AGNIKARMA IN SHALAKYATANTRA.

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ABSTRACT

Basic principles are the cause of invention and development. Ayurved is the base and origin of modern medicine and surgery. It is the oldest system of medicine that properly defines health and Treatment. Ayurved is composed of preventive, curative and well-planned dietary regimen or protocol for each diseases and protocol or procedures. Bhashaja, Kshyara, Agnikarma and Shashtrakarma chikitsa are known as the curative treatment in Ayurved. Agnikarma is the best among the parasurgical procedures or among Chaturbidha Chikitsa-Upakrama. Agni destroys the diseases and prevents reoccurrence. The father of modern health science, Hippocrates quoted that, “The diseases which medicines do not cure, iron cures; those which iron cannot cure, fire cures; and those which fire cannot cure, are to be reckoned wholly incurable. In the ancient India during the Vedic and Samhita period, the Ayurved scholars knew the concept of heat and its therapeutic uses over human body in oral cavity and even in the adnexa of eye in their disease condition. Regarding this, the detailed literature is available in different Samhita of Ayurved. The Cauterisation and its different forms are the developed state of Ancient Agnikarma. In both system of medicine, the heat therapy or Agnikarma is considered as the best treatment modality. Now a day, it is one of the unavoidable treatment modality in the surgical field. Maharshi-Sushruta (1500 BC) is considered as the father of Surgery. A detailed study that is the property, indications, contraindication, complication, preoperative, operative and postoperative care, along with the site of Agnikarma are available in his Samhita. Our Ayurvedic scholars even knew the application of Agnikarma in the Urdhwajatrugata roga that is application of therapeutic Agni or heat in the disease of Eye and its adnexa, Ear, Nose, Oral cavity and in headache. Cauterisation, electro cauter, diathermy, radiation and LASER therapy are the recent development based on Agnikarma. Though it is highly developed in Modern surgery, still we the Ayurved Scholars fails to provide its place in surgery of Ayurved and we have failed to develop it like the modern surgery did. Therefore, it is very essential to develop the acceptable Agnikarma procedure and to develop a Protocol or SOP in the Ayurvedic Surgical field.

Key words- Agnikarma in Urdhwa-jatrugata Roga, Cauterisation, Electro Cautery, Diathermy, Radiation, LASER Therapy.

INTRODUCTION

The Agnikarma is frequently used in all most all contemporary surgical procedures as Cauterisation, electro cauter, diathermy, radiation and LASER therapy. It is used to dissect, restore the hemostasis and to destroy tissue during surgery. Electrocautery and Diathermy are two possible techniques, which resembles the ultimate function of Agnikarma. Agnikarma is an ancient/classical parasurgical procedures explained in details by Acharya Sushruta and Vridha Vagbhatta. This procedure is practiced since 3000 years. The modern surgery also considers the same concept and develops the concept of Cauterisation, and LASER therapy. In practice, Agnikarma can be used as Pradhana Karma and Paschat Karma of many surgical procedures. Agnikarma is the best among Shasra, Kshyara and Agnikarma because; it prevents...
reoccurrence [1] and restores hemostasis during the procedure [2]. Shalakya-Tantra deals with the disease above clavicle [3]. There are many Urdhwastrugata roga where the Agnikarma is used as Pradhana Karma and Paschatkarma. Agnikarma is an essential treatment modality for Arbuda, Arsha of Karna, Nasa and also in the disease like Pakshamakopa, Pakshmo-poradha, Upapakshamama, Jalarbuda, Medoja Galaganda, and Krimidanta. In this study, we have aimed to present a clear image of Agnikarma in the Nasa, Netra, Mukha, Karna Roga (Urdhwastrugata Roga) in details.

MATERIALS AND METHOD

Aim and objective:
- To elaborate and to discuss the concept of Agnikarma in Urdhwastrugata roga.

Methodology:
- Literatures will be collected from different classical Ayurvedic texts, modern surgical books and from journals.
- The details of Agnikarma technique are discussed in details.

Literature review

Definition:
The word Agni is derived from the Dhatu “Agativyapnoti” [4] – it means, which spreads very quickly to everywhere. “Agnina Krita Yat Karma, Agne Sambandhi VaYat Karma, Tat Agnikarma” [5]. The word Agnikarma has been used in different context with different meanings. In Ayurveda Agnikarma, stands for the Karmas, which are done by using Agni that means procedure done with the help of Fire.

Table No. 1-Agnikarma references-

<table>
<thead>
<tr>
<th>Samhita</th>
<th>Sthana</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charaka Samhita</td>
<td>Sutra sthan 24/46</td>
<td>Sanyasha chikitsa (Trasana chikitsa)</td>
</tr>
<tr>
<td>Charaka Samhita</td>
<td>Sutrasthana 28/26</td>
<td>Manasa roga chikitsa</td>
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<tr>
<td>Sushruta Samhita</td>
<td>Sutrasthana 12</td>
<td>Agnikarma prakarana</td>
</tr>
<tr>
<td>Sushruta Samhita</td>
<td>Chikitsa Sthana 1/8</td>
<td>60 Vrana Upakrama and Dahana as Upakrama in Skandana karma (Coagulation).</td>
</tr>
<tr>
<td>Sushruta Samhita</td>
<td>Su.U.6/60, 14/5, 16/6,</td>
<td>As Vrana Upakrama</td>
</tr>
<tr>
<td>Astanga Sangraha</td>
<td>Sutrasthana 40</td>
<td>Agnikarma prakarana</td>
</tr>
<tr>
<td>Astanga Hridaya</td>
<td>Sutrasthana 30</td>
<td>Agnikarma and Ksharakarma prakarana</td>
</tr>
<tr>
<td>Astanga Hridaya</td>
<td>U.25/50-52</td>
<td>As Vrana Upakrama</td>
</tr>
</tbody>
</table>

Classifications and Types of Agnikarma-

- Agnikarma is classified in to three types depending on the Desired Dhatu Dahana. Those are Twak Dagdha, Mamsa Dagdha, Asthi, Sira and Snayu Dagdha.
- Depending on the Consequences of Dahana [6, 7]; Agnikarma is of four types. Tuchhal Tuttha Dagdha, Plustha Dagdha- In this condition, there will be Burn of Twak (Skin) with severe burning sensation. The lesion will be blister less. Durdagdha is achieved due to improper handling of the Agnikarma, which leads to formation of blister and severe pain. Atidagdha is characterized by muscle spasm, denudation or destruction, burning sensation, Dhoomayan, pain, thirsty, fainting, deep wound, destruction of Sira Snayu and even death. Sudagdha / Samyagdagdha- it is said to be Sudagdha, When purpose of Agnikarma is achieved that is restoration of hemostasis, Twak Daha sound, Lasika Yukta srava, Pakwa Tala Phala vat Varna, Mild pain with less Healing time.
- According to Location of Dahana karma, Agnikarma can be classified in to; Sthaniya- Dahana Karma is done at the Lesion or at the disease site, like Puyalasa, Pakshmo-poradha, Upapakshma,
Arsha and Arbuda of Urdhwajatru etc. and Stanantariya that is Dahana Karma done distant to the site of lesion, Ex. Gridhrasi.

- The Agnikarma technique can be used as PradhanaKarma. Here the purpose are; diseased tissue destruction, coagulation, prevention of reoccurrence and pain reduction. Some of the examples of Agnikarma as Pradhana Karma are -
  - Arsha
  - Arbuda
  - Bedana
  - Abhisyanda
  - Adhimantha
  - Siroroga,
  - Bhru Bedana
  - Lalata Bedana
  - Danta Nadi
  - Shlistha Vartma
  - Upa Pakshma
  - Lagana
  - Linganasha
  - Ati Rakta-Srava
  - Pakshma Kopa
Agnikarma can be adopted as Paschatkarma, to achieve hemostasis after Siraveda, post-operative haemorrhage as in tooth extraction, in the Krimidanta chikitsa, after Filling of Madhuchishtha and Jaggery and after Chhedana Karma of Arbuda, to prevent reoccurrence.

- **Instruments for Agni-Dagdha (Table No. 2):** The type of Dahanakarma and type of instruments are disease specific. Specific instruments are recommended according to the location of disease and type of tissue involved. This instrumentation depends on the heat absorbing capacity and heat releasing capacity of the matter used for the Dahanakarma. Some of the instruments are enlisted in the following table according to the tissue and disease involved. Usually the Khadira and Badara Firewoods are recommended for Agnikarma procedure [8].

<table>
<thead>
<tr>
<th>Type of Dagdha</th>
<th>Instruments used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twak Dagdha</td>
<td>Aja Sakrit, Pippali, Godanta, Shara, Shalaka, Suryakanta Mani</td>
</tr>
<tr>
<td>Mamsa Dagdha</td>
<td>Jambostha, Other Metals like, Lauha, Swarna, Tamra, Rajata and Kamshya</td>
</tr>
<tr>
<td>Asthi, Sira and Snayu Dagdha</td>
<td>Madhu chhistha (Honeybee wax) and Sneha</td>
</tr>
<tr>
<td>Arsha, Bhagandara, Granthi, Nadi Vrana</td>
<td>Jambostha, Madhu, Sneha and Jaggery</td>
</tr>
</tbody>
</table>

- **Other Instruments and medicines (Figure No. 1, 2, 3, 4, 5, 6, 7):** Shalaka like; Ardhendu vaktra Shalaka, Kulatha dal tulya Shalaka, Suchi, Ghrita, Taila, Yasti and Satadhatu Ghrita are also used for this purpose.

![Bee wax (Madhuchishtha)](image1)
![Cow teeth (-Danta)](image2)
![Goat stool (Aja Sakrit)](image3)

![Jaggery (Guda)](image4)
![Piper Longum (Pippali)](image5)
![Suryakanta Mani](image6)
![Glycyrrhiza Glabra (Yasthimadhu)](image7)

Figure No. 1, 2, 3, 4, 5, 6, 7 Showing Dravya used in Agnikarma.

**Agnikarma Procedures:** Agnikarma is recommended in every season except the Grishma and Sarad ritu [9]. Contact time or heating time of Agnikarma should be very short that is for few seconds and should not exceed more than 1min., as there is chance of complication like severe burn. Some research scholar recommend the contact time of Agnikarma as follows—
Table No. 3 Showing heating time of Dahnopakarana used for Agnikarma

<table>
<thead>
<tr>
<th>Sl.no</th>
<th>Dahan Dravya</th>
<th>Instrument of Heating</th>
<th>Period of heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Swarna-Suchi Shalaka</td>
<td>High pressure gas</td>
<td>2-3 second</td>
</tr>
<tr>
<td>2.</td>
<td>Tamra Shalaka</td>
<td>High pressure gas</td>
<td>6 second</td>
</tr>
<tr>
<td>3.</td>
<td>Raupyay- Shalaka</td>
<td>High pressure gas</td>
<td>10-15 second</td>
</tr>
<tr>
<td>4.</td>
<td>Swarna-Shalaka</td>
<td>High pressure gas</td>
<td>10 second</td>
</tr>
<tr>
<td>5.</td>
<td>Haridrakhanda</td>
<td>Candle</td>
<td>40 second</td>
</tr>
<tr>
<td>6.</td>
<td>Gaja Pippali</td>
<td>Candle</td>
<td>60 second</td>
</tr>
<tr>
<td>7.</td>
<td>Aja Sakrit</td>
<td>Candle</td>
<td>55 second</td>
</tr>
</tbody>
</table>

- Poorvakarma (Pre-Operative procedure of Agnikarma)

  The diet must be *Pichhila*. The patient should not be in empty stomach while doing *Urdhwajatrugata Agnikarma Chikitsa*. However, there is exception in *mukha roga*. Prior to *Agnikarma* the season, *Marma*, *Vyadhi Sthana* and its *Dhatu* involvement etc. should be considered.[11]

  *Ayurvedic Agnikarma* pre-operative protocol
  - Preparation of *Shalaka*, smoke less fire.
  - Preparation of *Madhu, Ghrita* mixture and other emergency medicines and equipment.
  - Prayer to Almighty. This may be to restore normal psychological state of patient and may be to provide relaxation to patient.
  - Head must be towards the East direction and position according to the location of the Lesion.
  - Disinfection or washing of desired area with *Triphala Kashaya*.
  - The assistants or attendants immobilize the patient.

In current time below protocol are followed prior to the *Agnikarma*
  - The Procedure must be described to the Patient and a proper written consent must be signed.
  - Proper Aseptic measures is followed.
  - Proper Assessment of the patient, Lesion and vitals of the patient are noted.
  - Inj. TT. One ampoule IM.
  - Inj. Xylocaine for Local anaesthesia around the lesion.

- PradhanaKarma (Principal procedure of Agnikarma)

  Desired type of Agni *dagdha* lesions (*Figure No. 8*) are made over appropriate location or lesion. The shape and size of *Agnikarma* depends on the disease or diseased tissue. According to shape and size classical *Agnikarma* are, *Valaya* (Circular), *Bindu* (Dot), *Vilekha* (Making of different shapes by heated *Shalaka*), *Pratisarana* [11] (Rubbing at indicated site by heated *Shalaka*). In this concern *Bagvatchrya* added, *Ardha-chandra* (Crescent shape), *Swastika* (eight limbs in different directions), *Ashtapada* [8] (specific shape of Swastika Yantra).
Paschat Karma (Post Agnikarma Management) [6]. For Ropana Karma purpose of Dagdha Varna, Snigdha and Sheeta Dravya or thick Lepa of Yasthimadhu Choorna along with Madhu and Ghrita are used. Some practitioner are also using the paste of Ghritakumari and haridra.

Superiority and Benefits of Agnikarma: Agnikarma is a non-pharmacological treatment modality. The pain is comparatively less as compared to other Shashttrakarma. Agnikarma is an essential painless and a very effective Ayurvedic treatment modality. It is Ashukari, Prevents reoccurrence or recurrence is very rare [9]. It causes vasoconstriction, which check the haemorrhage [12]. Post-operative haemorrhage is nil or very less, Suture is not necessary for this procedure, Bandage is not needed in Agnikarma, Minimum Post-Operative care is required. Agnikarma can be used in the form of Pradhanakarma and Paschatkarma.

Complications of Agnikarma [13]: Though it is an effective treatment modality, still it has also few complications. Improper Agnikarma may even lead to death. Improper handling of Agnikarma procedure may lead to Blisters, Severe Burning, Pain, Thirst, Fainting, Tissue destruction (Sira, Snayu, and Mamsa), deep-wound, Atidagdha and Durdagdha Laxana and Death.

Pramadadagdha [6, 8]: It is excessive burning by doctor and it is of four types, Tuttha-Dagdha, Durdagdha, Samyagdagdha and Atidagdha.

Contraindications of Agnikarma [8, 11]: Agnikarma must be avoided in Sarad and Grishma Ritu. In patients with Pitta aggravation, wounds containing Shalya (Foreign body), in eye except Vartma Mandala (Lid) [14] Kostha filled with Rakta, Multiple Vrana, on the marma, in case of Bala, Vridha, Veeru and Durbala Patients. Agnikarma is also contraindicated for those, who are contraindicated for Swedana like Pandu, Meha, Trisha and Raktapitta patients etc.

Samyak Yoga Laxana [6]: Rakta Srava Shanti in Siraveda and Ati Rakta srava, in Twak Dagdha, Sound of Twak Dagdha, Lasika Yukta srava, Tala Phala like color and Kopata Varna, in Arbuda; diseased tissue destruction and quick healing are the Samyak Laxana of Agnikarma.

Dagdha Chikitsa [6]: In Samyagdagdha the paste of Tubakshiri, Plaksha, Raktachandna, Giloy Choorna and Ghrita are applied over the lesion. Even if, it is not cured, then it must be treated like Pittaja Vidradhi. In Durdagdha lesion, Sheetala upachara (cold therapy), Ushna upachara, Satadhauta Ghrita application and Sheeta Parisheka are recommended. Pittaja Visarpa vat chikitsa is recommended for Atidagdha lesions.
AGNIKARMA IN URDHWAJATRUGATA ROGA

The basic concept of Agnikarma or the ancient Agnikarma Protocols are vividly available in the Sushruta samhita sutra Sthana 12, Astanga Sangraha Sutra Sthana 40 and Astanga Hridaya Sutra Sthana 30. In the disease context of Shalaka Tantra, Agnikarma is specifically mentioned in the contexts of tissue destruction like Arsha, Arbuda, Disease of Vartma, for pain management purpose and to achieve hemostasis like in the case of dental extraction.

- **SIRO ROGA**
  1. In *Siro Roga*, Twak Daha is applied on Bhrū, Lalata and Sankha Pradesha\(^{[11]}\) with Suryakanta Mani, Pippali, Aja Sakrit, cow tooth, arrow and Shalaka.
  2. In *Vataja Siro Soola*, if Vata is not balanced by the chikitsa Upakrama then the Agnikarma must be applied\(^{[15]}\).
  3. **Ardhavabhedaka**—DahanalAgnikarma is one of the treatment modality of Ardhavabhedaka\(^{[16]}\).

- **NETRA ROGA**
  1. **BHRU BEDANA**: Twak Daha done with Suryakanta Mani, Pippali, Aja Sakrit, Cow Tooth, Shara, Shalaka over Bhrū, Lalata and Sankha Pradesa\(^{[8]}\).
  2. **PAKSHMA ROGA**: If it is not cured by Shastra karma then Kshyara karma or Agnikarma is to be done. Evert the lid then the Pratisarana with Kshyara or Agnikarma is to be done on vitiated Bali (Trichiasis)\(^{[17]}\).
    - **Pakshmo-poradha**: the Agnikarma must be done by everti the lid, over the vitiated cilia and hair-root. The vitiated cilia is to be epilated by Sadamsha Yantra and that follicle or spot is to be burnt or Dahana Karma is to be done\(^{[18]}\). Lauha Shalaka, Dahana to the hair follicle by saving the eye ball with wet cloth\(^{[19]}\).
    - **Upapakshamamala (Figure No. 9)**—Agni or Kshyara Pratisarana\(^{[17]}\).

- **VARTMA ROGA**:--
  1. In **aggravated Vartma roga or upadrava Yukta**, Agnikarma must be done with a gap of Mudga matra. Here the Bindu type of Twak Daha is to be done\(^{[20]}\).
  2. **Arbuda**, the Arbuda is to be excised from its root and Lekhana and Pratisarana is to be done followed by Kshyara and Agnikarma\(^{[18]}\). The Drishti, which can be taken as Cornea, to be covered with wet cloth or cotton and Agnikarma to be done at lid margin over the hair follicle, root\(^{[11]}\).
  3. **Lagana (Figure No.10)**: In Large Size of Lagana, Kshyara and Agnikarma are done \(^{[21]}\). If Lagana is not cured by the treatment of Kaphotklisha chikitsa, then Agnikarma is to be followed\(^{[22]}\). After Proper Siraveda (Vein Puncture) Agnikarma done with Jambostha, Shalaka, Suchi, Madhuchishtha, Guda, Sneha over the stable Sira\(^{[8]}\).
• **Visha Vartma**: Agnikarma is one of the treatment modality [22].

• **Shlistha Vartma (Figure No. 11)**: Mamsa Daha is applied with Madhu-Sneha, Guda, Jambostha Yantra [22, 23].

  - Figure No. 11 Showing Agnikarma in Shlistha Vartma

• In **Ati rakta pravrutti**, Shlistha Vartma, Upapakshma, Lagana, Linganasha and Danta Nadi, after Proper Siraveda (Vein Puncture) Agnikarma is applied with Jambotha, Shalaka, Suchi, Madhuchishtha, Guda, Sneha over the appropriate area according to the disease on the stable Sira [8] and Mamsa Daha may also be adopted [6, 11].

• **Upapakshma (Figure No. 12)**: Agnikarma and Ksharakarma are followed by everting the lid [24]. In this case Lakshya marking followed by Agnikarma and then Vrana vat upachara is followed [24]. After Proper Siraveda (Vein Puncture) Agnikarma done with Jambotha, Shalaka, Suchi, Madhuchishtha, Guda, Sneha over the appropriate area on the stable Sira [8].

  - Figure No. 12 Showing Agnikarma in Upapakshma

• **Arsha-Arbuda**: After Mrudu Swedana, the lid is everted and the mass is lifted by Suchi then excision of the Arsha or Arbuda mass followed by Pratisarana and when bleeding stopped, Agnikarma is to be done with Red hot Shalaka to destroy the remaining mass of diseased tissue [25].

4. **SANDHIGATA ROGA**

• If **Puyalasa (Pilla Roga)** is not cured with indicated Treatment modalities then Agnikarma is helpful with Sukshma Shalaka [26].

• **Alaji /Bahya Alaji**- In the raptured condition, Lekhana karma followed by Kshara and Agnikarma is applied [24].

• **Bahya Alaji**- Incision followed by Kshara or Agnikarma is indicated [18].

5. **SARVAGATA ROGA**

• **Abhisyanda**: Twag Dagdha is indicated over Bhru, Sankha, and Lalata with Suryakanta Mani [8].
• **Adhimantha**: If Vataja-Adhimantha is not alleviating with Oral medications then Twag Dagdha is indicated over Bhru\[27\], Lalata and Sankha Pradesha\[11\] with Suryakanta Mani\[8\].

  If Adhimantha is not cured with indicated Oushadha and Sira Mokshyana then Agnikarma is recommended over the Bhru\[28\].

  If Adhimantha is not cured with Chhedana of Sira then Agnikarma above Bhru is recommended\[29\].

6. **DRISHTI GATA ROGA**

- In Nili / Linganasha after Proper Siraveda (Vein Puncture), Mamsa Daha done with Jambostha, Shalaka, Suchi, Madhuchishta, Guda, Sneha over the appropriate area according to the disease on the stable Sir\[6, 8\].

- **Daha karma at Bhru Madhya** can be done\[30\]. Twak Daha is to be done with Suryakanta Mani in Linganasha\[30\]. In the Siraveda at Apanga of Linganasha, causes inflammation, pain and bleed, this will be managed with Dahana i.e. Agnikarma Bhru Madhya\[30\]. After Siraveda, there will be different type of pain, so to reduce this Parisheka with Ghrita Paka done with Yasthimadhu and milk or Dahana Karma\[30\].

  ➢ **Contraindication in Netra roga**: Agnikarma is contraindicated over Sukla and Krishna bhaga of Netra.

- **NASA GATA ROGA** (Figure No. 13, 14)

  - **Mamsa Daha** is indicated with Jambostha, Suchi, Shalaka, Ghrita, Guda, Madhu, Yasthimadhu, Taila, Vasa, Sneha, Swarna, Lauha, Lauha, Raupya and Kamshya on Arsha and Arbuda.

  - **Nasarsha and Arbuda**: General, management of Arsha is excision followed by Agnikarma. So Agnikarma is a treatment protocol for Arsha occurring in any location\[31\]. In Nasa Arsha and Arbuda, Agnikarma or Ksharakarma is adopted followed by application of Pichu-Varti, prepared with Danti Beeza, Nishotha, Saindhava, Manahshila, Hartala, Pippali, Chitraka Moola, which is applied with Ghee and Madhu\[32\].

  - In Arsha, appropriate Kshara and Agnikarma must be done. In Sthula Arsha, Chhedana Karma followed by Dahana then Shita Pradeha is indicated\[33\].

  - **Arbuda** --The mass is held with Badisha Yantra then excised by Mandalagra Shastra, followed by Taila Dahana with Shalaka and Shita Pradeha is applied to the wound\[33\].

**Figure No. 13, 14 Showing Agnikarma in Nasarsha and Arbuda**

**Common Kaphaja Arbuda Chikitsa**: Flees are attracted by application of Kulatha Kalka, Mamsa paste, Dadhi, Matsu etc. Those Flies produces Krimi. Those Krimi fed upon the Kaphaja Arbuda. Then Lekhana karma is applied over the rest of Arbuda followed by Agnikarma. Careful Kshara and Agnikarma is also applied to the Kaphaja Arbuda\[34\].
**KARNA ROGA**

- **Arsha** (Figure No. 15)- General, management of Arsha is excision followed by Agnikarma\(^{[31]}\). Arsha and Arbuda of is to be treated like Nasa-Arsha and Arbuda\(^{[35]}\), i.e. Kshyara and Agnikarma followed by Application of Danti etc. Pichu-Varti application to the EAC\(^{[35]}\). Agnikarma is to be done with Kshara-karma followed by application of Pichu-Varti, prepared with Danti Beeja, Nishotha, Saindhava, Manahshila, Hartala, Pippali, Chitraka-Moola and applied with Ghee and Madhu to the Nasal cavity\(^{[32]}\). In large Arsha, Chhedana karma followed by Agnikarma is indicated\(^{[31]}\).

- **Arbuda**: The Arbuda mass is held with Badisha Yantra and excised by Mandalagra Shastra followed by Taila Dahana with Shalaka and Shita Pradeha is applied to the wound\(^{[33]}\).

![Figure No. 15 Showing Agnikarma in Karna Arsha](image1)

**MUKHA ROGA** (Table No. 5)

i. **OSTHA**

- **Medoja Ostha Roga** (Figure No.16)- Swedana is done prior to incision then Meda is removed and Pratisarana Agnikarma is done\(^{[36, 37]}\). Meda is removed by Vedanakarma followed by Agnikarma. Then Pratisarana-karma with Priyangu, Lodhra and Triphala etc.\(^{[38]}\).

![Figure No.16 Showing Agnikarma in Medoja ostha Roga](image2)

**Jalarbuda** (Figure No. 17) - If Jalarbuda is large and spread to deeper tissue then Kshyara or Agnikarma is applied followed by Ropana-Karma\(^{[36, 37]}\).

![Figure No. 17 Showing Agnikarma in Jalarbuda](image3)
ii. DANTAMOOLA GATA ROGA

1. Danta Vidradhi (Figure No. 18): If the Vidradhi is Hard and deep, then Vedana (incision) followed by Agnikarma \(^{39}\) If the Danta Vidradhi gets Paka, Incision is to be done followed by Agnikarma \(^{40}\).

![Figure No. 18 Showing Agnikarma in Danta Vidradhi](image)

2. Vardhana/ Kalli Vardhana/ Adhidanta (Figure No. 19): In this condition, if tooth extraction followed by Haemorrhage then Agnikarma and Ropana Karma is indicated \(^{41, 42}\).

![Figure No. 19 Showing Agnikarma in Adhidanta](image)

3. Danta Nadi: In Danta Nadi after Proper Siraveda (Vein Puncture) Agnikarma done with Jambostha, Shalaka, Suchi, Madhuchishta, Guda, Sneha over the appropriate area according to the disease and on the stable Sira\(^{8}\). If Danta, associated with Zigzag, deeply seated multiple sinuses, then wax (Madhuchishta) and Jaggery to be filled and Agnikarma is to be performed with Shalaka \(^{43, 44}\).
   - If Nadi-Vrana is not cured by the excision of Danta-Mamsa then the diseased tooth is to be extracted and Agnikarma is to be done \(^{45}\). If the Nadi-Vrana (sinus) is present near the tooth then the diseased gingiva is to be excised followed by Agnikarma \(^{46}\).

iii. DANTA ROGA

- Dalana / Sheeta Danta (Figure No. 20): In this condition the Swedana Karma is to be done over Danta Moola followed by Danta Moola Lekhana with Brihi Mukha Shastra then Daha karma with Ushna Taila followed by Pratisarana \(^{36, 37}\).

![Figure No. 20 Showing Agnikarma in Dalana](image)

- Krimidanta (Figure No. 21):-Tooth Cavity to be filled with (Madhuchishta with Guda or Ghrita) then Agnikarma is performed with Blunt and bend Shalaka \(^{8, 47}\). After the mobile tooth extraction, Agnikarma is indicated to achieve Haemorrhage \(^{48}\).
Figure No. 21 Showing Agnikarma in Krimidanta

- **Adhidanta**: After Tooth Extraction, Agnikarma is indicated for Rakta-Skandana \(^{[42]}\) (coagulation).
- **KANTHA ROGA** (Figure No. 22, Table No. 8)
- **Medoja Galaganda**: In Medoja Galaganda, after incision, Meda is removed followed by Daha karma with hot Meda, Madhu, Majja and Ghrita then Madhu and Ghrita is applied followed by Lepa with Kashisa, Tuthha, Gorochana Choorna and Vrana Upakrama like, Lepa and Gaadha Bandha (tight bandage) etc. is indicated\(^{[49]}\).
- If Medoja Galaganda is not cured With Shastra Karma then Dahana with any one among Vasa, Ghrita, and Madhu is done followed by Vrana Ropana Karma \(^{[50]}\). Agnikarma is one of the treatment modality for Medoja-Galaganda \(^{[8]}\).
- **Gandamala**- Agnikarma is one of the treatment modality for Gandamala \(^{[8]}\).

Figure No. 22 Showing Agnikarma in Galaganda

Table No. 4, 5, 6, 7 and 8 showing indications of Agnikarma with their purpose.

<table>
<thead>
<tr>
<th>NETRA ROGA</th>
<th>DISEASE</th>
<th>DISEASE CORELATION</th>
<th>LOCATION OF AGNIKARMA</th>
<th>PURPOSE OF AGNIKARMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vartma Roga</td>
<td>Disease of alpabral conjunctiva</td>
<td>Over the Vartma(Palpabral conjunctiva)</td>
<td>Diseased Tissue Destruction, Prevents Reoccurence</td>
<td></td>
</tr>
<tr>
<td>Pakshamakopa</td>
<td>Trichiasis, Entropion, Districhiasis</td>
<td>over Lid margin or over hair follicle</td>
<td>Diseased hair folicle Destruction,Prevents Reoccurence</td>
<td></td>
</tr>
<tr>
<td>Pakshmo-poradha</td>
<td>Trichiasis, Entropion, Districhiasis</td>
<td>over Lid margin or over hair follicle</td>
<td>Diseased hair folicle Destruction,Prevents Reoccurence</td>
<td></td>
</tr>
<tr>
<td>Upapakshama</td>
<td>Districhiasis</td>
<td>over Lid margin or over hair follicle</td>
<td>Diseased hair folicle Destruction,Prevents Reoccurence</td>
<td></td>
</tr>
<tr>
<td>Shlishtha Vartma</td>
<td>Blepharitis</td>
<td>over Lid margin or over the diseased tissue</td>
<td>Diseased Tissue Destruction</td>
<td></td>
</tr>
<tr>
<td>Visa Vartma</td>
<td>Incision over the lesion and Agnikarma</td>
<td>Diseased Tissue Destruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Krichhranmeela</td>
<td>Blepharospasm</td>
<td>over Lid margin or over the diseased tissue</td>
<td>Diseased Tissue Destruction</td>
<td></td>
</tr>
<tr>
<td>Alaji</td>
<td>Ext. Hordeolum, Dacryocytitis</td>
<td>Incision over the lesion and Kshara or Agni Karma</td>
<td>Diseased Tissue Destruction, Prevents Reoccurence</td>
<td></td>
</tr>
<tr>
<td>Puyalasa</td>
<td>Dacryocystitis</td>
<td>Over the Vrana</td>
<td>Diseased Tissue Destruction, Prevents Reoccurence</td>
<td></td>
</tr>
<tr>
<td>Abhisyanda</td>
<td>Conjunctivitis</td>
<td>Diseased Tissue Destruction, Prevents Reoccurence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adhimantha</td>
<td>Glaucoma</td>
<td>Above the Eyebrow</td>
<td>Pain Reduction</td>
<td></td>
</tr>
<tr>
<td>Lagana</td>
<td>Trachoma</td>
<td>Over the lesion</td>
<td>Diseased Tissue Destruction, Prevents Reoccurence</td>
<td></td>
</tr>
<tr>
<td>Vartma arsha/arbuda</td>
<td>Ophthalmic sporidiosis, Tumour</td>
<td>Over the disease tissue</td>
<td>Diseased Tissue Destruction, Prevents Reoccurence</td>
<td></td>
</tr>
<tr>
<td>Nî/ Linganasha</td>
<td>Cataract</td>
<td>Diseased Tissue Destruction, Prevents Reoccurence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bhru Vedana</td>
<td>Pain in eye brow</td>
<td>Apana, Upashriaka, Lalata</td>
<td>Pain Reduction</td>
<td></td>
</tr>
<tr>
<td>Netra Soola</td>
<td>Ocular pain</td>
<td>Apana, Upashriaka, Lalata</td>
<td>Pain Reduction</td>
<td></td>
</tr>
</tbody>
</table>
MUKHA ROGA

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>DISEASE CORELATION</th>
<th>LOCATION OF AGNIKARMA</th>
<th>PURPOSE OF AGNIKARMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medoja Osth roga</td>
<td>Tumour of Lip</td>
<td>Over the disease tissue</td>
<td>Diseased Tissue Destruction, Prevents Reoccurrence</td>
</tr>
<tr>
<td>Jalarbuda</td>
<td>Mucocele</td>
<td>Over the diseased area</td>
<td>Diseased Tissue Destruction, Prevents Reoccurrence</td>
</tr>
<tr>
<td>Danta Nadi</td>
<td>Dental abscess</td>
<td>Over the diseased area</td>
<td>Diseased Tissue Destruction, Rakta Srava Shamana</td>
</tr>
<tr>
<td>Krishna Danta</td>
<td>Dental discoloration</td>
<td>After tooth extraction over bleeding area</td>
<td>Diseased Tissue Destruction, Rakta Srava Shamana</td>
</tr>
<tr>
<td>Chali Danta</td>
<td>Mobile tooth, loose tooth</td>
<td>After tooth extraction over bleeding area</td>
<td>Diseased Tissue Destruction, Rakta Srava Shamana</td>
</tr>
<tr>
<td>Dzalana</td>
<td>Fractured tooth</td>
<td>Over the diseased area</td>
<td>Reduce pain</td>
</tr>
<tr>
<td>Krimidanta</td>
<td>Dental carries</td>
<td>After tooth extraction over bleeding area</td>
<td>Diseased Tissue Destruction, Rakta Srava Shamana</td>
</tr>
<tr>
<td>Adhidanta</td>
<td>Coronitis</td>
<td>Over the diseased area</td>
<td>Reduce pain</td>
</tr>
<tr>
<td>Sheeta Danta</td>
<td>Tooth Sensitivity</td>
<td>Over the diseased area</td>
<td>Reduce pain</td>
</tr>
<tr>
<td>Danta vidradhi</td>
<td>Dental abscess</td>
<td>After tooth extraction over bleeding area</td>
<td>Diseased Tissue Destruction, Pain Reduction.</td>
</tr>
</tbody>
</table>

NASA ROGA

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>DISEASE CORELATION</th>
<th>LOCATION OF AGNIKARMA</th>
<th>PURPOSE OF AGNIKARMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasa-arsha</td>
<td>Nasal polyp</td>
<td>Over the diseased tissue</td>
<td>Diseased Tissue Destruction, Prevents Reoccurrence</td>
</tr>
<tr>
<td>Nasa-arbuda</td>
<td>Nasal neoplasm</td>
<td>Over the diseased tissue</td>
<td>Diseased Tissue Destruction, Prevents Reoccurrence</td>
</tr>
</tbody>
</table>

KARNA ROGA

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>DISEASE CORELATION</th>
<th>LOCATION OF AGNIKARMA</th>
<th>PURPOSE OF AGNIKARMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karma arsha</td>
<td>Aural polyp</td>
<td>Over the diseased tissue</td>
<td>Diseased Tissue Destruction, Prevents Reoccurrence</td>
</tr>
<tr>
<td>Karma Arbuda</td>
<td>Aural neoplasm, Keloid</td>
<td>Over the diseased tissue</td>
<td>Diseased Tissue Destruction, Prevents Reoccurrence</td>
</tr>
</tbody>
</table>

KANTHA ROGA

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>DISEASE CORELATION</th>
<th>LOCATION OF AGNIKARMA</th>
<th>PURPOSE OF AGNIKARMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galaganda</td>
<td>Goiter</td>
<td>After removal of the content, Over the diseased tissue</td>
<td>Diseased Tissue Destruction</td>
</tr>
<tr>
<td>Gandamala</td>
<td>Goiter</td>
<td>Over the diseased tissue</td>
<td>Diseased Tissue Destruction</td>
</tr>
</tbody>
</table>

DISCUSSION

4500 years ago, in the ancient era, *Ayurved* was the only treatment modality. Different health issues were treated with different *Oushadha-Kalpana*, Panchakarma and Shalya *chikitsa*. The Shalya Chikitsa includes Yantra-Shastra, Kshyara and Agnikarma. Agnikarma was used either as Pradhana Karma or as Paschat Karma. The main aim of the Agnikarma procedure are to reduce pain, achieve hemostasis, destroy the diseased tissue and to prevent reoccurrence of the disease. To achieve, Destruction of the Vikrutha Dhatu, Bedana Shamana, to cease Ati-Rakta-Srava (coagulation), for prevention of reoccurrence (Arsha, Arbuda and Granthi etc.) Agnikarma can be used as Pradhana Karma or as Paschat Karma according to the need. After dental extraction, after Chhedana and Vedana Karma, to prevent reoccurrence and to reduce pain, Agnikarma can be used as Paschat Karma. Agnikarma is also can be used in chronic diseases like Pillaroga (Puyalasa) and chronic pain.

Recent Advancement

The father of modern health science, Hippocrates quoted that, “The diseases which medicines do not cure, iron cures; those which iron cannot cure, fire cures; and those which fire cannot cure, are to be reckoned wholly incurable” [51]. Therefore, there have been a great development in this direction. Cauterization is the developed state of Agnikarma. Now a days in the modern surgery Cauterization is used for coagulation and for tissue destruction. The Cauterization is the procedure of destroying the unhealthy tissue or clotting vessels to control bleeding by using heat, medicinal herbs and chemicals [52]. The Electro-cautery, Chemical-Cautery and Diathermy are the forms of cauterization.
Electro-cautery

Electrocautery uses heat conduction from a metal probe heated to a high temperature by electrical current. This may be accomplished by direct current. This is usually used to achieve hemostasis in small vessels and to cut small tissues.

Electro surgery

Electrosurgery is used routinely to cut, coagulate, dissect, fulgurate, ablate, and shrink body tissue with high frequency (i.e. radiofrequency) electrical current. It involves using a high frequency electric current to cut tissue and coagulate bleeding. The flow of electricity requires a complete pathway (circuit). It may be Monopolar or Bipolar. In monopolar type, electrical energy flows from the generator (ESU unit), to the active electrode (cautery pencil) then passes through the patient to the dispersive cautery pad, thus completing the electrical circuit. The uses are Cut, Coagulate and Blend - produces cutting effect with hemostasis. Using a constant waveform, the surgeon is able to vaporize or cut tissue. This waveform produces heat very rapidly. The generator modify the waveform, so that the duty cycle (on time) is reduced. This interrupted waveform will produce less heat. Instead of tissue vaporization, a coagulum is produced. A “blended current” is not a mixture of both cutting and coagulation current rather a modification of the duty cycle. As we go from Blend 1 to Blend 3 the duty cycle is progressively reduced. A lower duty cycle produces less heat. Blend 1 is able to vaporize tissue with minimal hemostasis whereas Blend 3 is less effective at cutting but has maximum hemostasis. Bipolar electrosurgery uses 2-tined bipolar forceps. One tine of the forceps serves as the active electrode, and the other tine serves as the return electrode. The electrical current is confined to the tissue between the tines of the bipolar forceps. The grounding pad is not needed for bipolar cases. Often “electrocautery” is used to describe electrosurgery. This is incorrect. Electrocautery refers to direct current (electrons flowing in one direction) whereas electrosurgery uses alternating current. During electrocautery, current does not enter the patient’s body. Only the heated wire comes in contact with tissue but in electrosurgery, the patient is included in the circuit and current enters the patient’s body.

Chemical-Cautery:

Some chemicals are responsible for tissue destruction. So in this procedure a small amount of chemical is used to destroy the diseased tissue. There may be damage to surrounding normal tissue, resulting in pigmentation and scarring. Some of the examples are Silver nitrate, Trichloroacetic acid and Cantharidin. Silver nitrate is dipped into lunar caustic solution and pressed onto the lesion to be cauterized for a few seconds. Cantharidin is an extract of the blister beetle, which causes epidermal necrosis and blistering, usually used to treat warts.

Diathermy

Electrosurgery is a common synonym used for Diathermy. However in other contexts/ diathermy means dielectric heating, produced by rotation of molecular dipolar in a high frequency electromagnetic field.

Mode of Action of Agnikarma (Flow chart No. 1)

In Ayurved the main purpose of Agnikarma are same as that of modern surgery. The common function are, Bedana Shamana (Reduction of Pain), Rakta Sthambhana (Coagulation), Dahana Karma (Diseased tissue destruction or Dissection and Apoonarvaba (prevention of reoccurrence).

- **Bedana Shamana (Reduction of Pain):** Agni is Ushna, Sukshma, Tikshna, and Ashukari. It removes the Srotavarodha, and hence it maintains the equilibrium of Vata, Kapha and reduces pain. Ushna guna, increase Dhatwagni, so pacify Ama, which ultimately reduces pain. It increases the Rasa, Rakta Sambahana (blood circulation) in the affected site resulting in reducing pain.
Dahana Karma and Apoonarvaba (Tissue Destruction and prevention of reoccurrence): The Ushna and Sukshma guna of red-hot Shalaka destroy the diseased tissue from its root and all around the lesion. It destroys the dead or diseased tissue of Nadi Vrana, dushtha Vrana, Arbuda, and Bhagandara. In Nadi Vrana the dead and diseased tissue are destroyed, the Ushna property improves circulations and promotes healing. It destroys the diseased tissue permanently so prevents reoccurrence.

Other benefits of Agnikarma: Agni neutralize the Vata and kapha by its Ushna, Tikshna, and Sukshma property. The Ushanguna of Agnikarma causes Utkleshnamtodhat, which activates Dhatura causing Ama Digestion which ultimately responsible for nirama Avastha of the desired location. Thus pacifies Vata and kapha. Agnikarma induces Sthambhana karma in Rakta Srava [2].

Therapeutic effects of heat:

The physiologic effects of temperature occur at the site of application of Agnikarma. Locally there is an increased blood flow with associated capillary dilation and increased capillary permeability. Initially tissue metabolism increases and there may be increase in the pain threshold and reduction of muscle spasm, Pain and Tenderness. The raised tissue temperature leads to vasodilation causing the increased tissue perfusion resulting clearance of local inflammatory mediators, which reduces inflammation and pain. Stimulation of DPI (Descending pain inhibitory mechanism) leads to Stimulation of CNS causing release of endogenous opioids in Proopiomelanocortin (POMC) cells in the arcuate nucleus & in the brainstem (e.g. Endomorphins, dynorphins etc.) thus Reducing pain. Vasodilation causing the increased tissue perfusion results in efficient oxygen delivery and it heals the tissue damage and injury caused by ischaemia and degenerations. The heat denatures the proteins and results in coagulation. The red-hot Shalaka or Agnikarma procedure burn the diseased tissue by its Ushna Property and it prevents reoccurrence by destroying the diseased tissue from its root.

Relation To Heat And Pain - Gate Control Theory Of Pain: Heat stimulates the lateral spinothalamic tract and Stimulate the descending pain inhibitory mechanism, which Stimulate the CNS, thus Release of endogenous opioid peptide (in Proopiomelanocortin (POMC) cells in the arcuate nucleus and in the brainstem e.g. Endomorphins, dynorphins etc.), which Binds with opioid receptors at substantia gelatinosa. This inhibits release of p-substance by pre sympathetic inhibition and block the transmission of pain sensation.
Flow chart No. 1 showing Mode of Action of Agnikarma

Application of Agni

- Raised local Temperature
  - Desired Tissue Destruction
- Dilation of local blood vessels
  - Increased tissue perfusion
  - Clearance of accumulation metabolic waste
  - Resolve inflammation
  - Reduces Pain

Conclusion

Agnikarma is the base behind the recent advancement and developments of Cauterisation, electrocautery, Diathermy, radiation and LASER therapy. This treatment modality deals with the action of thermal energy over the human tissue in order to reduce pain, destroy unwanted or diseased tissue. This protocol was widely used as one of the parasurgical procedure of Ayurved. In the ancient India during the Vedic and Samhita period, the Ayurved scholars knew the concept of heat and its therapeutic uses over human body and even in the adnexa of eye. During those time, Ayurved-scholars established this Agnikarma treatment modality for coagulation, destruction of diseased tissue and for pain management of body and urdhwajatru gata roga. Though it is highly essential for surgical purpose, still we the Ayurved scholars failed to provide its place in surgery of Ayurved and we have failed to develop it like the modern surgery did. Therefore, we need to develop our ancient science of Agnikarma and to establish the new Ayurvedic protocol of Agnikarma in Urdhwastra ura gata roga and for the Shalya Chikitsa Upakrama.

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