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GUDA BEYOND INTESTINAL EVACUATION: A REVIEW OF ITS MULTIDIMENSIONAL SIGNIFICANCE

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Abstract:

The anorectal region is referred as *Guda* (गुद) and has been regarded primarily as the terminal organ of intestinal evacuation. However, its functional and clinical significance extends far beyond defaecation.*Guda* is regarded as the *Mula* (root) of the *Purishavaha Srotas*[1], the seat of *Apana Vayu*[2], route for administration of *Basti* and the location of the *Muladhara Chakra*[4]. *Guda* is classified as a *Sadyopranahara Marma*[3].A vital site where injury leads to instantaneous death This structure serve as valuable site for diagnosing both local and systemic diseases.It provides an effective route for drug administration by avoiding first pass liver metabolism, assist in estimating the post mortem interval in forensic medicine and represent a complex surgical region that requires advanced technical expertise. This article combines evidence from classical Ayurvedic texts and modern medical science to highlight *Guda* as one of the most functionally, diagnostically,therapeutically and spiritually significant anatomical region of the human body.

Key words: *Sadyopranahara Marma*, *Purishavaha Srotas*, *Apana Vayu*, *Basti*, *Muladhara Chakra*, Drug administration.

I. INTRODUCTION

The anorectal region, referred to as *Guda* (गुद) in Ayurveda, is a complex anatomical and functional region with important roles in defaecation, continence and pelvic floor function. Ayurveda considers *Guda* as the *Mula* of *Purishavaha Srotas* and the site of *Apana Vayu*, highlighting its physiological importance. It also serves as a route for *Basti* and is associated with the *Muladhara Chakra*, reflecting its therapeutic and spiritual significance.It is also classified as a *Sadyopranahara Marma*, emphasising its vital importance.Although anorectal trauma is relatively uncommon, its close relationship with major blood vessels, pelvic nerves, sphincter muscles and surrounding pelvic organs makes injuries potentially serious. Rectal injuries account for approximately 1–3% of civilian trauma and up to 5% of military trauma, with penetrating injuries in war settings often associated with haemorrhage, pelvic sepsis and multisystem trauma[5].

II. MATERIALS AND METHODS

This narrative review integrates classical Ayurvedic texts and modern medical literature. References on Guda were obtained from the *Sushruta Samhita, Charaka Samhita,* and *Ashtanga Hridaya*, along with relevant anatomy textbooks and peer-reviewed articles. The findings were compared and integrated to explore the functional, diagnostic, therapeutic, surgical, forensic, and spiritual significance of *Guda*.

III. RESULTS

Nirukthi (Etymology)[6]

गु मलोत्सर्गे। (Amarakosha 2.6.73)

The anorectal region is known as *Guda* (गुद). The term is derived from root *'गु मलोत्सर्गे',*which means "to eliminate waste," indicating that its primary function is the expulsion of faeces (*mala*).

Utpatti (Origin)[7]

Guda is formed through the combined influence of the *Tridoshas* and *Rakta Dhatu*.

It is *Matruja Bhava avayava*.

Karma[8]

वातवर्चोनिरसनस्थूलान्त्रप्रतिबद्धो गुदः। (Su.Sh.6/25)

Guda is defined as the terminal segment of the large intestine (*Sthulaantra*) responsible for the expulsion of *Vata* (flatus) and *mala* (faeces).

***Sthana* and *Pramana* (Location and Measurement)**

Guda is attached to the *Sthulantra* (large intestine) and measures about **5½** *Angulas* in length.*Guda* is classified into two parts: *Uttaraguda*, which stores faeces and corresponds to the rectum and *Adharaguda*, which helps in the expulsion of faeces and corresponds to the anal canal.

***Gudavali* — The Three Functional Folds[9]**

table 2

Ayurvedic Fold	Function	Modern Anatomical Correlate
Pravahini	Propulsion-moves faecal matter downward	Longitudinal smooth muscle folds; peristaltic activity
Visarjani	Expulsion-responsiblefor defaecation	Internal anal sphincter (involuntary); defaecation reflex
Samvarani	Closure-prevents involuntary discharge	External anal sphincter (voluntary); puborectalis

Guda* as *Mula* of *Purishavaha Srotas

पुरीषवहे द्वे, तयोर्मूलं पक्वाशयो गुदं च, तत्र विद्धस्यानाहो दुर्गन्धिता ग्रथितान्त्रता च[1]

(Sushruta Samhita, Sharirasthana 9/12)[1]

पुरीषवहानां स्रोतसां पक्वाशयोर्मूलं स्थूलगुदं च।

(Charaka Samhita, Vimanasthana 5/7)[2]

Acharya Sushruta and *Charaka* described *Guda* and *Pakwashaya* (large intestine) as the roots of *Purishavaha Srotas*. Injury or disease here produces *Anaha* (bloating/obstruction), Durgandha (foul odour), and *Grathitantra* (constricted intestines) which corresponds to features of faecal obstruction, infection, and stricture.

Modern Anatomy of the Anorectal Region[10]

Rectum

The rectum is the terminal part of the large intestine. It extends from S3 to the anorectal junction and is about 12 cm long. Its lower part forms the rectal ampulla, which temporarily stores faeces. It contains Houston's valves and three lateral curves.

Anal Canal

The anal canal is the terminal part of the gastrointestinal tract. It is about 3–4 cm long and extends from the anorectal junction to the anus. The internal and external sphincters maintain continence and control defaecation. The pectinate line divides it into upper and lower parts, which differ in their blood supply, nerve supply, lymphatic drainage and epithelium. Anal columns, valves and sinuses are anatomically important structure.

Interior of Anal canal:

table 3

Zone	Length	Epithelial Lining	Key Landmarks
Upper Mucous Part	~15 mm	Columnar mucosa	Anal columns of Morgagni (6–10),anal sinuses and glands, pectinate (dentate) line with anal papillae,radicles of superior rectal vein
Middle Transitional Zone (Pecten)	~15 mm	Thin stratified squamous (pale, devoid of sweat glands)	Dense venous plexus (bluish appearance),limited mobility, lower boundary:- White line of Hilton
Lower Cutaneous Part	~8 mm	True pigmented skin	Sebaceous glands, apocrine sweat glands, hair follicles:- site of perianal skin tags

Musculature and Sphincteric Mechanism[11]

Anal Sphincters and Continence

The anal canal has two sphincters that work together to maintain continence.

1. Internalanalsphincter(IAS):

It is made of smooth muscle and works involuntarily. It remains tonically contracted and provides most of the resting anal tone.

2. Externalanalsphincter(EAS):

It is made of skeletal muscle and allows voluntary control of defaecation. It is supplied by the pudendal nerve (S2–S4).

The puborectalis muscle forms a sling around the anorectal junction and maintains an anorectal angle of about 90°. This angle supports faecal continence. Damage to the puborectalis, pelvic floor or sphincters can impair continence and cause faecal incontinence.

Blood Supply, Venous Drainage and Portosystemic Anastomosis[11]

The rectum receives blood from the superior, middle and inferior rectal arteries. The superior rectal artery arises from the inferior mesenteric artery, while the middle and inferior rectal arteries arise from the internal iliac and internal pudendal arteries, respectively.

Venous drainage forms an important portosystemic anastomosis. The superior rectal vein drains into the portal system, while the middle and inferior rectal veins drain into the systemic circulation through the internal iliac veins and IVC. This dual drainage is important in haemorrhoids, rectal drug absorption and the spread of pelvic malignancies. It also allows drugs absorbed from the lower rectum to partially bypass hepatic first-pass metabolism.

Peritoneal Relations

1. Upper one-third: Covered by peritoneum on the anterior and lateral surfaces.
2. Middle one-third: Covered by peritoneum only on the anterior surface.
3. Lower one-third: Not covered by peritoneum

Visceral Relations

1. **Anteriorly in males:** Upper 2/3 — rectovesical pouch, coils of intestine, sigmoid colon; Lower 1/3 — base of bladder, seminal vesicles, ductus deferens, prostate.
2. **Anteriorly in females:** Upper 2/3 — rectouterine pouch (Pouch of Douglas), coils of intestine, sigmoid colon; Lower 1/3 — lower vagina.
3. **Posteriorly:** Lower sacrum, coccyx, anococcygeal ligament; piriformis, coccygeus, levator ani; median sacral and superior rectal vessels; sympathetic chain with ganglion impar; pelvic splanchnic nerves (S2–S4).

Diagnostic Importance of the Anorectal Region

1.Indicator of Local Anorectal Diseases

Anorectal examination — comprises inspection, digital rectal examination (DRE), proctoscopy,Sigmoidoscopy and endoanal ultrasound. Local conditions directly diagnosed include:

- **Haemorrhoids** (internal and external) — graded I–IV on DRE and proctoscopy.
- **Anal fissure** : linear tear in the anoderm, most commonly posterior midline.
- **Fistula-in-ano** :Parks' classification identifies intersphincteric, transsphincteric, suprasphincteric, and extrasphincteric types.

- **Perianal abscess**: perianal, ischiorectal, intersphincteric, or supralevator locations.
- **Rectal prolapse, polyps, strictures, and anorectal tumours** : detected on inspection and DRE.

2.Early Detection of other diseases.

table 4

Direction of Examination	Structures Palpated	Diseases Diagnosed
Anteriorly Male	Prostate, seminal vesicles, base of bladder, ductus deferens	Benign prostatic hyperplasia; prostate carcinoma (induration/nodularity), seminal vesicle tenderness in prostatitis.
Anteriorly Female	Cervix, uterus, rectovaginal septum, posterior vaginal wall	Uterine fibroids, cervical carcinoma, rectovaginal fistula, endometriosis, ovarian cyst/tumour.
Laterally	Pelvic sidewalls, ischiorectal fossa	Pelvic appendicitis, salpingitis, ovarian pathology, pelvic abscess
Posteriorly	Sacrum, coccyx, anococcygeal ligament	Coccydynia, sacral tumours, pilonidal sinus tract.
Superior Peritoneal pouch	Rectovesical or rectouterine pouch	Peritonitis,ovarian cancer deposits, pelvic ascites.

Rectal Temperature — Gold Standard Core Measurement[12]

Rectal temperature is the gold standard for core body temperature assessment, reflecting internal body temperature more accurately than oral or axillary readings, typically 0.5–1.0 °C higher than oral. Clinical applications include:

- **Fever detection:** Rectal ≥38 °C (100.4 °F); hyperpyrexia ≥41 °C (105.8 °F). Preferred in infants, unconscious, or uncooperative patients.
- **Critical care monitoring:** Sepsis, heat stroke, hypothermia, cardiac arrest, and post-operative care: rectal probes provide continuous, reliable core temperature surveillance.
- **Heat stroke:** Rectal measurement is mandated as oral/axillary readings systematically underestimate severity.

Forensic Importance of the Anorectal Region

a)Post-Mortem Interval Estimation — Algor Mortis

Algor mortis — the progressive post-mortem cooling of the body following cessation of metabolic heat production — is most accurately measured via rectal temperature. The rectum, shielded from direct environmental contact, provides a stable, representative core temperature reading. The thermometer is inserted 8–10 cm into the rectum and left for 2–3 minutes before recording.

The Glaister Equation for post-mortem interval (PMI) estimation:

In °F: Hours since death = (98.4 °F − Rectal temperature) ÷ 1.5

In °C: Hours since death = (36.9 °C − Rectal temperature) × 6/5

Rectal temperature is commonly used in forensic medicine because it provides a more reliable estimate of the body's core temperature than oral or axillary measurements. It is useful for estimating the post-mortem interval (time since death). However, factors such as the surrounding temperature, body build, clothing, and the cause of death can affect the reading. Therefore, these factors should always be recorded along with the rectal temperature.

b)Forensic Anorectal Examination in Trauma and Assault

The anorectal region is a critical site of examination in cases of suspected sexual assault, physical abuse and penetrating perineal trauma. Forensic assessment evaluates:-anal sphincter tone, anocutaneous reflex(mediated by S3–S4),fissures, lacerations, contusions, mucosal tears and signs of healed prior injury. Anal reflex assessment is also a component of neurological evaluation in spinal cord injury, establishing level and completeness of deficit.

c)Rectal Specimens in Toxicological Post-Mortem Analysis

Type of Poison	Rectal Findings
Sulphuric acid	Black necrosis, sloughing, perforation
Nitric acid	Yellow staining and necrosis
Hydrochloric acid	Gray or brown necrosis, congestion
Caustic alkalis	Soft friable mucosa, perforation
Phenol	White leathery necrosis
Mercuric chloride	Severe congestion, ulceration, sloughs
Copper sulphate	Bluish-green mucosal staining
Phosphorus	Yellow necrosis, garlic odor
Alcohol enema	Congestion, erosions, chemical proctitis
Chloral hydrate	Congested, ulcerated mucosa
Opioids	Fecal impaction in rectum
Anticholinergics	Dry mucosa, fecal stasis
Organophosphorus compounds	Diarrhea, fecal soiling
Body packers	Drug packets, mucosal pressure, rupture

fig 1: rectal findings in different types of poisoning

Rectal contents are collected as specimens in post-mortem toxicological examination, particularly when gastric contents are unavailable or contaminated.

Therapeutic Importance :Basti Chikitsa and Rectal Drug Delivery

1.Basti Chikitsa — Ayurvedic Primacy of the Rectal Route[13]

आपाद तल मूर्धस्थान् दोषान् पक्वाशय स्थितः ।
वीर्येण बस्तिरादत्ते स्वस्थो अर्को भूरसानिव ।।(Cha.Si.7/64)

Just as the sun draws moisture from the earth through its energy, *Basti* acts from the *Pakwashaya*, draws out *Doshas* from the soles of the feet to the crown of the head. This verse establishes the systemic reach of rectal therapy, far beyond local evacuation.

मूलं गुदं शरीरस्य सिरास्तत्र प्रतिष्ठिताः ।
सर्वं शरीरं पुष्णन्ति मूर्धानं यावदाश्रिताः ।।(Prashara)

Guda is the root of the body,all the *Siras* (vessels) are anchored here and nourish the entire body up to the crown of the head. Here *Guda* is mentioned as root of the vascular system[14].

नाभिप्रदेशं कटिपार्श्वकुक्षिं गत्वा शकृद् दोषचयं विलोड्य,
संस्नेह्य कायं स पुरीष दोषः सम्यक् सुखेनैति च यः स बस्तिः ।।(Cha.Si.1/40–41)

Basti medicine reaches the umbilical region, waist, flanks and abdomen, loosens the accumulated faecal *Doshas*, lubricates the body and enables their comfortable elimination, this describes the mechanism of action of *Basti*.Here osmotic and lubricant enema pharmacodynamic principle takes place.

2.Rectal Drug Absorption :Modern Pharmacology[15]

The dual venous drainage of the anorectal region creates a pharmacologically unique route of drug delivery. Drugs absorbed from the lower rectum and anal canal enter systemic circulation via the middle and inferior rectal veins (IVC-systemic), bypassing first-pass hepatic metabolism. The rectal mucosa, a single layer of columnar epithelium with goblet cells permits passive diffusion of lipophilic drugs with systemic bioavailability comparable to intravenous administration.

table 5

Rectal Formulation	Drug Examples	Clinical Application
Suppositories	Paracetamol, diclofenac, glycerine, bisacodyl	Analgesia, anti-inflammatory, constipation — when oral route unavailable
Retention enemas/foam	Mesalazine, hydrocortisone enemas	Distal ulcerative colitis.
Rectal gels	Diazepam rectal gel	Seizure management in children, status epilepticus
Proctoclysis	Saline, electrolyte solutions	Palliative hydration when IV access unavailable
Rectal irrigations	Glycerine, phosphate, sodium citrate enemas	Bowel preparation, chronic constipation management

Surgical Importance of Anorectal region.

1. *Guda Marma* Preservation

Guda is classified as a *Sadyopranahara Marma* in Ayurveda. It is a vital region that should be protected during surgery. Modern colorectal surgery also focuses on preserving the muscles, blood vessels, nerves, and supporting tissues of the anorectal region. Injury to these structures can cause severe bleeding, faecal incontinence, urinary problems, sexual dysfunction, and other complications.

2. Major Anorectal Surgical Procedures[16]

- Total Mesorectal Excision (TME): The standard operation for rectal cancer. It removes the rectum and surrounding tissue while preserving important pelvic nerves. This reduces cancer recurrence and helps maintain bladder and sexual function.
- Sphincter-Preserving Surgery (SPS): Procedures such as Low Anterior Resection (LAR) and Intersphincteric Resection (ISR) preserve the anal sphincter.
- Stapled Haemorrhoidopexy: This procedure treats prolapsing haemorrhoids. It is performed above the dentate line, where pain sensation is minimal. As a result, patients experience less postoperative pain.
- Sacral Nerve Stimulation (SNS): This treatment is used for severe faecal incontinence. It stimulates the sacral nerves and improves sphincter function and bowel control.

Spiritual and Yogic Significance — Muladhara Chakra[4]

In Yoga and Tantric traditions, *Guda* is considered the location of the *Muladhara Chakra*, the first energy centre of the body. It is associated with stability, vitality, and the functions of *Apana Vayu*. Modern studies suggest that this region corresponds to the pelvic floor and the inferior hypogastric plexus, which regulate bowel, bladder, and reproductive functions.

table 6

Attribute	Description
Anatomical seat	Base of the spine, between the reproductive organs and anus (*Guda* and *Linga*); site of *Kundalini Shakti*
Form	4-petalled lotus; triangular *yantra* representing earth element stability
Colour / Element / Bija Mantra	Red / *Prithvi* (Earth) / *Lam*
Qualities	Joy, purity, integrity, groundedness, stability
Dosha correlation	*Apana Vayu*- governs downward-moving functions: defaecation, micturition, reproduction, parturition
Pathological imbalance	Diseases of the colon and anorectal region; elimination disorders; pelvic floor dysfunction
Awakening practices	*Garudasana*, *Shashankasana*, *Siddhasana*, *Malasana*; *Mula Bandha*; *pranayama*; *Dhyana*; chanting of *Lam*

Mula Bandha :- *Mula Bandha* is a yogic practice that involves contracting the muscles around the perineum and *Guda*. This action is similar to modern pelvic floor (Kegel) exercises. Both strengthen the pelvic floor muscles and improve bowel and bladder control. They are also used in the rehabilitation of faecal incontinence, recovery after childbirth, and prevention of pelvic organ prolapse.

***Guda* as *Sadyopranahara Marma*[3]**

तत्र सद्यो मरणम्। (Su.Sh.6/25)

Injury to the *Guda* can cause immediate death; therefore, it is classified as a *Sadyopranahara Marma*. *Marma* is formed by the confluence of 5 componenets such as *Sira* (vessels), *Mamsa* (muscle), *Snayu* (ligament/tendon), *Asthi* (bone), and *Sandhi* (joint).Presence of all these structures makes it a vital site..These structures in Anorectal region are as follows:

table 7

***Marma* Component**	**Modern Anatomical Correlate**	**Surgical Risk**
***Sira* (Vessel)**	Superior, middle, inferior rectal vessels; pudendal vessels	Catastrophic haemorrhage in rectal surgery
***Mamsa* (Muscle)**	Internal and external anal sphincters; levator ani; puborectalis	Faecal incontinence if divided
***Snayu* (Ligament)**	Anococcygeal ligament; Waldeyer's fascia; lateral rectal ligaments	Autonomic nerve injury in TME
***Asthi* (Bone)**	Coccyx; lower sacrum	Coccydynia; presacral haemorrhage
***Sandhi* (Joint)**	Sacrococcygeal joint; anorectal junction	Perineal approach complications

IV. DISCUSSION

- According to *Sushruta*, *Guda* and *Pakwashaya* are the *Mula* (root) of *Purishavaha Srotas* and are controlled by *Apana Vayu*. *Apana Vayu* regulates the downward movement of faeces. This closely corresponds to the modern concept of recto-anal inhibitory reflex and the voluntary-involuntary action between the internal anal sphincter, the external anal sphincter,puborectalis and the rectal ampulla, which must accommodate and sense stool volume before signalling urgency. Disorders of *Apana Vayu* produce symptoms such as *Anaha* (constipation/obstruction), which resemble modern anorectal disorders.Damage to the pelvic floor or loss of the anorectal angle can lead to faecal incontinence.So the concept of *Apana Vayu* reflects the coordinated neuromuscular control of defecation recognised in modern medicine.

Here the functional aspect of Guda is Carried out mainly by the Muscles of Anorectal canal..Hence *Acharya* have classified Guda as *Mamsa Marma*.

- The anatomy of Guda gives it important diagnostic, therapeutic, surgical, forensic and functional roles beyond defaecation. Its accessible location allows examination for haemorrhoids, fissures, fistulae, abscesses and other lesions. Digital rectal examination and endoscopy help detect rectal tumours, polyps, strictures and inflammatory diseases. Its rich vascular and lymphatic supply also helps in understanding drug absorption and tumour spread. The superior, middle and inferior rectal vessels support the use of the rectal route for drug delivery, while dual venous drainage allows partial bypass of hepatic first-pass metabolism.
- The deep pelvic location and relative protection from environmental changes make rectal temperature useful for assessing core temperature and estimating post-mortem interval. The close relationship of the mesorectal fascia, pelvic nerves, sphincters and puborectalis forms the basis of nerve- and sphincter-preserving colorectal surgery.
- In forensic medicine, the region also permits assessment of temperature, sphincter function, mucosal injury and toxicological samples. In yogic tradition, Guda is associated with the *Muladhara Chakra* and *Apana Vayu*. *Mula Bandha* involves pelvic floor contraction and has functional similarities to modern pelvic floor exercises. It may support continence, pelvic floor strength and postpartum rehabilitation. Thus, the anatomy of *Guda* supports its multidimensional importance in diagnosis, therapy, surgery, forensic medicine and pelvic floor function.
- *Guda* is classified as a *Sadyopranahara Marma*, a vital point where injury can be life-threatening. Rather than implying that every anorectal injury causes immediate death, this classification highlights the presence of important anatomical structures in this region. The anorectal area contains major blood vessels, muscles, nerves, ligaments, and bony support, all of which are essential for continence and pelvic function. The anorectal region has a rich arterial and venous supply through the superior, middle, and inferior rectal vessels, along with extensive vascular anastomoses. Injury to these vessels can result in severe and potentially life-threatening haemorrhage. Arterial injury is particularly dangerous because the higher intravascular pressure can cause rapid blood loss and haemorrhagic shock. Hence it can be considered as a *Dhamani marma*.
- Venous injury can also produce significant and prolonged bleeding, especially from the extensive rectal and pelvic venous plexuses. The portosystemic venous connection between the superior and middle/inferior rectal veins is clinically important mainly in portal hypertension, haemorrhoids, and rectal drug absorption rather than as a direct cause of fatal haemorrhage. Thus,

the rich vascularity of Guda contributes significantly to its clinical importance and supports the need for careful preservation of this region during surgery.

- The anorectal region has a rich arterial supply from the superior, middle and inferior rectal arteries. Injury to the deeper part of Guda can damage these arteries and cause severe arterial bleeding. As arterial blood is under high pressure, rapid blood loss can lead to hypovolaemic shock and death if untreated.*Sushruta* states that the increase and decrease of all *Dhatus* depend on *Rakta* (*Shonita*)[17]**.** Therefore, excessive blood loss causes *Rakta Kshaya*, leading to poor nourishment of the Dhatus, loss of strength and vitality, and ultimately loss of *Prana*. Thus, the rich arterial blood supply of *Guda* provides a possible anatomical explanation for its classification as a *Dhamani marma* and *Sadyopranahara Marma*[3]**.**

V. CONCLUSION

Guda is more than the organ of defaecation. It is having importance in functional,diagnostic, therapeutic, surgical, forensic and spiritual aspect. Its unique anatomy supports rectal drug delivery, forensic assessment and pelvic floor functions. As a *Sadyopranahara Marma*, *Guda* contains vital blood vessels, sphincters, nerves and supporting structures, injury to this region is life-threatening. Therefore, *Guda* should be carefully examined, protected and managed, as preserving this site of *Prana* is essential for maintaining life and function.

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