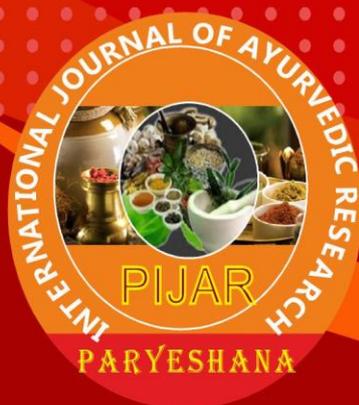


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CONCEPT OF GULPHA W.S.R TO INJURY**Prof Dr.N.G.Mulimani¹, Debasis Kundu²**¹H.O.D ,dept of Rachana shareera,²Final year P.G.Scholar of Dept of Rachana shareera, N K Jabshetty Ayurvedic Medical college and PG centre ,Bidar ,Karnataka**Abstract:**

In Ayurveda the concepts pertaining to gulpha are explained at various aspects ,to clarify such concepts is the aim and objectives of this article.The word gulpha is explained under sandhi shareera as gulpha sandhi, in paribhasha shareera as one among the asthi sanghata and is one of the location of jaala and in marma shareera as a gulpha marma. In present hectic life style the increased population of locomotives the road traffic accidents are very common and it is proving to be mortal and morbid.

Keywords: Gulphasandhi, Gulphamarma**Introduction:**

Foot injuries are more because it is connecting between stable leg bone and mobile foot .The morbidity leading to various complications even make one to lose his job. The physical and mechanical force,road mishaps and sports are leading to various injuries and specific symptoms such as agonizing pain ,restricted movements of the joint and lameness. Injury to the joint leads to excessive increase of inflammation, swelling, severe pain ,debility, breaking pain and finally loss of function of joints(su.su.25/38).

Injury of gulpha leads to tendon injuries ligaments injuries, and bone injuries out of these three injuries ligament injury is predominant.

Gulpha as a sandhi:

Synonyms: padagranthi, guthika, charanagranthi, ghuntakaha, khudaka, khallakaha

Gulphasandhi is sandhi of the lower limb, structurally it is classified under korasandhi and functionally bahuchalasanghi and is responsible for various movements of the body such as walking ,standing ,running ,climbing etc. This is one of the stable joint and

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bears 50% of the body weight during the locomotion while day to day activity .Gulpha is situated at the junction of foot and leg .It is the connecting link between stable bones of leg and mobile foot then allowing various movements. The korasandhi are inter phalangeal joints elbow, wrist and knee joints. The articular area of the bones seems to be slightly concave and convex. The outward appearance of the bone is smooth and concave and is known as korasandhi. Ankle joint is a compound joint where more than two articular bones are involved .It articulates with the lower end of tibia with its medial malleolus and the lateral malleolus of fibula and inferior transverse tibiofibular ligament form a deep socket for the body of talus.

Structurally ankle joint is hinge variety of compound synovial joint ,which is uniaxial in nature. Structurally, the joint is very strong. The stability is ensured by the close interlocking of the articular surface, strong collateral ligaments on the sides and crossing tendons ,4 in front and 5 behind and they are inserted into the foot beyond the transverse tarsal joint. A fibrous

capsule deltoid (medial) ligaments and lateral ligament supports the joint.

Fibrous capsule is surrounds the joint and attached to articular margin all around ,except posterior-superiorly and antero-inferiorly . Anterior and posterior part the capsule is loose and thin to allow hinge movements but on the each side, strong collateral ligament supports it.

Deltoid or medial ligament is very strong triangular ligament on the medial side of ankle and it has superficial and deep part .both parts have a common attachment above the apex of the medial malleolus.



Fig shows gulpha sandhi

Superficial part consists of tibionavicular ligament, tibiocalcanean ligament (middle) and posterior tibiotalar. Deep part consist only one ligament i.e anterior tibiotalar.

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Lateral ligaments: it consist of three bands – anterior talofibular ligament, posterior talo fibular ligament, calcaneofibular ligament.

GULPHA AS ASTHI SANGHATA:

The articulation of two or more bones forms as joints .Such joint region may be known as asthisanghata and form the complex joint in the body in one each asthisanghata is present in gulphapradesha(su.sha 5/16).



Fig shows asthi samghata

GULPHA AS JAALA :

The jaala is a network like arrangement of sira,snayu,mamsa and asthi in one particular region within the body. They are 16 in number and present in gulpha and manibandhapradesha ,among them 4 each jaala are present in gulpha pradesha i.e., sira, mamsa, snayu, asthi gulpha jaala.

Mamsagulphajaala :

Muscular arrangement in the gulphapradesha are anteriorly tibialis anterior , extensor hallucis longus ,extensor digitorium longus, peroneus tertitus . Posteriorly tibialis posterior, flexor digitorium longus , flexor hallucislongus,peroneus brevis and peroneus longus.

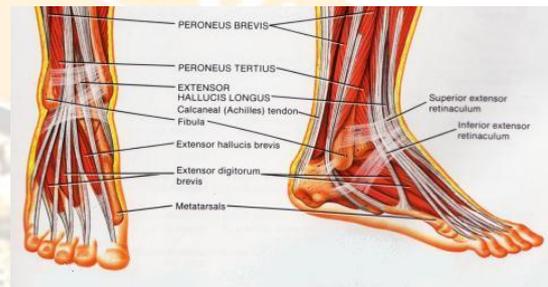


Figure shows mamsa jaala

Siragulphajaala:

Anterior medial malleolar and anterior lateral malleolar branches takes part in the anastomosis around the ankle joints, malleolar networks medial malleolar network lies just below the medial malleolus. It is formed by anterior medial malleolar branch of anterior tibial ,medial tarsal branches of dorsalispedis, medialmalleolar branches of posterior tibioalcanean branch of posterior tibial and twigs from the medialplanter artery .lateral malleolar network lies just below the lateral malleolus.It is formed by anterior lateral malleolar branch of anterior tibial ,lateral tarsal

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branch of dorsalispedis perforating branch of peroneal ,calcaneanbranches of peroneal and twigs from the lateral planter artery.veins of the lower limb are classified into 3 groups superficial ,deep and perforating veins.superficial veins are great and small saphenous veins where as deep veins are femoral popliteal ,anterior and posterior tibial and peroneal veins etc.the perforating veins connect superficial and deep

veins but in ankle perforating veins are middle medial perforator lies 4 inches above the medial malleolus and lowewr medial perforator lies 4 inches above the medial malleolus and lower medial perforator lies posterior inferior to the medial malleolus.

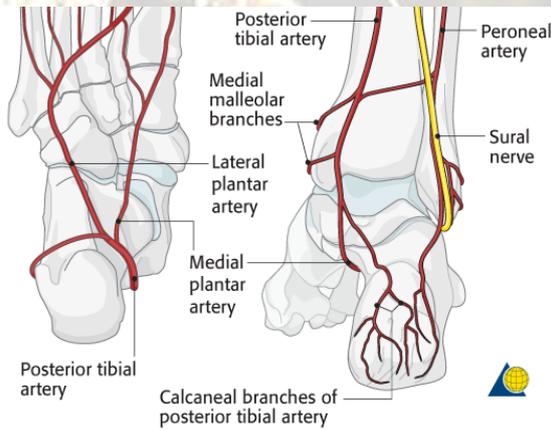
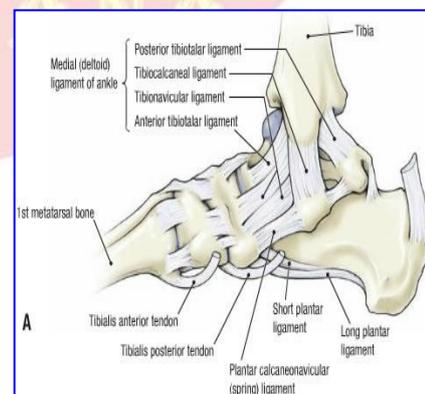
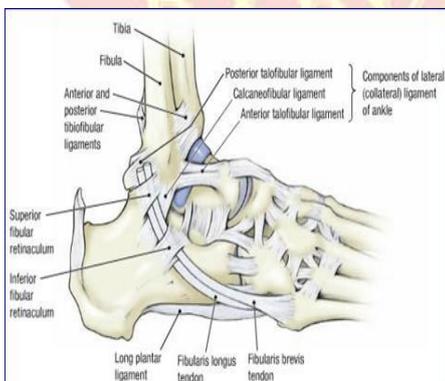


Figure shows sira jala

Snayugulphajaala: Fibrous capsule, medial (deltoid) ligament, and lateral ligament.



Asthigulphajaala:

It articulates with the lower end of tibia with its medial malleolus and the lateral malleolus of the fibula and inferior transverse tibiofibular ligaments from a deep socket for the body of the talus.



Figure asthi jaala

Talus is made up of 7 tarsal bone arranged in 2 rows with the navicular interposed between the 2 rows. The proximal row the talus lies above the calcaneum, in distal row the 4 tarsal bones lies side by side from medial to lateral side these are the medial intermediate, lateral cuneiform and cuboid. The navicular interposed medially between the head of the talus and 3 cuneiform. They are more large and stronger than the carpal bones because of support and distribute the body weight.

Gulpha as marma:

Gulpha is a sandhimarma of lower extrimities and is associated with various movements of the body. Gulpha is located at the junction of foot and leg, if it injured leads to pain rigidity, and functional deformity of the foot. (su .sha 6/31)

According to dalhana it is a sandhimarma having dimation of two anguli and vaikalyakara in nature. According to Bhavmishra the gulpha is a sandhimarma of 2 angulipramana on injury cases ruja, padasthambana, khanjata. b.p.pu 3/124. The exact site of gulphamarma is ankle joint, the structure involved in this area flexor hallucis longus and brevis, tibialis posterior muscle, flexor digitorum longus muscle, posterior tibial artery, posterior tibial vein. The injury of gulphamarma gives signs and symptoms like swelling impairment in the function of joint like flexion, extension etc pain, numbness.

Injury of the ankle joint:

Stability of ankle depends not only on the bony configuration of joint but also on ligaments which acts as additional supports to the joint. Ligaments on the medial and

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lateral sides of the ankle link the joint to the subtalar joint.

Ankle injuries:

Bones forming the ankle joints are frequent site of injuries. The large varieties of bending and twisting force results into fractures and fractures with dislocation, all injuries grouped under Pott's fracture.

The strong tibiofibular syndesmosis, along with medial and lateral malleolus make ankle strong and stable articulation.

Therefore dislocation of ankle is rare, commonly dislocation occurs only with fracture of the malleoli. The lateral collateral ligament is a weak and is often injured. Ankle injuries classified on the basis of five basic mechanism, adduction injuries, abduction injuries, pronation external rotation injuries, supination external rotation injuries, vertical compression injuries.

Adduction injuries:

Inversion force with the foot in plantar flexion results in a sprain of the lateral ligament of the ankle. It may either partial or complete rupture. A partial rupture is limited to anterior fasciculus of the lateral

ligament, in complete rupture the tear extends backwards to involve whole of lateral ligament complex. The inversion force on ankle results in neutral or dorsiflexed position results in fracture of medial malleolus, on the lateral side fracture of lateral malleolus or lateral ligament rupture.

Pronation:

External rotation injuries when pronated foot rotates externally, the talus also rotates outwards along its vertical axis. Fracture of the fibula above the ankle mortise is an indication of disruption of the tibia fibular syndesmosis.

Supination:

External rotation injuries when the foot supinated the talus twists externally with the mortise. As the medial structures are lax, the first structure to give way are those on the lateral side, the head of the talus striking against the lateral malleolus producing spiral fracture at the level of ankle mortise. In extreme cases the whole foot along with the three malleoli is displaced.

Vertical compression injuries:

All the above injuries may become complex due to a component

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of verticle compression force.vertical injury resulting in either an anterior marginal fracture of the tibia or a commuted fracture of the tibial articular surface with a fracture of the fibula pilon fracture.

Clinical features:

History of twisting injuries to the ankle joint is followed by pain and swelling. On examination, the ankle is found to be swollen.the swelling and tenderness may be localized to the area of injury (bone or ligament).crepitus may noticed if there is a fracture of ankle may deformed.

Sprained ankle:

It is due to ligament injury of ankle commonly the lateral –colateral ligament is sprained .This eversion force may results in a sprain of medial collateral ligaments of the ankle.

DISCUSSION:

In Ayurveda the concept of gulphais explained under the sandhi marma asthi sanghata and jaalas .In the present day life style ,RTA leads to various complication and even jobless, the physical and mechanical traumas ,road mishaps and sports lead to various injuries and causes agonizing pain,restricted movements of joint.

Injuries to joints increases inflammation ,swelling ,severe pain and loss of function of joints.

Gulpha injuries are because connecting between leg bones and mobile foot.Abnormal forces produces injury to bone and ligament.sports is the common events causes major ankle injuries.

Gulpha sandhi:

It is sandhi of lower limb helps in various movements and bears 50% weight during locomotion.It is situated at the junction of foot and leg allowing movements ,structurally it is kora and functionally bahuchala.it is also called kallkorasandhi. Here more than two articular bones are involved.medial and lateral malleolus,tibiofibular ligaments makes deep socket for the body of the talus.so structurally ,it is strong joint and stability is due to interlocking of articular surfaces.

Gulpha as asthi sanghata:

The union of more than two bones is called asthisanghata.Here the articulation of lower end of tibia and its medial malleolus and lateral malleolus of fibula and body of talus.the tarsus is made up of seven tarsal bones arranged in two rows.

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These bones are larger and stronger for support and distribute body weight.

Gulpha as jaala :

Jaala means network either formed by sira ,snayu,mamsa and asthi.

Siragulphajaala is formed by the blood vessels. Anterior medial malleolus and anterior lateral malleolus branches are anastomosis around ankle joint .The veins of lower limb are three group i.e.superficial,deep and perforating superficial veins.

Mamsajaalatibialis anterior ,exthallusislongus, extdigitoriumlongus, peroneustertius are anteriorly where asposyeriorlytibialis posterior ,flexor digitoriumlongus, flexor hallucis longus, peroneusbrevis and longus.

Snayujaala fibrous capsule ,medial and lateral ligaments,medial ligaments are 3 superficial Tibionavicular ligament,Tibio calcaneal ligament and Posterior tibiofibular ligament and 1 deep ligaments i.e. Anterior tibiotalar ligament where as lateral lig are Anterior tibiofibular ligament,Posterior tibiofibular ligament and Calcaneofibular ligament.

Asthijaala is formed by articulation with lower end of tibia with

its medial malleolus and lateral malleolus of fibular inferior transverse tibiofibularlig,body of talus .7 tarsal bones are arranged in two rows as proximal and dorsal row.The talus,calcaneum in proximal row,medial ,intermediate ,lateral cuneiform ,cuboid and navicular interposed medially between the head of talus and 3 cuneiform bones are in dorssl row.

Gulphamarma :

It is sandhimarma of lower limb loated at the junction of foot and leg.It is 2 anguli in pramana ,vaikalyakara in nature underlying structures involved are tibia fibula and calcaneum bones ,Flexor Hallusis Longus, Flexor Hallusis Brevis, Tibialis Posterior etc. muscles along with post tibial artery and vein .Injury to this marma leads to swelling ,impaired function, pain, numbness. Finally the stability of gulpha not only depends on bony configuration but also ligaments that surrounds it which gives additional support to it.

CONCLUSION:

Gulpha is meeting place of asthis at one place.In modern anatomy accepted joints are susceptible to injuries give rise to functional

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disturbance produces like pain, stiffness or disability .Injuries of gulpha will produce disability due to injuries of ligaments and bones.Ligament injuries produced disability .The dislocation or fracture of ankle joint usually occurs during sports ,traffic accidents, aversion ,etc also high heeled foot wear my cause injury to soft tissue like medial and lateral ligaments ,nerve, blood vessels and which cause disability.Based on above review and discussion we can conclude that gulpha is a sandhi ,sanghata,jaala,andmarma .hence it is vulnerable.

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