



Grahani Is Not A Duodenum

Dr.K.B.Hiremath , Phd

Prof/Hod Rachana Shareera Dept. Sjg Ayurvedic Medical College Kopal-583231
Karnataka.

Email ID :- kbhiremathphd@gmail.com

ABSTRACT:-

In this literature an effort is made to show and exhibit the position of *grahani* compared with modern anatomical structure by referring all the classics and sangrahas. *grahani* is pittedara kala and it is not a organ (duodenum).

Anatomical, physiological and pathologically in both Ayurvedic and modern It is came to know that *grahani* is not a duodenum it is lining epithelial membrane which is present in small intestine. Here the word *grahanath* *grahani* the food which holds for long period to help digestion and absorption. This *grahana* activity will be done by plicae circularis and villi. Which are present in the small intestine by increase the surface area of the mucosa layer in the lumen 8 times.

I hat's off to the knowledge of our ancient's without seeing microstructure of intestine they explained *grahanath* *grahani*.

KEYWORDS:- *grahani*, pittedara kala, kshudantra, amashaya, pakwashaya, duodenum, small intestine, Nabhi.

In many Ayurvedic text books it is written and it has been teaching to the UG and PG students that *Grahani* is a DUODENUM. But in this literature an effort is made to prove DUODENUM is not a *Grahani*. By referring many classical points which are available till today.

Review of literature on *Grahani*

This study begins by taking a note of all available definitions and descriptions of *Grahani* as a pittedharakala. *Grahana* means to hold food & makes area bigger for the digestion, absorption and metabolic events.

- ❖ According to Charaka *Grahani* is the seat of agni and it is situated above nabhi. It is not only the seat of agni but it is also supported and strengthened by agni and, it receives food.

“अग्न्यधिस्तान अन्नाशय ग्रहणात्ग्रहिणीमथः | नाभिरूपरिसाहग्निबलोपस्थम्भरुहिता ||

-च . चि 15/56-57¹

- ❖ Susrutha opines that “the sixth kala, is described as pittedharakala, and situated between amashaya and pakwashaya and it is named as *Grahani*”.

षष्ठी पित्तधरानामयाकलापरिकीर्तिता | पक्वमाशयमध्यस्थागृहणीसापरिकीर्तिता ||

Susr,sha -4/18²

- ❖ In view of Astanga Samgraha , “ the sixth kala namely, pittedharakala, is situated between Amashaya and Pakwashaya, receives and holds the food(*grahanam*). It is because of this, is called as *Grahani*”.

“षष्ठी पित्तधरापक्वमाशयमध्यस्था- - - | तथोसावन्थश्यग्रहणाथग्रहिणीसंज्ना ||”

- ❖ According to Astanga Hrudaya “Grahani” is the seat of pachaka pitta and it receives food. The dhanvanatari school of thought speaks of it as pittadharakala. It is situated at the place where pakwashaya begins. Its function is to retain the food in amashaya, for the duration of its proper digestion and to pass on the digested portion of food to pakwashaya”. *

“तदधिष्ठानमन्नस्यग्रहाणाद्ग्रहणीमता | सेवधन्वन्तरिमतेकलापित्तधराहया ||

स्थितापक्वाशयद्यारिभूक्तमार्गार्गलेवसा | भुक्तमामाशयेरुध्वासाविषाच्यनयत्यधः ||”

अ.शा.3-50/51⁴

- ❖ Sharangadhara says “pittadharakala or agnidharakala lies between the amashaya and pakwashaya”.
– शा शा 6-3⁶
- ❖ Vaidyakashabdasindhu defines Grahani as “agnivahadhamani”.
- ❖ Madhukosha defines it as agnyadhithananadi.
Various definitions and description of *grahani* is cryptic and brief ie, they are not descriptive. This has lead to considerable controversies as regards to the actual location of the structure described as *grahani* and the function it is stated to perform. The following are few examples, which will illustrate lack of unanimity, in the regard, among eminent modern authorities on Ayurveda.

1. Kavirajkunjyalalthisagaratna, in his English translations of susrutasmhita, has rendered susrutha’s description of pittadharakala as follows: The sixth kala, which has been described as pittadharakala (pitta containing sheath) is situated in between pakwashaya and amashaya, is called *Grahani*”. In so far as this authority has concerned it is seen that he is inclined to take the view that *Grahani* is duodenum.
2. Says Gananath Sen, in his prathyakshasharira that, by *grahani* it is understood that the first portion of the small intestine, which extends to above 12inches(duodenum). But in a foot note on the above, he writes that , in some ayurvedic literature , the mucosa of the entire small intestine stated as *grahani* and the same is described by susrutha as a pittadharakala.

“ग्रहणीनाम क्षुदान्त्रस्याध्यभागो द्वादशान्गुलमानः | ग्रहणीकद्म क्वचीतसमग्र ||

क्षुदान्त्राभ्यन्तरीयाकलामपिलक्षयतिवेध्यकग्रंथेषु , | सासोपित्तधराकलासंज्नासुश्रुतमतेनः → शु शा.4/18’

3. Anotherwell-known authority, Kavirajajothisha Chandra saraswati has identified *grahani* as pyloric orifices. Says the kaviraj“it is the opinion of everybody that the function of *grahani* is to guard the undigested food from the stomach entering into the pakwashaya, so *grahani* is pyloric orifices.
→ “*Ayurveda Mahasammelan Patrika*”, 1942, -Page-415.”
4. KavirajaD.N.Roy...as the view that *grahani* ,pittadhara kala and pittashaya, all indicate the same anatomical structure namely duodenum. → “*Principles of Tridosha*”, 1937, Page, 59, 94.”⁸
5. In the view of Dr.D.N. Banerjee, “*Grahani* means the whole of the small intestine, from pyloric sphincter to the ilio-cecalsphincter and it holds, byforce the food at the of pakwashaya”. “*Ayurvedic Sharira*”, D.N.Banerjee, Vol-1, Page-274.⁹
6. Dr.Ghanekar has identified pittadharakala as the mucous membrane of the small intestine. *SusruthaSharira 4, Page, 113, Ghanekar*,¹⁰
7. VaidyasreeR.R.patata has identified *Grahani* as duodenum. “*TridoshaTatwavimarsha*”, R.R.Pathaka, Page, 160.¹¹

8. One of our recent writers from Ayurveda, Kriyasharira, Shri Ranjith Ray has equated grahani as duodenum. “*Ayurveda KriyaSharira*”, R.Ray, Page,384.¹²
9. Another recent Ayurvedic writer Sri SudharshanaShastri appears to have been in dual mind that, he states from the point of view of the practical evidence furnished by modern physiology, grahani may be identified either as duodenum or as the small intestine. “*Madhavanidhana*”, Commentary by S.Shastri, Purvaadi Page, 150.¹³
10. In the English translation of Charaksamhitha edited and published by Sri.Gulabakunverba Ayurvedic society, Jamnagar, grahani has been translated as assimilation.

A careful analysis of the foregoing present for distinct views offered by modern authorities on Ayurveda viz,

- Grahani is pyloric orifices.
- Grahani is duodenum.
- Grahani is small intestine epithelial layer and
- Grahani extends from pylorus to ilio- Cecum including the two sphincters.
- Grahani extends from amashaya to pakwashaya

“*CharakaSamhitha*” by Shri GulabKunverba Ayurvedic Society, Jamnagar, Vol-5,Page, 56-57¹⁴

Ayurveda acharya prof||Dhamodar Sharma Gowda.M.M.S.srivaidyanathayurvedabhavan limited, great nagaroad nagapur-9. 1st-Eddition-1964 and 2nd Eddition-1979 - page no-48.....^{15(A)}

According to Ayurveda acharya prof||Dhamodar Sharma Gowda GRAHANI may be called as: Agnithana, agniadhithana, agnaashaya, anthrani, antrashaya, kshudrantra, kshudrantavayavagrahani, grahaninadi, tejapata, dahanashaya, pakwamashayamadyampachhamanashaya, pachakashaya, pittadharakala, pittashaya, purithat.

The anatomy, physiology and pathology of Grahani may be summarized as follows - According to Dr.Bynarjee

Anatomically Grahani is situated (1) above the nabhi (2) between the pakwashaya and amashaya (3) at the gate of pakwashaya (4) it is like a membrane (kalaa). Physiologically (5) seat of agni (agnyadhithanam) (6) receptor of food (7) it activates and suppresses the strength of the agni (8) forcibly separates and digests the undigested food (9) evacuates the fully digested food by side. Pathologically (10) evacuates the undigested food before being digested. All these indicate the seat of grahani to be in the small intestine.”

—by Dr.Bynarjee Dheku Ayurveda Sharira Prusta 282

(PARISHABDHASHABDHARTHASHARIRAM).^{15(B)}

ACCORDING TO THE MODERN ANATOMY:- Indrabir Singh’s Text book of Human Histology 7th edition¹⁶

In small intestine structure like plicae circularis (valves of Kerkring) are macroscopically visible, crescent-shaped folds of the mucosa and submucosa. Plicae circularis extend around one-half to two-thirds of the circumference of the lumen of the small intestine.

Characteristics of small intestine...

1. Are permanent structures i.e., their presence does not depend on the state of distension of the small intestine.
2. Are absent from the first few centimeters of the duodenum and the distal part of the ileum.
3. Are particularly well developed in the jejunum.
4. Increase the surface area of the mucosa 8 times.

“In man or the carnivore, the absorption of the constituents of a meal is practically complete by the time the food has arrived at the lower end of the ileum”.

MICROSCOPIC FEATURES:

The wall of the small intestine is made up of four layers – mucous, sub mucous, muscularis, serous. The serous and muscular layers correspond exactly to the general structure of alimentary canal. The sub mucosa is also typical except in the duodenum, where it contains the glands of brunner. The mucous membrane exhibits several special features that are described.

THE MUCOUS MEMBRANE:

The surface area of the mucous membrane of small intestine is extensive (to allow adequate absorption of food). This is achieved by virtue of the following.

- The considerable length of the intestine.
- The presence of numerous circular folds in the mucous
- The presence of numerous fingers like processes, or villi, that project from the surface of the mucous into the lumen.
- The presence of numerous depressions or crypts that invade the lamina proprea.
- The presence of micro villi on the luminal surface of the cells lining in the mucous.
- This mucous membrane which holds the food for long time ie, Grahani.

EVENTS IN THE GASTRO-INTESTINAL TRACT –

Shri Shiv CharanDhyaniGrahaniRoga Thesis^{17-(page no-16)}

In the stomach near the fundus, the outcome of the digestive juice production is dextrin, which is sweet. The consistency of the food, at the stage, is pasty and frothy. This step can be aptly described as MADHURABHAVA and, the place where it occurs, (cardiac and the fundus of stomach) as amashaya. Further digestion of sugar is arrested by Hcl, then commences the protein digestion under the influence of Hcl. and the enzyme pepsin, which results in the conversion of insoluble proteins into soluble peptone. The gastric which digest in this stage is known as acidified chyme. This stage of digestion can be appropriately described as AMLABHAVA and the stage of digested material as pakwaapakwa, for the food at this stage is only partially digested. In other words it awaits further digestive changes in the subsequent phases of digestion, in the small intestine. As the acidified chime, which is passed down in small quantities, to the duodenum through the pylorus comes in contact with the Mucosa of the duodenum, this stimulates the secretions of the member of intestinal secretions of the mucosal glands of this area.

Susruta has summed up the main functional of the division of the mahasrotas as amasthana(corresponding to kaphasthana), agnisthana(corresponding to the sthana of pitta) and pakwasthanana(corresponding to vaatasthanana).

It was stated above, that the identification of grahani as the pyloro-enteric mucus membrane in general. From a careful appraisal of some of the specific functions performed by *grahani* , it is seen that certain parts of it assume special importance. For example, Susruta observation quoted by vagbhata in his AstangaHrudaya that “Grahanath*Grahani* math’ because it retains the food for the duration of its digestion pittadhara kala is known as *grahani*. Secondly charaka has noted that *grahani* is situated above nabhi. The term nabhi carries many meanings like umbilicus, diaphragm, heart, umbilical region and koshtanga. Proceeding on this basis, *grahani* cannot be considered as the organ above the umbilical region.

Regarding the pachana and sarakittavibhajana, it should be noted that under the influence of pachakaagni, the digestion of the food eaten, is completed in the kshudrantra, resulting in the food being rendered increasingly fluid and the formation of food solution (ahara rasai.echyme).It may be noted from modern

physiology, that indigestible materials are suspended in it. It is also seen that the absorption of organic nutrients takes place, predominantly, in the upper part of the small intestine. Absorption has been shown to be carried by active, selective and energy consuming membrane, those of the lining cells villi diffusion of the basic nutrients in the gut wall has been shown to play in minor role, if ever it occurs, at all. The process of absorption is largely due to the vital activities of the cells which lines the *grahani*. Monosaccharide's, amino acids, fatty acids, glycerine, colloidal, fat, droplets and vitamins, are gradually removed from the food solutions. The process of stay of the food and absorption has been shown to be completed during the 4th to 8 hours, in the small intestine. The food material which stays for 4-8hours in small intestine proves physiologically as, Grahanathi.e holding and absorption of food.

IN THE TREATMENT OF KAYAAGNI

In this connection the following facts may have to be carefully considered. The treatment of the diseases included under the purview of kayachikitsa revolves around antaragni". Hence, considerable importance is attached to anataragni. Grahani has been stated by charaka to be the seat of agni and he has given a vivid description of this structure, the digestion, absorption of food, bhootagnivyapara and so on. However he has not included this important structure as one among the kostangas. Since, it has been stated that nabhi, like grahani, is situated between the amashaya and pakwashaya. The probability of these two terms being synonymous has to be considered.

सिराभिराव्रतनाभिश्चकणाभिरिवारकसु.शा. ७ -३, ¹⁸

GRAHANI ROGA (*Tropical sprue-tropical Diseases*"-'Manson & Bahr' – page 571, 1952 Eddition)¹⁹

In cases of grahani-roga diagnosed by modern medicines as *tropical sprue*, in which there is usually the atrophy of the small bowel so as to render it almost diaphanous. Ulceration and erosion of the ilium have been described by Manson and Bahr. Mackie, Fairley and Thyssen showed that the destruction of the intestinal villi is secondary changes.

The main lesions are thinning and atrophy of the mucus membrane of the absorptive and secretory epithelium with some shrinkage of the villi.

Grahanidosha may represent functional disturbance and grahaniroga changes in the structural of grahani.(lining of epithelial of small intestine).

DISCUSSION:-

With the above points the identity of grahani has been a subject of considerable difference of opinion. The difference appears to be due to the anatomical landmarks described in the samhithagranthas and sangrakaras indicate the region of grahani, which have many meanings, have been used in such descriptions. It will, therefore, be necessary to narrow the difference by determining the landmarks relating to the location of this structure.

1. Grahani has been stated to be situated between the amashaya and pakwashaya.
2. *Grahani* is not a kostanga according charaka, susruta and vagbhata.
3. According to vagbhata ,nabhi, which is one the kostangas, is a main seat of pitta. "*Ch.Sha. 7-12*" ²⁰
4. According to the samhita reference Nabhi can be called as following organs
 - (*Nabhi as umbilicus acc to →ast, sangr-shar-8.*
 - *Nabhi as diaphragm, acc to →susr, ni- 7-23.*
 - *Nabhi as heart, acc to →susr,shar. 15-39, ast, sangr. Sha-5/330.*
 - *Nabhi is representing the umbilical region, acc to →sha.pu-sha- 5/43.*
 - *Nabhi representing a centre, acc to →sus, shar-9/2.*
 - *Nabhi standing for a kostangas acc to →cha, chi-5/8).*

5. Bhela has included nabhi among kostangas and has described it as the main seat of jataragni. -- "*V.Sha. 3-12*".²¹
6. Susruta has included agnithana as one of the kostangas and located it between amasthana and pakwasthana.
7. Vagbhata has described nabhi's location between amasthana and pakwasthana.
8. The above explanation will support that nabhi and agnithana which are also known as the grahani.
9. *Grahani* is a kalaa (pittadharakalaa acc to susr,sha -4/18).
10. *Grahani* lies in between amashaya and pakwashaya acc to Astangasamgraha-sha -5.
11. *Grahani* is a mucous of the entire small intestine is described by Susruta as pittadharakalaa -- Gananathsen →su, sha. 4/18.

It was stated above, that the identification of *grahani* may be the pyloro-enteric mucus membrane in general. From a careful appraisal of some of the specific functions performed by *grahani*, it is seen that certain parts of it may assume special importance. For example, Susruta observation quoted by Vagbhata in his *astangahridaya* that "*Grahanathagrahanimathaa*" because it retains the food for the duration of its digestion because of presence of plicae circularis & villi (pittadharakalaa) increases the surface area of mucosa 8 times which can be called as *grahani*".

Thus the entire small intestine commencing from the antrum of the stomach including duodenal sphincter and ileo-caecal sphincter represents the total entity as *Grahani*.

It may, however, be noted that, due to various existing factors or nidana of *grahani-roga*, the portion of the *annavahasrotas*, known variously as *grahani*, *pittadharakala*, *nabhi*, *pittashaya*, *pachyamanashaya* and *kshudrantra*, becomes impaired, involving the dusti of *pachakagni* and *vaishamya* of *samanavayu*. The term *annavahasrotas* used here, includes not only the gastro-intestinal tract, but also the *sukmasrotamsi*, that compose the *kalaa*, which lines the inside of the *kshudrantra* (lining epithelial of small intestine).

CONCLUSION:-

By considering all authors view about *GRAHANI* (pittadharakala) which is nothing but lining epithelial of intestine. This layer helps for digestion and absorption. The plicae circularis plays very important role to hold make the area 8 times more distension and helps for *Grahana* (*GrahanathGrahani*).

Pittadharakala is agnithana and is also called *agnaashaya* and *kshudantara*, *pakwaamashayamadhyam*. *Pittadharakala* is nothing but where the *pachaka pitta* secrets.

Acc to Chakrapani adhoamaashaya means small intestine upto ileo-cecal junction. *Grahani* means small intestine. ("*Pittasthaneshu amaashayeti amaashayadhobhaga*")

Acc to susrutha *pittadharakala* is present in *amashaya* and *pakwashaya* means it is an epithelial layer present in stomach and small intestine and cecum and ascending colon.

Sharangadhar says "*Pittadhara kala* lies between *amashaya* and *pakwashaya*".

Dr.B.N.Bynarjee "*Grahani* means the whole of small intestine".

As per the *grahaniroga* / Tropical Spure. Usually atrophy of small bowel ulceration and erosion of the ileum or destruction of the internal villi or secondary changes.

It may be stated that in general *grahani* may represent the function of small bowel in ileum or changes in the structure of small intestine.

Grahani is not a kostanga by three main authorities, Charaka, Susruta, and Vagbhata.

Above Nabhi (*Nabhirupari*) is not a seat of duodenum. *Nabhi* means umbilicus, diaphragm, heart, umbilical region, centre point, kostanga as per reference.

By considering all above points *grahani* is not duodenum it may be lining of epithelial of small intestine.

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