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 Uttar Guda and Adhara Guda. It is a one among the nine bahir mukha srotas and is located in pelvic region. It is the continuation of large intestine. Embryologically it is derived from matrijajhabhava. Total length of Guda is 4 ½ angula. Uttar 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. Out of seven Sushrutokta kalas, Pureeshadhara kala is related to Guda. Guda is described as moola of Purishvaha srotas & 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.

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 matrija 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 Sadhyopranahara marma and is enumerated under Mamsa marma.
Dashapranayananas by Charaka.

Guda is one among nine Bahirmukha srotas.

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

The area 1 ½ yava from the hair end of anal verge is Gudoshta and it measures ½ 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: Ischiorectal 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 forms a transverse lines which run all round the anal canal called Pectineal line.

Middle part: Is 15mm long, lined by mucous membrane. Tere will be bluish appearance of mucous which is due to dense venous plexus reffered to s 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 sub cutaneous 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
Ischiorectal 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 saccular dilatations of the internal rectal venous and hence painless. The left lateral, the
right anterior and right posterior columns i.e 3o clock, 7o clock and 11 o clock positions (when viewed on lithotomy position) contains largest radicles and are the common sites for primary internal haemorrhoids.

Varicosites in other positions of the lumen are called secondary haemorrhoids.

External haemorrhoids are seen below the pectinate line and hence painful.

Fissure in ano is caused by the rupture of one of the anal valves Anal valve is lined with mucous membrane above and with skin below. Due to involvement of skin the condition becomes painful and associated with spasm of the anal sphincter.

**Anorectal abscess:** Abscess is produced as an infection of anal gland.

They are Supralevator abscess, Ischiorectal abscess, Intersphincteric abscess and Pefianal abscess.

1. **Fistula in Ano** are caused due to spontaneous rupture of an abscess around the anus. Anorectal abscess tracks into various directions and opens medially into anal sinus, laterally into the ischiorectal fossa, inferiorly at the surface and superiorly into the Rectum.

**Low level Fistula:** Opens below the anorectal ring.

**Subdivides into**
- a. Submucous type
- b. Intersphincteric type
- c. Transphincteric type
- d. Supr

**High level fistula**
Opens above the anorectal ring
- a. Extrasphincteric / Supralevatoric type
- b. Transsphincteric type
- c. Pelvirectal type
- d. sphincteric type

**Rectal incontinence**
Injury to ano rectal ring results in rectal incontinence

**Prolapse of rectum:**

I. **Incomplete / Mucosal prolapse:** Due to imperfect support of the rectal mucosa by the submucosa which is made up of loose areolar tissue.

II. **Complete prolapse Procidentia:** In complete prolapsed whole thickness of the rectal wall protrudes through the anus. Caused due to

- Laxity of the pelvic floor
- Deep rectovesical/ rectouterine pouch
- Inadequate fixation of rectum in presacral bed.
**Imperforate anus:** Is formed due to imperfect fusion between the post allantoic gut and proctodeum

**Rectal carcinoma** are due to columnar cell carcinoma

**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

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Guda vali</th>
<th>Situation</th>
<th>Modern terminology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pravahini</td>
<td>Proximal</td>
<td>Middle Houstans valve</td>
</tr>
<tr>
<td>2</td>
<td>Visarjini</td>
<td>Middle</td>
<td>Inferior Houstans valve</td>
</tr>
<tr>
<td>3</td>
<td>Samvarini</td>
<td>Distal</td>
<td>Dentate line</td>
</tr>
</tbody>
</table>

**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 uttara 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 *Maladhar 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/ shtulantra* 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 inferiorly. This is the area of anorectal ring, external sphincter. 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 *Sadthya 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 region. Embryological it
is derived from matrujabhava. Total length of Guda is 4½ 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 Muladhara 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.

REFERENCES
2. Sushruta samhitha shareera sthana, chapter 5, verse 10; 824: 364.
4. Astanga hrudaya, Nidana sthana, 7th chapter, verse 3-5; 956: 491.
5. Sushruta samhitha, Nidana sthana, 2nd chapter, verse 6; 824: 15.
6. Sushruta samhitha, Shareera sthana, chapter 10, verse 12; 824: 386
7. Sushruta samhitha, Shareera sthana, chapter 6th, verse 9; 824: 386.