



Review Article

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A CONCEPTUAL STUDY OF AMSA MARMA WITH SPECIAL REFERENCE TO FROZEN SHOULDER: A REVIEW

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ABSTRACT

Marma is a very important concept of Ayurveda. The science of marma is a unique and outstanding Ayurvedic concept with great value. Marma is centres of vital force i.e., prana. Marma is described in Samhitas in detail with respect to its number, site, structure, traumatic effects, the predominance of Panchamahabhuta and its clinical aspect. The total number of marma is said to be 107. Acharya Sushruta has given the number of marma in different anatomical parts of the body, namely urdhva jatrugata, sakthigata, udargata, uragata, and prushthagata. The site where the integration of mamsa, sira, snayu, asthi and sandhi takes place is known as marma. These are further divided into sadya pranahara, kalantara pranahara, vishalyaghna, vaikalyakara and rujakara marma. Amsa marma is a type of prushthagata marma anatomically and vaikalyakara marma according to viddha lakshana. An injury to amsa marma causes stabdhabahuta, in which the shoulder joint gets affected and restricts arm movement. These symptoms are similar to that of avabahuka. So frozen shoulder is a painful condition of unknown cause with loss of motion of the shoulder and arm. As it is a prevalent musculoskeletal disorder, the study of amsa marma is done regarding frozen shoulder conceptually to rule out the anatomical structure affecting, and it will be helpful to find effective treatment such as marma chikitsa while treating frozen shoulder.

Keywords: Amsa, marma, frozen shoulder, ligaments, arm, stabdhabahuta

INTRODUCTION

Marma is a very important and unique concept of Ayurveda. The literature of marma is provided in Ayurveda classics of Sushruta, vagbhata and Charaka. Marmas are the vital force, i.e., prana, the master power behind both the physical and psychological processes. According to Ayurveda, the appearance of marma is an essential diagnostic tool in determining the extent of the injury.

The site where the integration of Mamsa, Sira, Snayu, Asthi and Sandhi takes place is known as marma because this site is a specific location of prana.¹

The total number of marma said is 107.

Acharya Sushruta has also classified these marma points into five categories:

A) Depending upon the ultimate results after the trauma inflicted upon these points:²

- 1) Sadya pranahara marma
- 2) Kalantara pranahara marma
- 3) Vishalyaghna marma
- 4) Vaikalyakara marma
- 5) Rujakara marma

B) Depending on the anatomical structure:³

- 1) Mamsa marma - 11
- 2) Sira Marma - 41
- 3) Snayu Marma - 27

4) Asthi Marma - 08

5) Sandhi Marma - 20

C) Depending on the regions of body:⁴

- 1) Sakthigata - 44
- 2) Udara and Uragata - 12
- 3) Prushthagata - 14
- 4) Greeva urdhwa - 37

Acharya Vagbhata said Marma are called so because they cause death and are the meeting place of muscles, bones, tendons, arteries, veins and joints; life entirely resides in them.⁵

Marmas are 107 in number. They are divided into 6 types according to anatomical structure mamsa (10), asthi (08), sira (37), snayu (23), dhamani (09), sandhi (20), and marma ⁶ other divisions are the same as said in Sushruta.

This study aims to detail Amsa marma and its relation to a frozen shoulder.

Amsa marma

It is prushthagata marma. It is situated along the line of the area adjoining bahu(arm), murdha (head) and greeva (neck), also binding the amsapitha and skandha.⁷

Injury to this results in the stiffness of the upper arm with loss of function. This can be correlated with the shoulder joint. It includes the structures like muscles, tendons, ligaments etc.,

which takes part in the formation of the shoulder joint. An injury to these structures may cause rupture of the ligaments and muscle; therefore, dislocation of the joint may occur function, and it progresses to loss of function of the joint. Amsa marma is a Snayu marma; its measurement is half angula.⁸

It is a vaikalyakara marma. Vaikalyakara marma is Soumya in nature, as it bestows strength to the seats of prana because of the soma's stability and coldness properties.⁹

Any injury to amsa marma can cause stabdhabahuta, that is, loss of arm function.

In Ghanekar tika of Sushruta Sharir sthana, it is said that amsa marma should be considered as snayu of amsa sandhi, i.e., ligaments of the shoulder joint. It also has an insertion of the trapezius muscle.¹⁰

According to Acharya Vagbhata, also Amsa marma is snayu marma structurally. It is vaikalyakara marma (causing distortion, irregularity etc.).

If snayu marma gets injured, there will be a contraction of body parts, convulsions, severe pain, inability to ride, sit etc. distortions.¹¹

On either side of the neck, the snayu (ligaments) binding the root of the shoulder with the nape of the neck are the two Amsa marma; injury to this causes loss of function of the arms.¹²

Shoulder joint

The shoulder is a multiaxial spheroidal joint possessing three degrees of freedom, a roughly hemispherical humeral head between the and shallow scapular glenoid fossa. Skeletally the joint is weak and depends for support on the surrounding muscles and ligaments. Both the articular surfaces are covered by hyaline

cartilage on the humerus, which is thickest centrally, and thinner peripherally; the reverse is in the glenoid cavity.

The Ligaments of the joints are Capsular, glenohumeral, coracohumeral and transverse humeral¹³.

A) Fibrous capsule: It envelops the joint, attaching medially to the glenoid margin outside the glenoid labrum and encroaching on the coracoid process to include the attachment of the long head of the biceps. The fibrous capsule is supported by the tendons of supraspinatus (above), infraspinatus and teres minor (behind), subscapularis (in front) and by the long head of triceps below. All but the triceps blend with the capsule as the rotator cuff, reinforcing the capsule and actively supporting it unless the muscles are fully relaxed.

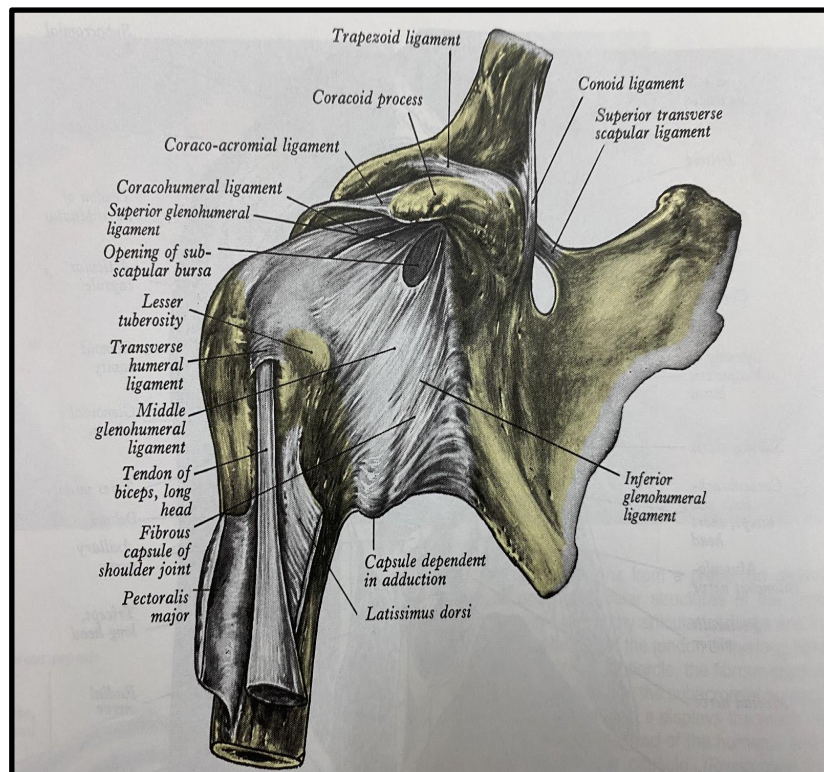
B) Glenohumeral ligaments: Anteriorly, three glenohumeral ligaments (superior, middle, inferior), best visible from within the joint, reinforce the capsule. The superior glenohumeral ligament passes from the upper part of the glenoid labrum and base of the coracoid process (deep to the coracoacromial ligament) to the upper part of the neck of the humerus, between the lesser tubercle and the articular margin.

C) Synovial membrane lines the capsule and covers parts of the anatomical neck.

D) Coracohumeral ligament: It is a broad thickening of the upper capsular region that passes from the lateral border of the root of the coracoid process to the front of the greater tubercle, blending with supraspinatus tendon it's inferoposterior border blends with the capsule.

E) The transverse humeral ligament is a broad band passing between humeral tubercles.

G) Glenoid labrum, a fibrocartilagenous rim around the glenoid.



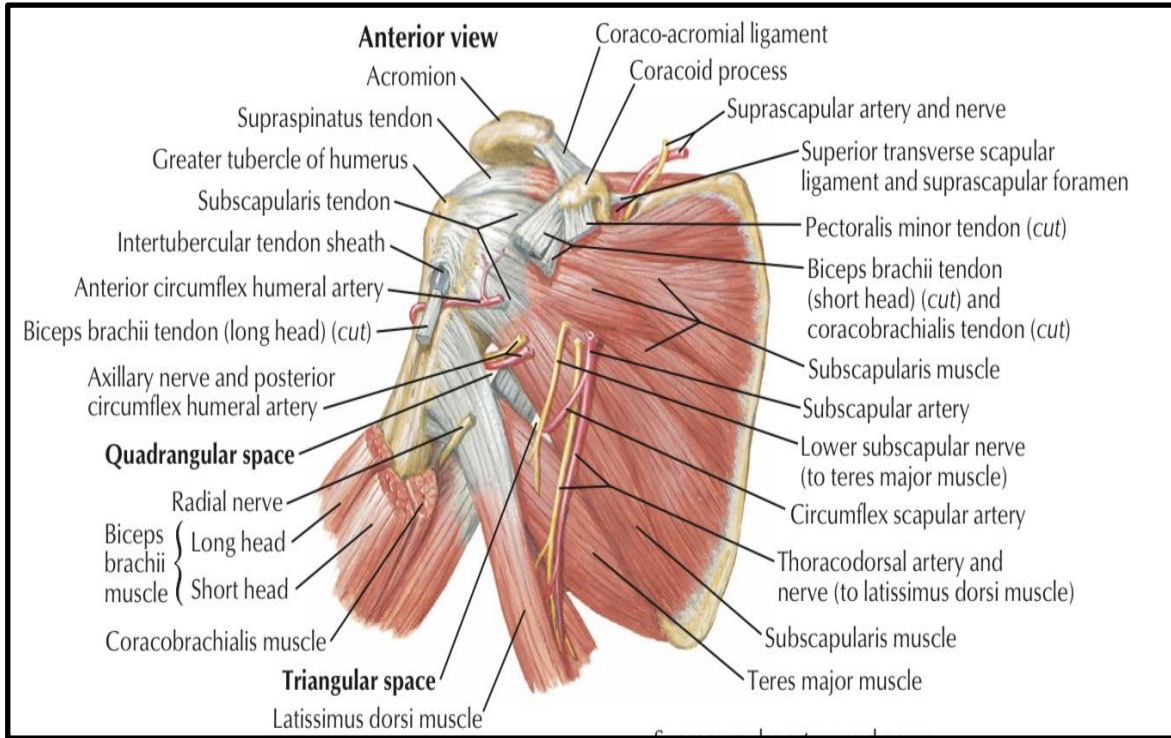
Ligaments of shoulder joint ¹⁴

Bursae Related to the Joint

- 1) The subacromial (subdeltoid) bursa.
- 2) The subscapularis bursa communicates with the joint cavity.
- 3) The infraspinatus bursa may communicate with the joint cavity.

The subacromial bursa and the subdeltoid bursae are commonly continuous with each other but may be separate. The subacromial

bursa separates the acromion process and the coracoacromial ligaments from the supraspinatus tendon and permits smooth motion. Any failure of this mechanism can lead to inflammatory conditions of the supraspinatus tendon. Many bursae adjoin the shoulder joint: between the subscapular tendon and articular capsule, the infraspinatus tendon and capsule, and the subacromial bursa between the deltoid and the capsule.¹⁵



Attachments of shoulder¹⁶

Muscles

1. Supraspinatus (above)
2. The long head of the triceps (below)
3. Subscapularis (in front)
4. Infraspinatus and Teres minor (behind)
5. Long tendon of biceps (intrascapular)
6. The Deltoid covers the joint in the front, behind and laterally.

Some other muscles which cooperate in shoulder movement:

Trapezius is a flat triangular muscle extending over the back of the neck and upper thorax. It gets inserted on the lateral third of the scapula's clavicle, acromion, and spine.

Levator scapulae: is inserted into the medial border of the scapula extending from a superior angle to the junction of the spine and medial border of the scapula.

Vessels and nerve supply to the joint: Arteries are from the anterior and posterior circumflex humeral and suprascapular and circumflex scapular vessels. Nerves are mainly from the posterior brachial cord and the suprascapular, axillary and lateral pectoral nerves.

A normal shoulder joint is a highly movable ball and socket joint with a remarkable range of movement. This mobility is necessary for allowing the arms to carry out day-to-day tasks. A normal shoulder joint capsule comprises relatively loose connective

tissue with a surface area almost double that of the humeral head. Rotator cuff tendons and glenohumeral ligaments maintain the capsule from above and from the side.¹⁷

Frozen shoulder

Mobility of the shoulder region and arm gets hampered due to a frozen shoulder, i.e., adhesive capsulitis.

A frozen shoulder is one of the most common causes of shoulder pain and disability are seen by family physicians. The frozen shoulder is estimated to affect 2% of the general population. It is rare before the age of 40, with a peak incidence between 40 to 60 and is unusual in patients over 70 years and in manual workers. It affects women slightly more.¹⁸

The incidence of frozen shoulder is higher in diabetic patients than in the general population.

During the motion of the normal shoulder, the tightening and loosening of the glenohumeral ligaments and capsule encircling the humeral head are accompanied by lengthening and shortening of the rotator cuff and deltoid tendons and muscles. Loss of motion in the shoulder can result from any condition that directly affects these structures or their ability to glide relative to one another during shoulder movements.

There is a change in the obtainable space, and the available volume around the GH joint as the patient develops contractures by a frozen shoulder. It is observed that the space surrounding the GH joint decreases from between 15 to 35 cubic centimetres (cm) to 5 to 6 cubic cm. Moreover, it is suggested that changes in the capsule are similar to those changes which take place in the hand due to a Dupuytren's contracture. There may also be thickening and fibrosis of the rotator interval at the top of the cuff, originating contractions and fibrosis of the GH ligaments. This contraction of the inferior glenohumeral ligament appears to be the one which makes the most significant difference. When considering the anatomical location of the inferior glenohumeral ligament, it behaves as the "hammock" at the bottom of the joint with an anterior and posterior band. If that ligament tightens, it can decrease the accessory movement available at the GH joint.¹⁹

Frozen shoulder typically lasts for 12-18 months with three main phases:

Phase I is the freezing or painful stage, which may last from 6 weeks to months; in this stage, the patient has a slow onset of pain. As the pain increases, the shoulder loses motion.

Phase II: the frozen or adhesive stage is marked by a slow improvement in pain and stiffness. This stage generally last from 4-9 months.

Phase III is the thawing or recovery phase when shoulder motion slowly returns to normal. This generally lasts from 5 to 18 months.

A) Frozen shoulder is characterised by an inflammatory contracture of the capsule and ligaments, which reduces intra-articular volume and limits glenohumeral movement.

B) The structures primarily involved are the rotator interval (which comprises the superior glenohumeral ligament), the rotator interval capsule and the coracohumeral ligament, the anterior capsule and the inferior glenohumeral ligament. Postero-superior capsular tightening limits internal rotation and may be present in more severe forms.²⁰

Avabahuka: It symptomatically resembles the frozen shoulder mentioned in Ayurvedic literature. It is characterised by pain and stiffness of the shoulder joint leads to restricted movements of the hand, which is caused by vitiated vata dosha.

Acharya Sushruta and Acharya vagbhata mentioned avabahuka as vata vyadhi. There can be two types of hetu causing Avabahuka:

- i. Vitiating vata dosha of amsamula region.
- ii. Injury to the marma or region surrounding the area.

According to Acharya Vagbhata, the symptoms seen in avabahuka are bahu prasanditahara²¹ - loss of upper arm movement due to vitiated vata constricting the veins at the root of the shoulder.

According to Acharya Sushruta, when vata gets vitiated at amsa desha, it causes wasting of amsabandhan and sira akunchana, which leads to avabahuka.²²

In Dalhan tika, it is explained as amsa desha means area near amsa, which is the head of the arm and amsa bandhan is made of shleshma. Therefore, shosha of amsabandhan causes avabahuka.²³

Anatomical structures related to amsa marma can be considered.

Mansa: Muscles-Pectoralis major, latissimus dorsi, deltoid, biceps brachii, short head and long head of coracobrachialis, teres major, teres minor, supraspinatus, infraspinatus, subscapularis.

Sira: Internal thoracic artery, suprascapular artery, subscapular nerve, brachial plexus.

Snayu: Capsular ligament, glenohumeral ligament (superior, inferior, medial), coracohumeral ligament, transverse humeral ligament.

Asthi: Parts of scapula, clavicle, humerus

Sandhi: Acromioclavicular joint, Glenohumeral ligament.

DISCUSSION

Marma Sharir is a unique concept of preeminent significance in Ayurveda. The amsa marma is a snayu marma structurally. It is half angula in size. According to the traumatic effect, it is vaikalyakara marma. Marmabhighata to amsa marma cause stabdhabahuta, i.e., stiffness of the arm with loss of function. The anatomical structures in the area are muscles of the rotator cuff, trapezius, deltoid, subacromial bursa, ligaments viz capsular, glenohumeral, coracohumeral, transverse humeral, vessels and bones clavicle, scapula, humerus. The rotator cuff muscles and ligaments are important in shoulder movements and maintaining glenohumeral joint stability.

A frozen shoulder is one of the most common causes of shoulder pain and disability are seen by family physicians.

A frozen shoulder is characterised by an inflammatory contracture of the capsule and ligaments, which reduces intra-articular volume and limits glenohumeral movement. There occur restrictions in both active and passive ranges of motion depending on the stages of the disease. In Ayurveda, this condition resembles the avabahuka in which stiffness of shoulder joints leads to restricted arm movements. The structures affected are the glenohumeral ligaments (superior, middle, inferior), the rotator interval capsule, the coracohumeral ligament, and the anterior capsule.

CONCLUSION

This work attempts to seek clarity of Amsa marma explained in ancient literature along with its modern perspective and frozen shoulder. The region around the amsa marma is said to be structurally restricted by joining accompanying structures as the lower part of the neck, 1/4th of the scapular region. It is half angula in size. As it is a snayu marma, the ligaments present at the shoulder joint are considered in amsa marma, which are fibrous capsule, glenohumeral ligaments- superior, middle, inferior, coracohumeral ligament, transverse humeral ligament, glenoid labrum. In a frozen shoulder, thickening and contraction of the glenohumeral joint capsule and adhesion formation cause pain and movement restriction. The affecting structures are the glenohumeral ligaments (superior, middle, inferior), the rotator interval capsule, the coracohumeral ligament and the anterior capsule. These structures are said to be present in amsa marma. So, it can be concluded as amsa marma is the important structure to get affected in a frozen shoulder, and the loss of movements in the shoulder and arm is similar to that of stabdhabahuta, which is seen in amsa marmabhighata.

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