GLIMPSES ON TWACHA SHAREERA

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ABSTRACT

In Ayurveda, skin is called Twacha which encloses the whole body. Study of Twacha is important, as it is seat for all Twak Rogas. Our Twacha integrates the whole body “Under one Roof”. Twacha senses pain, temperature and pressure. It is prone to injuries both externally and internally. Sushruta Samhita Shareera Sthana, Sushruta has mentioned five sensory organs i.e Gyanendiyas. Sparshanendriya is one of them whose adhishtana is twacha. This article emphasis on the etymology, synonyms, Utpatti, functions of Twacha, its correlation with skin, with reference to anatomical and physiological aspect, description of Twacha and its thickness is present in both sciences, so an attempt is made in this article to brief look on the Twacha.

Key words – Twacha, gyanendriyas, Skin.

Introduction

Ayurveda is science of life and its main aim is to maintain healthy living being, i.e prevention of disease and treatment of disease. As per Ayurvedic science, shareera is made up of dosha, dhatu, upadhatu, and mala. Twacha is measured as upadhi of mamsadhatu. Twacha is one among the five gyanendriyas. It is base of sparshanendriya. Skin the largest organ of human body, holds significant prominence in maintaining normal human physiological condition Twachapariksha is also explained among eight tools of Asthavidha pareeksha. The skin, also known as the cutaneous membrane is the largest organ of the body with a total area of about 20 square feet and weight 4.5 -5kg, about 7% of the total body weight. Skin is known as “The First line of Defence” as it protects us from microbes and other invading elements. It is a part of integumentary system that contributes to homeostasis by protecting the body and helping regulate body temperature. It also allows us the sense pleasurable, painful and other stimuli in the external environment.

ETYMOLOGY OF TWACHA

The word Twacha is derived from “Twack Samvarane Dhatu” along with Tap Pratyaya which means covering the body.¹

Definition

The part of body which completely covers Meda, Shonita and other dhatus and which spreads over are called Twacha.²
Synonyms of Twacha
Charma, Sparshana, Chavi, Chadani, Asrugdhara, Ajina, Kruti.

Formation of Twak:
Acharya Sushruta has described the process of formation of Twak in the developing foetus after Shukra Shonita Samyoga Twacha develops just like formation of a creamy layer in the upper most portion when milk is boiled. According to Vagbhata, the Sapta Twacha are produced during the Paka of Rakta Dhatu by its Dhatvagni in the foetus. After the Paka, Formation of Twacha occurs just like the deposition of cream over the surface of boiled milk. Vagbhata mentioned that the skin becomes fully developed during 6th month of intrauterine life. According to Charaka, Twak is derived from maternal source (Matruja Bhava) which is one of the six Bhavas essential in the development of foetus.

Maharshi Kashyapa states Sparshendriya is derived from Vayu. Twacha is the upadhatu of mamsa.

Layers of Twacha.
There are some differences of opinion between the ancient Acharyas regarding layers of skin.

Layers of the Twacha according to Acharya Charaka.
Charaka described six layers of Skin among which he has named only two layers and the remaining four layers were described in terms of the diseases.

<table>
<thead>
<tr>
<th>No</th>
<th>Layers</th>
<th>Name of the Layers</th>
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<tbody>
<tr>
<td>1</td>
<td>Pratham</td>
<td>Udadadhara- Bahyatwak</td>
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<tr>
<td>2</td>
<td>Dwiteeya</td>
<td>Asrigdhara</td>
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<tr>
<td>3</td>
<td>Triteeya</td>
<td>Sidhma, Kilasa Sambhavadhishstana.</td>
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<tr>
<td>4</td>
<td>Chaturta</td>
<td>Dadru, Kashta Sambhavaadhishstana.</td>
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<tr>
<td>5</td>
<td>Panchami</td>
<td>Alaji, Vidradhi Sambhavadhishstana.</td>
</tr>
<tr>
<td>6</td>
<td>Shashti</td>
<td>Injury leads- Kampa &amp; Tamodarshan.</td>
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Layers of the Skin according to Acharya Sushruta
Whereas Acharya Sushruta Specifies the names of all the seven layer along with its thickness and the peculiarities of Disease of the concern layer as

Sushruta and Dalhana mentioned that 5th layer is Adishtana for Sarva Kushta.
According to Vagbhata & Sharangadhara has described there are seven layers of skin like that of Sushruta. He advocates the origin of all types of Kushta in 4th layer of twacha. (tamra). Sharangadhar advocates is in 5th layer except the seventh layer the name it as shhula and is the place of Vidradhi Vyadhi.  

According to Sharangdhara has also mentioned seven layers of skin along with the probable onset of diseases. The names of first six layers are same as Sushruta the location of all types of Kushta in 5th layer of Twacha (Vedini).  

According to Kashyap & Bhela mentioned 6 layers of Twacha.

**Panchabhautiktva of Skin.**

Acharya Charaka described Panchabhautiktva of Twacha as follows.

*Prathvi-* Twacha is Parthiva Avayava.  
*Jala-* Mruduta and Snigdhata of Twacha are due to Jala Mahabhuta.  
*Teja-* Abha and varna of skin is due to Teja mahabhuta.  
*Vayu-* Twacha is sparshanendriya Adisthana which Vatadhisthana.  
*Akasha-* Svedavahi srotasa is indicative of Akashamahabhuta.  

It is the indriya which have predominance of all the Panchamahabhutas as like Netra explained by Charakaacharya based on Gunas present in Twacha.

**Functional aspect of Twack.**

Relation of Twacha and Dosha.

Acharya Vagbhata has explained that Sparshana Indriya as one of the Adhisthana of Vayu.  
Acharya Vagbhata says that Bhrajaka Pitta is in Twacha.  

The word Bhrajana is Prakashana or Deepana i.e imparting lustre to skin. It does Pachana of Abhyana, Parisheka and Lepa. Because of Kapha, Sneha and Sthirata are present in skin.

Relation of Twacha and Dhatu.

In the context of Twak sara Purusha Lakshana, its said that as Rasa Sara 1st layer of Twacha that is Udakadhara also contains Rasa, so it is considered that there is relation between Twacha and Rasa. While mentioning the function of Rakta, Varna Prasadana and Mamsa Pushti have been mentioned. In Raktha Vruddi, Twacha will be Rakta Varna. Twak is the Upadhatu of Mamsa.

Relation of Twacha and Mala

Sweda is the Mala of Meda which excreted by Twacha. Function of Sweda is Twak Saukumaryata. And Kleda Vidhruti. Acharya Vagbhata explained during sweda kshaya, there will be Sphutana of Twacha. Twakgata Sneha is the mala of majja Dhatu according to Acharya Sharangadhara Twak Sneha and Yauvanapidaka is the Mala of Shukra Dhatu.

Relation of Twacha and Indriya

Acharya Charaka explained that Twacha is the Adhisthana for Sparshnendriya, Indriya Dravya is vayu and Sparsha is Indriya Buddhi.
Srotomula

Twacha is the moola of Mamsavaha Srotas and Loma is the Moola of Swedavaha Srotas. Twacha is place where the medas will get or present along with the Lomakupas so it may be considered one of the component of Swedavaha Sotas.

Correlation of Layer of Twacha\textsuperscript{15}

The correlation of Ayurvedokta Twacha with modern sciences as per mentioned by Ghanekar. The commentator of Sushruta Samhita Shareera stana which is as follows.

Avabhasini- Stratum Corneum
Lohita- Stratum Lucidum
Shveta – Stratum Granulosum
Tamra- Malpighian Layer
Vedini- Papillary Layer
Rohini -Reticular Layer

Mamsadhara – Subcutaneous tissue.

SKIN

Skin is the largest organ which compromises 16\% of the body weight, surface area 1.8m\textsuperscript{2}. It is important to understand the structure of skin to understand the pathology.

Development of Skin

All components of skin is evident by 12 weeks early development.\textsuperscript{16} Foetus skin development occurs in 3 stages Specification, Morphogenesis, and differentiation. Its Specification occurs from 0-60 days, Morphogenesis from 2-5 months and differentiation from 5 to 9 months.\textsuperscript{17}

Embryology of Skin.\textsuperscript{18}

Skin has structures derived from different sources:

1. Epidermis, Hair follicles, sweat glands, Sebaceous Glands are derived from Ectoderm.
2. Dermis, Arrectores, Vessels, Nerves, are derived from mesoderm.
3. Subcutaneous fat, Langerhans cells are derived from Mesenchyme.
4. Melanocytes are derived from Neural crest.

Chronology of Development of Skin.

Epidermis develops from 4-7 weeks.
Nail develops from 10 weeks.
Dermis develops from 11 weeks Sweat glands develops from 12 weeks.
Primitive hair structures develop from 12 weeks.
Melanocytes develops from 12 weeks.
Dermo epidermal junction develops from 12 weeks.
Fingerprints develops from 17 weeks.
Structure of skin:

Skin has 3 layers:

1. Epidermis
2. Dermis
3. Subcutaneous Fat (Hypodermis)

1. Epidermis: The Epidermis is approximately 0.4 mm to 1.6 mm thick. The cells most present in the epidermis are keratinocytes. Cells are organized into 5 layers: stratum corneum, stratum lucidum, stratum granulosum, stratum spinosum, stratum basale or stratum germinativum. The stratum corneum is the outermost layer containing flattened nucleated cells without cellular organelles. The thick epidermis of the palms and soles has an extra layer under the stratum corneum that is electron-permeable and called the stratum lucidum. The stratum granulosum is so named due to the presence of intracellular basophilic keratinocytes granules and consist of 2-5 cells layers. The stratum spinosum contains 8-10 layers of polyhedral cells with round nuclei. The Basal stratum consists of a single layers of cuboid cylindrical cells. Other member cells found in the epidermis are melanocytes, Langerhans cells and Merkel cells.

2. Dermis: The dermis is composed of connective tissue that contains collagen fibers, elastic fibers, and a matrix of proteoglycans and glycosaminoglycans. Their thickness varies from about 1 mm to 4 mm on the back and thighs. Collagen fibers are the main components of the dermis.

The dermis is structurally divided into two regions:

Papillary Region: The papillary region consists of loose areolar connective tissue it is named for its finger-like projection called papillae. Which extend up to the epidermis. Area reticularis. The area reticularis is located deep within the papillary area and is usually much thicker. It is made up of dense, irregular connective tissue.

3. Hypodermis: It is not part of the skin and is found under the dermis. Its purpose is to attach the skin to the underlying bones and muscle and supply them with blood vessels and nerves. It is composed of loose connective tissue, adipose tissue, elastin, blood vessels, lymphatic nerve fibers.

Appendages of skin.

Sweat Glands: Humans have several millions sweat glands spread all over the surface of the body. Each sweat gland consists of a secretory spiral deep in the subcutaneous tissue and a duct that carries secreted sweat to the surface. The sweat produced by the coils is transported through the ducts. There are 2 types of sweat glands, namely eccrine sweat glands and apocrine glands.

Eccrine sweat glands:

They are tubular structures that open directly on the skin and consist of 3 segments. The secretion coil, straight intradermal part, Coiled or spiral intradermal part.

Apocrine sweat glands: They are specialized sweat glands distributed along the mammary line. These tubular glands consist of 2 main parts the tortuous secretory gland and the straight excretory duct.

Pilosebaceous unit: The hair and the sebaceous gland from pilosebaceous unit. Therefore, both structures are often involved in many skin diseases such as acne vulgaris.

Hair: Hair is Structurally made up of cuticle, cortex and medulla. Hair grows at a rate of 0.3 mm per day and goes through a growth cycle. These recurring cycles consist of anagen, catagen, Telogen phases.

Sebaceous glands: The sebaceous glands are lipid-secreting holocrine glands found on all areas of the skin except the palms, soles and back of the feet. The maximum density is in the scalp, face, upper chest, etc. They are activated under the influence of androgen hormone. The sebaceous glands secrete a greasy secretion rich in fatty substances.
**Nails:** Its yet another epidermal appendage. The main part of this appendages is hard nail plate the arises from the nail matrix.

**Functions of skin:** Protective functions, Thermoregulation, sensation, storage and synthesis, Excretion, Percutaneous absorption, Immunological components of skin, Melanocyte.

**MATERIALS AND METHODS**

Necessary information regarding Twacha and integumentary system is collected by Samhitas, compiled textbooks, modern literature different articles etc.

**DISCUSSION**

Twacha is also explained under Asthavidha Rogi Pariksha, thus by examining the Twacha we can have a fair idea of the disease.

The outermost layer Avabhasini is responsible for colour and 5 types of shadows i.e Prabha and it is seat of psoriasis, pimples, acne, and correlates with Horne layer of epidermis.

Lohita is second layer it outermost layer and it is moles, dark circles, black pigmentation and correlates with stratum Lucidum layer of epidermis.

The Third layer Shweta provides balance to skin colour and seat of atopic dermatitis, eruption or blisters, moles and correlates with stratum granulosum layer of epidermis.

The Fourth layer Tamra supports the immune system and seat of leprosy and correlates with Malphagian layer of dermis.

The Fifth layer Vedini is centre for transformation of sensation and seat of leprosy and herpes and correlates with papillary layer of dermis.

The Sixth layer Rohini supports healing and regeneration and seat of cysts, scrofula or lymphadenopathy, cancer, tumours, elephantiasis, goitre and correlates with Reticular layer of dermis.

The Seventh innermost layer Mamsadhara is the platform for the skin’s stability and firmness and seat of fistulas, abscess, haemorrhoids and correlates with subcutaneous tissue and muscles. Sense of touch carried out through skin by Vata dosha. Bhrajaka pitta gives colour to the skin.

According Acharya Sushruta there are seven layers of skin, namely as Avabhasini, Lohita, Shweta, Tamra, Rohini, Mamsadhara whereas Acharya Charaka mentioned them as Udakadhara, Asrukdhara, Trutiya, Chatuta, Panchami and shasti. Sushruta mentioned the measurement of seven Twacha layer from1/18 to 2 vrihi.

Classical texts and modern texts have different opinion about skin. But they both describe the layers, pigments and thickness of skin. More over classical text describes the diseases which occurred in particular layer of skin.

**CONCLUSION**

The skin called Twak which encloses the whole body.

The layer wise distribution of twak described in ayurvedic science seems to have close resemblance with skin layers described by the modern science. Layer wise diseases of skin stands to be more perfect for diagnosis of skin diseases described in the ayurvedic science many years before as compared to modern sciences.

Understanding the skin diseases with this type of detailed study about twak shareera in (anatomy and physiology) of skin from both ayurvedic and modern science is significantly resourceful.
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