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# A Comprehensive and Conceptual Study on Kalanthara Pranahara Marma of Uras

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## ABSTRACT

The detailed explanation of Marma is available in Bruhatrayee. There are 107 Marma mentioned by Acharyas, description of which is given in the classics. Based on Vikalpa the Marmas are classified into 5 types, injury to which leads to death or disabilities. Kalanthara Pranahara Marma is total 33 in number and predominant of Agni and Soma mahabhuta.

Kalantara Pranahara Marma of Uras is Stanamoola, Stanarohita, Apalapa and Apastamba. Although the Sthana and the Viddhalakshana of these Marma are explained in the Samhita, detail description of particular structures present in Stanamoola, Stanarohita, Apalapa and Apastamba Marma region are lacking in ancient texts. Objectives of this study were to make a comprehensive and conceptual study on Kalanthara Pranahara Marma of Uras as mentioned in text and to critically analysing the consequence of injury to these Marma as well as the reasons leading to gradual death in comparison with contemporary science through literary review. So Literature related to Kalanthara Pranahara Marma of Uras was collected and Dissection of 4 cadavers was carried out in the region of Kalanthara Pranahara Marma of Uras for better understanding.

**Key Words** Marma, Kalanthara Pranahara Marma, Vidhalakshana

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## INTRODUCTION

Ayurveda the science of life can be found in the Vedic period, around 5000 BC. Ayurveda focuses on preserving a person's overall health, including their bodily, mental, and spiritual well-being. Despite the importance of every body part, there are certain locations known as *Marma* that are crucial. *Marma* is the point where there is conglomeration of *Mamsa*, *Sira*, *Snayu*, *Asthi* and *Sandhi*. It is the place where *Prana* resides<sup>1</sup>. *Marma* is the site which is painful, tender and

show unbearable throbbing after getting afflicted with an injury<sup>2</sup>. Any injury to these leads to death or deformities. Concept of *Marma* was first introduced in Charaka Samhitha in the context of *Trimarmeeya Siddi*.

*Kalanthara Pranahara Marma* are 33 in number<sup>3</sup> among which 8 are located in the *Uras*. They are *Stanamoola* (2), *Stanarohitha* (2), *Apalapa* (2) and *Apastamba* (2) and predominant of *Agni* and *Soma Mahabhuta*<sup>4</sup>. Due to dominance of *Jala Mahabhuta*, death occurs gradually and it

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becomes fatal after a period of time that is within 15 to 30days<sup>5</sup>. Among them *Stanamoola*, *Apalapa*, *Apastamba* are *sira marma* and *Stanarohitha* is *mamsa marma*<sup>6</sup>.

### AIMS AND OBJECTIVES

- To know the regional anatomy of *Kalanthara Pranahara Marma* of *Uras* by means of cadaveric dissection.
- To critically analyse the consequence of injury to these *Marma* as well as the reasons leading to gradual death in comparison with contemporary science through literary review.

### METHODS OF COLLECTION OF DATA

1. Literature related to *Kalanthara Pranahara Marma* of *Uras* will be collected from the Bruhatrayee, Laghutrayee, all literary works, books and journals including all published materials on the concept related to the subject.
2. Critical analysis of *Kalanthara Pranahara Marma* of *Uras* will be done with the help of cadaveric dissection.

### OBSERVATION

The dissection is carried on 4 male cadavers. The gross location of *Marma* in the pectoral region was identified and procedure was carried out layer by layer and structures were observed and studied.

### MARKING AND INCISION

#### STANAMOOLAMARMA

Location- on either side of the chest, 2 angula below the *Sthana*<sup>7</sup>.

2 finger below nipple, a circular marking done with 2 angula diameter.

The pectoral region was dissected in the region of *Stanamoola marma* layer by layer in order to see the structures which come under this area. First skin removed. Below, superficial fascia contains moderate amount of fat along with cutaneous nerves derived from cervical plexus and intercostal nerves, cutaneous branches from the internal thoracic and posterior intercostal arteries. Deep pectoral fascia covers the Pectoralis major muscle. After removing of Pectoralis major muscle, Clavipectoral fascia, Pectoralis minor, external intercostal muscle, internal intercostal muscle and intercostal vessel and nerve were observed. At the region of *Stanamoola Marma* 6<sup>th</sup> rib identified, then rib is reflected upwards and lower border of lungs with pleura was observed



in Figure 1.

**Figure 1** Stanamoola marma

#### STANAROHITHA

Location- on either side of the chest, 2 angula above the *Sthana*.

2 finger above nipple, a circular marking done with 2 angula diameter (3.2 cm).

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*Stanarohitha Marma Pradesha* was identified. Skin removed. Below superficial fascia was observed with fat and cutaneous nerves and vessels. After removing superficial fascia, pectoral fascia which covers the pectoralis major muscle, Clavipectoral fascia and Pectoralis minor muscle, external intercostal muscle and internal intercostal muscle along with intercostal vessels and nerves were present. At the region of *Stanarohita*, 3<sup>rd</sup> rib and deeper to it lungs with pleura is seen. After removing tissues of the lungs, pulmonary vessels were observed on both the side (Figure 2).



**Figure 2** Location of Stanarohita marma

### APASTHAMBA

Location- on either side of the *Uras*, where 2 *Vatavaha nadis* are seen.

The location of *Apastamba Marma* was identified and marked at both the sides of sternal angle. Skin, superficial fascia with fat, cutaneous nerve, vessels are removed. Deeper to it, pectoral fascia, pectoralis muscles, external and internal intercostal muscles, intercostal vessels, and nerves were identified. Then the rib is reflected back. Deeper to this, Principal Bronchus and pulmonary artery were present (Figure 4 and 5).

### APALAPAMARMA

Location- on either side of the chest, below the *Amsakuta* above the *Pashwa*.

The location of *Apalapa Marma* was identified and marked at the region below the clavicle.

Skin over in this region reflected, below to it superficial fascia along with superficial nerves and vessels, pectoral fascia along with clavicular part of pectoralis major muscle, Clavipectoral fascia with cephalic vein, lateral pectoral nerve. From medial to lateral axillary vein, first part of axillary artery, lateral cord of brachial plexus were identified. Posteriorly medial cord of brachial plexus was observed (Figure 3).



**Figure 3** Location of Apalapa marma



**Figure 4 and 5** Location of Apastamba Marma

## DISCUSSION

Injury to *Kalantara Pranahara Marma* will lead to gradual death compared to *Sadhyopranahara Marma*. *Kalanthara Pranahara Marma Agni* and *Soma Mahabhuta* predominant, indicates *Agneya*



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*Guna of Raktha and Sheeta Guna of Rasa dhatu. Pitta Dosha and Kapha Dosha take shelter in them respectively. Even though Agni Tatva is extinguish quickly, because of the Soma Tatva gradual death can be seen. Any injury to this Marma, results in gradual bleeding leading to Dhatu Kshaya, because of which person will suffer from Vedana, finally Marana.*

### DISCUSSION ON STANAMOOLAMARMA

#### Discussion on Location –

*Stanamoola Marma* located on either side of chest, 2 *Angula* below the *Stana* and 2 *Angula Pramana*. It can be considered as 6<sup>th</sup> rib, structure comes under 6<sup>th</sup> rib and 5th intercostal space.

#### Discussion on Marma Vasthu

- *Marma Vastu*- Superficial to deep be as follows:
- *Mamsa*- Pectoralis major, external and internal intercostal muscle
- *Sira*- Intercostal vessel
- *Snayu*- Intercostal nerve
- *Asthi*- 6<sup>th</sup> rib
- *Sandi*- Junction of intercostal muscle fibers and fascia to 5th rib

#### Discussion on Marma Vidda Lakshana

Injury to *Stanamoola* marma leads to *Kaphapoorna kostatha, Kasa, Shwasa*.

These symptoms may be due to following reasons: *Kapha* can be correlated to pleural fluid in the pleural cavity which can increase in cases like Pleural effusion. The pleural space normally contains 5 to 10 ml of clear fluid, which lubricates the opposing surfaces of the visceral

and parietal pleurae during respiratory movements. Any condition that increases the production of the fluid (e.g., inflammation) or impairs the drainage of the fluid (e.g., collapsed lung) results in the abnormal accumulation of fluid, called a pleural effusion. These exudates gradually gravitate towards the base of the lungs and causes congestion. If untreated, this can lead to serious health problems, such as collapsed lung from fluid filling the pleural space. Due to collapse of lung, body and cells get deprived of oxygen in due course of time. This may lead to gradual death. If left untreated it becomes infected and collection of pus in the pleural cavity is known as an empyema<sup>8</sup>. Symptoms like shortness of breath, cough, fever, chest pain. If it left untreated these conditions can be fatal.

Collapsed lung can be caused by an injury to the lung. Injuries can include a gunshot or knife wound to the chest, rib fracture, or certain medical procedures. In some cases, a collapsed lung is caused by air blisters that break open, sending air into the space around the lung. Causes of a collapsed lung include lung diseases such as pneumonia or lung cancer.

Inflammation of Pleura is called Pleurisy occurs due to Infections: bacteria, fungi, parasites, or viruses. The main symptom of pleurisy is a sharp, stabbing pain, or a constant ache in the chest. The pain may present on one or both sides of the chest, the shoulders, and the back. Other symptoms include: shortness of breath, or rapid,

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shallow breathing, coughing can be correlated to *Kasa& Shwasa*.

### DISCUSSION ON STANAROHITA MARMA

**Location:** *Stanarohita Marma* located on either side of chest, 2 *angula* above the *Stana Chuchuka* and 1/2 *angula* in *Pramana*. The structures which come under 3<sup>rd</sup> rib, 2 *angula* above the nipple considered under *Stanarohita*.

#### Discussion on *Marma Vasthu*

- *Mamsa*- Pectoralis major, Pectoralis minor, external and internal intercostal muscle
- *Sira*- Intercostal vessel, Branches of Pulmonary vessels
- *Snayu*- Intercostal nerve
- *Asthi*- 3<sup>rd</sup> Rib
- *Sandi*- Junction of intercostal muscle fibers and fascia to 3<sup>rd</sup> rib

#### Discussion on *Vidda lakshana*-

Injury to *Stanarohita Marma* leads to *Lohitapoorna Koshta, Kasa, Shwasa*.

Injury to this region will damage all *Marma Vasthus*, predominantly *Mamsa*(muscle),based on the extent of injury it can also damage the *Sira* which can be considered as pulmonary vessels, intercostal vessels. *Lohitapoorna koshta* can be correlated to haemothorax. Injury to vessels leads to continuous bleeding and blood gets collected within the thoracic cavity or pleural cavity.

Hemorrhage is of two types

1. External
2. Internal or Concealed. Among these the concealed Hemorrhage is difficult to treat. In

*Stanarohita marma* injury there will be concealed bleeding in traumatic injury to thorax, blood with air enters pleural cavity leading to Haemopneumothorax results in Dyspnea, Pain, Shock and Cyanosis. Gradual, continuous accumulation of blood in the pleural cavity results in lung collapse and respiratory failure. Because of excessive bleeding there will be hypovolemia which results in death.

### DISCUSSION ON APASTAMBAMARMA

#### Location:

*Apastamba marma* located on either side of *Uras*, where *Vatavaha nadis* are seen.

It is 2 *angula* in *Pramana*. The structure which comes under sternal angle, where 2nd costal cartilage attached to sternum, on either the side of the chest.

#### Discussion on *Marmavasthu*

- *Mamsa*- Internal intercostal muscle
- *Sira*- Intercostal vessels, Pulmonary artery, Principle bronchus
- *Snayu*- Intercostal nerve
- *Asthi*- 2nd costal cartilage
- *Sandi*- Sternocostal joint

#### Discussion on *Viddalakshana*-

*Apastamba marma* injury leads to *Vatapoorna kostatha, Kasa, Shwasa, Shonitha Poorna Kostatha*<sup>9</sup>. Injury causes death by filling of air in chest and cough and dyspnoea. Bronchial injury is a rare and serious complication after a blunt trauma. If the diagnosis is delayed, the bronchial injury can lead to a recurrent pneumothorax, empyema, atelectasis, pneumonia,

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mediastinitis and respiratory failure. As a result of diseases or injuries (stab or gunshot wounds) air can enter the pleural cavity from the lungs or through the chest wall (pneumothorax).

### **Pneumothorax-**

Closed pneumothorax- here air leak from a ruptured bronchus to pleural cavity.

Open Pneumothorax - chest wall is damaged by any wound -outside air enters pleural space and causes lung to collapse.

Tension Pneumothorax - the communication between the lung and pleural cavity is small. It allows air entry during inspiration but prevents it from escaping during expiration<sup>10</sup>. Symptoms like shortness of breath, chest pain, cyanosis etc. can be seen. Lung collapse in turn exerts pressure on the circulation and breathing mechanism leading to hypoxia and gradual death.

Vagbhata considered this as *Dhamani marma*, injury to this *Marma* leads to *Kasa*, *Shwasa*, *ShonithapooranaKoshtata*. If pulmonary artery gets injured it leads to hemothorax. The amount of blood accumulation depends on the impact of injury. Infection will spread through this injury and results in cough, breathlessness, sepsis. Hemothorax further leads to lung collapse. As death occurs gradually it is considered as *Kalanthara pranahara marma*.

### **DISCUSSION ON APALAPAMARMA**

#### **Location:**

*Apalapamarma* located below *Amsakuta* in the upper portion of the sides of chest

#### **Discussion on *Marmavasthu***

- *Mamsa-* Pectoralis major, 1 and 2 digitations of serratus anterior, external intercostal muscle
- *Sira-* axillary artery 1st part, axillary vein
- *Snayu-* lateral and medial cord of brachial plexus, intercostal nerve
- *Asthi-* 1st rib with costal cartilage.
- *Sandi-* Junction of intercostal muscle fibers and fascia to first rib

#### **Discussion on *Viddalakshana-***

Injury to *Apalapamarma* leads to *Rakthenapooyabhava*, *Marana*. On Injury death ensues by putrefaction of blood. Penetrating injuries of the Axillary venous system are associated with extensive blood loss and are fatal in more than 50% of cases. Patients are usually unstable and are treated with surgical exploration. Infection of the injured part may lead to sepsis and finally death.

## CONCLUSION

*Stanamoola Marma* injury leads to death by *Kaphapoorna kostatha*, which can be interpreted as gradual death occurring due to pleural effusion, lung collapse and respiratory infection.

*Stanarohitha Marma* injury leads to *lohithapoorna kostatha*, this can be interpreted as hemothorax occurring due to injury to pulmonary vessels.

*Apalapa Marma* injury leads to *Rakthena pooyabhavena marana* and can be interpreted as injury to axillary artery and vein leading to

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gradual bleeding, infection, sepsis and finally death.

*Apastamba Marma* injury leads to *Vatapoorna kostatha*, which can be considered as injury to principle bronchus leading to pneumothorax, lung collapse and gradually leading to death. According to Ashtanga Sangraha injury to this *Marma* leads to *Raktapoorna kostatha*, this can be interpreted as injury to pulmonary artery resulting in hemothorax.

Considering the above consequences it can be interpreted that injury to *Kalanthara Pranahara Marma* leads to gradual death.

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