

Fundamentals of *Rachana Sharira* (Anatomy) in treatise *Susrutha Samhita*

Review article

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Abstract

Susrutha Samhita is one of the early treatises that form the cornerstone of the Indian Medical tradition of Ayurveda. *Susrutha* is the most celebrated physician and surgeon in India. Though he practiced during the 5th century B.C., many of his contributions to medicine and surgery preceded similar discoveries in the western world.

Acharya Susrutha was not only one of the earliest pioneers in surgery in the World and also one of the earliest to study the human anatomy, *Acharya* describes about the method of dissection in the good old days before the modern anatomy exists.

Acharya Susrutha has not only described the anatomical structures and its situations but also described the dissection in detail.

Key Words: *Susrutha Samhita*, *Acharya Susrutha*, *Rachana Shaarira*, Anatomy, *Sharira*.

Introduction

Acharya Susrutha has paid great attention towards the structural organization of the human body. This was emphasized to such an extent that no surgeon should start his surgical carrier unless he is well acquainted with human anatomy.

Acharya Susrutha has not only described the anatomical situations of various structures but he has also given the detailed description right from evolution of universe, cellular structure to the development of various tissues and organs, beginning from the intrauterine life. He has so keenly mentioned that the sperm and ovum combines together to form embryo in the *Garbhashaya* (Uterus).

Susrutha has separately explained

regarding the anatomical aspects of the body and one section of the *Susrutha Samhita* has been dedicated solely for this, which is known as the *Sharira sthana* (section on the study of human body) containing 10 chapters.

The study of anatomy is dealt with in the *Sharira sthana* (section on the study of human body) of the *Susrutha Samhita*. He proposed to first deal with origin of universe in relation to the physical and metaphysical aspects of the body, Embryology and then anatomy of the human body, which he felt, was an extension of the embryo. He stressed the importance of observational and practical experience in surgery. He may be the first person to advocate dissection to gain the first hand knowledge of the human anatomy.

This section of *Susrutha Samhita* is known as *Sharira sthana* (section on the study of human body) because it thoroughly explains life from birth, and also discusses on the origin of universe.

Acharya starts the *Sharira sthana* by giving the explanation of origin of

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universe regarding the Physical and Metaphysical aspects of the body like *Trigunas* (3 characteristics), *Panchamahabhutas* (5 subtle elements like-earth, water, fire, air, space), *Atma* (soul), relation between nature and eternal body, How the living beings has been originated from these basic elements of universe.(1)

Anatomy of abnormal and unhealthy *Shukra* (Sperm) and *Artava* (menstrual blood), here it's quite interesting to know that once the abnormal *Shukra* and *Artava* are treated with the required medications he says about the healthy *shukra* and *artava*. Here the *Shuddha Shukra* (healthy semen) *lakshanas* are explained as it should be crystal clear fluid, smells like honey and colour is like oil or honey, in the similar manner the qualities of healthy menstrual fluid like it should resembles the blood of rabbit or like liquid lac and also it should not stain the clothes. Later on acharya explains regarding the fertilization, that is the 4 essential factors for the formation of *Garbha* (foetus) like how the plant requires the concurrence of season, soil, water and seed, in the similar manner child born under this circumstances would be healthy, wealthy and prosperous throughout the life and the explanation on theory of twin pregnancy, Congenital Abnormalities in foetus which was told in good old days.(2)

The extent *Acharya susruta* has observed and mentioned the things is very interesting which holds good with contemporary sciences of today. For example the essential factors for fertilization, the healthy sperm and healthy ovum and the uterus which is for implantation of the fertilized ovum should be disease free, even today the modern gynaecologists intervene and find out the causes in case of infertile couples ex. In endometriosis the unhealthy uterus is not ready for conception and implantation, therefore it should be treated accordingly.

Garbhavakranti *Sharira* (Embryology) i.e., fertilization till the delivery of the healthy progeny, Sex determination (Here we will get to know the hidden knowledge of fundamentals of genetics). Acharya was so keen in observation and explained regarding the features of woman who is in her ovulatory period, duration of ovulation which stands the same with the contemporary sciences even today, and also closing and opening of the cervical Os as been beautifully correlated with the lotus flower before and during ovulation, which is beautifully explained by Acharya sushruta. Menstruation - its duration, do's and don'ts during the cycle, signs and symptoms of conceived woman like nausea, vomiting etc which is explained in the Modern medicine as Emesis gravidarum. Do's and don'ts during Pregnancy, Foetal circulation is explained similarly in the contemporary science i.e., exchange of gases and nutrition takes place through *nabhi naadi*(umbilical cord).

Month wise development of Foetus from the 1st month till the 9th month is also mentioned. In the ancient days without any aids, the pioneer *Acharya Susruta* has beautifully quoted regarding the month wise development and even today the matter holds good.

- 1st month – Formation of *kalala* (small mass).
- 2nd month – If the growing embryo is Female – the mass will be elongated, Male – Round, Hermophrodite – Irregular in shape.
- 3rd month – There will be formation of 5 buds in the mass for upper limbs, Lower limbs, Head and neck.
- 4th month – Body parts can be grossly differentiated, heart beat can be heard, and at this time the mother is known as *Douhridini* (two hearted lady), who presents herself with longings/desires for specific things like eatables or ornaments, it should be fulfilled

otherwise this unfulfillment of longings leads to some congenital anomalies of the foetus like dwarf, Mentally retarded child, Blind child will be born.

- 5th month – *Manas* (Brain) is developed .
- 6th month – Development of *Buddhi* (Intellect).
- 7th month – All the body parts are well appreciated.
- 8th month – *Oja* (Immune power) becomes well formed.
- 9th month – Delivery of the child takes place.(3)

Here we can easily notice that Acharya explains regarding the organogenesis in the first trimester, the *kalala*(small mass) can be taken as gastrula stage of the fertilized ovum which looks irregular.

In sequence with this next the explanation goes with the foetal body anatomy like 7 layers of skin, 7 inner linings of internal cavities, formation of organs, definition of heart, 7 types of Body constitution and their characteristics.(4)

It can be observed that acharya sushrutha is unique in explaining the monthwise development of foetus than other *acharyas* and was very particular about the complications associated with the post dated deliveries.

The organogenesis like *hrudaya* (heart) is formed from *shonita* (blood) and *kapha*(phlegm) which can be compared with the cardiac jelly of embryological development of heart.(5)

Acharya given importance to numerical enumeration of body parts – definition of *Garbha* (Embryo) has the union of sperm and ovum along with its *Atma* (soul) and *Prakruthi* (five subtle elements along with intellect, ego, and mind). Also explains regarding the number of divisions, subdivisions, sub parts of the body, ex: – no. of bones, muscles, ligaments, joints, description of uterus as

conch shell shaped and its mouth similar to mouth of a fish.

Acharya specifically mentions about Myology i.e., structure of muscles as long, flat, large, small etc., the extra muscles in females which are present in breasts, uterus etc., can be said as the smooth muscle layer of myometrium in uterus.

Dissection has been explained in detail regarding the collection of the dead body and preservation of the dead body.

The physician/surgeon desiring to have the exact knowledge of *Shalya shastra* (Surgical science) should thoroughly examine all parts of dead body after its proper preservation. Practical knowledge along with theoretical knowledge is very essential.

Therefore for dissecting purposes, a cadaver should be selected which has all body parts, a person who has not died due to poisoning, not suffered from a chronic disease (before death), had not attained a 100 years of age and from which the fecal contents of the intestines have been removed. Such a cadaver, whose all parts are wrapped by any one of *munja* (grass), bark, *kusa* (a variety of grass) etc, The cadaver should be kept inside a cage and to be put in a slowly flowing water and allowed to decompose in an unlightened area. After proper decomposition for seven nights, the cadaver should be removed (from the cage) and then dissected slowly by rubbing it with the brushes made out of any of *usira* (fragrant roots of plant), hair, and bamboo. In this way, as previously described skin etc., and all the internal and external parts with their subdivisions should be visually examined.

Here *Acharya sushrutha* emphasis on the healthy cadavers is ideal for acquiring the complete knowledge of the (*Sharir*) body.(6)

Nowhere in other samhitas the reference about the *mruta shodhana* (Preservation of dead body) and the art of dissection has been mentioned, which is

the unique contribution from *susruta samhita*.

Marma (vital points), their definition, types, number, their injury and treatment. Though *Marma* (vital points) knowledge was well known in the ancient period because of the War field injuries, where the one troop aims at the specific vital points of the opposite troop (enemies) and this *Marma* (vital points) knowledge can be correlated with the Surface Anatomy, where even we can understand the topographic anatomy (Regional anatomy), In some contexts *Acharya* has mentioned regarding the definition of organs like heart, rectum etc.(7)

In day to day life, the knowledge of marma is seen in the sports like cricket ex. wearing abdomen guards thigh pads, leg pads, hand gloves, helmets etc to protect the vital points like *jaanu*, *indrabasti*, *gulpha* (names of vital points)etc, to protect the vital points of head. So like these the ages old *marma vijnana*(Science of vital points) can be utilized and accepted as applied Anatomy.

In Chinese medicine the science of accupressure, art of kungfu is the outcome of our ages old art of *Marma* (vital points) and its therapy respectively. *Kalari payattu* (martial arts) is also practiced in kerala and southern Karnataka region which is equivalent to the *marma vijnana* (science of vital points).

Similarly acupuncture is found in the Chinese medicine, the art of puncturing the vital points with the fine needles to treat the specific disease.

Anatomical considerations of vein and their divisions has been mentioned, divisions according to the regions, veins contraindicated for vene puncture, deals regarding the techniques of vein puncture in specific to some diseases.(8,9)

The study of vessels and its importance i.e., Angiology is briefed out by giving explanation on veins and its vein puncture in related to diseases like

gridhrasi (sciatica), *udara*(Ascitis) etc., diseases.

Acharya proves his keenness again that he can differentiate blood vessels as *siras* (Veins) and *dhamanis* (Arteries) deals with the arteries of human body, numbers, divisions, vascular study.

srotas (minute channels) which in contemporary science called as different systems of the body like digestive, respiratory etc.,(10)

Lastly *Acharya* deals regarding the month wise diet management of *Garbhini* (Pregnant lady) i.e., antenatal care, *Sutikaghara* (labor theatre/Operation theatre) stages of delivery of the child which holds good even today with the modern textbooks of obstetrics, postnatal care, care of the new born baby – *swarnaprashana* (licking of medicated herbs, honey, ghee with gold), *Samskaras* (sacraments) to be done to the new born child like *namakarana samskara*(naming ceremony) etc are mentioned. Marriage age for male and Female, results of early conception, Conception age for woman and man which is nowadays called as elderly pregnancy.(11)

The month wise nourishment of pregnant lady i.e., antenatal care is found only in the ayurvedic science these things are never mentioned in the contemporary sciences.

Anthropometry of the ideal Human body - Dimensions of organs and bony skeletons like thorax, pelvis is mentioned, and height of human being has been mentioned as *120 angulas* (measurement in fingers).(12)

Conclusion

Acharya Susruta's creative work, the *Susruta Samhita*, forms the basis for the Ayurvedic tradition, which is still widely practiced today. The contributions of ancient civilizations to our modern understanding are well appreciated, with ancient India being no exception. An appreciation of the evolution of anatomical

knowledge can be extracted from various sources by reviewing ancient texts like *Susruta Samhitha*. So here we can conclude the reason behind entitling **Acharya sushruta** as the **father of Indian surgery**. And even **Sharira sthana of sushruta is the best among all the brihatrayis**. (3 main samhitas).

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