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Conceptual Review on Amsa Sandhi Sharir and Effect of Heavy weight Lifting on Amsa Sandhi.

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ABSTRACT
The shoulder complex composed of the clavicle, scapula and humerus is an intricately designed combination of four joints, the Glenohumeral Joint, the Acromioclavicular Joint and the Sternoclavicular Joint and a "floating joint", known as the Scapulothoracic joint. Shoulder joint is very common & causes substantial morbidity. Standardized classification system based upon presumed Patho-anatomical origins have proved poorly reproducible & hampered epidemiological research. The human shoulder is one of complex joint of our body. It is most motile joint. This mobility provides the upper extremity with tremendous range of motion such as adduction abduction, flexion, and 360 circumduction in sagittal plane. Further-more the shoulder joint allows for scapular protection retraction elevation and depression. This wide range of motion also makes the shoulder joint unstable. This instability is compensated for by rotor cuff muscle tendon ligament and glenoid labrum. By doing work, the AmsaSandhi get affected by heavy work done. It is uneasy to do work with affected hand. Amsa Sandhi is the major joints of upper part of the body and it is involved in ChalaSandhi and UlukhaalaSandhi type. The change in the AmsaSandhi by doing heavy work is not easy. This Makes the person unable for self-caring and if the person tries to do work with affected limb the pain precipitate and produce discomfort to the patient.

I. INTRODUCTION

In the present era, competition or race for everything made humans more susceptible to many Muscular skeletal diseases. The prime factors that are responsible for the decline of health are irregular swift jerky movements, stress, suppression of natural urges, lack of proper sleep and relaxation.For those who are more ambitious than others, the sudden strain that comes along with getting back to the work may cause overuse injuries like bursitis, tendonitis, and strains/sprains. These three conditions often occur from overdoing it while trying to get that one last rep in, using too much weight, not warming up properly, and using poor lifting techniques. In order to help prevent this type of injury, it is important to understand what makes them different. According to ayurveda Vata is considered as a chief factor for the physiological maintenance of the body. Factors provoking Vata result in the instantaneous manifestation of diseases, which can even prove to be fatal. Therefore, the Vatajavyadhis are of outmost importance, rather than the vyadhis produced by the other two doshas. Contradictory approaches to pacify this vitiated state have to be restored to, to maintain the equilibrium.In the modern point of view, the diseases involving the neurological, musculoskeletal, psychosomatic, and gastrointestinal system disorders have more similarity with the Vatavyadhi. It indicates the wide-ranging involvement of Vata in various systems of the body.

AIMS AND OBJECTIVE

1) To study the amsa sandhi sharir described in ayurveda and modern aspect.
2) To study the stress effect on amsa sandhi in heavyweight lifting.

II. MATERIALS AND METHODS

Through a critical review of available literature from ayurveda and modern science related to sandhi sharir. Sandhi Amsa Sandhi is the major joints of upper part of the body. The change in the AmsaSandhi by doing heavy work is not easy. This Makes the person unable for self-caring and if the person tries to do work with affected limb the pain precipitate and produce discomfort to the patient. So, to study the applicability of sandhi sharir described in ayurveda and present contemporary science this study was initiated.

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III. REVIEW OF LITERATURE

As per AcharyasAmsaSandhi also called as skandhaSandhi.

There are two types of AmsaSandhi according to literature,

By Rachana-UlukhakaSandhis

By Gati- Bahuchala Sandhi

AmsaSandhi is a type of ulukhalaSandhi performs wide range of action and it is situated in kaksha and vankshan. It's is a major joint of upper limb. This joint is formed by the articulation ofpragandasthi, akshakasthi and Amsaphalakasthi.

The structure which binds the Bahushira, Amsapeetha and Greeva in between the AmsaSandhi which binds the Snayu that is ligament of the shoulder. Sanyu binds the joints together allows all possible movement. ones and ligaments of the joints have great role in giving support, stability and carry out its function easily.

AmsaSandhi includes the structure related to shoulder region are the most exposed area to common injuries. The activity like weight lifting, fall, on outstretched arm causes the injury to ligaments and muscle of shoulder joints, leads to disability of the AmsaSandhi.

ULUKHAL SANDHI

The articular area of bones has more concave and convex. The one articular area is socket, the other one is ball shape, it appears like socket and ball, such joints are ulukhalasandhi.

The shoulder joint

The shoulder joint is formed by the articulates, the head of the humerus with the glenoid cavity of the scapula. It is a weak joint but having great mobility. The head of the humerus is smooth and convex as ball, the glenoid cavity is concave with less diameter comparative to head of humerus. Joint type – synovial variety and subtype is ball and socket. As per Samhita it is ulukhala sandhi.

Ligaments-

1. **The fibrous capsule**- loose fibrous sac that completely covers the joint which extends from the circumference of the glenoid cavity to the anatomical neck of the humerus. Inferiority it is weak, the fibrous capsule is lined by synovial membrane. It permits free movements.
2. **Coracohumeral ligament**- it is strong and broad ligament which gives strength to the fibrous capsule, that extends from the root of the coracoid process of the scapula up to the greater tubercle of the humerus and covers the neck.
3. **Glenohumeral ligament**- there are three thickening fibrous bands of the articular capsule over the anterior aspect of the fibrous capsule, the ligament is a part of capsule.
4. **Transverse humeral ligament**- there is narrow sheet of fibers extending from the greater tubercle to the lesser tubercle of the humerus. It bridges the intertubercular sulcus. The long head of biceps passes deep to the ligament.
5. **Glenoid labrum**- it is a narrow rim of fibro cartilage around the edge of the glenoid cavity. It increases the depth of the glenoid cavity.

Bursae associated with joint-

- **Subcapsular Bursa**- it lies in between the tendon of the subscapularis muscle and the underlying joint capsule.
- **Subdeltoid bursa-** it is lies in between the deltoid muscle and joint capsule.
- **Subacromial bursa-** it is lies in between the acromion process of the scapula and joint capsule.
- **Subcoracoid Bursa**- it either lies between the coracoid process and joint capsule or appears as an extension from the subacromial bursa.

Blood supply-

1. Anterior circumflex humeral artery
2. Posterior circumflex humeral artery
3. Subscapular artery
4. Suprascapular artery

Nerve supply-

1. Axillary nerve
2. Musculo cutaneous nerve
3. Suprascapular nerve

INJURIES OFTEN ACQUIRED DURING HEAVY WEIGHT LIFTING

A) Strain/Sprain

A strain is when a muscle fiber is torn; a sprain is when a ligament is torn. Both strains and sprains have grades or degrees ranging from 1 to 3, with grade 3 being a complete rupture of the tissue. Strains and sprains happen from a rapid stretch or change in direction of the tissue usually when the body is tired. This injury can also be caused from lifting a weight that is too heavy and trying to power through it by adding a swinging motion to the exercise versus a lifting motion.

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B) Tendinitis

The tendons are structures in the body that attach the muscle to the bone. These tendons are covered by sheaths which allow them to move smoothly. Overuse of these shoulder tendons can create friction in the sheaths, causing them to become irritated. Excessive strain or lifting weights that are too heavy can eventually lead to inflammation, altered tissue alignment and irregular movement. These issues will not allow the tendon to move smoothly, and cause pain in the affected area.

C) Bursitis

A bursa is a small fluid-filled sack that acts as a cushion and lubricating factor between tendons, ligaments and bone. There are several bursa around the larger joints of the body including the knee, elbow and shoulder. Bursitis is most often caused from overuse and repetitive strain from lifting and not treating existing shoulder injuries. It can also because from direct blows to the shoulder like tripping and falling or dropping a weight on it at the gym.

With all of these conditions, over use is the most common culprit. It is very important to stretch and warm up prior to working out, use the appropriate amount of weight, apply proper lifting technique, eat a balanced diet, and get enough rest for your body to recover from a workout.

A good way to prevent shoulder injuries is to properly build up the associated muscle groups. Major muscles that make up the shoulder and a few exercises for each include:

D) Rotator Cuff: Rotator cuff injury (Supraspinatus, subscapularis, infraspinatus, teres minor)

Movement of the shoulder joint

As a ball and socket synovial joint, there is a wide range of movement permitted:

a) Extension (upper limb backwards in sagittal plane) – posterior deltoid, latissimus dorsi and teres major. And ligament involved in this glenohumeral ligament,middle and inferior ligament.
b) Flexion (upper limb forwards in sagittal plane) – pectoralis major, anterior deltoid and coracobrachialis. Biceps brachii weakly assists in forward flexion.
c) Abduction (upper limb away from midline in coronal plane):The first 0-15 degrees of abduction is produced by the supraspinatus.The middle fibres of the deltoid are responsible for the next 15-90 degrees.Past 90 degrees, the scapula needs to be rotated to achieve abduction – that is carried out by the trapezius and serratus anterior.Adduction (upper limb towards midline in coronal plane) – pectoralis major, latissimus dorsi and teres major. Ligament involved in this superior glenohumeral ligament.
d) Internal rotation (rotation towards the midline, so that the thumb is pointing medially) – subscapularis, pectoralis major, latissimus dorsi, teres major and anterior deltoid. Ligament involved in this is inferior glenohumeral ligament.
e) External rotation (rotation away from the midline, so that the thumb is pointing laterally) – infraspinatus and teres minor. Ligament involved in this is the middle glenohumeral ligament, transverse humeral ligament.
f) Circumduction (moving the upper limb in a circle) – produced by a combination of the movements described above. Ligament involved in this motion like superior-middle-inferior glenohumeral ligament, also coracohumeral ligament.

Movement during weight lifting

A) Flexion
B) Extension
C) Abduction
D) Adduction
E) Inward rotation
F) Outward rotation
G) Circumduction

These movement are regular in use while weight lifting. That can cause a serious damage to shoulder joint while excessive weight lifting.

IV. DISCUSSION

1) A joint is a junction between two or more bones and cartilage. Joint is called as anarticulation or an articulus. The shoulder girdle is having important role is connecting the upper limb of the axial skeleton of the body.
2) It is made up of the clavicle and scapula along with the supporting muscles, tendons and capsule.So heavy weight lifting may injuries the underlying structures related to shoulder joint like muscle, ligaments, tendons, shoulder capsule. But this-changes may found in individuals who are under the heavy weight lifting over a period of time due to continuous use of heavy weights on shoulders, so in this study the subject we can consider are labors,

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hamal, cooleys who work atleast for more than 3 to 5 years.

3) The glenohumeral joint is the articulation between the spherical head of the humerus and the concave glenoid fossa of the scapula. Being a synovial joint, both articular surfaces are covered with hyaline cartilage.
4) The glenoid fossa is a shallow pear-shaped pit on the superolateral angle of scapula. The concavity of the fossa is less acute than the convexity of the humeral head, meaning that the articular surfaces are not fully congruent. Congruency is increased somewhat by the presence of a glenoid labrum, a fibrocartilaginous ring that attaches to the margins of the fossa.
5) The labrum acts to deepen the glenoid fossa slightly, it is triangular in shape and thicker anteriorly than inferiorly. The surface of the humeral head is three to four times larger than the surface of glenoid fossa, meaning that only a third of the humeral head is ever in contact with the fossa and labrum.
6) This incongruent bony anatomy allows for the wide range of movement available at the shoulder joint but is also the reason for the lack of joint stability. Instead, joint security is provided entirely by the soft tissue structures; the fibrous capsule, ligaments, shoulder muscles and their tendons.Synovial fluid filled bursae assist with the joint's mobility.
7) The subdeltoid-subacromial bursa is located between the joint capsule and the deltoid muscle or acromion, respectively. Similarly the subcoracoid bursae are found between the capsule and the coracoid process of the scapula.
8) The subscapular bursa sits between the capsule and the subscapularis tendon, while the coracobrachial bursa is located between the subscapularis and coracobrachialis muscles. These bursae allow the structures of the shoulder joint to slide easily over one another.Several ligaments limit the movement of the GH joint and resist humeral dislocation. These are the coracohumeral, glenohumeral and transverse humeral ligaments.
9) Glenohumeral and transverse humeral are capsular ligaments while coracohumeral is an accessory ligament.The transverse humeral ligament extends horizontally between the tubercles of the humerus.
10) It covers the intertubercular sulcus and the long head tendon of the biceps brachii muscle, preventing displacement of the tendon from the sulcus. The coracohumeral ligament extends between the coracoid process of the scapula to the tubercles of the humerus and the intervening transverse humeral ligament, supporting the joint from its superior side. It acts to limit inferior translation and excessive external rotation of the humerus

V. CONCLUSION

1) Amsa sandhi is one of the major joint of upper limb which takes greater contribution in activity such as weight lifting and movement etc.
2) During heavy weight lifting it will cause injury to structure related to joint such as ligament, bursae, rotator cuff muscle.
3) At an extensive level, heavy weight lifting may affect bone as well.

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