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Cadaveric and applied study of 'Guda' to certitude Sushrutokta Gudavalitrye

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ABSTRACT

Ayurveda is the sea of knowledge and to get a pearl out of it one should make a good effort to ensure the curiosity in Human Anatomy specially regarding "*Gudavalitrye*". To elaborate the description of "Guda" and to certitude "*Gudavalitrye*" descriptions are illustrated in Modern and Ayurvedic texts. I have tried to correlate the layers of Guda as described in Ayurvedic text in scattered form with modern text to certitude *Sushrutokta*- "*Gudavalitrye"*. In ancient eras Acharyas used to do *Sambhasa* Parishad before drawing any conclusion. "*Tadvida Sambhasa"* is said to be the best method of enhancing knowledge according to *Charkacharya*, which indicate the importance of the discussion in the research work. After thorough discussion of all the observations found throughout the research work, one can draw a definite conclusion. Acharya Charaka described that "A hypothesis can only call principle when it is gone through inquisition and got approved by many experts to give a right judgement."

Key Words: *Gudavalitrye, Tadvida Sambhasa,* Human anatomy, *Guda*

INTRODUCTION

Ayurveda is one of the most ancient medical sciences of the world. It is at verge of global acceptance due to its holistic approach of wellbeing for mankind. Vedas are the documented sources of all kinds of Indian wisdom and knowledge, Ayurveda is also said to be developed on the Vedic philosophies. It is said to *Upaveda* of Atharvaveda by most of the thinkers. It is highly evolved and confined system of longevity of life and health science based on its own unique and original concept quenched with fundamental principle of Vedic stream. Recently, the whole world is looking behind it to improve the life style and to combat from disease. The two basic aims of Ayurveda are "*Swasthasya Swasthya Rakshanam Aturasya Vikara Prashamanam* Cha".

Ayu (life) is defined as conjunction of body, mind, soul and senses. Each has been given due importance in maintenance of health and prevention of diseases. Among these, body is given the utmost importance as it is the chief aspect on which all other things are based that's why

Acharya Charak had stated "Leaving everything else, one should maintain the body, because everything available in the world is due to this body, if it is destroyed nothing can be achieved." The knowledge of anatomy and physiology is essential for the benefit of the body as this knowledge gives insight for the maintenance of healthy body and its treatment and hence expert highly recommends the anatomical and physiological understanding of the body. The physician and surgeon who possess the knowledge of anatomy and physiology of all structure in the body can only understand thoroughly the overall science of Ayurveda. Ayurveda belongs to every living thing, which exists in this visible and invisible universe. The life of every living being has a various aspect like spiritual, psychological and physiological and Ayurveda take all these aspects too long, beyond the imaginations. Acharya Sushruta described a clear methodology of dissection of the human body, which forms the base for understanding the whole concept of Ayurveda.

Maharsi Sushruta is best known for his dome of surgical wisdom, practices and tools. It is evident that considerable thoughts were given by him to anatomical structure and functions. His text Sushruta Samhita includes a systematic method for dissection of human cadaver which proves that he was a proponent of human dissection. Rachana Sharir is a segment of Ayurveda which exclusively deals with the study of human body through dissection, which forms the subtle essential basics and sets a story base for further medical knowledge. Acharya Charaka and Sushruta introduced the division of *Sharira* in to six parts, i.e., four *Shakha* (extremities), *Madhyakaya* (*Kostha*/trunk) and Shir. In *Kostha* has 15 *Koshthanga* which is introduced by Acharya Charka. Guda is also one of *kosthang* among fifteen. This topic is concerned with "Cadaveric and applied study of Guda to certitude *Sushrutokta* "*Gudavalitraye*". The anorectal region is considered as Guda. Guda is the organ that evacuates Apana Vayu and faeces (mala). Constipation, indigestion, improper diet, stress, reduce Agni (*Mandagni*), lack of exercise, faulty lifestyle, improper toilet training, spicy food, intake of excess meat etc; due to these causative factors different type of anorectal disorders produced like Arsha (Haemorrhoids), *Parikartika* (Fissure in *ano*), *Bhagandara* (Fistula in *ano*), *Gudabransha* (Rectal Prolapse) etc.

MATERIALS AND METHODS

present study was carried out by executing the following materials.

1. Literary Review
2. Cadaveric study
3. Clinical study

1. Literary Research- All relevant references regarding Cadaveric and applied study of Guda to certitude *Sushrutokta- Gudavalitrye* had been collected from the following literature:

A. Ayurvedic text
B. Modern text
C. Thesis/Dissertations
D. Journals/Articles

2. Cadaveric Study

Sushruta pioneered the instruction of cadaveric based anatomical learning which is still being used in medical teaching; he developed plastic surgical techniques, types of bandaging, hygiene practices and over one hundred surgical instruments.

Therefore, to visualize study and verify all the anatomical structures related to Guda and *Gudavalis* i.e. rectum and anal canal on cadavers of male and female has dissected in the department of Rachana Sharir, Government Ayurvedic College, Patna. The materials used during preservation of cadaver such as arsenic oxide, turpentine oil, phenol, water, glycerine, *formaline, leadoxide* as colouring agent, stirrup pump, thymol crystal etc. were used in proper way. After the preservation of cadaver, dissection of Guda and *Gudavalis* i.e. rectum and anal canal related structure were done. Following instruments were used, such as- knives, tooth forceps, plain forceps, saws, bone cutting machine, cloths, tray pot, scalpel blade etc.

Clinical Study

The clinical study was conducted in the OPD of Government Ayurvedic College and Hospital, Patna.

Study of the clinical significance of Arsha, *Bhagandara, Parikartika*, and *Gudabhramsha* has done from OPD of Shalya Tantra, Government Ayurvedic College, Patna in the limited duration of MD course. The cases selected for study, after careful clinical examination and fulfilling the inclusive criteria, have registered for the study. They all has been thoroughly interrogated about their socio-demographic profile, address, chief complaint, etc. A general physical examination has done to exclude the possibilities of any other associated diseases. After that, patients have carefully been enquired for the presence and absence of general symptom of Ano-rectal disease.

Selection criteria

Inclusion criteria-

- Patients and healthy volunteer's age group 20-70 years.
- Patients diagnosed with *hemorrhoids*, fistula, fissure and rectal prolapse.

Exclusion criteria

- Patient with co-morbidity, affective mental or physical health.
- Patient with extreme age groups more than 70 years or less than 20 years.
- Abuse of drugs and alcohol.
- Patients with terminal illness.
- HIV/ *HbsAg* positive subjects.
- Patients with any systemic disease like uncontrolled DM.
- Patients of ano-rectal malignancy.

Case paper and Consent form- These are attached in appendix.

Tools and technique employed

The following tools and techniques employed in the present study

- Local examination (inspection, palpation)
- Digital rectal examination (per rectal examination)

- Instrumentation (probing, proctoscope)
- 4.Specific investigation e.g. routine investigation (Blood, Urea, Stool), USG whole abdomen & pelvis, MRI, *fistulogram* / sinogram, and *ano*-rectal *monometry*.

Cadaveric study

The study of human anatomy has always been related to the use of cadavers. Cadaveric dissection is widely used in medical education to grasp the knowledge about the gross anatomy. A good dissection should display clearly and cleanly the main features of the region. When I went for dissection, I found that the body has already been embalmed with a suitable preservative fluid.

Surface marking-

I made an incision from xiphoid process till the umbilicus. Made a small circular incision around the umbilicus and extend it till the pubic symphysis. Carried the incision laterally from the umbilicus till the lateral abdominal wall on both sides. Gave curved incisions 3 cm below from anterior superior iliac spine to pubic symphysis on either side. Finally gave an oblique incision from the xiphoid process along the costal margin till the lateral abdominal wall on either side.

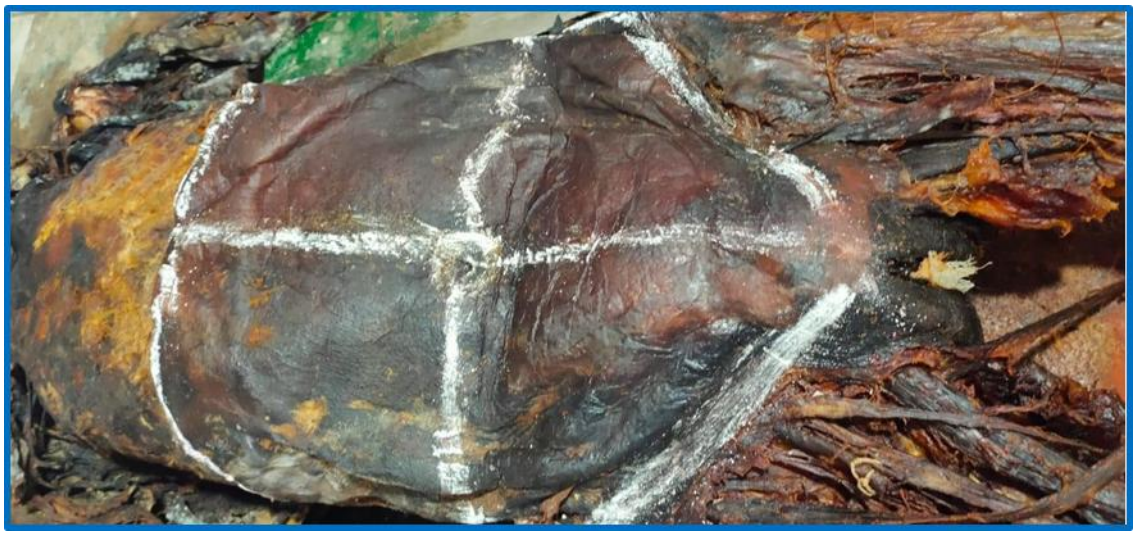

Fig. 01: Cadaver embalmed with formalin solution with surface marking

The pelvis is the area of transition between the trunk and the lower limbs. The bony pelvis serves as the foundation for the pelvic region and it provides strong support for the vertebral column upon the lower limbs. The pelvic cavity is continuous with the abdominal cavity, the transition occurring at the plane of the pelvic inlet. The pelvic cavity contains the rectum, the urinary bladder, and the internal genitalia.

The perineum is a diamond-shaped area between the thighs that is divided for descriptive purposes into two triangles. The anal triangle is the posterior part of the perineum and it contains the anal canal and anus. The urogenital triangle is the anterior part of the perineum and contains the urethra and the external genitalia. At the outset of dissection, it is important to understand that the pelvic diaphragm separates the pelvic cavity from the perineum.

Skin Incisions

- Before starting, the *ano*-rectal dissection I place the cadavers on dissection table in the prone position.
- Firstly, I started the skin incisions, for that I made an incision that follows the lateral border of the sacrum and iliac crest from the tip of the coccyx to the midaxillary line.
- After that I continued to make a midline skin incision to the posterior edge of the anus and made an incision that encircles the anus.
- Next, I made an incision from the anterior edge of the anus down the medial surface of the thigh, approximately 7.5cm down the medial thigh.
- After that I followed the next step and made an oblique incision across the posterior surface of the thigh up to the lateral surface of the thigh in a manner that this incision is approximately 30cm inferior to the iliac crest.
- After making the incision on lateral side of thigh I removed the skin from medial to lateral and removed the superficial fascia from the surface of the gluteus maximus muscle.
- Then I saw the posterior surface of the Gluteus maximus muscle and with hand I followed the superior margin of the gluteus maximus muscle separating it from the gluteal aponeurosis, which overlies the gluteus *medius* muscle.
- Then I observed the difference between the fibres of gluteus maximus and *medius*.
- After that with the help of the scissors I cut the proximal attachment of the gluteus muscle which is very close to the posterior surface of the sacrum and coccyx.
- After that in superior to inferior direction I inserted fingers under the superior margin of the gluteus maximus muscle and loosened it from deeper structures.
- I saw that inferiorly, the gluteus maximus muscle is attached to the Sacro-tuberous ligament. I used scissors to detach the gluteus maximus from the *sacro*-tuberous ligament to save the ligament.

After that I visualized the entire length of the *scro*-tuberous ligament.

Dissection of *ischioanal* fossa

- I made a transverse cut through the skin between the ischial tuberosities, immediately anterior to the anus. Then I made a median skin incision from the coccyx to the transverse incision, encircling the anus, and reflect the flaps of skin.
- Then I noted the radiating strands of muscle passing outwards from the anus. These are the terminal fibres of the longitudinal muscle of the intestine.
- After that I removed the fascia from the external anal sphincter, the anococcygeal ligament, the margins of the anus, and the central perineal tendon.
- I found the inferior rectal vessels and nerve on the medial side of the ischial tuberosity and traced them through the *ischioanal* fossa to the anal canal.
- Then I traced the perineal branch of the fourth sacral nerve over the surface of the *levator* ani from the side of the coccyx which supplies the external anal sphincter and the overlying skin.
- Then I turned the cadaver into prone position and identified the *sacrotuberous* ligament deep to the inferior border of the gluteus maximus.

- After that I exposed the posterior scrotal or posterior labial vessels and nerves near the lateral part of the posterior margin of the perineal membrane and followed them into the superficial perineal space.
- Completing the exposure of the inferior rectal vessels and nerve, I followed them to the lateral wall of the *ischioanal* fossa, removed the fat from the *ischioanal* fossa, found the pudendal nerve and vessels in the pudendal canal on the lateral wall.

DISCUSSION

Swastha Rakshana and *Vikara Prashamana* are the prime goals of Ayurveda. Knowledge about structural and functional aspect of *Sharira* is considered as a key to reach these goals. Guda is one such structural entity explained in Ayurveda, which play a role in elimination of *Pureesha* and Apana Vata. In Basti Chikitsa, one of the prime treatment modality of Vata medicine usually administered through Guda Marga only. Present clinical study Cadaveric and applied study of „Guda' to certitude *Sushrutokta*- "*Gudavalitrye"* comprises of conceptual study of *Gudavalis* and to elaborate all the controversies regarding the anatomical structure related to *Gudavalis* and its function.

For the proper understanding of the Anorectal diseases, it is necessary to have a clear knowledge of their site of manifestation. Detailed description regarding the anatomy of Guda is not available at one place. But a little light can be shed in this direction by collecting references scattered in various chapters.

LACUNAE IN THE KNOWLEDGE OF SUBJECTS

Till date many researchers and books tried to explain the anatomy of Guda specially related to Guda Vali. Scholar has tried to extend previous works in new prospective, updated the present knowledge, to visualize and verify all the anatomical structures related to Guda *Sharira* for its applied aspect in *Gudagat* Vikar. This makes it more applicable in Ayurvedic and other medical system.

- The description about *Gudavalia* is available in ancient literature but the correlative interpretation and applied aspect of *Gudavalia* with modern parameters has not yet been done.
- No one has explored in detailed the anatomical and physio-pathological implication of Guda in the light of Ayurvedic ancient and modern literature.

In this chapter the researcher has explained about the findings of the study as well as interpretation of the result, importance of the study and how this study is fulfilling the gaps in previous studies and literature. In this part of study an illustrative attempt has been made to point out hidden facts in the Ayurvedic literatures and Clinical contrive.

CONCLUSIONS

Conclusion based on the Literary Study -

Literary study of both Ayurvedic and modern classics was done to build up a firm relation between anatomical and physiological aspect of the anorectal region (Guda) and *Gudagata Vikara* (Anorectal disorders) which includes; Arsha (Haemorrhoids), *Bhagandara* (Fistula-in-*ano*), *Parikartika* (Fissure-in-*ano*), *Gudabhransha* (Rectal prolapsed) which can also be

justified on modern medical sciences. The term Guda is significantly correlating with the anorectal region or anorectum. Adhar Guda can be correlated with the lower part of the rectum and anal canal, Uttar Guda can be correlated with the distal rectum. The total length of the Anorectal canal or anorectum from recto- sigmoid junction to anal verge is 16.5 cm. The length of Guda is considered, whole of the anal canal & distal 5 to 6 cm of the rectum, which extends up to the middle Huston's valve. Apana Vayu carries sensory and motor function. It carries defecation impulses to the brain, after that defecation urge is produced. So Vata is significantly correlated with neurotransmitters as described in Ayurveda. *Gudavali* namely- *Pravahani* correlates with the Middle Houston's valve, *Visarjini* correlates with the inferior Houston's valve and *Samvarni* correlates with the dentate line *line*. These *Gudavalis* are associated with the defecation process.

Conclusion over Cadaveric study-

It is concluded that Guda as described in Ayurvedic Samhita is significantly correlated with the anorectal region or anorectum. The term Shankha Nabhi (conch shell) having many spirals in shape, can be correlated with anteroposterior and lateral curvatures of the rectum and anal canal.

Uttar Guda is the faecal reservoir; this is significantly correlated with the upper part of the rectum and sigmoid colon or distal rectum. Adhar Guda through which faecal material excretes out, it is significantly correlated with the lower part of the rectum and anal canal. The term *Gudaustha* is correlated with an anal orifice (anus). *Gudavali* namely- *Pravahani* is 1 & 1/2 Angula above the *Visarjani* which lies at the level of Middle Houston valve, *Visarjani* is 1 & 1/2 Angula above the *Samvarni* which lies at the level of inferior Houston valve and *Samvarni* 1 Angula above the *Gudaustha* (anus) which is situated at the level of the dentate line. The study of Ayurvedic review on Arsha, *Bhagandara*, *Parikartika*, *Gudabhransha* is significantly correlated with Haemorrhoids, Fistula-in-*ano*, Fissure-in-*ano*, Rectal prolapse. Vitiated Apana Vata in Guda is responsible for causation of disease like *Arshas* etc. Guda Marma is both Dhamani and Mansa Marma. Guda is a *Sadya Pranhara* Marma. Guda is one among 15 *Koshtangas*.

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