

Review Article

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CRITICAL ANATOMICAL REVIEW OF CARTILAGE TISSUE IN AYURVEDA

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Abstract:

Shareera Rachana's (*Shareera Rachana*) human anatomy is essential for allied health disciplines. It is a fundamental subject in the field of health science. Rachana Shareera's wisdom was valued by Acharyas such as Sushruta, Charaka, and Vagbhata. Tarunas, which are considered bones in Ayurvedic medicine, are equivalent to cartilages described in current medical research. It is one of the five varieties of Asthi. Ghrana, Karna, Greewa, and Akshikosh are the localities described in Ayurvedic texts. Tarunasthi's description is irregular and spread throughout Ayurvedic books. This review of Tarunasthi's applied component and its significance in Sharira has been debated.

Key words: *Asthi, Tarunasthi, cartilage tissue.*

INTRODUCTION

According to Life Acharya Sushruta, the goal of explaining "*Shareera Sthanam*" is to have a comprehensive understanding of the Shareera. The constituents of the body are categorized by Ayurveda into three basic components: Dosha, Dhatu, and Mala. These three entities are in charge of maintaining the body's structural and functional integrity. They stated that the bone does not degrade after death and remains as such for a longer period of time. The Asthi is generated by the Prithvi and Apamahabhuta and is the Pitrujabhava Avayava. The shape of the body is caused by the articulation of the skeletal framework, which supports the body in the same way as trees stand on the support of their inner wood. Asthis are categorized into five groups in Ayurvedic science: Kapalasthi, Ruchakasthi, Tarunasthi, Valayasthi, and Nalakasthi. Various Ayurvedic writings express similar views on the five forms of Asthi. Taruna (meaning and origin), Komal, Mulayam, Navin, Taja, and Saras. [1] Tarunasthi is a combination of Komal (soft) and Asthi (bone). Tarunas are plentiful and in short supply. The Twacha is the source of nails and teeth. Hard bones are classified into four types: Kapalasthi, Valayasthi, Nalakasthi, and Vishamasthi. Tarunasthi are not among the four categories described above. Tarunasthi, for example, are found in the vertebral column in the form of intervertebral discs, as well as joints, the chondral section of the ribs, the nasal wall, the pinna of the ear, and the trachea, bronchi, and their branches.

Locations of *Tarunasthi* in the body [2]

Tarunasthis may be found in Ghrana, Karna, Greeva, and Akshikosh. '*Buddhindriya*' (Sense organ). It has a lot of 'Parthiv Tatva.' Because it retains and recognizes the fragrance, it is known as 'Ghrana.' Pruthivi is the substance, Nasika is the place, Gandha (smell) is the matter, and Smell sense is 'Indriyabuddhi.' It is a place of *Bahirmukh Srotasa* (external apertures), and there are two nasal openings that are considered '*Bahirmukh Srotasa*'. It is also one of Kaphadosha's locations. It is known as the olfactory region of the nose. Ghrana is a specific region in the nose, and this exact area is known as 'Ghranendriya - Adhishtan.' [3] 'Nasa' or 'Nasika' with a 'Ghranendriya' position also give a secure and direct path for

air conduction to the lungs. So it is included in area of '*Nasaputa*' is one *Anguli*. It is also stated that including *Tarunasthi* the measurement of *Nasaputa* is two *Anguli*. [4]

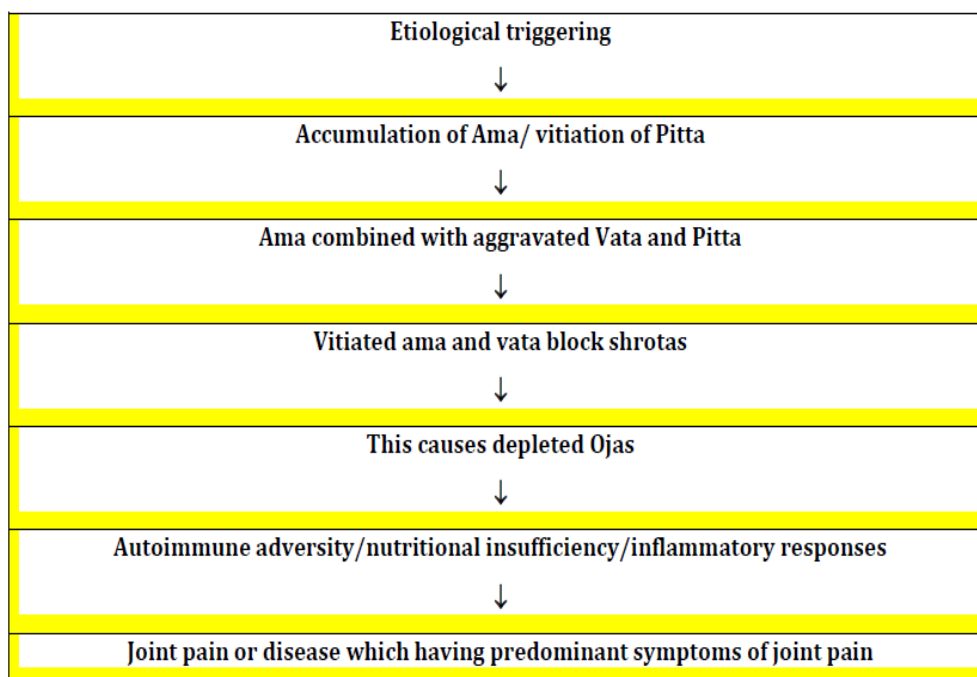
2. Karna (ear): It is a sensory organ located in the '*Jatrurdhva*' location. Karna is a '*Shrotrendriya*' place. It is around four *Angula* in length. It is sometimes pierced in children and women for jewellery purposes. The ear is also known by the names Karna, Shravana, Shrotra, and Shabdapath. It is the home of '*Shrotrendriya*.' It is also known as the hearing organ. In 56 *Pratyangas*, Acharya Charak specifically mentions '*Karnashashkuli*' or '*Karna-shashkulika*' (Pinna) (organ). [5] *Karnashashkuli* is made of *Tarunasthi* and is coated with a thin layer of *Twacha* and *Mamsa*. It connects to the lateral side of the '*Shankhasthi*,' or temporal bone. Because it is pinna-shaped, it is also known as an auricle or pinna of ear. [6] *Karnaputraka* (*Bahyakarna*): It is a *Pratyanga* of the body that is a portion of the external ear. These come in twos, one on each side. *Karnaputrika* is a tiny, curving, triangular flap that extends rearward across the meatus opening. *Tragus* is another name for it. [7] *Karnapali*, also known as the ear lobule, is the lowest hanging component of the external ear. It is pierced through the '*Daivakruta*' hole to be used as jewellery.

3. Greeva: *Greeva* is a *Pratyanga* of body; it is also called as '*Manya*'. It represents *Kaphasthana*. The distance between *Greeva* and '*Drushtimandala*' is four *Angula*. It is situated inferior to head. *Sushrutacharya* mentions twenty *Angulas* circumference of *Greeva* and it is one in number. The number of bones in *Greeva* and above its i.e. head is 63. [8]

4. Akshi-Kosha: The terms listed below are found in several Ayurvedic literatures. These are either synonyms for or related to eyelids. *Akshikosh*, *Akshiputa*, *Akshibandhani*, *Akshivartma*, *Akshivartma-Kosh*, *Netrakosh*, *Netracchadan*, *Netraputa*, *Vartma*, *Vartma-kosh*, *Vartma-patala*, *Vartma-mandala*, *Vartma-mandala*, *Vartma-mandala*, *Sushrutacharya* mentioned the word '*Akshikosh*' while describing *Tarunasthi*'s locations. The term '*Akshikosh*' refers to a sheath or saccular structure. Tarsal cartilage is one cartilaginous structure found here since it is a *Tarunasthi* location. *Akshikosh* is nothing more than an eyelid if it is a saccular and cartilaginous structure.

5. Tarunasthi-Marma: [9] The two '*Nitamba Marma*' are placed under *Tarunasthi* attached on the each side of the ribs, which covers the organs above the '*Kshronikarna*'. If it is hurt then oedema develops over lower body parts, gradually loses power and finally death occurs.

Samprapti



CHIKITSA OF JOINT PAIN AS PER AYURVEDA

The primary course of therapy entails rebalancing vitiated components such as agni, ama, and vata. Herbs with analgesic and anti-inflammatory effects are extensively utilised in the treatment of disorders associated with joint pain [5-7]. Langhanam, swedanam, tiktam, deepana, katu medicines, and sodhana technique are the mainstays of therapy for disorders associated with joint pain, such as amavata

- Rasnasaptaka kashayam, Maharasnadi kashayam, Dhanwantara kashayam, and Sahacharadi kashayam are effective in relieving joint discomfort.
- Ksheera bala taila, Narayana taila, Gandha taila, and Maha narayana taila provide joint lubrication and cartilage, muscle, ligament, and bone strengthening.

- Niruha (decoction-based) vastis are advised; herbal medications dashmoola and guduchi are widely used in niruha vastis, which have a favourable impact on joint discomfort.

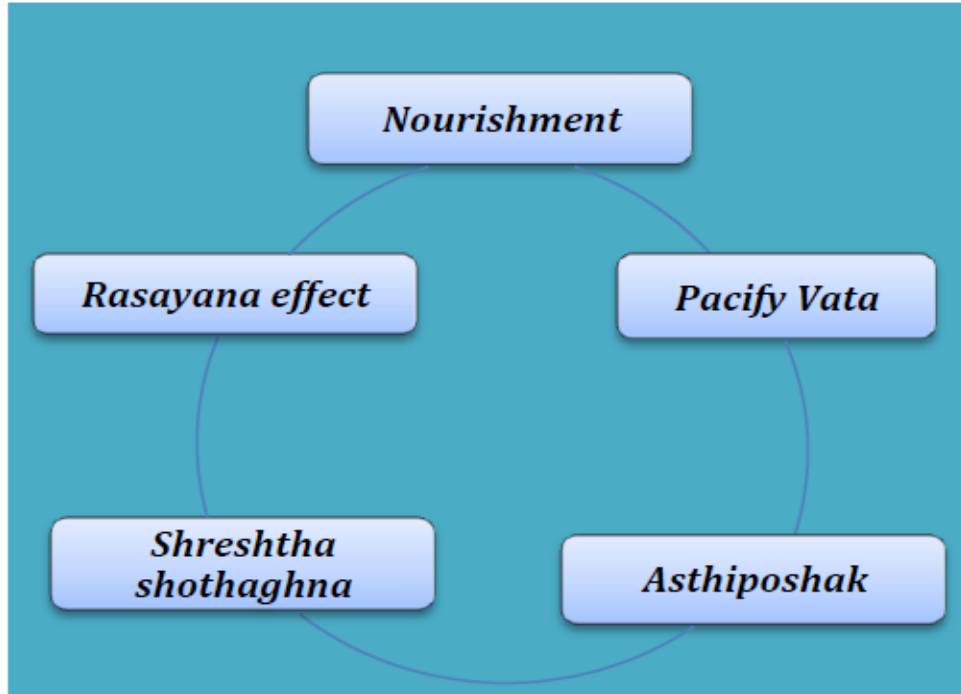


Figure 1: Role of herbal medicine in joint pain

Herbs/formulation helps in joint pain:

- *Castor Oil*
- *Gugguls*
- *Guduchi*
- *Nirgundi*
- *Turmeric*
- *Ashwagandha*
- *Shatavari*
- *Triphala*

- *Dashmool*
- *Shallaki*
- *Eucalyptus*
- *Devadaru*

Castor Oil (*Ricinus communis*):

Castor oil has astringent rasa, warm virya, and pungent vipaka, as well as purgative and analgesic properties. It aids in the normalisation of exacerbated pitta and kapha, making it ideal for the treatment of vata sickness. The application of oils to aching joints aids in the exacerbation of inflammatory illnesses.

Guggul (*Commiphora mukul*):

Guggul has anti-inflammatory, dipana, and pachana characteristics, which aid in the reduction of ama, vata, and kapha. Guggul also aids in weight loss, which lessens the extra stress on joints and so reduces discomfort. It also has anti-microbial and analgesic qualities that aid in symptomatic alleviation of joint discomfort.

Guduchi (*Tinospora cordifolia*):

Guduchi balances all doshas and acts as an anti-inflammatory and analgesic. This plant acts as a preventative anti-infective agent, lowering the risk of joint problems caused by infections. *Guduchi* offers relief in joint pain associated with *pitta*-type arthritis.

Nirgundi (*Vitex negundo*)

Has a bitter, astringent, and pungent rasa as well as a warm virya. It is light and abrasive, beneficial to the kapha dosha while also calming the vata dosha. It has anti-inflammatory and analgesic properties and can help with arthritis, nerve pain, and back discomfort.

Nirgundi is one of the most often utilised herbs in joints; it decreases swelling, controls inflammatory responses, has anti-oxidant qualities, and the heated potency of Nirgundi strengthens joints and muscles.

Turmeric (*Curcuma longa*):

Turmeric has a bitter rasa and a warm virya; it is light and gritty in texture. Turmeric functions as an antibacterial and anti-inflammatory substance, assisting in the reduction of joint pain aetiology and symptoms. It reduces prostaglandin synthesis, slowing the inflammatory cascade, and boosts cortisol production, alleviating arthritic symptoms.

Ashwagandha

Ashwagandha contains anti-inflammatory qualities, aids in vata balance, and nourishes muscle and bone structure. Ashwagandha has adaptogen properties and relieves pain caused by joint stiffness and persistent stress.

Shatavari Shatavari has very effective healing and anti-inflammatory characteristics that aid to lessen joint pain symptoms and improve joint flexibility.

Triphala

Triphala contains anti-inflammatory (*Hreshtha shothaghna*) properties and aids in the healing process by providing nutrients that strengthen bones and detoxifying impurities (uric acid) that may induce inflammation. Triphala's combined effects give significant relief from gout, arthritis, and other joint pain-related issues.

Mulethi (*Glycyrrhiza Glabra*):

Mulethi or licorice relieves joint discomfort by providing a lubricating action that supports joint tissues and increases flexibility. After using Mulethi, there is a considerable reduction in joint discomfort during movement.

Dashmool

Dashmool is made from the roots of many plants, including patala, gambhari, brihati, and shalparni. It has an anti-inflammatory action and cures Vata Roga. Its anti-oxidant, analgesic, and sedative characteristics also aid in the treatment of joint pain symptoms.

Shallaki

Shallaki plant strengthens joints, relieves joint pain, reduces swelling, promotes mobility, and pacifies the doshas that cause joint disorders.

Eucalyptus

The tannins included in plant material aid to decrease swelling and stiffness of joints, making eucalyptus oil useful for arthritis treatment. The aroma of oil offers calming effects and relieves joints pain.

Devadaru

It having *Shothahara* & *vedana sthapan* properties, therefore indicated in *jeerna sandhivata* & *Amavata*.

Role of medicine in joint pain pathogenesis:

- Control deterioration of the cartilage and sub-chondral bone.
- Herbs help to pacify *Vata* and *Kapha doshas*, lessen *srotovarodha*, relieves pain, swelling, heaviness, stiffness and tenderness of joint.
- Use of *Tikta-Katu Aushadis* promotes *agni*, *srotoshodana*, reduces *kapha* and produces lightness in body.
- *Deepana* and *Pachana* medicines prevent formation of *ama* and nourish *dhatu*.
- Herbal medicine not only restores nutrition to diseased cartilage cells but also help to repair damage cartilage.
- Herbal drugs help to improve synovial fluid viscosity & concentration and strengthens bones; *brumhanam* effect.

DISCUSSION

Elastic cartilages are used in current research to position where vibrational functions are required. Tarunasthis may be connected to modern-day cartilages. Cartilages are broadly classified into three types: hyaline cartilage, fibrocartilage, and elastic cartilage. Hyaline cartilage is found in 'Ghrana' and Greewa cartilage. The external ear is made up of yellow

elastic cartilage. 'Akshikosh' does not have fibro-cartilage, but it does have a cartilage-like structure made of fibrous tissue. It is known as the tarsal plate, and it aids in the creation of the eyelid skeleton. As a result, all three forms of cartilage, namely hyaline cartilage, fibrocartilage, and elastic cartilage, can be included in the Ayurvedic word 'Tarunasthi.'

Applied part of *Tarunasthi*

Tarunasthi droops as a result of an accent, which also breaks Nalakasthi, ruptures (Shatteres) Kapalasthi, and disbands Ruchakasthi and Valayasthis. When the curable 'Kushtha' (Leprosy) is disregarded, the vitiated kaphadosha contributes to the creation of worms. Twacha, Rakta, Mamsa, Lasika, Sira, Snayu, and Tarunasthi are all eaten by these worms at the same time. [10] Raktaj Krumi multiplies rapidly and begins to consume numerous tissues of the body, including Twacha, Sira, Snayu, Mamsa, and Tarunasthi. [11] Inhaling irritating odours, sunrays, thread, grass, and other Vayu wreathing concentrates when scrapes the nasal Tarunasthi, yitiates the local Vayu. Furthermore, it produces irritation of the nasal cartilages, and any remaining Vayu that becomes trapped is transferred to 'Shrungatak.' As the transferred Vayu comes back it causes sneezing, such a pathological condition is known as '*Bhrushkshava*'. [12] Both the type of *Kshara* (*Bahyaparimarjan* and *Antah-parimarjan*) should not be applied over vital parts like *Marma*, *Sira*, *Snayu*, *Sandhi*, *Tarunasthi*, *Sevani*, *Dhamani*, *Gala* (Throat), *Nabhi* (umbilicus), inside nails etc.

CONCLUSION

According to Ayurveda, Tarunasthi is a form of Asthi. In modern science, it is synonymous with cartilage. Tarunasthi is the only kind of cartilage that is soft and flexible. When compared to current science, all three sites, i.e. Hyaline and elastic cartilages may be found in Ghrana, Karna, and Greewa.

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