A DETAILLED CADAVERIC STUDY ON GUDA MARMA WITH RESPECT TO ITS SURGICAL ANATOMY THROUGH DISSECTION

Deepak Singh *, Khan Shazia Islamuddin
Jeevan Jyoti Ayurvedic Medical College, Aligarh, Uttar Pradesh, India

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ABSTRACT

Ayurveda is an ancient science which deals with theoretical and practical knowledge with help of cadaver, structural and functional activity. In various Ayurvedic textbooks mention Marma (vital points of the body) which is a vital part of the body. Ayurveda is an ancient science which deals with theoretical and practical knowledge with help of cadaver, structural and functional activity. The detailed knowledge of Marma (vital points of the body) is important from the surgical point of view. Surgical procedures like Agnikarma (thermal cauterization), Kshararharmac (therapeutic application of caustic material), Raktamoksha (bloodletting), etc. are used as a part of the surgery. The aim of this study is to reconstruct the concept of Guda Marma in the light of current knowledge and studied the applied aspect of Guda Marma. Cadaveric study was done in 5 human cadavers to visualize all the structures (muscles, artery, vein, nerve, etc.) of Guda (Anus) Pradesha (Anorectal region) in terms of Ayurvedic sciences and Modern Medical Sciences. The exact location, regional anatomy as well as applied aspect of Guda Marma in terms of surgery were analyzed and correlated with modern sciences. Guda (Anus) is the seat of Prana (the breath of life) and it has regarded as one of the ten Prana (the breath of life) yatan. Guda Marma is one among the Mamsa (Muscular tissue), Sira (blood vessels), Snayu (nervous tissue), Asthi (Bone) and Sandhi (Joints). The importance of this region can be assessed by the fact that two of the diseases of Guda (Anus) (Ansha and Bhagandara) have been considered as Mahagada. Guda Marma is the vital organ or site of the human body having a rich blood supply which correct knowledge and applied aspects concerning anorectal injuries and disorders is essential.

Keywords: Marma, Guda, Anal Canal, Ayurveda.

INTRODUCTION

The science of Marma (vital points of the body) is an integral part of all the Vedic sciences that emerged in India in ancient times. The close observation of Vedic Literature reveals that the first reference to Marma (vital points of the body) can be traced out in Rigveda1. Warriors were advised to protect the vital parts of their bodies before going to the battlefield to come back victorious without any harm to their Marma (vital points of the body) Sthanas. All acharyas are accepted a total number of Marma (vital points of the body) in 107. According to Sushruta, Marma (vital points of the body) is a conglomeration of anatomical structures namely Mamsa (Muscles), Sira (blood vessels), Snayu (ligaments and nerves). Asthi (Bone) and Sandhi (Joints)2.

Acharya Charaka gave much importance to the Tri Marma (vital points of the body), these are Shira (head) Hridaya (cardiac area), and Basti (hypogastric area) by keeping the physician in mind, he also mentioned that according to the surgeon point of view, the total numbers of Marma (vital points of the body)’s are 107 in Siddhi sthana3. Acharya Charaka also considered these three Marma (vital points of the body) in Ten Prana (the breath of life) yatan4 which showed the importance of Marma (vital points of the body) since ancient times.

Meaning of Marma (vital points of the body)

According to the Sanskrit dictionary of Sir Monier William and Macdonell etymologically the word Marma (vital points of the body) denotes mortal spot, vulnerable point, weak or sensitive point of the body or secret, mystery, excessively poignant or painful. Each letter of the word Marma (vital points of the body) has got specific meaning. “Ma” means Prana (the breath of life) or Vayu (air element).

Acharya Charaka has opined that the Marma (vital points of the body) is the vital part and the seat of Prana (the breath of life) in the body. It is the site of Chetana (consciousness), so the sense of pain will be more in this region compared to other parts of the body.

Acharya Sushruta has defined Marma (vital points of the body) as the anatomical site where Mamsa (muscular tissue), Sira (blood vessels), Snayu (nervous tissue), Asthi (osseous tissue), and Sandhi (joints). The Prana (the breath of life) is specifically situated in these Marma (vital points of the body). Hence a trauma to any one of these Marma (vital points of the body) leads to a physical disturbance per their types5.

Guda (Anus) Sharir

The word Guda (Anus) is at times used for both i.e., end part of the digestive system and the end part of the urinogenital system. Thus, the chief site of Apana Vayu (air element) is Guda (Anus)6. The door of the expulsion of faecal matter is known as “Guda (Anus)”

Formation of Guda (Anus)

In Sharir Sthana, Sushruta Acharya states that the most Sara part of Rakta and Kapha (doṣha responsible for regulating body fluids and keeping the body constituents cohesive) is digested by Pitta (doṣha responsible for regulating body temperature and metabolic activities) with the help of Vayu (air element)7. This process is
completed in the uterine life and the ‘Guda (Anus)’ is formed. Charaka Acharya has described that Uttar Guda (Anus) and Adhār Guda (Anus) are derived from the maternal source7.

**Functions of Guda (Anus)**

The important function of Guda (Anus) is the excretion of Vāyu (air element) and faecal material9. This function is controlled by Apan Vāyu (air element) (one of the five subtypes of vāta (vāyu), situated in the pelvic region) with the help of three valise of Guda (Anus). The Pravahini forces the stool downward; the Visarjani relaxes the anorectal muscles and thus performs excretion of the faeces. The Samvarani closes the anal orifice after the faecal column has been cut by the action of Visarjani7.

**Guda (Anus) as Marma (vital points of the body)**

According to Sushruta10, Guda Marma which is situated in Sthulaṇa (large intestine) performs the function Vātu (flatus) and Mala (faeces) excretion is called Guda Marma. If it is injured then goes to sudden death, this shows the importance of Guda (Anus). Guda (Anus) is mainly formed by Mansa dhatu (muscle tissue). Sushruta11 and Ashtanga Samgrahakar12 have considered Guda Marma as Mamṣa Marma (mamsa predominant point) while Ashtanga Hridayakar13 considered it as a site of Dhāmni Marma (dhāmni predominant point). Sushruta14 and Ashtanga Hridayakar15 both have described its dimension as equal to the palm of that person in size (one’s own folded palm).

**Importance of Guda Marma**

In Chikitsa Sthana Sushruta has enumerated the following eight vital parts (Included Guda (Anus) of the body16. He further stated that unskilled surgeons without considering the above eight vital parts may kill many persons, so these eight vital parts should be avoided from injury during surgery.

As Marma (vital points of the body) is a vital part of the body, the anal canal can grossly be considered as Guda Marma. According to Sushruta, injury to Guda Marma results in the instant death of a person i.e., Sadhya Prana (the breath of life) hara. The instant death due to injury in this region can be possible under two conditions Vasovagal attack & Hypovolemic shock as while doing any Surgery its location and its anatomical structures are to be protected from any type of injury or trauma. So, this cadaveric study was done to give some fruitful outcomes for surgeons and physicians.

**Aim & objectives**

- To find the exact location of the Guda Marma on described in Ayurveda & contemporary science.
- To correlate Ayurvedic science with modern science with the help of dissection.

**MATERIALS AND METHODS**

A literary and conceptual study was done by collecting data from the Brihatayee, Laghumayees, and other classical books including journals, internet websites, previous work done and correlated, analyzed with the knowledge of contemporary science on the subject. Dissection of the Guda Marma Sthana was carried out on five cadavers in Rani Dullaiya Smriti Ayurveda P.G. College & Hospital, Bhopal as per Cunningham’s Manual of Practical Anatomy Book. Observations were analyzed and co-related in the view of Ayurvedic description of Guda Marma with Special reference to Modern science.

**Cadaveric study**

**Selection Criteria**

Observation of surface and regional anatomy on cadaver dissection and correlated with the Sharir of Marma (vital points of the body) in the Guda (Anus)-Pradesh (Anorectal region) of the 5 human cadavers was used as explained in Ayurveda classics. This study was done to visualize all the structures (muscles, artery, vein, nerve, etc.) of Guda (Anus) Pradesh (Anorectal region).

**Table 1: Instrument used for the cadaveric study**

<table>
<thead>
<tr>
<th>The instruments used for dissection</th>
<th>An instrument used for Measuring Anguli Praman</th>
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<tbody>
<tr>
<td>Scalpel</td>
<td>Measuring Tape</td>
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<td>Toothed and plain forceps</td>
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<td>Mallet</td>
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**Figure 1: Dissection of anal canal**

**Figure 2: Anal canal**

**Figure 3: Measurement of Anal Canal**

**Figure 4: Vertical Section of anal canal**
RESULT

The exact location of the Guda Marma

Guda Marma is attached to Sthlulantra (large intestine) and serves as the passage of vata (flatus) and mala faeces. Measurement of Guda (Anus) is four and half Anguli Praman. The rectum begins as a continuation of the sigmoid colon at 3rd sacral vertebra and ends by becoming continuous with the anal canal at the anorectal junction. The rectum is 12 cm long. The upper part has a diameter of 4 cm, and the length of the anal canal is 4 cm. It extends from the anorectal junction to the anus. Considering Modern Anatomy Guda Marma includes the whole of the anal canal and lower part of the rectum.

Sushruta & Vagbhatha point of view about Guda Marma

Guda (Anus) is a Mamsa Marma (vital points of the body) as it is soft and having a lot of muscular tissue. At the same time, it is also rich in blood supply and a site of “portosystemic shunt” which is a vital part of the portal circulation. So that both Sushruta and Vagbhatha seem to be correct from their perspectives.

Sushruta has considered Guda (Anus) as Mamsa Marma (vital points of the body) an injury to it can cause sudden death. This observation of Sushruta appears to be partially correct because injury to the muscles around the Guda (Anus) may damage the Sympathetic (L1 and L2) and Parasympathetic (S2, S3, and S4) nerve through the superior rectal and inferior mesenteric hypoglossal plexuses. Any injury to this area may cause severe pain and shock leading to death. Vagbhatha’s observation that the Guda (Anus) is Dhammi Marma (vital points of the body) and injury to it may cause bleeding leading to unconsciousness and death is also true because there may be profuse bleeding from the rich venous plexuses around the Guda (Anus) and artery supplying superior rectal artery is a direct continuation of the inferior mesenteric artery (systemic artery).

Regional Anatomy of Guda Marma

Prominent structures present in this area are anal canal, rectum anal sphincters, pelvic diaphragm, pararectal fossa, rectal pouches, peritoneal folds, and its contents, these structure blood vessels seen to be more vital as they form a portosystemic anastomosis. Bony or cartilaginous support is not available against which the blood vessels can be compressed to arrest the bleeding. Loose tissues and space are present around them the possibility of perforation due to injuries through the wall into surrounding peritoneal space is also important.

In Modern Anatomy boundaries of this area can be appreciated as follow:

Anterior: Perineal body, Posterior: Tip of the coccyx, On each side: Ischial tuberosity. Thus, the area covered by the lines joining these points can be assuming das area of Guda Marma.

Surgical applied aspect of Guda Marma

Guda (Anus) is an important Marma (vital points of the body) i.e., vital spot so it is important to consider it during surgical processes for diagnosis of disease and performing surgery, a surgeon must know various organs and structures of the body because of their anatomy and physiology. Ano-rectal diseases are very common nowadays due to changing trend of diet and lifestyle in peoples. The basic understanding and knowledge of modern surgical or applied anatomy of the anal canal and rectum is necessary to solve the issue of present-day anorectal diseases.

Arsha in the classics comes under the heading of Mahagada. According to Sushruta, Arsha originates from valis of Guda (Anus). Arshas which have their origin from Samvarani and Visarjani valis are comparatively easy to treat, but Arsha originating from Pravahani Vali are difficult to treat and are more likely to be incurable.

In acute fisure only anal canal skin is broken, radiating longitudinal fibers will be seen in the floor of the fissure, and these unstriped muscle fibers are derived from the fibers of the conjoint longitudinal muscle which have traversed the lower end of the internal sphincter. In chronic fissure longitudinal fibers disappear and fine white circular fibers appear across the floor of the fissure. Fissurectomy or sphincterotomy is mainly needed in a fissure in ano. Therefore, a good knowledge of its anatomy and recognition of the sphincters, anal canal, and rectum is very important.

Guda Marma and Basti Treatment

Basti of niruha kashaya or medicated oil is given into the anal canal & rectum. The lower segment of the rectum is absorbive. Hence Guda (Anus) plays an important role in the absorption and uptake of medicines of Basti. Guda (Anus) is one of the Sadhya Prana (the breath of life) hara Marma (vital points of the body). A sharp Basti netra can injure Guda (Anus) leading to a wound and sometimes can lead to vasovagal shock, trauma to the anorectal region may lead to peritonitis, internal hemorrhage, septicaemia, toxemia, shock, etc. Hence called Sadhya Prana (the breath of life) hara Marma (vital points of the body). Charaka Acharya included Guda (Anus) in Dasha Prana (the breath of life) yatana [important seats of Prana (the breath of life)]. That means the ‘Prana (the breath of life)’ seated on these Ayatanas, and any trauma or vidhdhata to these Ayatanas leads to death.

Correlate the Ayurvedic science with Modern science

Considering as per modern anatomy length of the anal canal is maximum up to 4 cm so can correlate Guda Marma described in Ayurvedic Literature includes the whole of the anal canal and lower part of the rectum. Because the measurement of one angula is approximately 1.5-2 cm in breadth. On this basis, the length of Guda (Anus) is 7.0-9.0 cm.

Predominantly Guda (Anus) is a muscular part. Spinhincter ani internus and externus, as well as levator ani muscles, are related to it, therefore Sushruta has mentioned it as Mamsa Marma (vital points of the body), but its viddha lakshana is given as sudden death. Death occurs due to damage of blood vessel plexus, portosystemic shunt, and nerve plexus which are present around there and in the wall of the anal canal, therefore Vagbhatha has mentioned it as Dhammi Marma (vital points of the body).

Sushruta mentioned that Guda (Anus) is consisting of three valis. During dissection, it is observed that Samvarani first vali lies at 1 angula (1.5-2 cm) from the anal margin (Anus) i.e., almost at the level of the dentate (pectinate) line. Visarjani is ½ angula above Samvarani, i.e., almost at the level of the anorectal ring or Inferior Houston’s valve similarly, Pravahani is ½ angula above Visarjani, i.e., almost at the level of Middle Houston’s valve.

DISCUSSION

Guda (Anus) is one of Sadhya Prana (the breath of life) hara Marma (vital points of the body)17 which is situated in the terminal part of Sthlulantra and categorized under Mamsa Marma (vital points of the body)11. Acharya Vaghbhatta13 has mention Guda (Anus) as Dhammi Marma (vital points of the body). The
seat of Prana (the breath of life) consists of agni, soma, Vayu (air element), sattva, rajas, tamas, Panchamahabhuta and jivatma.18,19

He has also said that Gada (Anus) is attached to Shulatura and functions as an evacuator of faeces & flatus. Injury to this would lead to immediate death, still, we see those diseases like Arsha, Bhagandara, Gada (Anus) bhrasna etc. are treated with Agni & Kshara karma in Ayurveda.20-21. Agni karma & Kshara karma are contraindicated in Marma (vital points of the body) Sthan. In the treatment of Gada (Anus) bhrasna, Acharya Sushruta has told to apply Kshara directly with the finger, maybe for proper accuracy of application only on the diseased area shows the importance of Gada Marma. For Abhyantara Arshas, he has been told to apply Kshara only after the introduction of arsho-Jantra. So that the normal Gada (Anus) area is safe from Kshara. Again, for the proper surgical approach of Bhagandara, Nadivrana, proper Gada (Anus) Sharir knowledge is needed. Hence, all these proved the importance of Gada Marma.

During the times of Acharyas, vasovagal shock due to pain during surgery must have been a common cause of sudden death so considered as Sadhya Prana (the breath of life) hara Marma (vital points of the body). Although traumatic lesions involving the anal canal, rectum, perineum, and anus are uncommon but difficult to treat.

CONCLUSION

Gada Marma is the vital organ or site of the human body having a rich blood supply which correct knowledge and applied aspects in terms of Ayurveda and modern parameters is essential for the treatment of anorectal diseases which are more prevalent nowadays due to intake of faulty food habits and lifestyle.

REFERENCES


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