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A REVIEW ARTICLE ON AVABAHUKA WITH SPECIAL REFERENCE TO FROZEN SHOULDER

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Abstract

In recent years, multiple groups of diseases have become the subject of intense study and research. This is primarily due to a change in lifestyle and patterns of physical activities for work. Vataj and Kaphaj disorders are also becoming common. Modern civilization has led to a significant increase in mental and physical stress, resulting in Vata aggravation and the eventual development of Vata disorders such as Avabahuka, Sandhivata, Gridrasi, Katishool, Trikshool, Vishwachi, etc. There is also an increase in Kapha dosha due to irregular eating habits, high glycemic index diets, and stressful lifestyles. Avbahuka primarily exhibits Vata characteristics, but over time, Kapha dosha becomes involved, hindering shoulder joint mobility. Avabahuka is similar to Frozen Shoulder, a common condition characterized by shoulder joint stiffness and pain. As the condition progresses, shoulder range of motion significantly decreases, leading to difficulties in daily activities. In Ayurvedic texts, Avabahuka is considered one of the Vata Nanatmaj diseases, clinically characterized by symptoms such as upper arm pain, ligament stiffness, arm atrophy, and loss of movement. Avabahuka, a condition affecting the shoulder joint, is detailed by Acharya Sushruta as one of the eighty types of vata vyadhi. Given the shoulder joint's extensive range of motion crucial for daily tasks, this ailment significantly hampers productivity. Its clinical presentation and underlying mechanisms bear resemblance to Frozen Shoulder. Among the prevalent musculoskeletal issues treated in orthopaedic clinics, Avabahuka poses frustrations for both patients and healthcare providers. This article seeks to offer an overview of its characteristics and the commonly accepted treatment approaches based on various studies and Ayurvedic sources.

KEYWORDS: Frozen shoulder, Avabahuka, Adhesive capsulitis, Vatananatmaza, Gridhrasi, Sandhivat, Vishwachi

INTRODUCTION: Avabahuka, a term introduced by Acharya Sushruta between 600-400 BC, represents a shoulder disorder commonly seen in general medical practice. The human body is composed of six parts (shadanga)[1], with the shakha (upper limb) being one of them, while skanda is considered the foundation of shakha. Within his work "Shruta Samhita," Acharya Sushruta employed this term to characterize a condition with symptoms described[2,3] as ***'Ansadeshasthitovayu shoshayitvam ansabandhanam, shiracha aakunchaya tatrasto janayatava avabhahukam.***' Conversely, in the Astanga Hridaya[4] (5th century) and Astanga Sangraha[5], it is defined as ***'Ansamulasthito vaayu sira sankochaya tatraga, bahupraspanditaharam janayatvam avabahukam,'*** signifying a state where vata becomes lodged at the shoulder root, leading to vein constriction and shoulder movement impairment, thereby identified as Avabahuka. In the Madhava Nidana[6], two disease conditions are delineated for Avabahuka—Ansashosha and Avabahuka—the former being regarded as an initial stage of the latter. The Charaka Samhita (200-300 BC) in the Sutra Sthana[7] and Chikitsa Sthana[8] bahushosh and bahuvata respectively has been mentioned. In Chakradutta[9] only bahushosha has mentioned in vatavyadhi Chikitsa. According to Acharya Sushruta[10] vitiated vata in and around shoulder causes shosha (dryness) of ansabandhan (shoulder ligaments, tendons and connective tissue or capsule leading to pain and stiffness) and constriction of blood vessels (reduced blood supply) resulting in avabahuka. This article aims to provide an overview of the Avabahuka and the widely accepted management of this condition based on other studies. Avabahuka it is made up of two words ava + bahuka, the prefix ava means away, down[11], vikrita[12], off, away.[13] All that means like dysfunction or physiological separation not anatomical resulting in movement restriction hampering one‟s all activities of that particular part, as if there is real separation. Therefore, avabahuka means immobile shoulder. Etiology (Nidana) Cause of Avabahuka is mainly vata dosh as it is described under vatavyadhi and in later stage kapha dosha is also associated with vata dosha.[6] The causes of avabahuka may be classified in to three groups: -

1) Abhighataj (trauma) or marmabhighata:[14,15] injury to ansa marm (shoulder region) leads to stiffness of shoulder.

2) Aaharaj[16] (unwholesome food): tikta (bitter), ushana, kashaya (astringent), alpa, ruksha, pramita bhojanae (food) cause vitiation of the vata.

3) Viharaja (activities or unhealthy lifestyle): Excessive involvement in activities such as intense physical exertion, sudden fear, grief, etc., can result in the depletion or breakdown of tissues, leading to an aggravation of the Vata dosha. Other contributing factors include:

i) Extended swimming sessions lasting over 40 minutes,

ii) Bearing heavy loads (Bharavahan),

iii) Engaging in wrestling matches with stronger opponents (Balvat vigraha),

iv) Maintaining improper sleeping postures (Dukha shayya).

Pathogenesis (Samprapti) of Avabahuka As per Acharya Sushruta's , the imbalanced Vata around the shoulder joint causes the reduction of structures or tissues within and around the joint, alongside the constriction of blood vessels, resulting in pain, stiffness, and ultimately restricted mobility in the shoulder joint.

Prodromal symptoms (Purva Roopa) play a minimal or non-existent role in vatavyadhi. The signs and symptoms (Roopa) of Avabahuka include:

1. Predominant pain in the shoulder region due to vata imbalance.
2. Stiffness in the shoulder.
3. Limited range of motion in the shoulder joint. 4. Muscular atrophy (Sosha).

The treatment protocol outlined in Ayurvedic texts for vatavyadhi (avabahuka) typically involves:

i) Snehana (internal and external oleation using medicated oils).

ii) Swedana (sudation with steam infused with vatashamaka herbs).

iii) Basti (administration of decoctions or oils through the anal route like enema).

iv) Agnikarma along with oral medications such as guggul and decoctions.

v) Nasya (nasal medication) as mentioned by Acharya Vagbhata for udarvajatrugata roga. Astanga Sangraha[17] recommends Navana nasya and snehapana for avabahuk, while Acharya Sushruta[18] suggests vatvyadhi chikitsa except sira vyadha,in Astang Hridaya[19] first nasya followed by basti, Baladi or dashmooladi kwath according to Chakradatta[20] for avabahuka treatment.

Yoga Ratnakar suggests bahuparivartana (shoulder joint movements) along with Prasaraniyadi Kashaya from Sahasrayoga for Avabahuka management.

The text below outlines some of the widely recognized methods in practice:

1) Nidana parivarjana (avoiding the causes) and pathya ahar-vihar (maintaining a healthy diet and engaging in beneficial activities).
2) Abyanga (massage involving warm medicated oil, emphasizing stretching).
3) Sweden (sudation using dosha-shamak steam) for deep heating and Upnaha.
4) Pizhichil: This is the application of hot oil through simultaneous massage.
5) Elakizhi: This is a herbal poultice made with Vata-balancing herbs, encased in cloth, immersed in hot medicated oil, and applied to the affected area.
6) Njavarakizhi is beneficial for degenerative conditions and is similar to shastikashali pinda sweda, where initial abhyanga is performed followed by the application of a rice pack dipped in a specific decoction on the affected area.
7) Podikizhi, it involves applying herbal powder enclosed in a linen bag and dipped in oil.
8) Pichu entails applying a cotton swab soaked in hot medicated oil on the affected area.
9) Nasaya karma is recommended for udravajatrugat roga conditions. Additionally,
10) Sanshamana aushadhi incorporating vatashamak drugs, kwath, and oils like Yograj Guggul, Rasna Erandadikshayaya, and Mahanarayanadi oil is advised respectively. Yoga and aasanas such as surya namaskara, along with shoulder exercises or physiotherapy known as Bahu parivartanam, can be beneficial.
11) Agnikarma and Marma therapy, which focuses on stimulating marma points near ansa sandhi, yield promising results in frozen shoulder cases, and can be practiced long-term without adverse effects.

From a modern perspective [21,22], frozen shoulder is attributed to synovial inflammation and fibrosis of the shoulder joint capsule. The primary frozen shoulder's exact cause is still unknown, with factors like a partial loss of blood supply considered, and it typically progresses through painful, frozen, and thawing phases as part of its clinical presentation. The first documented account of frozen shoulder dates back to 1872 by Duplay, who described it as 'periarthritis scapulohumeral,' and the term 'frozen shoulder' was coined in 1934 by "Codman who detailed the typical characteristics of a gradual onset of pain localized near the deltoid muscle insertion, discomfort when lying on the affected side, and limited range of motion in active and passive shoulder movements, despite a normal appearance on radiographs. A true frozen shoulder is diagnosed based on clinical evaluation, characterized by a slow onset of shoulder stiffness, intense nocturnal pain, and significant reduction in both active and passive external rotation of the shoulder. Frozen shoulder can be broadly classified into primary, where no specific cause is apparent, and secondary, where a causative factor can be identified through patient history, physical examination, and imaging studies. In practice, there is a tendency to diagnose any patient with a painful, stiff shoulder as having frozen shoulder, but this approach should be used judiciously. Frozen shoulder is a specific condition that has a natural history of spontaneous resolution and requires a management pathway that is completely distinct from conditions like rotator cuff tear or osteoarthritis, frozen shoulder presents with a prevalence rate of 3% - 5% in the general population, rising to 20% in individuals with diabetes. It primarily affects individuals aged between 40-60, with a higher incidence rate in women. Approximately 6-17% of patients may develop the condition in their other shoulder within 5 years after the resolution of the first shoulder issue, with a slightly higher likelihood in the non-dominant shoulder. Frozen shoulder, also known as 'adhesive capsulitis,' involves the inflammation and fibrosis of the shoulder joint capsule. Pathologically, fibroblasts and mast cells are present, and cytokines like transforming growth factor β and platelet-derived growth factor may contribute to the inflammatory process. While the glenohumeral joint's synovial capsule is primarily affected, structures beyond this joint can also be involved in the disease process. The structures may comprise the coracohumeral ligament, rotator interval, subscapularis, musculotendinous components, and the subacromial bursa.

Etiology: The etiology of the idiopathic variation of the condition remains unidentified, while various factors can contribute to secondary frozen shoulder, including systemic ailments (such as diabetes mellitus, hypothyroidism, hyperthyroidism, and hypoadrenalism), external conditions (like cardiopulmonary disease, cervical spine issues, stroke, Parkinson's disease, and humerus fracture), and internal factors (such as rotator cuff tear, rotator cuff tendinitis, biceps tendinitis, calcific tendinitis, and acromioclavicular joint arthritis).

Clinical Features: The diagnosis of frozen shoulder is established through analysing the patient's medical history, conducting clinical and radiological examinations, and ruling out other shoulder conditions. Codman introduced specific diagnostic criteria for frozen shoulder.

1 Shoulder pain with slow onset
2) Pain felt at deltoid insertion.
3) Inability to sleep on affected side.
4) Atrophy of the supra and infraspinatus muscle.
5) Sometimes minimal local tenderness.

6)Restriction of active and passive ROM.
7) Painful and restricted: elevation and external rotation.

History taking: Comprehensive history taking involves documenting the beginning and length of symptoms, affected area, its function, and any prior trauma. It is crucial to gather the patient's medical and surgical past. Primary frozen shoulder patients typically lack a history of shoulder trauma and often report a gradual development of pain alongside reduced motion. Early stages are often marked by nocturnal and resting discomfort. Patients experiencing secondary frozen shoulder frequently have a medical background of diagnosed diabetes mellitus. Additional medical conditions linked to frozen shoulder that can aid in the diagnosis include hypothyroidism, hyperthyroidism, hypoadrenalism, Parkinson's disease, cardiac issues, a history of stroke, and recent surgical procedures.

Clinical evaluation: During the initial stages of the disease, the primary symptom observed is pain when the shoulder is moved to its maximum range. Patients in stages 1 and 2 typically experience pain upon touching the front and back of the shoulder capsule, and they report feeling pain spreading towards the deltoid insertion. As the disease progresses, a slight decrease in the size of the deltoid and supraspinatus muscles may be noticed due to disuse. Palpation may reveal a widespread tenderness around the glenohumeral joint that can extend to the trapezius muscle and the area between the shoulder blades. A complete inability to externally rotate the shoulder is a characteristic indicator of frozen shoulder. It is crucial to differentiate whether this limitation in external rotation is present both actively and passively. If passive external rotation is unimpaired but active external rotation is restricted, a potential rotator cuff injury should be considered instead. In cases of severe frozen shoulder, most movement occurs at the scapulothoracic joint.

The disease primarily impacts extension and horizontal adduction motion. In cases of extended duration, mild disuse atrophy of the deltoid and supraspinatus muscles is typically evident upon examination. The affected arm may show adduction and internal rotation, with tenderness being detectable upon palpation of the glenohumeral joint. Both active and passive range of motion are compromised, particularly in abduction and external rotation. It is crucial to observe movement in the thoracoscapular joint, which could assist in abduction. Symptoms of rotator cuff tendinitis can mimic those of frozen shoulder; however, in frozen shoulder, stiffness often outweighs pain. Therefore, while pain is the main concern in rotator cuff tendinitis, patients with frozen shoulder commonly experience chronic pain alongside pronounced stiffness. Furthermore, signs of cervical radiculopathy and upper limb neurology warrant evaluation, as conditions like cervical spondylosis or cervical disc disease may contribute to or accompany frozen shoulder.

Special Diagnosis: The diagnosis relies on clinical examination findings along with a plain x-ray. While some x-rays may appear normal, others may reveal periarticular osteopenia resulting from disuse. These x-rays help rule out other potential causes of a stiff shoulder, such as glenohumeral arthritis, calcific tendonitis, or rotator cuff disease. MRI is usually not necessary for diagnosing adhesive capsulitis; however, if conducted, it may show a mild thickening in the joint capsule and coracohumeral ligament. MRI can also be beneficial in identifying other reasons for a stiff shoulder, such as infections or tumours. Laboratory tests do not typically aid in diagnosing frozen shoulder. Still, for suspected secondary frozen shoulder, certain tests like immunological studies (such as Human Leukocyte Antigen B27), full blood count, erythrocyte sedimentation rate, C-reactive protein, thyroid function test, lipid levels, and fasting glucose might be ordered if an underlying co-morbidity is suspected based on the patient's history.

"This condition tends to resolve on its own over time. According to most research, this phase typically spans 18 to 24 months. Poor outcomes have been linked to factors like insulin-dependent diabetes and related intrinsic issues such as calcifying tendonitis. In 1987, Neviaser and Neviaser delineated four stages within the disease progression. Hannafin et al later applied these same four stages to successfully associate clinical examination findings with the histological characteristics observed in capsular biopsy samples for the initial three stages. It is crucial to understand that these stages illustrate a continuous spectrum of the disease, as opposed to clearly defined, separate stages. These stages are as follows:

1**) Stage 1** (inflammatory): Patients experience pain during movement, described as an ache at rest and sharper with motion, lasting less than 10 weeks, with well-maintained range of motion.

2) **Stage 2** (freezing): Chronic pain for 10-36 weeks, worsening at night, no injury history, progressive loss of motion, and synovitis seen on arthroscopy.

3**) Stage 3** (frozen): Pain diminishes, limited to extreme movement, significant reduction in motion, minimal external rotation.

4) **Stage 4** (thawing): Typically starts at 12 months post-onset, lasting up to 42 months, showing improved range of movement and minimal pain.

Management in modern medicine: Typically, this illness tends to resolve on its own. Nevertheless, roughly 10% of patients may face persistent issues. Emphasizing patient education is crucial for fostering adherence to treatment protocols. Providing patients with information regarding the stages, progression, and duration of the condition commonly helps alleviate frustration. It is paramount to highlight that although there may be enhancement in range of motion, full recovery may not always be attainable.

Regarding treatment, modern medical science suggests that the most suitable course of action is determined by the disease stage and clinical symptoms. Treatment strategies vary based on the disease stage: for stage 1, intra-articular steroids and physiotherapy are recommended; for stage 2, intra-articular steroids and arthroscopic release are advised; stage 3 typically involves arthroscopic release, while stage 4 requires progress monitoring and active physiotherapy. Non-surgical treatment options include oral non-steroidal anti-inflammatory drugs during the painful freezing phase, intra-articular steroids, physiotherapy aimed at interrupting inflammation and relieving pain, hydro dilation by injecting normal saline to distend and rupture capsular adhesions, oral steroids, and electric stimulation.

Surgical interventions may include manipulation under anaesthesia and arthroscopic selective capsular release, which is now the primary surgical method for treating adhesive capsulitis.

In **Discussion** this article's aim is to present a comprehensive review of the Avabahuka and established management approaches for this condition, drawing on existing research. Within texts like the Sushruta Samhita and Madhav Nidan, Avabahuka and Bahu Shosh are viewed as a continuum rather than distinct ailments. Personalizing treatment is crucial by taking into account each patient's symptoms and status. Marma therapy, focusing on marma points near the ansa-sandhi, shows positive results and can be a lifelong practice with no adverse reactions. Combining marma therapy with oral vatashamaka medications and nasya therapy with medicated oils can further improve outcomes. Shoulder exercises (Bahuparivartan) are beneficial across all stages of avabahuka. While evidence supporting marma therapy's ability to alter the disease's natural progression is limited,however, Nasya karma is also one of the panchakarma therapies in Ayurvedic system of medicine constitutes the main treatment in the management of jatru-urdhwagata rogas mainly apabahuka or the frozen shoulder, future research should prioritize investigating nasya karma and marma therapy efficacy through well-designed randomized controlled trials. In Ayurveda, Nasya therapy refers to the administration of medicinal substances through the nasal passage. Avabahuka, also known as frozen shoulder, is a condition characterized by pain and difficulty in shoulder movement. Here are some different types of Nasya therapy used in the treatment of Avabahuka. **Pratimarsha Nasya**: This involves instilling one or two drops of medicated oil or ghee into each nostril multiple times a day. It helps in lubricating the nasal passage and provides relief from shoulder pain**. Shirovirechana Nasya**: In this type of Nasya therapy, nasal drops are administered to induce sneezing. It helps in expelling the excess mucus and toxins from the respiratory system and improves shoulder movement**. Dhoomapana Nasya**: In this technique, smoke from medicated herbs is inhaled through the nostrils. It helps in relieving congestion, reducing pain, and improving blood circulation to the shoulder joint. **Navana Nasya**: It involves applying medicated oil or herbal juice to the nasal passage using a dropper. The oil or juice is retained in the nasal cavity for a specific duration before being expelled. It helps in reducing inflammation and alleviating pain. **Pradhamana Nasya**: This type of Nasya therapy involves blowing medicated powders, such as herbs or minerals, into the nasal cavity. It helps in drying excessive mucus, clearing nasal congestion, and improving shoulder mobility.

In **Conclusion,** Avabahuka, or frozen shoulder, is a condition that can be effectively managed using a combination of Ayurvedic treatments. Personalizing treatment based on the individual's symptoms and status is important. Marma therapy, shoulder exercises, and Nasya therapy are all beneficial in improving shoulder movement and reducing pain. While evidence supporting the effectiveness of marma therapy is limited, further research should be conducted to explore the efficacy of Nasya therapy and marma therapy through well-designed clinical trials. Different types of Nasya therapy, such as Pratimarsha Nasya, Shirovirechana Nasya, Dhoomapana Nasya, Navana Nasya, and Pradhamana Nasya, can be used to provide relief from shoulder pain and improve overall shoulder mobility. Overall, a comprehensive approach that combines various Ayurvedic therapies can be effective in managing Avabahuka or frozen shoulder.

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