INTRODUCTION:
Sushrutsamhita is the main pillar of ayurvedic surgery in which surgical and parasurgical procedures are described. Susruta while defining Shalyatantra says “YANTRA SASHTRA KSHARA AGNI PRANIDHANAM”. Agnikarma is true cauterisation. Cautery can also be done by kshara also, but Agnikarma is better than kshara due to complete eradication of pathology. Sushrut advises four types of Agnikarma and classified burn injury into four grades. Vaghbatha also described concepts of Agnikarma. Acharya charak indicated agnikarma in gridhasi between kandara and gulfa.

AIMS AND OBJECTIVES:
To evaluate, elaborate and discuss the various basic concepts of Agnikarma of sushrutsamhita.

MATERIAL AND METHODS:
The references of Agnikarma were collected and compiled from sushrutsamhita and other ayurvedic classics. We also referred to various modern textbooks of surgery. The various methods of Agnikarma are discussed with their importance in ayurvedic surgical practice.

OBSERVATION:
Acharyasushruta described yantra in sutrasthanam along with upyantra and anushastra. Both Agnikarma and kshara karma are described under upyantra and anushastra. Acharyasushruta gives complete description of Agnikarma in sutrasthanam chapter 12. In the beginning of chapter he mentions that Agnikarma is superior to kshara karma. The disease treated with Agnikarma has no recurrence and there are some diseases where medication, surgery and kshara karma are not effective or not possible. Agnikarma treats these conditions easily and successfully. Materials used in Agnikarma are stated according to use as pipali, stool pills of goat, godant (teeth of cow), shar and shalaka are used in the tvacha gat rog, jambosth and loha (metals or alloys) are used for Agnikarma in mansagat (muscular area) rog, Madhu , guda and sneha is used for purpose of dahan in the Sira (vessels) , Snayu (tendon) and sandhi (joints) and Asthigatvyadhi.
Acharya Vagbhata added pichuvarti,suryakant and wax for the Agnikarma purpose. Agnikarma is contraindicated in sarad and grishma ritu, but in emergency it can be performed with due precaution. Patient should be advised agniviruddha ahar specially pichila ahar prior to procedure. In some conditions patient shouldn’t take anything by mouth before procedure. Those conditions are ashmari, bhagandar, arsh, and disease of oral cavity (mukha gat vyadh). Some acharyas say that Agnikarma can only be employed in tvacha and mamsagatavikar but acharya sushruta stated it can be employed in sira, snayu,sandhi and asthigatvikara also. In tvachadagdha, sabdpradurbhav means production of a sound, durgandhata means foul smell and tvaksankoch means contraction of skin at the site of dagdha. These features of tvachadagdha, may be due to skin having more fibrous tissue that after burn produces sound, foul smelling and contraction. In mamsadagdha, kapotvarnata i.e colour changes and becomes like pigeon, alpasvayathu and vedna means less swelling and pain; shuska sankuchit vranata means the wound formed during dagdha is dry and of small circumference. That may be due to the muscle having less blood and nerve supply than skin tissue producing less pain and swelling. Muscles are pinkish in colour and after burn become blackish. Only that tissue burns which comes in contact of shalaka. Dagdha of sira and snayuvrana have features of black colour, less swelling and discharge. This might be due to the coagulation of blood present inside the vessels during dagdha. The dagdha of sandhi and asthi show characteristics like Ruksha(dry), karkas (hard), lalima (redness), katina(hardness). This may be due to the less fluid at sandhi and asthi. In sirarog and netrarog (adhimanth) dagdha should be done on eyebrows, frontal and shankh(temporal ) area. In vartmgat vyadh the dagdha should be done on the lomkoope of vartm covered by wet cloth so the heat does not damage the cornea and conjunctiva. Diseases of tvacha,mamsa ,sira, snayu, sandhi and asthi with severe pain due to vitiation of vata) and the chronic ulcers with mansankur(smaller polyps), granthi (outgrowths and hardness) are treated with Agnikarma. Some diseases like arsha, bhagandara, arbuda, apachi, slipad, charmakeel, tilkalak, aantravridhi, joint disease, bleeding vessel and sinus tract are treated with Agnikarma.

Acharya sushruta stated four types of Agnikarma on the basis of procedure performed. When dagdha is done in circular form it is called valaya, when only pointed dagdha is done then it is called bindu, when daghda is done in the form of straight line then it is named vilekha(rekha), when a large area is burnt with blunt dagdha upkaran then it is called praatisaran. Astanga samgraha introduces another three kinds of dagdha namely Ardhachandra, Swastik and Astapad i.e. semicircular, swastika and like octahedral structure.

The patient with pitta prakriti, suffering from raktapitta, Atisaar, retaining foreign body, debilitated, children, oldaged, people afraid of procedure, having multiple wounds already and unable to perspire are advised to avoid Agnikarma.

When surgeon unnecessarily burns the excess tissue or burn done on the healthy/ nondiseased area of body it is known as pramada dagdha.

On the basis of amount of dagdha acharya describes four types of agnidagdha as
Plusth dagdha, Durdagdha, Samyag Dagdha and Atidadagdha. When Agnikarma is performed for therapeutic purpose then dagdha must be samyagdagdha. In plusthadagdha the skin is partially burnt and the colour of skin is changed. Acharya Vagbhata equates this to Tuthadagdha. This might be the first degree of burn. Durdagdha is the condition where burn occurs deep in the skin. In this condition large vesicles are formed, Chosh type of pain, Daah(burning sensation), Raag(redness), Paak(Putritication), and severe pain for long time, this kind of features are present. This may be considered as second degree burn. If the colour of burn tissue is like Taalaphalavarna and no deformity appears it is called Samyagdagdha(third degree of burn). If the burns occur deep and large part of. muscles are burned and blood vessels, nerve and joints dislocates and extensive tissue damage occurs along with generalized features jvara(Fever),daha(burning sensation),pipasa (excessive thirst) and Murcha(unconsciousness) appear as complication then that type of dagdha is called Atidadagdha (fourth degree of burn).During performance of Agnikarma one should always assess the condition for grading of burn and manage accordingly. After Agnikarma patients usually suffer severe pain, burning sensation and appearance of large vesicle because of Kupita agni vitiated Rakta and because of same composition of pitta it also vitiates and produces features described above.

Acharya described the chikitsa of different kinds of burn. In plustdagdha the affected area of body should be kept warm by external application of lepa and internal usages of Usnavirya drugs. This management has a scientific logic as due to burn the blood in the cutaneous vessel becomes more concentrated due to loss of water. In this condition if cold therapy is given then it may increase the thickness of blood which may coagulate and lose its capacity of carrying oxygen to tissue. That’s why acharya stated warm treatment for plustdagdha. In durdagdha both sheeta and usna chikitsa should be employed. For local application Ghrita, seka and Alepa should be cold. In Samyagdagdha the management should be like pittajvidradhi along with Alepa made by mixing Vanshlochana(Bambusa arundinaceae), Plaksha (Ficus lacer), RaktaChandani(Pterocarpus santalinus), Gairik and Guduchi (Tinospora cordifolia) and Ghrita. In case of Atidadagdha the treatment should be like PittajVisarpa. The burned tissue should be excised and for local application sheetvira drugs are used. The powder of Shalidhanya or Kwath of Tinduk bark mixed with ghrita applied and the site should be covered with Guduchi Patra and Kamal patras, (they keep the area moist). Other drugs are employed in form of kalka for ropana karma in agnidagdha.

Acharyasushruta indicates agni karma in different surgical diseases in different places of Sushrutsamhita. In the management of wound under Sashhtiupakram he includes agni karma. Here agnikarma may work by drying discharges like pus, serous or blood that may improve wound healing. In vatavyadhichikitsa Agnikarma is indicated in Snayu, Sandhi and Asthigat vat Prakop. In Sutra shan Acharya describes some disease conditions where agnikarma is indicated like Tvacha, Mamsa,Sira ,Snayu,Sandhi and Asthi where there is sharp pain due to vataparakop, wounds having hypergranulation, hard and
hyposthesia, and some disease like Arsh, Granthi, Arbud, Bhagandar, Apachi, Slipada, Kadar, Katisshool, Vatvyadhi, Charmkeel, Tilkalaka, Antravridhi, and Dieases of Sandhi and at the site of bleeding and Nadvrana.

**PROCEDURE:**

The site must be cleaned with either triphlakashaya or any antiseptic solution to provide an antiseptic area. The red hot shalaka of panchdhatu held in right hand and the area held firmly with left hand and dagdha with pointed site in bindu, vilekha, pratisaran or valaya type dagdha be done according to requirement. The dagdha should have feature of samvak tvacha dagdha. The dagdha site should be kept cold immediately with pulp of Ghritkumari and later haridra and triphala powder along with madhu and grita applied at the dagdha site. Both drugs may reduce the inflammation and post-operative pain. Patient should always be immunized against tetanus by 1 ampoule injection of tetanus toxoid. The area should be left open and patient should be advised to avoid wetting the area that may provoke post-operative infection. Usually there is no need of any prophylactic antibiotic.

**DISCUSSION:**

In current ayurvedic practice agnikarma has very good results in some chronic conditions like plantar fascitis, sciatic pain, peri-arthritis in shoulder joint, frozen shoulder, removing plantar corn etc. Plantar fascitis is a chronic degenerative inflammation of the plantar fascia. Here the bindu type of agnikarma is employed. The mode of action of Agnikarma can be explained as follows. Agnikarma is mainly indicated in the disease having Vataprakop. Theguna of agni are Sukhma, tikshna, and usna. By virtue of these gunaagni entering in the different small channels (srotas) of body the prakupitavata is neutralized. Other theory is that usnagunaagni improves the dhatvagni that pacifies the aam dosh and reduces the pain. By this means as vatashaman occurs the pain subsides spontaneously. Here agnikarma works by virtue of its guna but in some places it works by mechanical degeneration of tissue. Acharya Sushrut indicated agnikarma in Arbuda, bhagandar, Nadvrana and dushtavrana. Here agnikarma works by its mechanical power of destroying the tissue by heat (Unhealthy granulation tissue in chronic non-healing hyper granulated wound, unhealthy granulation tissue in track of chronic sinus (nadvrana), fistulous track (Bhagandar), and malignant cells in the case of arbuda). In diseases with hyperkeratinised tissue like kadar and charmakeel it is both mechanical power and effects of guna which are acting. Here by bindu or vilekha the hypergranulated tissue is removed by direct burn through loha tapta shalaka then due to its guna it destroys the deep seated root cells of kadar. Agnikarma explained by acharyasushrut in many diseases can be understood except in aantravridhi. It is very difficult to understand and explain how the agnikarma works in aantravridhi.

**PROBABLE MODE OF ACTION:**

The probable mode of action of agnikarma may be the property of agni. The properties of agni are sukhsm, laghu, thikhsna and usnaguna. It works on both vata and kapha dosha. It works on vata by its usna and tikhsmaguna and on the kaphadosa by laghu, sukhsma, tikhhsna and usnaguna. It works deep in the tissue because of its power of penetration to deep tissue by virtue of laghu, sukhsm and
tikhsna guna. Besides working on the doshaagni it also destroys the dead tissue on wound surface by its mechanical burn causing thermal injury. In this way it promotes the healing in chronic non healing wounds.

CONCLUSION: It is easy to learn and apply the principle of agnikrama in the management of different surgical conditions where surgery is not possible to treat the condition or there is great chance of recurrence of disease. Agnikarma provides lot of options for the surgeon as it is easy to perform, less chance of recurrence, less bleeding, no need of suture, less post-operative hemorrhage and minimal pain.

REFERENCES
5. Charaksamhita, vidyotani hindi commentary by, pandit rajeswar dattashastri, Chaukambha surbharti academy, Varanasi, chikitsa sthan, chapter ,28/100 p-795.

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