Anatomical Intervention in *Bhagandara Chikitsa*: Classical Insights and Modern Laser Application

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Abstract- *Bhagandara* (fistula-in-ano) is a chronic inflammatory tract of the *Guda* region described in detail in *Sushruta Samhita* and elaborated by *Dalhana*in *NibandhaSangraha*, with parallel conceptual insights in *Charaka Samhita* through *Chakrapani's* commentary. Modern management has evolved toward sphincter-preserving techniques such as laser-assisted fistula closure (FiLaC), which aim to eradicate the fistulous tract while maintaining anatomical and functional integrity of the anal sphincter complex.

This study presents a detailed Rachana Sharira–based anatomical analysis of laser intervention before, during, and after surgery, integrating classical Ayurvedic descriptions.

A comparative anatomical evaluation between Ksharasutra therapy and laser technique is also undertaken to assess tissue involvement, sphincter preservation, and healing patterns.

The integrative analysis reveals that laser therapy functionally corresponds to the Ayurvedic principle of controlled *Agnikarma* with *Marma* preservation, while offering superior anatomical conservation of sphincter structures. Thus, a combined classical–modern anatomical framework enhances surgical precision and supports evidence-based integration in the management of *Bhagandara*.

Key words - Bhagandar, fistula-in-ano, guda, laser treatment

I.INTRODUCTION

Classical Definition

"गुदप्रदेशेपिडकाभित्त्वानाडीरूपंप्रवर्तते स भगन्दरः।"

— *Sushruta Samhita, Nidana Sthana 4/3*

A suppurative swelling in the anal region which bursts and develops into a tract is called *Bhagandara*.

Dalhaṇa Commentary (*NibandhaSangraha*)

Dalhana explains:

"नाडीवद्गम्भीरमार्गेणगच्छतीतिनाडी।"

(Comm. on Su. Ni. 4)

It is termed Nadi because it travels deeply like a tubular channel.

This clearly correlates with the modern fistulous tract extending through sphincteric planes.

II.MATERIALS AND METHODS

Study Type - conceptual study

Comparative textual–anatomical analysis.

Primary Sources

- *Sushruta Samhita* with*Dalhaṇa commentary*
- *Charaka Samhita* with *Chakrapāṇi commentary*
- *Ashtanga Hridaya*

Modern References

- BD Chaurasia – Pelvis & Perineum
- Gray's Anatomy – Anal canal & pelvic floor

III.METHODOLOGY

Collection of data Ayurvedic Samhita and classical data

Stepwise anatomical evaluation of:

Pre-operative mapping

Intraoperative anatomical involvement

Post-operative healing anatomy

IV.DISCUSSION

Pre-Operative Anatomical Considerations

1. *Guda Rachana* (Anal Canal Anatomy)

"गुदंद्व्यङ्गुलपरिमितंत्रिवलीयुतम्।"

— Su. Sha. 5/7

The anal canal measures approximately two *angulas* and contains three folds.

Dalhaṇa Commentary
"वलयत्रयंस्नायुबन्धरूपम्।"
The three folds represent sphincteric muscular bindings.

Modern Correlation
According to BD Chaurasia & Gray's:
- Internal anal sphincter (smooth muscle continuation of rectum)
- External anal sphincter (voluntary skeletal muscle)
- Anal columns (Morgagni)

Preoperative laser planning requires:
- MRI fistulogram
- Identification of internal opening (usually at dentate line)
- Classification (intersphincteric / transsphincteric / suprasphincteric)

2. *Marma* Involvement
"गुदोनाममर्माणिमध्येस्थितम्।"— Su. Sha. 6
Dalhaṇa:
"अत्रक्षतेवेदनामलमूत्रविघातश्च।"
Injury here causes severe pain and disturbance in defecation.

Modern correlation:
- Pudendal nerve supply
- Inferior rectal nerve
- Risk of fecal incontinence

Laser therapy is designed to avoid sphincter damage → Marma preservation.

B. During Surgery – Detailed Anatomical Involvement
Modern Laser Procedure (FiLaC) – Stepwise Anatomical Intervention

Step 1: Identification of External Opening
Anatomy involved:
- Perianal skin
- Subcutaneous tissue
- Ischioanal fossa fat

Ayurvedic correlation: Meda dhatu involvement (*Charaka Sharira*7)

Step 2: Probing the Tract
Instrument passes through:
- Skin
- Superficial fascia
- External sphincter
- Intersphincteric space
- Internal sphincter

Dalhaṇa describes depth:
"मांसमेदोऽनुगतःस्रोतोमार्गः।"
The tract passes through muscle and fat layers.

Step 3: Laser Fiber Activation
Laser energy causes:
- Photothermal ablation
- Protein coagulation
- Tract shrinkage

Ayurvedic description:
"क्षाराग्निकर्मणादोषदुष्टमांसविनाशः।" — Su. Chi. 17
Dalhaṇa:
"अग्निनादुष्टधातुक्षयःशुद्धिर्भवति।"
Through controlled cauterization, vitiated tissue is destroyed and purification occurs.

Laser = Modern precise Agnikarma

Step 4: Closure of Internal Opening
Critical anatomical structure:
- Dentate line
- Internal sphincter
- Anal mucosa

Modern significance: Preserving sphincter integrity prevents incontinence.

C. Detailed Anatomical Structures Involved
Chart image 1

Structure	Ayurvedic term	Modern equivalent
Guda	*Guda*	Anal canal
Snayu	*Snayu*	Sphincter muscle
Meda	*Meda*	Ischioanal fat

Sira	*Sira*	Inferior rectal muscle
Nadi	*Nadi*	Fistula tract

D. Neural & Vascular Involvement
Nerve Supply
- Inferior rectal nerve (pudendal nerve branch)
- Autonomic plexus

Injury may cause:
- Incontinence
- Sensory loss
- Vascular Structures
- Inferior rectal artery
- Venous plexus

Laser advantage: Minimal bleeding due to coagulation.

E. Post-Operative Anatomical Healin
Ayurvedic Concept of *Vrana Ropana*
"शुद्धेव्रणेमांसोत्पत्तिःक्रमशः।"
— Su. Chi. 1
Dalhaṇa:
"ग्रन्थिशून्यंसममांसवृद्धिः।"
Healthy tissue develops gradually without nodular formation.

Modern equivalent:
- Granulation tissue
- Fibrosis
- Secondary healing

Chakrapani Commentary (*Charaka Samhita*)
On deep-seated suppuration:
"गम्भीरगतदोषाःकठिनचिकित्स्याः।"
(*Charaka Nidana*)
Chakrapani explains:
"यत्रस्नायुमांसमेदोऽनुगतत्वंतत्रदीर्घकालव्याधिः।"
When pathology involves muscle and fat layers, disease becomes chronic.
This precisely matches complex fistula.

Anatomical Zones in Laser Fistula Surgery
1. Intersphincteric Plane
Space between internal & external sphincter
Common fistula pathway
Laser preserves sphincter continuity

2. Ischioanal Fossa
Fat-filled wedge-shaped space
Allows spread of abscess
Ayurvedic *Meda dhatu* involvement corresponds.

Why Laser Is Anatomically Superior
Chart image 2

Parameter	Fistulectomy	Laser
Sphincter division	Yes	No
Marma injury Risk	High	Minimal
Bleeding	Moderate	Minimal
Healing time	Long	Faster

Laser aligns with Ayurvedic principle: "अल्पक्षतेनमहत्फलम्।"
Minimal injury for maximum benefit.

MRI Correlation and Anatomical Mapping
Magnetic Resonance Imaging (MRI) is considered the gold standard for preoperative fistula mapping due to its high soft-tissue resolution and accurate sphincter visualization [9].

MRI Anatomy of Anal Canal
According to Gray's Anatomy
Internal sphincter → Hyperintense ring on T2
External sphincter → Hypointense muscular ring
Intersphincteric space → Fat plane between sphincters
Ischioanal fossa → Fat-filled lateral space

Ayurvedic Correlation
Chart image 3

MRI structures	Modern anatomy	Ayurvedic correlate
Internal sphincter	Circular smooth muscle	Antar snayu
External sphincter	Voluntary skeletal muscle	Bahyasnayu
Intersphincteric Plane	Fat & connective tissue	Meda Mansa sandhi
Ischioanal plane	Fat compartments	Meda pradesh
Fistula tract	Epithelized channel	Nadi

*Dalhaṇa's*commentary:
"मांसमेदोऽन्तर्गतोमार्गः।"
(NibandhaSaṅgraha, Su. Ni. 4)
The tract courses through muscle and fat layers.
MRI directly visualizes what Dalhaṇa conceptually described.

Ayurvedic textual parallel:
"ऊर्ध्वंअधोवातिर्यक्गाच्छति।"
— Su. Ni. 4
The tract may extend upward, downward, or transversely.
Thus, classical descriptions anticipated spatial classification principles similar to Parks system.

Laser Mechanism
Laser causes:
- Radial photothermal ablation
- Protein coagulation
- Shrinkage without cutting
- Anatomical preservation:
- No sphincter division
- Minimal neural injury
- Reduced fibrosis

Detailed Surgical Anatomical Involvement
Structures at Risk During Laser
- External Anal Sphincter
- Internal Anal Sphincter
- Puborectalis muscle
- Inferior rectal vessels
- Pudendal nerve branches

Modern anatomy (BD Chaurasia Vol 2) confirms that sphincter damage >30% leads to incontinence [7]

Laser advantage:
Radial energy emission
360° circumferential ablation
Controlled depth (~2–3 mm)

Healing Anatomy
Laser induces:
- Coagulative necrosis
- Collagen contraction
- Gradual fibrosis

Ayurvedic reference:
"शुद्धेव्रणेमांससम्भवः।"
— Su. Chi. 1 [4]

Chakrapani commentary:
"दोषक्षयेधातुसाम्यं।"
With removal of pathology, tissue equilibrium is restored.
- Marma and Functional Anatomy

From *Sushruta Samhita, ShariraSthana*6:
"गुदमार्मक्षतेवेदनामलविघातः।"
Injury to Guda Marma results in severe pain and obstruction of defecation.
Dalhana:
"वातप्रकोपात्विबन्धः।"
Functional obstruction occurs due to *Vata* disturbance.

Modern equivalent:
- Sphincter spasm
- Neurogenic dysfunction
- Pudendal nerve irritation

Chronicity and Deep Tissue Involvement
From *Charaka Samhita, Nidana Sthana*:
"गम्भीरगतदोषाःदीर्घकालिनः।"
Chakrapani (Ayurveda Dipika):
"स्नायुमांसाश्रितत्वात्कठिनसाध्याः।"
When pathology involves muscle and ligaments, it becomes difficult to treat.
→ Reflects complexity of transsphincteric fistula.

V.CONCLUSION

Laser treatment of Bhagandara can be interpreted as a modern refinement of classical Ayurvedic surgical principles described by *Dalhana* and *Chakrapani*. It represents a contemporary application of the *Agnikarma* principle, utilizing controlled thermal energy to ablate the pathological tract while preserving surrounding healthy tissue. This sphincter-sparing approach safeguards *Guda Marma* and reflects *Dalhana's* concept of deep-seated tract pathology along with *Chakrapani*'s view of chronic muscular and fatty involvement.
From a *Rachana Sharira*perspective, successful outcomes depend on precise knowledge of the anal canal layers, the sphincter complex, vascular–neural

supply, and accurate spatial mapping of the fistulous tract. Modern MRI-based mapping combined with Parks classification allows exact localization of the tract in relation to the sphincters, closely correlating with classical descriptions of directional spread—*urdhva* (upward), *adhah* (downward), and *tiryak* (transverse). Thus, integrating classical anatomical wisdom with modern pelvic surgical anatomy enhances therapeutic precision and safety in *Bhagandara* management.

REFERENCES

Classical Ayurvedic Texts

[1] *Sushruta. Sushruta Samhita. Nidana Sthana, Adhyaya 4, Shloka 3–12. With NibandhaSangraha Commentary by Dalhaṇa. Varanasi: Chaukhambha Surbharati Prakashan; Reprint 2019. p. 280–285.*

[2] *Sushruta. Sushruta Samhita. ShariraSthana, Adhyaya 5–6. With Nibandha Sangraha Commentary by Dalhaṇa. Varanasi: Chaukhambha Surbharati Prakashan; 2019. p. 355– 372.*

[3] *Sushruta. Sushruta Samhita. Chikitsa Sthana, Adhyaya 1 & 17 (Bhagandara Chikitsa, Agnikarma). With Dalhaṇa Commentary. Varanasi: Chaukhambha Surbharati Prakashan; 2019. p. 397–404, 470–478.*

[4] *Dalhaṇa. Nibandha Sangraha Commentary on Sushruta Samhita. In: Sushruta Samhita (Chaukhambha Edition). Varanasi: Chaukhambha Surbharati; 2019. Relevant commentary under Ni. 4 and Chi. 17. p. 283, 472.*

[5] *Charaka. Charaka Samhita. Nidana Sthana, Adhyaya 8. With Ayurveda Dipika Commentary by Chakrapāṇi. Varanasi: Chaukhambha Sanskrit Series Office; 2018. p. 222–228.*

[6] *Chakrapāṇi Datta. Ayurveda Dipika Commentary on Charaka Samhita. In: Charaka Samhita (Chaukhambha Edition). Varanasi: Chaukhambha Sanskrit Series; 2018. Commentary under Nidana Sthana 8. p. 224–226.*

[7] *Vagbhata. Ashtanga Hridaya. Sutra Sthana, Adhyaya 30 (Agnikarma Vidhi). With Sarvangasundara Commentary by Arunadatta. Varanasi: Chaukhambha Orientalia; 2017. p. 406–412.*

[8] *Arunadatta. Sarvanga sundara Commentary on Ashtanga Hridaya. In: Ashtanga Hridaya (Chaukhambha Edition). Varanasi: Chaukhambha Orientalia; 2017. p. 408.* Modern Anatomy Textbooks

[9] Chaurasia BD. Human Anatomy. Volume 2: Lower Limb, Abdomen and Pelvis. 9th ed. New Delhi: CBS Publishers & Distributors; 2022. p. 289–312 (Anal canal, ischioanal fossa).

[10] Standring S, editor. Gray's Anatomy: The Anatomical Basis of Clinical Practice. 41st ed. London: Elsevier; 2016. p. 1179–1195 (Anal canal and pelvic floor).

[11] Snell RS. Clinical Anatomy by Regions. 10th ed. Philadelphia: Wolters Kluwer; 2019. p. 438–452.

Radiology and MRI References

[12] Buchanan GN, Halligan S, Bartram CI, Williams AB, Tarroni D, Cohen CR. Clinical examination, endosonography, and MR imaging in preoperative assessment of fistula-in-ano. Br J Surg. 2004;91(4):476–482.

[13] Spencer JA, Chapple K, Wilson D, Ward J, Windsor AC. MRI of fistula-in-ano: classification and surgical correlation. Radiographics. 1998;18(1):133–146.

[14] Sahni VA, Ahmad R, Burling D. Imaging of perianal fistulas. Clin Radiol. 2008;63(6):623–635.

[15] Parks Classification & Surgical Literature

[16] Parks AG, Gordon PH, Hardcastle JD. A classification of fistula-in-ano. Br J Surg. 1976;63(1):1–12.

[17] Garg P. Comparing existing classifications of fistula-in-ano in 440 operated patients. World J Gastroenterol. 2017;23(26):4841–4850.

[18] Garcia-Aguilar J, Belmonte C, Wong WD, Goldberg SM, Madoff RD. Anal fistula surgery: factors associated with recurrence and incontinence. Dis Colon Rectum. 1996;39(7):723–729.

[19] Laser (FiLaC) References

[20] Wilhelm A. A new technique for sphincter-preserving anal fistula repair using laser. Tech Coloproctol. 2011;15(4):445–449.

[21] Giamundo P, Esercizio L, Geraci M, Tibaldi L, Valente M. Fistula-tract laser closure (FiLaC): long-term results. Tech Coloproctol. 2015;19(8):449–453.

[22] Emile SH, Elfeki H, Shalaby M, Sakr A. Laser ablation for anal fistula: systematic review. Surg Endosc. 2018;32(9):3755–3768.
[23] *Ksharasutra& Ayurvedic Surgical Research*
[24] Deshpande PJ, Sharma KR. Treatment of fistula-in-ano by Ksharasutra method. Indian J Med Res. 1975;63(6):881–889.
[25] Gupta PJ. Ksharasutra therapy for fistula-in-ano. Int J Colorectal Dis. 2005;20(4):366–369.
[26] Singh V, Pathak VP. Ksharasutra therapy in anal fistula: clinical evaluation. AYU. 2012;33(1):29–35.
Additional Comparative and Anatomical Studies
[27] Rojanasakul A. LIFT procedure: a simplified technique for fistula-in-ano. Tech Coloproctol. 2009;13(3):237–240.
[28] Ellis CN. Outcomes with sphincter-preserving fistula surgery. Clin Colon Rectal Surg. 2016;29(1):50–57.
[29] Lindsey I, Smilgin-Humphreys MM, Cunningham C, Mortensen NJ. A randomized trial of fibrin glue vs conventional treatment for anal fistula. Dis Colon Rectum. 2002;45(12):1608–1615..