



APPLIED ANATOMY OF GUDA – A CONCEPTUAL STUDY

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ABSTRACT

Guda is defined as the passage through which excretion of faeces and flatus takes place. *Guda* is one among the fifteen *Koshtangas* described by *Charaka*. He recognizes two parts in it i.e *Uttara Guda* and *Adhara Guda*^[1]. It is a one among the nine *bahir mukha* srotas and is located in pelvic region^[2]. It is the continuation of large intestine. Embryologically it is derived from *matrujabhava*^[3]. Total length of *Guda* is 4 ½ *angula*^[4]. *Uttara Guda* stores the faecal matter, the *adhara Guda* does the function of throwing it out. There are three *valis* situated inside the *Guda* placed one above the other at a distance of 1½ *angula* from each other and are named as (proximal to distal) *Pravahini*, *Visarjini* & *Samvarani*^[5]. Out of seven *Sushrutokta kalas*, *Pureeshadhara kala* is related to *Guda*. *Guda* is described as *moola* of *Purishvaha srotas*^[6] & it is related to *Annavaha srotas*, further it is described that its attachment is to be *Bruhadantra*. One of the vulnerable spot “*Guda Marma*” which is *Sadhyopranahara* in nature and measures four *angula*^[7].

KEYWORDS: *Guda*, *Guda vali*, *Guda marma*

INTRODUCTION

Discussion of anatomical details of any organ includes: Location, embryological development, structure, blood & nerve supply, anatomical relationship, functions & *doshic* relationship. All these details are scattered throughout the classical texts.

The term *Guda* is derived from ‘*gu*’ means the organ of excretion of *Pureesha mala*.

Guda is defined as the passage through which excretion

Acharya *Sushruta* describes *Guda* is made up of three *peshi*.

Shape of *Guda* internally resembles interior of conch and elephant’s palate in colour.

There are 3 folds at the intervals of one and a half *angulas*, four *angulas* broad and all risen obliquely up to one *angula*- they are named as *Pravahani*, *Visarjani* and *Samvarani*.

Of the three *valis*, *Pravahani* is the innermost one, *Visarjani* lies in between and the outermost is *Samvarani*.

The *Guda* is supported by sixty *Snayus* in pelvic region.

of faeces and flatus takes place. According to *Amarkosha*, *Guda* has synonyms like *Apanam* & *Payu*. Embryologically *Guda* is derived from *matruja bhava* (maternal element) *Guda* is formed with other body parts as early in the fourth month and fully formed by seventh month of gestation. The minute essence of *Rakta* and *Kapha* is acted upon by *Pitta* followed by rushing of *Vayu*, thereby intestines (*aantra*), anus (*Guda*), and bladder (*basti*) are formed.

ANATOMICAL DESCRIPTION OF GUDA

Vatavaha siras, particular in the trunk they are thirty four, of these eight are in pelvis situated in anus and penis.

The down coursing *Dhamanis* respectively form the channels, for the downward conveyance of flatus, urine, stool, semen, menstrual blood etc. The two *Dhamanis*, attached to the *Sthoolantra*, serve as the channels of faecal matter. Five bones form the *Shroni*(pelvic cavity), of these four are found about the *Guda* (anus), *Bhaga*(pubis) and the *Nitamba*(hips) and the fifth one is *Trika* (sacrum).

Samudga type of *sandhi* is situated in *Guda*, *Bhaga* and *Nitamba* *Guda* is considered one among *Sadhyapranahara marma* and is enumerated under *Mamsa marma*.

*Dashapranayatana*s by Charaka.

Guda is one among nine *Bahirmukha srotas*.

Pureeshavaha srotas have their roots in *Guda*. *Guda* is the seat of *Apanavayu*.

The area $1\frac{1}{2}$ *yava* from the hair end of anal verge is *Gudoshta* and it measures $\frac{1}{2}$ *angula*.

Anatomical relationship: Bladder, Prostate, Scrotum and Anus are inter-related, found in pelvic cavity (*Guda stha vivara*).

The action of *Guda valis*

Pravahani propels, *Visarjani* eliminates the feces and flatus and the *Samvarani* is that which closes (sphincter) after defecation.

ANAL CANAL^[8] is the terminal part of the large intestine and measures 3.8 cms long, extends from anorectal junction to anus.

Anus is the surface opening of the anal canal situated 4cm below and in front of the tip of coccyx, the skin is pigmented and contains a ring of large apocrine glands

RELATIONS

Anterior: Perineal body

Membranous urethra

Bulb of penis

Lower end of vagina

Posterior: Anococcygeal ligament

Tip of coccyx

Lateral: Ischioanal fossa

INTERIOR OF ANAL CANAL

Is divided into three parts

I. Upper part: 15mm long

II. Middle part: 15mm long

III. Lower part: 8mm long

Upper part

Is 15mm long, lined by mucous membrane and of endodermal origin. Mucous membrane shows 6-10 vertical folds called **Anal columns of Morgagni**.

Anal columns unite each other by short transverse folds of mucous membrane called **Anal valves**. Depression above the anal valve is called **Anal sinus**. Anal valves form a transverse line which runs all round the anal canal called **Pectineal line**.

Middle part: Is 15mm long, lined by mucous membrane. There will be bluish appearance of mucous which is due to dense venous plexus referred to as pectineal line.

Below the pectinate line has a whitish appearance hence named as **White line of Hilton**.

Lower part: Is 8mm long lined by true skin containing sweat and sebaceous glands.

MUSCULATURE OF ANAL CANAL

Anal sphincters

Internal anal sphincter

Is involuntary and formed by thickened circular muscle coat which extends from upper end of canal to white line of Hilton.

External anal sphincter

Is voluntary and made up of striated muscle and surrounds the whole length of anal canal which consists of three parts: subcutaneous part, superficial part, deep part.

Conjoint longitudinal coat

Formed by fusion of puborectalis with longitudinal muscle coat of the rectum at anorectal junction which lies between the external and internal sphincters.

Anorectal ring

Is formed by the fusion of puborectalis, deep external sphincter and the internal sphincter unites at the anorectal junction.

SURGICAL SPACES OF ANAL CANAL

Ischioanal space- lies on each side of the anal canal.

Perineal space- surrounds the anal canal below the white line

Submucous space- lies above the white line between the mucous membrane and internal sphincter

Arterial supply- Superior rectal artery, inferior rectal artery

Venous drainage- External rectal venous plexus lies in the submucosa of the anal canal and drains mainly into the superior rectal vein. Internal rectal venous plexus lies outside the muscular coat, the lower part is drained by inferior rectal veins into internal pudendal vein. Anal veins are arranged radially around the anal margin. They communicate with internal rectal plexus with the inferior rectal veins.

Lymphatic drainage

Internal iliac nodes

Superficial inguinal nodes

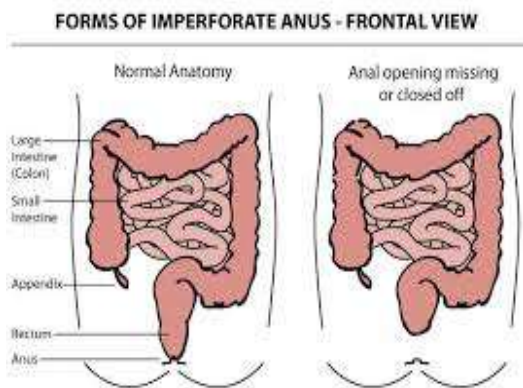
Nerve supply

Inferior hypogastric plexus (L1, L2), Pelvic splanchnic (S2, 3, 4), Inferior rectal nerve.

APPLIED ANATOMY

Haemorrhoids are sacculated dilatations of the internal rectal venous and hence painless. The left lateral, the

Imperforate anus: Is formed due to imperfect fusion between the post allantoic gut and proctodeum



Rectal carcinoma are due to columnar cell carcinoma
Are of two types

Macroscopic Type

- 1) Proliferative variety: At rectal ampulla
- 2) Ulcerative variety: At rectal ampulla
- 3) Annular variety : At Anorectal junction

Microscopic Type

- 1) Columnar cell carcinoma
- 2) Squamous cell carcinoma
- 3) Colloid
- 4) carcinoma

SI No	Guda vali	Situation	Modern terminology
1	Pravahini	Proximal	Middle Houstans valve
2	Visarjini	Middle	Inferior Houstans valve
3	samvarini	Distal	Dentate line



DISCUSSION

Guda is derived from *matruja bhava* (maternal element) and *matruja avayavas* are *jaliya* (more predominant of water factor) hence highly vascular. According to *chakrapani utara Guda* is an organ where *purisha* (faeces) is collected and *adhara. Guda* is meant for excretion of faeces. This shows Rectum and anal canal are clearly brought about in the reference of *uttara Guda* and *adhara Guda*. While describing the operative procedure of *Ashmari* (Calculus in urinary bladder), *Acharya Sushruta* instructs introduction of digits in the *Guda* and fixing the calculus to make it prominent in the perineal region. This description gives various details

like close relation of urinary bladder and *Guda*, per rectal digital examination and manipulation in *Guda* etc. *Acharya Sushruta* mentions that *Garbhashaya* (Uterus) is interfaced between bladder and large intestine. Here he uses the term *Maladhaara* for large intestine, meaning to say rectum.

From *tantra sharen era* point of view, it is said that *Muladhar Chakra* is situated between genitalia and anus, which is correlated with pelvic plexus of Autonomic nervous system.

Then the extent of *Guda* includes that of anal canal plus the lower 6cms of rectum which roughly relates with middle Houstans valve. *Sushruta* has described that the interior of the *Guda* contains three *valis* which can be enumerated and correlated to modern anatomical parts in the following table.

Upper part of rectum is considered as *purisha dhara/ Pakwashaya/ sthulantra* and not considered as *Guda* . The lower part of rectum i.e 6 cms is lower part (*uttara Guda* in our terms) lies below the middle fold. It is empty and being sensitive, its distention causes the desire to defecate. Where the desire to defecate occurs .this is the area of *pravahini* (the area where the urge originates). In middle rectal valve there is no peritoneum, no mucous membrane but rich in stretch sensitive nerve endings. Process of defecation is stimulated here and hence can be correlated to *visarjani* vali. On the basis of measurement given in *ayurvedic* classics *Samvarini* lies 2 cm above the anal verge interiorly. This is the area of anorectal ring, external spincter. Hence *samvarini* can be correlated to External and internal sphincters which maintains the contents.

The surgical anal canal is lined from above downwards by pink rectal mucosa (columnar epithelium) covering the haemorrhoidal pedicle at the anorectal ring; by dark red anal mucosa (cuboidal and transitional epithelium) covering the main haemorrhoidal mass; by smooth, parchment coloured anal canal skin (thin squamous epithelium) covering the pecten zone and, finally, by the true skin of the anus (squamous epithelium with hair follicles and sweat glands) covering the external haemorrhoid.

Guda is one among the *Sadhya pranahara marmas*. During *Basti karma* if the *Basti netra* is sharp, it can injure the *Guda* leading to wound and some time can lead to vasovagal shock. If ano – rectal region get traumatized may lead to peritonitis, internal hemorrhage, septicemia, toxemia, shock etc hence called *sadhya pranahara marma*. *Charaka acharya* included *Guda* in *Dasha Pranayatana* (important seats of *Prana*).

CONCLUSION

Guda is one among the fifteen *Koshtangas* described by *Charaka*. It is a one among the nine *bahirmukha srotas* and is located in pelvic region¹⁰. Embryological it

is derived from *matrujabhava*. Total length of *Guda* is 4 ½ *angula*. *uttaraGuda* stores the faecal matter, the *adhara Guda* does the function of throwing it out. There are three *valis* situated inside the *Guda* placed one above the other at a distance of 1½ *angula* from each other and are named as (proximal to distal) *Pravahini*, *Visarjini* & *Samvarani*. From *tantra shareera* point of view, it is said that *Muladhar Chakra* is situated between genitalia and anus, which is correlated with pelvic plexus of Autonomic nervous system. Vitiated *apana vata* in *Guda* is responsible for causation of disease like *Arshas* etc. Therefore a clear anatomy of *Guda* is a prerequisite for understanding disease pathology and further treatment.

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