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ABSTRACT

Guda is the terminal part of *Annavaha Nalika*. It is attached to *Sthulantra*. It is also an important *Karmendreya* which helps in excreting faeces and flatus through it. *Guda* is described in *Bahirmukha Srotas*, it is the *Moola* of *Pureeshavaha Srotas*. *Guda's* origin has come from *Matrijabhava*. *Acharya Charak* has described *Guda* in fifteen *Koshthanga* by the name *Uttara Guda* and *Adhara Guda*. The description of *Guda* in *Marma* has also been done under *Sadyopranahara Marma*. The number of *Guda* is one and its *Pramana* is four and half *Angula*. Three *Vallis* are found in *Guda* named *Pravahini*, *Visarjini* and *Samvarani*. The diseases which are found in the *Guda* are *Arsha*, *Bhagandara*, *Gudavidridhi*, *Sannirudhaguda*, *Gudabhransha* etc. An attempt has been made in this article to establish the co-relation of *Guda* and *Guda Vallis* between *Ayurveda*

and modern science.

KEYWORDS: *Guda*, *Guda vallis*, *Pravahini*, *Visarjini* and *Samvarani*.

INTRODUCTION

Ayurveda is the scientific compilation of knowledge and the vast experiences of ancient Indian scientists and philosophers. The principal objective of *Ayurveda* is prevention of disease and cure of sickness.^[1] *Acharya Sushruta* has mentioned basis and unique concepts of *Rachana Sharira* in *Sushruta Samhita* under *Sharira Sthana* where he has discussed the

importance of body parts and anatomical structures. *Guda* is also one such anatomical structure which is important not only for its physiological function but also a part whose surgery is also mentioned in various ailments present in this particular organ. Even in twenty first century many procedures of *Guda* are followed as such. *Acharya Charak* has mentioned that study of *Sharira* provides a reflection of the healthy and painful condition of a human body. This is the reason why it is important to have knowledge of the various parts of the body.

Guda is an important site of *Vata*. *Vata* controls all the activities in the body. When *Guda* is injured, the *Vata* gets disturbed and subsequently the disturbed *Vata* has damaging impact on the body and its functions. Due to sedentary lifestyle *Annavaha Srotas* and *Pureeshavaha Srotas* are badly affected and this subsequently affects the *Guda Sthana* making abnormal changes leading to various diseases. Due to prolonged sitting posture and unhygienic cleaning of the *Guda*, *Guda Vallis* get affected which might lead to *Gudarogas* like *Malabadhama*, *Parikartika*, *Arsha* etc. So the knowledge of *Guda Pradesha* and *Guda Vallis* is of utmost importance.

AIMS AND OBJECTIVES

1. To collect the various references in detail about the anatomy of *Guda Pradesha* and *Guda Vallis* in classical *Ayurvedic* texts.
2. To correlate the *Ayurvedic* literature related to *Guda* and *Guda Vallis* with modern scientific text.

MATERIALS AND METHODS

All sorts of references regarding *Guda* and *Guda Vallis* are compiled from various available *Ayurvedic* classics text like *Sushruta Samhita*, *Charak Samhita*, *Ashtang Hridaya*, *Ashtang Sangraha* *Ayurvedic* commentaries, classical *Ayurvedic* text Books and modern books like B.D.C. Human Anatomy, Gray's Anatomy, Review articles, journals, dictionaries etc.

LITERARY VIEW ON GUDA AND GUDA VALLIS

VYUTPATTI OF GUDA

The word *Guda* is derived from verbal root “*Guda Kriyam*” to express or to function or from the root “*Gu Pureeshotsarga*” which expresses defecation.

DEFINITION

The last part of *Sthulantra* which is *Ardhapancha Angula* and is attached to it is called *Guda*.^[2]

Guda is the distal part of *Sthulantra* through which excretion of faeces and flatus takes place.^[3]

SYNONYMS^[4]

1. *Apanam, Payu-Amarkosha*
2. *Guhayam, Gudavartam-Jatadharam*
3. *Braghanam-Vijyarakshit, Chakrapani*.^[5]

Acharya Charak has described the *Guda* in fifteen *Koshthanga*^[6] by the name *Uttara Guda* and *Adhara Guda*, commenting on which *Chakrapani* has written.^[7]

1. UTTARAGUDA- अत्र पुरीषमवतिष्ठते ।

where faeces is stored.

2. ADHARA GUDA- येन तु पुरीषं निष्कामति तदधरगुदम् ।

lower part by which faeces is defecated.

LOCATION OF GUDA

Guda is located closely posterior to the *Vasti*. In the context of anatomy of *Vasti*, *Acharya Sushrura* says that *Vasti* is having closer relation with *Guda* and both are situated in *Gudasthi vivara*.^[8]

EMBRYOLOGICAL DEVELOPMENT OF GUDA

Describing the embryological development of *Guda* *Acharya Sushruta* has written that *Mamsa, Shonita, Medo, Majja, Hridya, Nabhi, Yakruta, Pleea, Antra* and *Guda* like soft *Avayva* are developed from *Matrujabhava*.^[9]

It is formed from the best part of *Rakta* and *Kapha* being digested by *Pitta* along with active participation of *Vayu*.^[10] Regarding the development of first organ in the body different *Acharyas* have different views but *Acharya Bhadrashaunaka* has mentioned that *Guda* develops firstly in the body.^[11] *Acharya Charak* stated that during the third month of pregnancy all *Indriya*, all *Anga* (*shira* etc.), all *Avayava* (*Nasa, Karna* etc.) are produced

simultaneously.^[12] Thus, we can assume that *Guda* will also have started forming in the 3rd month of pregnancy and gets fully formed by the end of pregnancy.

DESCRIPTION OF GUDA VALLIS

Acharya Sushruta and *Acharya Vagabhatta* have described the presence of three *Vallis* inside the *Guda*. They are named as *Pravahini*, *Visarjini* and *Samvarini*^[13] and each *Valli* has *Parimaan* of one and half *Angula*.^[14] These *Vallis* are arranged in spiral form (*Sankhavarta Nibham*) likened to involuted indentures in conch shell and resemble the colour of palate of an elephant (*Gaja Taalu*).^[15]

Acharya Vagbhatta has further classified the positions of these *Vallis*. He named proximal one is *Pravahini*, middle one is *Visarjini* and distal one is *Samvarini*. The outermost part *Gudostha* is situated one *Angula* from hairy margin (*Romanta Pradesh*) away or distal to *Samvarini Valli*. The *Parimaan* of *Gudostha* is one and half *Yava*.^[16] These *Vallis* are counted from within outwards. *Acharya Dalhana*, while commenting on *Sushruta Samhita* has given the detail description of *Guda Vallis*.^[17]

1. *Pravahini*: प्रवाहयतीति प्रवाहणी । (डल्हण टीका, सु.नि. 2/5-6)
2. *Visarjini*: विसृजयतीति विसर्जनी । (डल्हण टीका, सु.नि. 2/5-6)
3. *Samvarni*: संवृणोति संवरणी । (डल्हण टीका, सु.नि. 2/5-6)

- *Pravahini* is the first & innermost *Valli* which propels the *Mala* forward.
- *Visarjini* is the second *Valli* which is present between *Pravahini* and *Samvarini* and it helps in expulsion of *Mala*.
- *Samvarini* is the third and last *Valli* situated one *Angula* away from the *Gudoshtha* which helps in closure of *Guda*.

DIMENSIONS OF GUDA & GUDA VALLIS

As described earlier, the *Parimaan* of *Guda* is *Ardhapanchangula* i.e., four and half *Angula* and the *Parimaan* of each *Guda Valli* is one and half *Angula*. Throwing light on this, *Acharya Dalhana* has cleared the concept of *Angula*. While commenting on the *Parimaan* of *Gudoshtha* which is one and half *Yava*, he said that one and half *Yava* is equal to *Ardha Angula*.^[18] In this way, 3 *Yava* = 1 *Angula*.

SIRAS

According to *Acharya Sushruta*, in *Koshtha* region there are 34 *Vayu* carrying *Siras*, out of which 8 *Siras* are situated in *Shroni* region connected with *Linga* and *Guda*.^[19]

DHAMANI

There are 24 *Dhamani* in the body, out of which 10 go downwards and performs the function of micturition, defecation, ejaculation of sperm, menstruation and expulsion of foetus during delivery.^[20]

ASTHI

Visceral organs are well protected by bony cage of *Shroni*. This *Shroni* comprises of five bones out of which four corners are well attached with *Guda*, *Yoni*, *Nitamba*. The remaining one is in the *Trika* region.^[21]

SNAYU

There are 60 *Snayu*^[22] in pelvic region. *Snayu* which are connected with *Guda* region are of *Sushira* type.^[23]

IMPORTANCE OF GUDA**1. Guda as a Marma**

Guda is a *Mamsa Marma*^[24] and *Acharya Sushruta* has considered *Guda* in *Udara Marma*^[25] while *Acharya Vagbhata* has included it in *Dhamani Marma*.^[26] All *Acharyas* consider it as *Sadyopranahara Marma*.^[27]

2. Guda as Pranayatana

Pranayatana are so enlisted because their proper functioning is very important for the proper functioning of the body. *Guda* is one of such *Pranayatana*.^[28]

3. Guda as Srotas

Guda is *Bahirmukha Srotas*.^[29] *Acharya Charak* and *Acharya Sushruta* has put *Stihulaguda* as root of *Pureeshavaha Srotas*.^[30]

4. Karmendriya

Guda is described as one of the *Panchakarmendriya* and its function is to excrete the *Mala* from the body.^[31]

MODERN LITERATURE

The anal canal is the terminal portion of intestinal tract, it begins at the Anorectal junction, 3-4 cm in length and terminates at the anal verge. Interior of anal canal has three parts.

1. UPPER PART

It is a mucosal part measuring 15 mm long, extends from anorectal junction to pectinate line.

2. MIDDLE PART

It is a mucosal part lies between the pectinate line above and white line of Hilton below measuring about 15mm long.

3. LOWER PART

It is a cutaneous part and is about 8mm long.

ANAL SPHINCTERS

The anal sphincters are a group of muscles around the anus that controls the release of stool from the rectum, thereby maintaining continence. There are two muscles.

1. Internal anal sphincter

It is formed by thickened (5-8mm) circular muscle coat and is involuntary in nature. It surrounds the upper $3/4^{\text{th}}$ part of the anal canal i.e. 30 mm of the anal canal extending from the upper end of the canal to the white line of Hilton.

2. External anal sphincter

It is under voluntary control, made up of striated muscle surrounding the whole length of the anal canal.

RECTUM

The rectum is the distal part of the large gut. It begins as a continuation of the sigmoid colon and ends at the anorectal junction. It is about 12cm long. The mucous membrane of an empty rectum shows two types of folds.

1. Longitudinal folds

They are present in the lower part of an empty rectum.

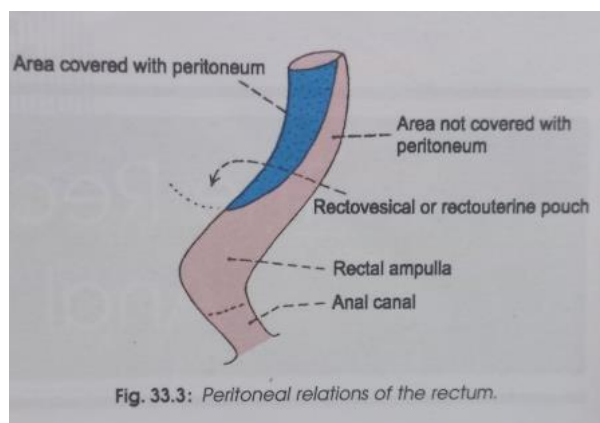
2. Transverse folds/Houston's valves

These are more marked when the rectum is distended.

- a). **First transverse fold** lies near the upper end of the rectum and are about 15cm above anus.
- b). **The second transverse fold** lies about 8 cm from anus.
- c). **The third transverse fold** lies 2.5 cm below the second fold.

Peritoneal relations of the Rectum^[32]

The rectum shows different relations with peritoneum in its different parts. For easy understanding, the rectum is divided into 3 parts and its relations with peritoneum are mentioned below-



- The upper 1/3rd part is covered with peritoneum in front and on sides.
- The middle 1/3rd part is covered with peritoneum in front only.
- The lower 1/3rd part is devoid of peritoneum.

BLOOD SUPPLY OF RECTUM

Rectum is chiefly supplied by the superior rectal artery along with middle rectal arteries and median sacral artery.

PHYSIOLOGY OF THE RECTUM AND ANAL CANAL

The function of the Anorectal has to store and evacuate the faecal matter. This function is facilitated by the act of defecation. Most of the time rectum is empty of faeces. When a mass of faeces makes movements into rectum desire for defecation is normally initiated including reflex contraction of rectum and relaxation of anal sphincters.

The **anal sphincter reflex** is a process that occurs when stool moving through the digestive tract triggers the internal anal sphincter to relax, which in turn makes the external anal sphincter to contract. This response is called the defecation reflex. Functionally the sigmoid

canal is the faecal reservoir and the whole of the rectum is empty in normal individual. Being sensitive to distension, passage of faeces into the rectum, therefore, causes the desire to defecate.

DISCUSSION

DISCUSSION ON GUDA AS ANORECTAL REGION

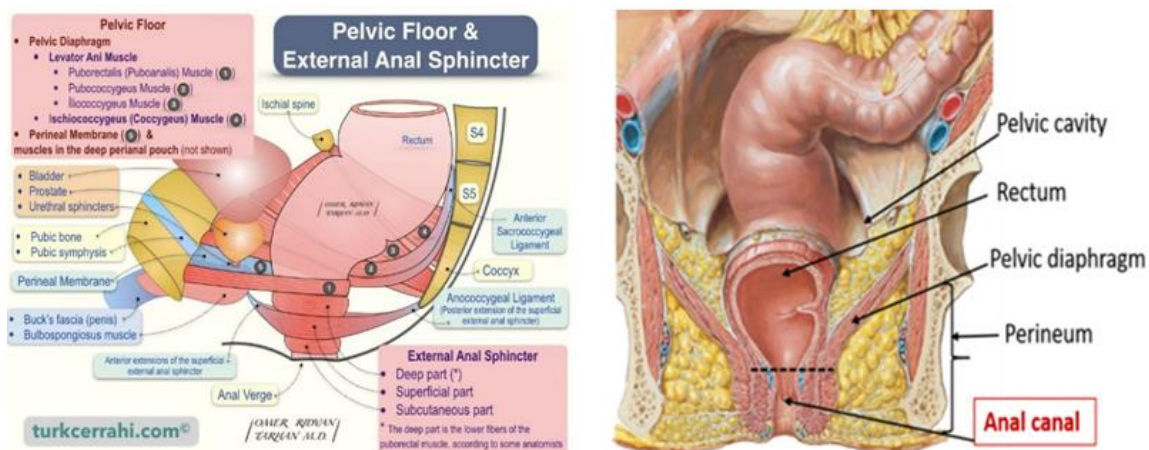
Acharya Sushruta and *Acharya Vagbhata* have mentioned the length of *Guda* as four and half *Angula*. The measurement of one *Angula* is approximately 2 cm and on the basis of this, the total length of *Guda* is approximately 9 cm. It is known that the anal canal is the terminal portion of the intestinal tract, it begins at the anorectal junction and is 3-4cm in length and terminates at the anal verge. Then the extent of *Guda* includes that of the anal canal plus lower 6 cm of rectum.

DISCUSSION ON GUDA VALLIS

Sushruta has described that interior of *Guda* contains three *Guda Vallis* which can be correlated with the modern anatomical parts. They can be related to horizontal folds in the rectum (Houston's Valve) named as middle and lower folds. It is mentioned that second Houston's Valve is about 8cm from the anus and third transverse fold is about 2.5 cm below the middle Houston Valve. It means that third Houston's Valve is 5.5 cm from the anus. If the distance of Lower Houston's valve from anus which is approximate 5.5cm and distance between lower and middle Houston Valve which is 2.5 cm is added it comes approximate 8cm which can be correlated with the *Chaturangulaayata Pramana* of *Guda Vallis*.

Gananath sen considered as distal two Houston Valves are *Pravahini* and *Visarjini* respectively and area of internal and external anal sphincter collectively known as *Samvarini*. Some authors have considered *Pravahini* as lower Houston's Valve, *Visarjini* as Column of Morgagni and *Samvarini* as Anorectal ring.

1	<i>Pravahini</i>	Proximal	Lower Houston's Valve
2	<i>Visarjini</i>	Middle	Column of Morgagni
3	<i>Samvarini</i>	Distal	Anorectal junction



DISCUSSION ON GUDA VALLIS AS ANAL SPHINCTERS

In the light of present-day knowledge, some scholars translate *Valli* as sphincter (G.D. Singal et al 1972) Sphincters are the musculature of the Anal Canal named as Internal Anal Sphincter and External Anal Sphincter. If we look at the Hindi Commentary *Ayurveda-Tatva-Sandipika* of Kaviraj Ambikadutta Shastri on *Sushruta Samhita* on *Guda Vallis*, he clearly mentioned *Samvarini Valli* as two circular muscular structure responsible for contraction in *Guda* region. On the basis of this, external and internal anal sphincter can be correlated with the *Samvarini Valli* which helps in closure of anal canal after defecation.

CONCLUSION

1. As per the review of literature available in *Samhitas*, as well as the commentaries done on *Guda* it is deduced that physiologically it is an organ associated with generation of impulse or urge to defecate and as an organ which facilitates the process of defecation.
2. Anatomically, the measurements provided in *Samhitas*, when seen in light of modern tools of measurements come to be approximately 9 cm which includes lower 6 cm of rectum and 3 cm of anal canal.
3. On the basis of literature available, *Vallis* are both functional as well as structural entities of *Guda*.
4. The peritoneal relation of the rectum is also suggestive of the fact that the lower portion of the rectum performs different function from upper part.

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