vṛuṇa cikitsa*, *Agnikarma* is said to be utilizable in *Dvivraniya*.
- In the treatment of *Kaphaja gulma* .
- In *Svayathu Cikitsa*, in the reference of *Granthi roga* and *Bhagandara Cikitsa*.
- In *Udara Cikitsa*, in the reference of *Plihāroga* and *Yakrudodara*.
- In *Arsha Chikitsa*, as one of the four modalities of treatment in *Visarpa*
- *Cikitsa Agnikarma* has been mentioned in the management of *Granthi visarpa*

- In *Viṣa cikitsa*, in the reference of *Viṣavega cikitsa*.
- In *Vātavyādhi Cikitsa*, in the reference of *gṛdhrasi roga*.
- In *Sidhisthāna*, in the context of *Trimarmīya* and *Ardhāvabhedaka cikitsa*.

Susruta Samhita

- It is mentioned as an *Upayantra* in *Yantravidhi Adhyaya*.
- *Susrutacarya* describes *Agnikarma* in *Agnikarmavidhi Adhyāya*.
- *Agnikarma* is mentioned as a *Salyanirharaṇa vidhi* in the chapter *Pranassta salya vinjnana* .

In Vatavyadhi Cikitsa of Sira, Snayu, Sandhi Asthigata vyadhi.

- In *Arso roga cikitsa*.
- In *Asmari cikitsa* for the management of *Vṛuṇa*.
- In *Bhagandara cikitsa* for the management of *Vṛuṇa*.
- In the reference of *Granthi Apaci Arbuda Cikitsa*.
- *Agnikarma* is mentioned in *Vrudhiupadamsha Cikitsa*.
- In *Ksudra roga Chikitsa*.
- In the context of *Mukha roga Cikitsa*.

- In *Susruta Kalpasthana*, in reference of *Sarpa viṣa Cikitsa*.
- In *Suśruta Uttarantra* and as one among the *Ṣaṣṭirupakrama*.

Astanga Samgraha

In *Aṣṭāṅga Samgraha* a separate chapter deals with the description of *Agnikarma*.

There is availability of references regarding the use of *Agnikarma* in the management of many diseases.

Aṣṭāṅga Hṛudaya

Aṣṭāṅga Hṛudaya Sūtrasthāna 30 deals with *Agnikarma Vidhi*. Utility of *Agnikarma* in a large number of diseases have also been explained in this text.

AHANA UPAKARAṆA

Dahana upakaraṇa include a wide variety of instruments which can be used for inflicting therapeutic burns in *Agnikarma Cikitsa*. *Dahana upakaraṇa* as per the classical literature include the following^[v]–

Twak gaata: Pippali, Godanta, shara, shalaka
Mamsagata: Jambavoshta, itharaloha

Sira, Snayu, Sandhi, Asthigata: Kshoudra, Guda, Sneha

CLASSIFICATION OF AGNIKARMA

Agnikarma can be classified as follows:

According to Dravya

Snigdha Agnikarma: Madhu, Ghruta, Taila etc are used in this type of *Agnikarma*.

Rūkṣa Agnikarma: Pippali, Salaka, Godanta etc are used in this type of *Agnikarma*.

According to Pradesa of Roga

Sthānika or local: *Agnikarma* done in *Kadara, Arśa, Vicarcika* etc.

Sthānāntariya: Agnikarma done in *Apachi, Gṛdhrasi* etc.

According to Akṛuti^[vi]

All together 7 types of *Agnikarma* can be considered under this heading based on the *DahanaVisesa*.

According to the Dagdha dhātu^[vii]

Twak Dagdha, Māmsa Dagdha and *Sira Snāyu Sandhi Asthi Dagdha*.

DAGDHA BHEDA

Dagdha bheda refers to the various types of burns either therapeutic or otherwise based on the severity. According to *Suśrutācārya* all the burns can be included under four headings viz. *Samyak dagdha, Pluṣṭa dagdha, Dur dagdha* and *Ati dagdha*.

Samyak Dagdha^[viii]

Suśrutācārya has enlisted the general *Samyak dagdha lakṣaṇa* as well as specific symptoms related to the particular *Dhātu* which is *Dagdha*. The specific symptoms include *Samyak Dagdha Twak Lakṣaṇa*,

Samyak Dagdha Māmsa Lakṣaṇa, Samyak Dagdha Sira – Snāyu Lakṣaṇa and Samyak Dagdha Sandhi – Asthi Lakṣaṇa.

Samanya Lakṣaṇa of Samyak dagdha

Anavagadhata i.e where the *Lakṣaṇa* of *Atidagdha* are not seen, *Tala varna* or blue black discoloration, *Susamathita* or absence of elevations or depressions and all the symptoms specific to *āaha* of particular *Dhātu* ^[ix].

Vishesha Lakṣaṇa of Samyak Twak Dagdha ^[x]

Sabda pradurbhava or production of sound on burning, *Durgandhata* or production of an unpleasant odour or *Twak sankoca* or shrinking of skin around the site of burn.

Vishesha Lakṣaṇa of Samyak Māmsa Dagdha ^[xi]

Kapota varṇata or colour resembling that of a pigeon, *Alpa śvayadhu* or mild swelling, *Alpa vedana* or slight pain at the site of burn and *Śushka Sankucita vraṇata* or production of a dry contracted wound.

Vishesha Lakṣaṇa of Samyak Sira Snāyu Dagdha ^[xii]

Kriṣṇa varṇa or black discoloration at the site of burn, *Unnata vraṇata* or elevation of the site of wound and *Srāva sannirodha* or cessation of discharge from the wound

Vishesha Lakṣaṇa of Samyak Sandhi Asthi Dagdha ^[xiii]

Rūkṣata or dryness, *Aruṇata* or dark red coloration, *Karkaśata* or roughness and *Sthirata* or stability and hardness at the site of burn.

Pluṣṭa dagdha ^[xiv]

In *pluṣṭa dagdha* the site of burn is characterized by severe burning sensation and discoloration.

Dur dagdha ^[xv]

Here there will be appearance of vesicles and there will be severe burning sensation, *coṣa* or “*Akrusyata Iva Vedana Viśeṣa*” i.e sucking or pulling like feeling, redness and often followed by suppuration. These clinical presentations run a chronic course.

Ati dagdha ^[xvi]

Māmsa avalambana or hanging of burnt tissue, *Gātra viśleṣha* or the respective body parts become lax and without proper functioning, *Vyapadana* of *Sira*, *Snāyu*, *Santhi* and *Asthi* are seen. There will be severe fever, excruciating burning sensation, severe thirst and the person may become unconscious.

Ḍalhaṇācārya has added that *Śoṇita srāva* etc are also to be considered along with the early mentioned symptoms. The wound takes a long time to heal and the healed area always bears distinct scar.

AGNIKARMA KALA

Agnikarma can be done in all the climates other than *Sharad* and *Greeshma* ^[xvii]. In these two climates the environmental state causes an aggravation in the burning sensation and other associated clinical features which arise after *Agnikarma*.

In spite of these contraindications *Suśrutacarya* adds that *Agnikarma* can be done irrespective of the *Ṛitu* in emergencies and *Agnikarma sādhyā Vyadhi* with necessary precautions such as *Sitacadana*, *Śīta vīrya Bhojana* and *Pradeha* with *Śīta vīrya Dravya* ^[xviii].

AGNIKARMA ANARHA

Suśrutācārya has clearly mentioned the individuals and associated conditions in which *Agnikarma* has to be avoided. ^[xix]

These contraindications include:

- *Pitta prakruti*
- *Antha shonita*
- *Bhinna koṣṭa*
- *Anudhrita śālya*
- *Durbala*
- *Bala*
- *Vrudha*
- *Bhīru*
- *Anekavrūna peedita*
- *Asvedya*

AGNIKARMA VIDHI***Purvakarma***

Selection of the patient for *Agni karma*.

According to *Sushrutacharya*, *Pichila Anna* has to be administered in the patients to be subjected for *Agnikarma*. *Dalhanācarya* has explained that *Pichila Anna* has *Sita*, *Mridu* and *Pichila Vīrya* and hence has *Pittaghna* quality ^[xx].

Roga samsthana which is determinative of the specific *Dahana Visheshā* to be employed, the consideration of *Marma* in the vicinity of the site of *Agnikarma*, *Balabala* of the *Rogi*, the characteristics of the *Vyadhi* and *Ṛitu* are to be considered prior to *Agnikarma*. *Agropaharaṇa* of all the articles required for *Agnikarma* are to be done prior.

Pradhānakarma

The patient has to be done *Svastyayana*. The patient should be made to lie down with his head in the *Prāk* direction. He should be held and maintained in the desired position. The instrument used for *Agnikarma* is to be exposed to *Nirdhūma Agni* obtained by igniting wood from plants such as *Khadira* and *Badara*.

The upward moving flame should be utilized for the purpose. When the instrument has become *Bhasuravarṇa* it can be used for

Agnikarma. One should console the patient throughout the procedure by talking positively and should provide water to drink.

Paścātkarma

The anointment of *Madhu* and *Sarpi* ^[xxi] over the site of *Agnikarma* has been mentioned by *Suśrutacharya* as the treatment in *Samyak dagdha*. *Ḍalhaṇacharya* has explained that this particular anointment is meant for the *Prasadana* of vitiated *Rakta* and *Pitta* after *Agnikarma*. It is also said to relieve pain i.e. *Vedanopaśamaya cha*.

Alepa of *Ghruta* prepared from *Tugakṣiri*, *Plakṣa*, *Candana*, *Gairika* and *Amruta* has been mentioned. This *Lepa* is considered as *Pitta Pratyānika* and *Avisosi*. *Alepa* of macerated *Gramya*, *Audaka* and *Anupa mamasa* has also been mentioned for *Vāta śhamana*. The rest of the management should be in the line of treatment of *Pitta vidradhi* ^[xxii].

MANAGEMENT IN DEFECTIVE AGNIKARMA

Management in *Plushta dagdha*

Agnipratapana or *Svedana* is mentioned as the management for *Plushta dagdha*. Also the *Auśadha* which includes *Ālepa*, *Anna*, *Pāna* etc should be exclusively of hot potency. In *Plushta dagdha* there will be an incomplete heat transfer.

As a result some part of *Rakta* will be *Asvinna*. This remaining *Asvinna Rakta* causes discomfort by doing *Shita kriya* directed to *Rakta pitta śamana*. *Śīta kriya* will cause *Rakta Skandana*.

Hence in *Plushta dagdha*, *Uṣṇa kriya* is to be done. *Uṣṇa kriya* liquifies the *Styāna rakta*, which may otherwise cause *Margavarodha* to *Vata* and *Ūṣma* resulting in *Śūla*, *Śopha*, *raga* etc. Hence *Ushna kriya* is to be done which is *Rakta vilyana kari*, helping *Uṣma nissaraṇa* and *Vātānulaomana* ^[xxiii].

Aṣṭāṅga Saṃgrahakāra has also considered similar line of management for this condition. He uses the term *Tutha* for *Plushta dagdha*.

Management of *Dur dagdha* ^[xxiv]

Durdagdha may occur if the surgeon is unskilled or if the patient is not keeping the desired position during the *Karma*. The management of this condition includes both *Śīta* and *Uṣṇa kriya*. In *Durdagdha* there will be *Vagadhamula dagdha bhaga* and *Anavagadhamula dagdha bhaga* i.e the sites of deep burn and superficial burn may be present together.

According to *Ḍalhaṇacharya*, *Shita kriya* is mentioned for the *Nirvapana* of *Svinna rakta* in *Avagadhamula dagdha bhaga* and

Ushna kriya is for *Vilayana* of *Asvinna rakta* in *Anavagadhamula dagdha bheda*.

There is another opinion that *Śīta kriya* is to be done in *Atidaha* and *Uṣṇa kriya* in conditions where *Dāha* is not much.

Management of *Samyak dagdha*

The anointment of *Madhu* and *Sarpi* over the site of *Agnikarma* has been mentioned by *Suśrutācārya* as the treatment in *Samyak dagdha*. *Ḍalhaṇacārya* has explained that this particular anointment is meant for the *Prasādana* of vitiated *Rakta* and *Pitta* after *Agnikarmma*. It is also said to relieve pain i.e. *Vedanopaśamaya cha*.

Ālepa of *Ghruta* prepared from *Tugakṣīri*, *Plaksha*, *Chandana*, *Gairika* and *Amruta* has been mentioned. This *Lepa* is considered as *Pitta pratyānika* and *Aviśoṣi*. *Alepa* of masserated *Grāmya*, *Audaka* and *Ānūpa māmsa* has also been mentioned for *Vāta śamana*. The rest of the management should be in the line of treatment of *Pitta vidradhi*.

Management of *Ati dagdha*

In *Ati dagdha* condition there is extensive burn with excessive tissue destruction. The management includes removing of the loose hanging *Māmsa* from the wound. This must be followed by *Śīta kriya*. *Lepa* of paste of *Shali* and paste of *Tinduki* bark with ghee has been mentioned. *Gudūci* leaves or leaves aquatic plants such as *Padma*, *Ulpala* etc.

are specifically indicated for covering the wound. *Pitta visarpa Cikitsa* is said to be the line of treatment of choice in *Ati dagdha vraṇa* ^[xxv].

THE PHYSIO-ANATOMICAL EFFECTS OF HEAT ON THE BODY TISSUES

Any form of local body tissue heating will lead to a complicated set of physio-anatomical changes which interact to produce still further complex responses. These merge with systemic changes needed to maintain thermal homeostasis.

The various therapeutic modalities of tissue heating that produce tissue heating differ from one another in their effects due to the site of tissue heating rather than any difference in its nature. Living tissues appears to be affected by temperature changes in two fundamental ways, from which further changes emanate. These are:

- Temperature dependent physical and chemical changes, as in metabolic rate, viscosity and collagen tissue extensibility.
- Changes related to physiological regulation, developed to protect the body from damage, such as

occurring in the vascular and nervous systems.

Effect on metabolic activity ^[xxvi]

The rate of any chemical action that can be affected is increased by a temperature rise (Vant Hoff's law). Metabolism, being a series of chemical reactions, will increase with a rise and decrease with a fall of temperature. The actual change is about 13% for each 1°C .

In living organism increasing temperature tends to denature proteins and thus interfere with enzyme controlled metabolic processes. Thus after some increased activity an optimum temperature is reached at which the metabolic activity is maximally stimulated by the heat and yet not sufficiently hot to destroy the necessary enzymes.

This temperature point will differ for different reactions. At temperatures above 45°C so much tissue destruction occurs that there is destruction of cells and tissues.

From the therapeutic point of view the local temperature changes that can, or should be achieved are limited in the deeper tissues to about 5 or 6°C above or below core temperature; for skin and sub cutaneous tissue much lower temperatures can be achieved.

With an appropriate rise in temperature, all cell activity increases, including cell motility and the synthesis and release of chemical mediators. Furthermore, the rate of cellular interactions, such as phagocytosis or growth, is accelerated.

Effect on viscosity

The resistance to flow in a blood vessel depends directly on the viscosity of the fluid and inversely on the fourth power of the radius of the vessel. This striking dependence of blood flow on the diameter of the blood vessel is the reason why the autonomic control of the arteriole diameter regulates the tissue blood flow so effectively.

Raising the temperature in liquids lowers its viscosity. Viscosity changes affect not only the fluids in narrow vessels (blood and lymph), but also fluid movement within and throughout the tissue spaces. Thus, although the effect is quite small, it is widespread.

Collagenous tissue changes

It has been shown that collagen melts at temperatures above 50°C. At temperatures within a therapeutically applicable range (40 – 45°C), extensibility of collagen tissue has been shown to increase. This only occurs if the tissue is simultaneously stretched and requires temperatures near the therapeutic limit, but it is an important therapeutic

effect. Therefore it becomes evident that joint stiffness reduces by heating.

Nerve stimulation

Plainly heat and cold stimulate the sensory receptors of the skin since these sensations can be recognized. Furthermore these receptors pass information to the heat regulating centers, contributing to the control of body temperature. Afferent nerves stimulated by heat may have an analgesic effect by acting on the gate control mechanism in the same way as the mechano receptors.

There is some evidence that stimulating heat receptors inhibits nociceptive impulses in rat (Kanui, 1985). This could account for the analgesic effects of local heating. There is evidence that cutaneous sensations are altered by local heating of the skin. Hyperalgesia occurs in the area of the heated region, which appears due to mechanisms in the central nervous system at the sub – cortical level. This remains only for a few minutes after the cessation of heating.

Blood vessel changes

With skin heating erythema is produced. The striking cutaneous hyperaemia due to heat leads to the idea that similar effects occur in other tissues, but this is not the case. The skin is specially adapted for heat

regulation and what is being seen is a heat – blocking response.

Vasodilatation occurs not only to distribute the additional heat around the body, allowing compensatory heat loss from other regions, but also to protect the heated skin. This is important because the skin surface is naturally heated from the outside and heat conduction is not effective through the subcutaneous fat; in fact the two mechanisms may be somewhat separate in that it has been found that directly heating skin causes capillary dilatation but the arterio-venous anastomoses are opened by reduced sympathetic tone for total body temperature regulation.

Vasodilatation by heat is caused by several mechanisms;

There is thought to be a direct effect on capillaries, arterioles and venules, causing them all to dilate; the nature of this mechanism is not understood.

An axon reflex triggered by stimulation of polymodal receptors is an important cause of the vasodilatation; in this mechanism only the peripheral branches of the afferent nerve fibers are involved.

Increased metabolism will lead to further release of carbon dioxide and lactic acid, leading to greater acidity of the heated tissues, which leads to provoke dilatation.

Further heating can damage proteins; this may initiate an inflammatory reaction due to the release of histamine like substances and bradykinins which evoke vasodilatation.

It must also be recognized that the reduced viscosity of blood would contribute to the increase of blood flow. The foregoing accounts for the area being heated; other skin areas may well show cutaneous vasodilatation to lose heat in response to impulses from the heat regulating centre.

Increased blood flow in tissues other than skin has been shown to occur as a consequence of heating but is much less marked and in some cases uncertain.

Overall effect in blood and tissue fluid

As a consequence of the increased metabolic activity, decreased fluid viscosity and arteriole and capillary dilation (leading to a rise in capillary blood pressure and flow), there is an inevitable increase in fluid exchange across capillary walls and cell membranes. The acidity of the blood rises and both carbon dioxide and oxygen tensions increase. There is an increase in lymph formation and a higher blood leukocyte count.

THERAPEUTIC EFFECTS OF LOCAL TISSUE HEATING

As has been explained, applying heat to the skin leads to reflex responses in order to dissipate the local heat. There is local skin vasodilation in the heated skin and subsequently vasodilation of skin vessels elsewhere to increase the body's heat loss.

Thus when heat is applied to the skin surface, either as conduction heating or as radiation, little heating of the deeper tissues occurs because they are shielded by the thermal insulation provided by the subcutaneous fat and the fact that heat is removed in the increased skin blood flow.

However, some conduction to the local deep tissues does occur and it is this that justifies the use of superficial heat for the treatment of such structures.

Since the effects are largely confined to the skin it is responsible to propose that the major pain-relieving effects are largely reflex as far as subcutaneous structures are concerned. The other therapeutic effects due to heat are attributable to conduction heating. Summing up, therapeutic use of superficial heat includes;

- The relief of pain
- The relief of muscle spasm
- Sedation
- Acceleration of healing, especially of superficial injuries

- Promotion of resolution of chronic inflammatory states
- Increase of the range of joint motion or lengthening of scar tissue.
- Facilitation of fine movements

In spite of the fact that the main circulatory changes due to conduction heating occur in the skin, rather than in the underlying structures in which the painful lesion is often located, there is a wide spread acceptance of the efficacy of mild superficial heating. This may be due to the excitation of cutaneous receptors. It has also been suggested that the very mild heating which occurs in the deeper tissues is particularly beneficial to promote resolution of mild inflammatory states and accelerate repair.

CONCLUSION

This procedure aims at the management of various conditions by inflicting burns on the tissue surface directly. The insightful authority of *Agnikarma* becomes clear from the wide descriptions in various Ayurvedic texts belonging to *the Vedic, Samhita* and *Samgraha* period. Because of its great therapeutic value it is considered superior than *Kshara*. Even in the modern surgery the principles of *Agnikarma* have been adopted

with advanced technology like, Radiation therapy, Laser therapy, Cauterization for haemostasis, excision etc.

The effects and their causative internal anatomical and physiological as described above fully explains the scientifically the role of *Agnikarma* on various body parts and its utilization on therapeutic basis. Thus, proving at par knowledge of use of *Agni* as part of treatment *since Samhita Kaala* in this modern era.

BIBLIOGRAPHY

- Agnivesha, Charaka samhitha, revised by Charaka and Dridabala with Ayurveda dipika commentary of Chakrapanidatta, edited by Yadavji Trikamji Acharya, 5th Ed-2007, Chaukambha Sanskrit sansthan, Varanasi.
- Susruta, Susrutha Samhita Sutrashana by KavirajaambikaduttaShastri A.M.S. with "Ayurveda-Tattva-Sandipika" Hindi Commentary Part-I Edition Reprint (2007) Published by Chaukhambha Sanskrit Sansthan-Varanasi.

- Sarangadharacharya, Sarangadhara Samhita, Dipika commentary of Adamalla and Gudarthadipika commentary of Kasirama, Madhyamakhanda, Chaukhambha Orientalia, Varanasi.
- Vagbhata, Ashtanga Hrudaya, Sarvanga Sundari commentary of Arunadatta and Ayurveda Rasayana commentary of Hemadri, edited by Bhisayacharya Harisastri Paradkar Vaidya, 9th edition, reprinted on 2005, Chowkhamba Sanskrit Series Office, Varanasi.
- Madhavakara, Madhavanidana, Madhukosa commentary of Vijayarakshita and Srikanthadatta and with extracts from Atankadarpana by Vachaspathi Vaidya edited by Vaidya Yadavji Tricumji Acharya, 1st part, 30th edition 2000, Chaukhambha Orientalia, Varanasi.
- Gray Henry, Gray's Anatomy; Edited by Peter L. Williams, Roger Warwick, Mary Dyson and Lawrence Bannister; 39th edition; Churchill Livingstone; London; 1989;
- Jayanth Joshi, Prakash kothwal. Essentials of Orthopedics and

Applied Physiotherapy. New Delhi: Elsevier publication; reprint 2008

REFERENCES

- i *SusrutaSamhita Sutrashana* by KavirajaambikaduttaShastri A.M.S. with "Ayurveda-Tattva-Sandipika" Hindi Commentary Part-I Edition Reprint (2007) Published by Chaukhambha Sanskrit Sansthan-Varanasi, chapter 12
- ii *SusrutaSamhita Sutrashana* by KavirajaambikaduttaShastri A.M.S. with "Ayurveda-Tattva-Sandipika" Hindi Commentary Part-I Edition Reprint (2007) Published by Chaukhambha Sanskrit Sansthan-Varanasi, chapter 12, Sloka 4
- iii *SusrutaSamhita Sutrashana* by KavirajaambikaduttaShastri A.M.S. with

“Ayurveda-Tattva-Sandipika” Hindi

Commentary Part-I Edition Reprint (2007)

Published by Chaukhambha

Sanskrit Sansthan-Varanasi, chapter 12,

Sloka 10

iv Vagbhata, Ashtanga Hrudaya Sutrasthana,

Sarvanga Sundari commentary of Arunadatta and

Ayurveda Rasayana commentary of Hemadri,

edited by Bhisayacharya Harisastri Paradkar

Vaidya, 9th edition, reprinted on

2005, Chowkhamba Sanskrit Series Office,

Varanasi, chapter 30, sloka 40

v *SusrutaSamhita Sutrashana* by

KavirajaambikaduttaShastri A.M.S. with

“Ayurveda-Tattva-Sandipika” Hindi

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Published by Chaukhambha

Sanskrit Sansthan-Varanasi, chapter 12,

Sloka 4

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“Ayurveda-Tattva-Sandipika” Hindi

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Sanskrit Sansthan-Varanasi, chapter 12,

Sloka 11

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Sanskrit Sansthan-Varanasi, chapter 12,

Sloka 8

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Sanskrit Sansthan-Varanasi, chapter 12,

Sloka 16

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Sloka 16

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Sloka 8

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Sloka 8

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Sloka 5

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Sloka 5

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Sloka 14

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 Sloka 23-24
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 xxiv *SusrutaSamhita Sutrashana* by
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 Sloka 22
 xxv *SusrutaSamhita Sutrashana* by
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 “Ayurveda-Tattva-Sandipika” Hindi
 Commentary Part-I Edition Reprint (2007)
 Published by Chaukhambha
 Sanskrit Sansthan-Varanasi, chapter 12,
 Sloka 25-26
 xxvi Arthur C. Guyton, M.D.†, Text book of
 Physiology, Elsvier Saunders, edition 11,
 2006, Philadelphia, U.S.A., chapter73, page
 889