



Agnikarma Intervention for Avabahuka (Frozen Shoulder): A Systematic Review

Mahesh Kumar¹ , Shinde R.K.² And Jaiswal Reena³

¹Ph.D. scholar, Department of Shalya Tantra MGACHRC Wardha Maharashtra.

²Professor, Department of surgery JNMC DMIMS (DU), Wardha Maharashtra

³Associate Professor, Department of Shalya Tantra MGACHRC Wardha Maharashtra

Abstract: The Avabahuka is a common Vatavikar (disorder due to Vatadosha) described in ancient Ayurvedic literature like the Charak Samhita, Sushruta Samhita, Ashtanga Hridaya, etc. The Avabahuka disease affects Ansha sandhi (shoulder joint) and its clinical features are closer to the frozen shoulder (FS) of a modern musculoskeletal disorder, which is a common shoulder disorder. Synovial inflammation occurs in FS, followed by capsular fibrosis. The shoulder joint becomes gradually painful and stiff with a reduction in range of motion. Numerous treatment modalities are available for the treatment of Avabahuka as well as frozen shoulder. Traditional and surgical approaches are in practice, but each one has its limitations. Agnikarma, the intentional therapeutic heat burn therapy is an Ayurvedic treatment modality practice for the treatment of Avabahuka. The aim and objective is to prepare a comprehensive literature review of the subject. The study design is systematic literature review. The related article was searched in Ayurvedic text books and on the web. The matters were also searched on google scholar, PubMed, chochrane library, scopus library etc which are available. The thorough study of searched available matters, drafted, analysed and then draw a conclusion. The review suggests that the Agni karma intervention is an effective treatment modality in Avabahuka disease. This review is appraisal of available matters and is very helpful for researchers, clinicians, and pharmaceuticals companies who are involved or plan the work in particular subjects. Summarily this systematic review shows that the Agnikarma is helpful for the management of Avabahuka by virtue of heat and its vata and kaphashaamak nature. Agnikarma improves rasa-rakta circulation by its ushna (hotness), sukshma (penetration) and ashukari (fast acting) quality. Some more research studies are desired for experimental and clinical validation.

Keywords: Agnikarma, Avabahuka, Ayurveda, Frozen Shoulder, Vatavyadhi.

*Corresponding Author

Dr. Mahesh Kumar, Ph.D. scholar, Department of
Shalya Tantra MGACHRC Wardha Maharashtra

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1. INTRODUCTION

Ayurveda have description of many diseases along with their management. The vatavyadhi disease is caused by the vitiation of Vata dosha and said as “*Vikrita vata janitor asadharana vyadhi vata vyadhi*”¹. Among vatavyadhi, one common disease seen named *Avabahuka*. The *Avabahuka* disease affects the *Ansha-sandhi* (shoulder joint). *Avabahuka* is *vatajvikar*, but not mentioned in counting of *vata-naanatmajavyadhi*(disease due only vitiated vata)². The Sushruta³ and Vagbhatta⁴ consider *Avabahuka* as a vatavyadhi (disease due to vitiation of vatadosha). Sushruta advocated to follow vatavyadhi chikitsa in *Avabahuka* except *Siravedhana* (venepuncture). Madhavkar describes the *Avabahuka* in vatavyadhi chapter of Madhav-Nidan. Also mentioned *Anshashosha* as a preliminary stage of *Avabahuka*⁵. Madhukosha clarified that *Anshashosha* cause by *dhatukshaya* (decrease in body tissue) and is pure *vata-janyavikar* and *Avabahuka* is *vata-kaphajanyavikar*⁶. The term “*apa*” means dysfunction (*viyog*) and “*bahuk*” means arm that is why *Avabahuka* disease has features of *bahu-praspanidhara* (limitation in range of movement, restricted movement), *sira-akunchana*(constriction of *sira*), *stambha* (stiffness). The Yogratnakar mentioned the practice of movements of shoulder joint i.e. *Bahu-parivartana* for the treatment of FS. The various other Ayurveda text like *Bhaisajya Ratnawali*, *Sahasrayoga*, *gad nigraha*, *Bangsen*, *vangasena Vrihatnighanturatnakar* etc also have description of *Avabahuka*. The disease *Avabahuka* is diagnosed on the basis of their clinical features mentioned in Ayurvedic text. The *Avabahuka* can be related with the Frozen Shoulder (FS) of modern musculoskeletal disorders. The Frozen shoulder (FS) is “adhesive capsulitis” of the shoulder joint or “periartthritis scapula-humeral”⁷. The FS was first described by Duplay in 1872. Codman in 1934 described the features of FS, mentioned the challenge that still survives. The prevalence rate of FS as shown in the literature search is 3% - 5% in the general population and nearly 20% in the patient having a history of diabetes mellitus⁸. The causes of FS are usually idiopathic along with others like diabetes mellitus, thyroid disorders, cervical spine pathology, arm bone fracture, rotator cuff tear or tendinitis, acromioclavicular joint arthritis, etc. The physical and local examination of patient is sufficient to make the diagnosis of FS. This causes painful functional disability of shoulder joint in middle age working populations. The classical sign of FS is shoulder pain, shoulder stiffness with restricted movement or progressive decrease of active and passive range of motion (ROM). The pain usually worsens in the night. The flexion etcetera various movement of shoulder joint affected in FS. The FS is commonly seen in females compared to males, in the age group 40-70 years. The painful, stiffening and thawn or resolving is common moment of FS. The FS has four well-defined stages⁹ that represent the continuum of disease. Stage I is an inflammatory stage (painful phase) with features of pain, that covers for less than 10 weeks. Stage II is a freezing phase (stiffening phase) with nagging chronic pain, progressive decrease in range of motion (ROM), and covers 10-36 weeks. Stage III is a frozen phase (thawn or resolving phase) with features of gradual decreasing of pain, more stiffness, and longs to 4-12 months. Stage IV is the thawing or resolution phase, which occurs from 12 months to 42 months thereafter with features of improvement in ROM and reduction of pain. The conservative methods like non-steroidal anti-inflammatory drugs, local steroids, injection steroids, physiotherapy etc frequently prescribed by clinician for their management. Failing these the surgical methods like hydro-distensions, MUA (manipulation under anaesthesia), ACR (arthroscopic capsular release) also adopted. Most of the cases responded conservatively, but functional disability and no relief cases requires surgical

intervention. Each one has their limitation. Pain free smooth functional movement of shoulder joint is the primary aim of treatment in FS. Ayurveda have description of many useful drugs (*shaman-aushadhi*) and treatment modalities like *Snehana*(*Abhyanga*), *Swedana*, *Uttarabhaktik-Snehapan*, *Marma therapy*, *Nasya karma*, *Physiotherapy*, *Agnikarma* etcetera for the treatment of *Avabahuka* or FS. These are basically for subsiding the *vatadosha*. Many works on these modalities has been completed and many are pursuing; still they show their limitations. To finds the status of actual effect, the available literature review expected. Clinically it has been observed that, among these the *Agnikarma* is important parasurgical procedure that gives the satisfactory results in diseases caused by Vata and *Kaphadosha* like *Avabahuka*. *Agni* have quality of *ushna*(hotness), *sukshma*(penetrating) so it acts in *Avabahuka*. The aim is to make a systematic literature reviews the *Agnikarma* intervention for *Avabahuka* (Frozen shoulder).

2. MATERIALS AND METHODS

The review was framed by doing the best effort of searching in an ancient text, available literature, online search, etc. The related literature with *Agni karma* and *Avabahuka* searched on online platform PubMed, Google, Cochrane, Google Scholar etc. The published article studied and then planned to analyse. The keywords used for database search include *Avabahuka*, *Agnikarma*, *Marma therapy*, *Snehana Swedana*, *Nasya karma*, *Vatashamakchikitsa*”. The articles in english language were included for review. No other exclusion criteria were applied regarding journals, years, authors, etc. The list prepared is of all articles published until October 2021. The traced article obtained from searching the databases were compiled and screened. The title, abstract and article conclusion was studied. The research study that satisfied the inclusion criteria and that is describing *Avabahuka* were only included, others excluded.

3. RESULT

All selected matters from articles or books were grouped and screened properly. The text and abstract were read thoroughly and analysed. The “PRISMA” (the preferred reporting items for systematic review and meta-analysis) guidelines (Moher et al., 2009) was adopted to describe this systematic review (Table 4)⁵¹. The ancient Ayurveda literature have description of various treatment modalities like *Snehana*, *Swedana*, *Nasya*, *Agnikarma* etc for the treatment of *Avabahuka* and they have a significant role in managing it. Among these methods, the *Agnikarma* (therapeutic heat burn) treatment is considered as important and critical treatment.

4. DISCUSSION

The *Avabahuka* disease of Ayurveda is nearer to frozen shoulder of musculoskeletal disorders. The shoulder joint is synovial joint and ball and socket type. It has much range of mobility but a weak joint because lesser area of articulation between head of humerus and glenoid cavity¹⁰. Ayurveda literature and available research studies show that *Agni karma* is indicated¹¹ for the treatment of *Avabahuka*. The *Kaphadosha* and *Vatadosha shaman* effect of *Agnikarma* is the key indication in *Avabahuka* treatment. The basic concept behind the treatment of *Avabahuka* is the use of *Vatashamak* (alleviate *vatadosha*) drugs and methods. The various Ayurvedic treatment modalities along with remarks for *Avabahuka* described collectively and mentioned in text of Table I¹²⁻²⁵. Also the different modern treatment modalities for frozen shoulder are available and frequently in practice. These are mentioned in table 2 of text at reference number²⁶.

Table I: Different Ayurvedic Treatment methods for Avabahuka

Treatment modality	Ayurveda reference	Remarks
Nidan-parivarjan	Avoidance of causative factors.	It is a general rule while considering the management of diseases.
Vatavyadhichikitsa	Charakchikitsasthana 28/75-105 ¹² Sushrutachikitsasthana 04/8 ¹³ Ashtanga Hridaya ¹⁴ AshtanagaSamgraha ¹⁵	The vatavyadhichikitsa is suitable in Avabahuka like Snehana, Swedana, mridu-sansodhana, basti, nasya etc.
Snehana(oleation), Upnaaha(sudation by application of medicated herbal paste or powders), Agnikarma(intentional therapeutic heat burn therapy), Bandhan(bandaging), Mardan (massage with pressure)	Sushruta Samhita chikitsasthana chapter 4/8 ¹⁶ , SushrutaChikitsasthana chapter 4/15- ¹⁷	It is mentioned in context of Snayugatavata, Sandhigatavata, Asthigatavatachikitsa
Brumhana Nasya (medication through nasal route) in Avabahuka	Vagbhatta	Brumhana-nasya is a type of nasya karma.
Navan Nasya and Snehapaan (intake of sneha), then food intake.	Ashtanaga Hridaya Chikitsasthan chapter. 21/44 ¹⁷	Nasya karma is useful treatment in urdhwajatrugatavikara.
Snehana (oleation), dahakarma, upnaahah	Ashtanga Hridaya Chikitsasthan chapter.21/22,23 ¹⁸	When Snayu-sandhi-siragatavata exists.
Local Abhyanga(therapeutic oil massage) and Swedana(sudation)	The Abhyanga and Swedana are considered for general vatavyadhichikitsa	General treatment for vatavikaar.
First snehiknasya then snehpaan after dieting.	Charak Samhita chikitsasthana chapter 28/98. ¹⁹	Baahugata and sirogatavatadosha can be managed with this regime.
Baladi or dashmooladi kwath	Chakradatta ²⁰ Dalhan ²¹ Vangsen ²² Bhaisajya Ratnawali ²³	Gadnigraha & Vangsen mentioned the features and treatment of Avabahuka.
“Masha tail rasonabhyam bahuvochparivartanam, dashangimmashakwathaena jayata Avabahukam”.	Yogratnakar ²⁴	Bahuparivartana means movements of the shoulder joint.
Prasaraniyadikashaya	Sahasrayoga ²⁵	Vatahara and nourishing drugs
Nasya, Uttarbhaktiksnehapaan, Swedana	Chikitsa Saar Samgraha	Useful in Avabahuka.

Table2: Different modern treatment modalities for Frozen shoulder 26

S.No.	Treatment modality	Description	Remarks
1.	Medications	NSAID's (non-steroidal anti-inflammatory drugs) are usually prescribed by the clinician.	It is common anti-inflammatory drugs
2.	Oral steroids	Oral steroid to reduce pain stiffness.	Rarely prescribed
3.	Injection of Steroids	The intra-articular steroid intervention is done to reduce inflammation, pain and stiffness.	Provide small short term benefit
4.	Physical therapy or Physiotherapy	– In stage one is indicated to interrupt the inflammatory process and in stage two it is more effective in stretching the capsule also to achieve normal joint biomechanics.	Commonly practiced before going to surgical intervention.
5.	Hydro-dilation	Intra-articular injection of normal saline to release capsular adhesions of adhesive capsulitis.	Potential effective treatment method in secondary care
6.	Surgical methods	-Manipulation under anaesthesia (MUA) -Arthroscopic capsular release(ACR)	Surgical methods are helpful in a minority of cases of FS. ACR generally uses it if MUA fails.
7.		For first stage- Intra-articular steroids and physiotherapy For second stage - intra-articular steroids and arthroscopic release For third stage, arthroscopic release For fourth stage- assess progress and active physiotherapy	

The online search result of articles related to term *Avabahuka*, *Agnikarma* etc are collectively enlisted in table 3(a & b) ²⁷⁻³⁰. The findings mainly searched on Pubmed, Cochrane library, scopus Elsevier, google scholar and the search includes abstract, full text, CT, RCT.

Table 3a: Avabahuka related terms and findings on different search engine. (Searched on 22-10-2021)

Related terms	Findings on different Search engine			
	PubMed ²⁷	Cochrane library ²⁸	Scopus Elsevier ²⁹	Google scholar ³⁰
Avabahuka	Two results were found (one in the context of <i>Prasarini</i> and second in context of <i>ekangaroga</i>)	2 Trials (register in CTRI) matching <i>Agnikarma</i> and <i>Avabahuka</i> in Title Abstract Keyword.	No result	Review article on <i>Avabahuka</i> – search 18 articles
Agnikarma	Nine results were found	65 Trials (registered in CTRI) matching <i>Agni karma</i> in Title Abstract Keyword No complete study find.	No result	About 782 results
Agnikarma and Avabahuka	No results were finds. The <i>Avabahuka</i> term was not found.	2 Trials (register in CTRI) matching <i>Agnikarma</i> and <i>Avabahuka</i> in Title Abstract Keyword.	No result	About 25 results
Marma Therapy Avabahuka	04 results found but not related in <i>Avabahuka</i> as <i>Avabahuka</i> term not finds.	Not any	No result	About 50 results
Nasyakarma and Avabahuka	No results were found. The term <i>Nasya</i> is found in 3 articles but not with <i>Avabahuka</i> .	4 Trials matching <i>Nasya karma</i> and <i>Avabahuka</i> in Title Abstract Keyword.	No result	About 92 results
Snehan -Swedan karma and Avabahuka	No result finds	0 Cochrane Reviews matching	No result	6 results

Table 3b: Agnikarma & Avabahuka on AYUSH PORTAL³¹

Ayurveda Medical System - Category	Agnikarma (on basis of Article title)	Avabahuka (on basis of Article title)	Agnikarma&Avabahuka (on basis of Article title)	Remark
Preclinical Research	No data found	No data found	No data found	-
Clinical Research Evidence Grade A	No data found	No data found	No data found	-
Clinical Research Evidence Grade B	04	No data found	No data found	All these four study is on Agnikarmabut not on Avabahuka.
Clinical Research Evidence Grade C	23	Total 7	No data found	<ul style="list-style-type: none"> Among 23- only two on Frozen shoulder Among 7 the work on Avabahuka available.
Fundamental Research	7	Total 2	No data found	<ul style="list-style-type: none"> Among 7 no work on Frozen shoulder Among two work on Avabahuka available. <ol style="list-style-type: none"> Etiopathological study of Avabahuka with special reference to frozen shoulder: a review. Etiopathological study of Avabahuka: a review
Drug Research	1	No data found	No data found	Only one research
Source: https://ayushportal.nic.in/default.aspx last accessed on 12-07-2022 8.40 PM				

Table 4 Summary of all articles Identified, Screen, and Included for review, according to PRISMA guidelines

Identified	There are no significant search finds on PubMed, Cochrane and Scopus. The maximum work-related with Agnikarma and Avabahuka searched on Google scholar and were found to be about 25 results
Screening	The screening was based on their title and abstract regarding Avabahuka and their management. Screened the total 25 article
Eligibility	The search article must have term Avabahuka and Agnikarma
Inclusion	Finally 19 articles were selected and incorporated for Avabahuka and their treatment with Agnikarma.

The flow chart of all articles identified, screen, and included for review, according to PRISMA guidelines mentioned in table 4.

Table: 5 The important search article for the term Avabahuka.

S.N.	Author	Year	Work title	Remark
1.	Amol Deshpande et.al ³²	2020	Comparative Study on Efficacy of MarmaChikitsa, Agnikarma and Physiotherapy in Avabahuka (Frozen shoulder)	This is a study protocol. Group A (Study Group): MarmaChikitsa with Placebo. Group B (Control Group): Agnikarma with Placebo. Group C (Control Group): Physiotherapy with Placebo
2.	Satvi et al. ³³	2020	A case study - Management of FS (Avabahuka) by Agnikarma with chitrakamoola (plumbagozeylinica).	This is a case report. Pain and stiffness are reduced markedly by therapy. No side effects were noted.
3.	Nikhil et al. ³⁴	2019	A case study- Management of FS by suchivedha with Agnikarma.	Case report Suchivedha with Agnikarma is highly effective.
4.	Mahesh Kumar et.al ³⁵	June 2021	A Protocol for Treatment of Avabahuka (Frozen Shoulder) with Agnikarma and Topical Diclofenac Sodium Gel	This is a study protocol

5.	Negi.V ³⁶	2018	<i>Avabahuka</i> vis-a-vis frozen shoulder: a review	Provide an overview
6.	Praveen Kumar H. Bagali. ³⁷	2018	Pain management in <i>Avabahuka</i>	Describe the <i>Abhyanga</i> , <i>Swedana</i> , <i>Agnikarma</i> etc and as a treatment modality.
7.	Urhe et al. ³⁸	2021	Case study of <i>Agnikarma</i> with <i>panchdhatushalaka</i> in <i>Avabahuka</i> - frozen shoulder	This is a case report. 95.87% average effect in symptoms was observed. <i>Agnikarma</i> markedly reduced Pain, Stiffness, Tenderness and Numbness.
8.	Dalvi, A. S., & Gandhi, A. S. ³⁹	2019	Case study- management of <i>Avabahuka</i> with special reference to frozen shoulder by Ayurvedic medicine.	The patient got relief after treatment.
9.	Rathod NA, Kuchewar VV. ⁴⁰	2019	Review on role of <i>Agnikarma</i> in pain of various musculoskeletal disorders.	<i>Agnikarma</i> can be used in various musculoskeletal disorders like Frozen shoulder
10.	Dr. MeghaTyagi ⁴¹	Sept-Oct.2013	<i>Agnikarma</i> on Frozen shoulder (<i>Avabahuka</i>)-Pilot study	Pain reduced 87.17% Stiffness improve 85.71% ROM increased 87.23 %
11.	Vd. Pradeep Patel & Vd. KavitaKhond ⁴²	2021	A Review of <i>Avabahuka</i>	Overview on prognosis, <i>samprapati</i> and management as per <i>Ayurveda</i> mentioned here.
12.	Kumar V, et.al. ⁴³	2012	Case study- Role of <i>Agnikarma</i> in degenerative disorder- <i>Avabahuka</i> (FS)	Pain score/VAS score reduced eight to four on 7th day and then two on fifteenth day. The angle of flexion, elevation of arm improves 950 to 1200 on 7th day, 1200 on 15th day, and 1500 later. The abduction angle and elevation improve 800 to 1200 on 15th day after <i>Agnikarma</i> .
13.	Sathish HS et.al. ⁴⁴	2018	Review of Researches on <i>Agnikarma</i> [Cauterization] Therapy	<ul style="list-style-type: none"> ▪ Analgesic action of <i>Agnikarma</i> searched in musculoskeletal disorders. ▪ While the curative and non-recurrence action of <i>Agnikarma</i> is less tested.
14.	BadweYogesh et al ⁴⁵	2021	Review study- role of <i>Agnikarma</i> in Pain Management of Various Musculoskeletal Disorders.	<i>Agnikarma</i> is useful in muscular and skeletal pain management.
15.	DebasisKundu ⁴⁶	2016	" <i>Agnikarma</i> in <i>Avabahuka</i> - frozen shoulder"	It's easy, safe, uncomplicated and economical to reduce the <i>Avabahuka</i>
16.	Gaikwad et al. ⁴⁷	2021	Case study- To evaluate the effect of <i>Agnikarma</i> in the management of FS- <i>Avabahuka</i> .	Pain & stiffness was decreased. ROM increased.
17.	Samson A, et,al ⁴⁸	2020	Short-term efficacy of an integrated approach using spencer's mobilization and <i>Agnikarma</i> on movement and functional disability in a patient with shoulder impingement syndrome	Before to after therapy significantly improves muscle strength and functional disability. Jointly, found promising on a short-term basis.
18.	Dr. Ganesh Purushottam Deokar, Dr. D.K.Parida ⁴⁹	2020	"Management of <i>Avabahuka</i> through <i>Ayurveda</i> "	provide an overview of the nature and the widely accepted management
19.	Arumugaraj, V. ⁵⁰	2019	Hot Mud Application on Pain Management in Periarthritis of Shoulder	Hot mud over site causes vasodilatation that infiltrates further into the muscle. It finally reduces the pain and increase ROM of shoulder joint.

The important search article of term *Avabahuka* is mentioned in Table 5 ³⁰⁻⁴⁸.

In context title, it seems that the *Agnikarma* is a popular parasurgical procedure and effective in pain reduction and significant in management of *Avabahuka*. Actually this is intentional therapeutic heat burn therapy and able to manage vitiated vata and kapha dosha of body. It is effective to subside the musculoskeletal pain. Also no serious adverse effects happen by *Agnikarma* in patient of *Avabahuka* if performed judiciously.

5. CONCLUSION

In *Ayurveda*, the *Avabahuka* disease falls in group of vata-vikar. In general observation, it seems that *Ansha-shosha* is an initial stage in which dryness of *Shleshakkapha* finds while *Avabahuka* is later stage in which loss of *Shleshakkapha* along with symptoms occurs. *Avabahuka* have feature like *bahupraspandithara*, *shool* (pain), *stambha* (stiffness) etc which is nearer to Frozen Shoulder (FS) of modern musculoskeletal disorder of shoulder joint. The excessive physical work, trauma at shoulder region, diabetes mellitus etc. are risk factors of FS, however the exact aetiology is unclear. The FS have three typical stages freezing (6-9 weeks), frozen (4-6 months) & thawing stages (6 months to 2 years). Various conservative and operative methods like steroids, pain killers (NSAIDs), physical therapy, and surgical treatment are in practice for management of FS, still have their limitations. The numerous treatment modalities are also available in ancient *Ayurveda* texts like *Snehana*, *Swedana*, *Upnaaha*, *Nasya*, *Agnikarma*, etc. Among these methods, the *Agnikarma*

treatment is easily and frequently adopted by clinician for treatment of *Avabahuka*. It also delivers satisfactory results. *Agnikarma* subside *Vata* and *Kapha dosha* that mentioned in *Ayurveda* has proven in *Avabahuka* cases. Summarily, on review of the articles available from online and offline databases shows that, *Agnikarma* is advantageous in *Avabahuka* management as it improves the range of movement (ROM). Out of 25 articles, the 19 articles mentioned *vata-kaphashamak*, and showed *Agnikarma* is effective in reducing pain and stiffness of *Avabahuka* ailments reported as satisfactory action. Mainly shalaka *Agnikarma* adopted for *Agnikarma* by clinicians. The clinical application of *Agnikarma* on *Avabahuka* are promising, still there are needs of more experimental and clinical research for validation and reliability.

6. CONFLICT OF INTEREST

Conflict of interest declared none.

7. AUTHOR CONTRIBUTIONS STATEMENT

Dr. Mahesh Kumar done the initial literature collection work, conceptualized, designed and collected the related data with regard to this review study. Dr. R.K. Shinde and Dr. Reena Jaiswal supervised and analysed the data. Also necessary inputs regarding modern and *Ayurveda* were given towards designing of the review article. All authors discussed the review article, methodology, discussion, and results and contributed to the final document.

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