

Indrabasti Marma Fatality In Current Scenerio: Aretrospective Observational Study

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Abstract:

Marma Science holds an important place in Ayurveda especially from the Surgical point of view. AcharyaSushruta has given a lot of importance to Marma describing them as physio – anatomical vital structures where concentrated life force energy (Prana) is located. Out of the 107 Marmas described in our texts, IndrabastiMarma is a shakhagat (Limbs)Marma located in both upper and lower limb. The Samhitas describe the ill effect (viddhalakshana) produced by Injury to IndrabastiMarmaas death after a peculiar interval, which is caused due to gradual blood loss within 15-30 days. In this fast-moving lifestyle, road traffic accidents are quite common. Limb injuries are quiet commonest injuries in RTA.The present work was conducted to revalidate whether the impact of injury on IndrabastiMarma, mentioned by Samhita is applicable in today's era.This observational study conducted on 30 patients of IndrabastiMarmaViddhata (injury)revealed that IndrabastiMarma asKalantarPranaharaMarma in maximum cases was converted to either Vaikalyakara (deformity producing) or Rujakara (pain causing) type. The fatality percentage due to IndrabastiMarma Injury has gone down in todays developed modern medical science.

INTRODUCTION:

Marma Science Marma is a very important and fascinating topic in Sharira, they are vulnerable spots of our body, constituting the essential aspects of surgico-anatomical knowledge.¹⁻³Marma 's expertise is the hidden gem of Vedic surgical skills. In order to increase the importance of this discipline, the principle of Marma has been studied with distinct views, techniques, etc. Marmas are conglomeration of anatomical structures–Mamsa (muscles), Sira(vessels), Snayu (ligament and nerves), Asthi (bones) and Sandhi (joints).³Marma Science may be taken as synonym of traumatology.

Indrabasti is one of the delicate and vital points of the body located in the hands and the feet.(shakhagatmarma)Theyare four in number. Two in the upper limb (one in each forearm – middle and anterior front of both forearms) and two in the lower limb (one in each leg – in

middle of leg calf muscles). Structurally *Indrabastimarma* has been categorized under *MamsaMarma* predominantly.⁴

According to the *Impact* it is placed under *KalantarPranaharMarma*. (Gradual Life taking). Its size is estimated as of half *angulipramana* (approximately equal to the horizontal dimension or breath of middle segment of one's own middle finger). Injury to this leads to hemorrhage and death due to gradual loss of blood.⁵

Modern science has not realized the concept of *Marma* yet to the full extent, hence the diagnosis of a *Marma* injury is never done by clinical investigations. Most *Marma* injuries are difficult to diagnose, but a *Marma* expert can identify injuries through signs and symptoms on the body. Severe traumatic injuries are common in current advance life. The incidence of trauma takes place in road traffic accidents. It has been noticed in various studies that in Road traffic accidents-face and the limbs are the most common site of injuries, amongst which limb injuries are the commonest. Lower limb injuries occupy a greater percentage in comparison to upper limb injuries.⁶ According to *Samhitas*, the ill effect produced by *IndrabastiMarmaViddhata* is death after a peculiar interval, which is caused due to gradual blood loss within 15-30 days. Although, this is not so evident now-a-days due to advanced life saving measures, still it is observed that injuries inflicted at the location of *IndrabastiMarma* (especially in the lower extremities) are difficult to heal and sustain a long course. This is one *Marma* which is an obvious landmark in the body where the muscles are terminated in the thick tendon (like *Tendo-calcaneum* as in lower limbs). The development of modern medical science has helped us to understand the services available in biological cell whenever called for. The post traumatic stage has achieved lot of progress through research which has changed scenario of traumatic result. This work studies the *IndrabastiMarma* and its effects as a *Kalantarpranaharamarma* in current scnerio of well-developed surgical management techinques. Also, observation was made regarding *KalantaraPranharaMarma* and its conversion into *Vaikalyakara/RujakaraMarma* if trauma is inflicted at the periphery of *Marmasthana* as per *Acharyasushruta's* quote.

AIM and OBJECTIVES:

- To study *IndrabastiMarmasharir* retrospectively or concurrently with special reference to forearm and calf region injuries relevant to site
- To observe *IndrabastiMarmaViddhatalakshana* in patients for one month.

MATERIAL and METHODS

Total 30 patients having acute traumatic injuries (*abhighata*) at the site of *IndrabastiMarma* were selected for the study.

(*Abhighata* includes trauma due to fracture)

INCLUSION CRITERIA-

1. Patients of *IndrabastiMarmabhighata*
2. Age group – 21 to 60 years
3. Genders – Both (Random selection)
4. Duration of injury – 15 days to 1 month.

EXCLUSION CRITERIA-

1. Systemic disorders (Hypertension, Ischemic Heart Disease, Diabetes Mellitus, etc.)
2. Previous traumatic injury or any deformity

METHODOLOGY-

PLACE OF STUDY

1. *SharirRachana* Department & attached hospital of the college.
2. Outside sources with prior permission.

STUDY EVALUATION

1. **Subjective Criteria:** Local examination by inspection, palpation, and *sthanikmarmaghatalakshana*
2. **Objective criteria:** Included:
 - 1.) **Oxford Pain scale**
Categorized as 0=no pain
1=mild pain

2=moderate pain

3=severe pain

2.) Movements were given gradations as

None =0 (Movable part)

Mild =1(Affected part will be slightly movable)

Moderate=2 (Can be movable with difficulty)

Severe =3 (Unable to move the affected part)

Radiological evaluations included X-Ray of the affected limb.

Assessment Criteria -

Provisional clinical diagnosis of severity of injury was made by the clinical score mentioned above and to confirm the exact structure involved in the injury, necessary investigations were performed by the reference of orthopedic surgeon and then the diagnosis was done.

OBSERVATION and RESULTS:

1. Age wise distribution reveals maximum volunteers in 21-30 age groups (40%) and minimum in age group 50-60 (16.66%)

2. The distribution according to sex reveals a greater number of males (76.66%) than females (23.33%)

3. Distributions of cases as per type of fracture-

Open fracture was 46.66% and Closed Fracture were 53.33%

4. Distribution of open fracture in extremities-

Open fracture in upper extremity were 28.57% and in lower extremity were 71.42%

5. Injured site-injury to left side was more common compared to right side. Out of 30 cases, Right side was 40% and Left side was 60 %

6. Distribution of cases in each extremity-

Out of 30 Cases, Upper extremity was 50% and Lower Extremity was 50%.

7. Distribution of cases according to pain scale

Out of 30 cases, patients having moderate pain were 76.66% and patients having severe pain were 23.33%.

8. Distribution of the cases as per *Cheshtahani*-(Loss of movement)

Out of 30 cases, patients with moderate *Cheshtahani* were 20% and those with severe *Cheshtahani* were 80 %

9. Distribution of cases according to *Raktasraav*.(Bleeding)

Out of 30 cases, *Raktasraav* was present in 46.66% and absent in 53.33%.

10. Distribution of cases according to *Glani*. (**Lethargy**)

Out of 30 cases, *Glani* was present in 70% and absent in 30 %.

11. Distribution of cases according to *Bhrama*. (Giddiness)

Out of 30 cases, *Bhrama* was present in 56.66% and absent in 43.33%.

12. Out of 30 patients, *Cheshtahani* after a month was present in 6.66%

and absent in 93.33%

13. Distribution of cases according to *vikruti*(deformation) after a month

Out of 30 cases, patients having *Vikruti* were 6.66% and patients having no *vikruti* were 93.33%

14. Distribution of cases according to Pain scale after a month

Out of 30 patients, Patients having no pain were 23.33%, patients having mild pain were 70% and patients having moderate pain were 6.66%.

DISCUSSION:

After going through the conceptual study and Observational case study in detail, the present retrospective observational study reveals some interesting issues which are discussed thoroughly to draw probable conclusion at various levels.

The word Marma was discovered centuries ago by scholars of Ayurveda as the anatomical site where the five structures – Mamsa (muscle), Sira (vessel), Snayu (ligaments and nerves), Sandhi (joints), and Asthi (bone). Some opined this site to be the site of Chetana or place where Prana resides.

A total of 107 has been classified into groups based on structure, regional, dimension, prognosis etc. In this work, *IndrabastiMarma* has been considered to have an anatomical, surgical view in composition from both *Shakha* (extremities).⁷

Location of *Indrabasti Marma* in both limbs is described as between the calf (*Jangha*) and the heel (*Parshni*) of the leg (lower limb) and the anterior and front of forearm (upper limb).

According to Modern Anatomy following structures are present at the site of *IndrabastiMarma*.

INDRABASTI MARMA IN UPPER LIMB

MAMSA	SIRA	SNAYU	ASTHI	SANDHI
Mostly flexor group of muscles i.e Pronator teres, Flexor Digitorum Profundus, Flexor Carpi Ulnaris	Radial artery with its palmar branches, ulnar arteries with branches & Median Nerve	Interosseous membrane, Bicipital aponeurosis	Radius and Ulna	Joint between Radius & Ulna

INDRABASTI MARMA IN LOWER LIMB

MAMSA	SIRA	SNAYU	ASTHI	SANDHI
Gastrocnemius (2 heads) Soleus	Peroneal Arteries, Posterior Tibial Artery, Small saphenous vein, Sural & Tibial nerve	Plantaris & Interosseous membrane	Tibia & Fibula	Synchondrial joint between tibia & fibula (Tibiofibular joint)

The *pramana* of *IndrabastiMarma* is just *Ardhaanguli*, so we may consider *ardhaangulipramana* equally in length, breadth or depth present over the middle of *prakoshtha* and *jangha*. The *ardhaangulipramana* may be considered as structure involving in and around the *prakoshtha* and *jangha*.

DISCUSSION ON VIDHA LAKSHANA OF INDRABASTI MARMA:

Injury at *IndrabastiMarma* causes injury to muscles as well as bone (fractures) which causes deformity and pain. As explained in Samhitas the *MarmaViddhalakshana* of *IndrabastiMarma* is gradual blood loss which causes death but this gradual blood loss is managed through operative and medical emergencies in today's era.

The calf muscle and the muscle of the sole are enclosed within the deep fascia. The traumatic effect depends on the amount of tissue involved, amount of blood loss and the period lapsed between the time of injury and definitive treatment given. The vascular injury in the calf region associated with damage of surrounding muscles, threatens the life either due to excessive loss of blood at the instance or due to secondary hemorrhage from the disrupted artery.⁸ Sushruta therefore appears to fix the responsibility of calf muscles more than the popliteal artery though loss of blood is expected from the popliteal artery. However, Sushruta has focused on a point that loss of blood in this particular *Marma* concerning threat to life or salvage of limb as a result of secondary arterial disruption. This clearly indicates the importance of injury of calf region. This may be added upon the Sushruta version that intensity of the injury is a prime factor to produce

the result and alter the traumatic result in spite of the best facilities and the management given to it. Going through the different injuries it is appreciated that the involvement of the lower extremity shares the highest percentage, this also peeps through the Sushruta observation that, Sushruta has discussed in detail the *Marma* of *adhoshakha* (lower limb) and passed this knowledge with the *Urdhvasakha* (upper limb) this emphasis has been exposed throughout the experience of war wounds.

DISCUSSION RELATED TO KALANTARA PRANHARA MARMA:

The post traumatic result in *KalantaraPranharaMarma* is due to considerable loss of tissue and severe pain. ⁹This classical view may be reviewed and verified by the knowledge of developed surgery. Under this variety of *Marma*, Sushruta observed many secondary causes leading to fatal result for want of either surgical skill or management. This is also observed that the importance of surgical structure stays on the vessels, muscles and nerves.

These *Marma* are of *Agni* and *Jala* constitution. These two *Prana* are diagonally opposite to each other in every respect substantially, qualitatively and functionally. One is hot and is capable of drying out the environment by sucking the fluid and unctuous content while the other is nourishing and capable of replacing the lost fluidity and unctuousness. One is hot, intense and fast acting while the other is cold, mild and slow in effect. Hence this contrast combination leads to first intense activity of *Agni* in causing vitiation of *Pitta*, *Rakta* and *Sweda* while the slow acting *Jala* component tries to maintain status of other *Dhatu* with its slow, heavy, dense, slimy and cold attributes.¹⁰ This leads to slowing down of the decay of tissues, thus from fortnight to a month. Soma is depicted cosmically by the Moon; if the affliction took place in the rising phase of the moon, the afflicted individual may live for a month while he succumbs to his affliction in the waning phase of the moon in a fortnight. If at the time of affliction, the *Jala* is more active, then the tissue disintegration is slower and the individual takes a month to succumb to the affliction. It therefore takes longer time for the disintegration, like *Shukra* and *Ojas*, to hit more distal *Dhatu*, as the attributes of *Soma* resist any kind of change.

DISCUSSION RELATED TO FATAL PERIOD OF MARMA:

The prognosis of *Marma* is variable depending upon the intensity, the depth of wound and the loss of type of tissue. It has also been observed by our Acharyas that the fatality period of *SadyahPranharaMarma* is seven days; *KalantaraPranharaMarma* is from 15days- month. The concept of modern surgery is also almost the same. Extremities are also involved in wars and civil wounds, but tissue morbidity in the extremities is not very important relative to tissue in the head, neck and trunk. The vessels are especially more significant than other systems and organs. The muscles are made up of a stripped (smooth muscle), supplied by sympathetic nervous system. The injury to the vessels, particularly the arteries, contributes to hyper-tonicity via sympathetic influx, which causes muscles to recoil inside the arteries' lumen. Thus there is a self arrest of bleeding. The life therefore is protected at the cost of limb. Unmanageable damage to other limb tissue suggests amputation of the limb, but it saves life. This observation is clearly mentioned by Acharya Sushruta.

An important quote of Sushruta Sharir Sthana "*PratyekMarmaNirdeshAdhyaya*" in relation to the site of trauma of a particular marma and its grade of fatality / affection is worth noting in this context which is^{12,13}

तत्रसद्यःप्राणहरमन्तेविध्दकालान्तरेणमारयन्ति।कालान्तरप्राणहरमन्तेविध्दम्वेकल्यमापादयति।विशल्यघ्नमवै
कल्यकरम्वभवति।वैकल्यकरमकालान्तरेणक्लेशयतिरुजाम्चकरोति।रुजाकरमतीव्रवेदनम्भवति॥ (सु.
शा. ६/२९)

सद्यःप्राणहरमन्तेविध्दकालेनमारयेत्।कालान्तरप्राणहरमन्तेविध्दन्तुदुःखदम्॥ (भा. प्र. पूर्वखं. ३/२३६)

This means, that the site of trauma, if it is at the periphery of a *Sadyahpranharamarma* shall not cause loss of life of the person afflicted. The same is true in the context of other types too. But, in such case, the type of the affected marma will be converted in to its successor i. e. a *Sadyahpranharamarma* receiving trauma at its periphery or away from the exact point of location will show the after effects of other type as per severity and location of impact. This is

the very principle which is based on the theory of twelve Prana which are concentrated at the Marma point. Hence the permutations and combinations of trauma as well as the exact point of location inflicted on a particular marma may differ its prognostic value which is dependent on a multitude of factors.

DISCUSSION REGARDING OBSERVATIONAL STUDY:

According to the study, patients having *IndrabastiMarma (KalantaraPranharaMarma) Viddhata* were not found to be fatal like the *viddhalakshana* of *Kalantarpranaharamarma* as conveyed in *Samhitas*. Some cases as per observation either developed deformity (*vikruti*) i.e. 6.66% which implies that here the *kalantarPranaahramarma* was converted into *Vaikalyakaramarma*. While maximum of the cases experienced only pain at the site, implies that the *KalantarPranaharaMarma* was converted to *Rujakar* type of marma here. This was all after a duration of one month. No fatality / death was observed in any of the 30 cases. This is synchronous to the quotation mentioned in *SushrutaSharirsthana*. (Su.Sha 6/29) and *AcharyaBhavprakashaPurvakhanda(3/236)*

DISCUSSION ON X-RAY

X-Ray is a key to evaluate and it may reveal fracture, bone dislocation, mal-alignments and other changes to bone. Fracture leads to damage of surrounding structures like muscles, ligaments and vessel also.

In this study, X-rays (AP & Lateral view) of 30 Patients, diagnosed as Fracture at *IndrabastiMarmasthana* have been collected to observe *viddhalakshana*.

X- Rays revealed fracture mid shafts of Radius-Ulna or fracture mid shaft Tibia or Fibula

On the basis of observational data regarding the various criteria included in CRF, it can be said that even though patients having *Raktasraav* were not fatal, the restricted movements were corrected, *Vaikalyata* (deformity) was minimum, significant decrease in pain scale was achieved. All this was achieved by skilled operative measures, essential physiotherapy and other medical facilities.

On the basis of knowledge of Ayurveda this phenomenon can be explained as, though *KalantaraPranharaMarma* are *Agni* and *Soma* dominant, due to quick and skilled intervention, *Soma guna* overcomes *guna of Agni*, and because of this action it can be said that *Soma* gives stability which brings significant change in the scenario of *KalantaraPranaharavidhata* manifestations.

Few of the related studies were reviewed¹⁴⁻¹⁸. Sawarkar and Gabhaneet. al. also reported on *Basti* for healthy life in their studies^{19,22}.

CONCLUSION:

The Result of this study can be correlated with concept of *antah* and *Madhya viddhalakshana* explained in *Samhita* as per the depth of injury at/near the *Marma* site.

With the help of clinical examination, it was possible to judge the severity of injury and their conversion into *Rujakara* and *Vaikalyakaramarma*.

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