

A literary review on *Pranashta Shalya* with special reference to foreign body

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Abstract

Among eight branches of Ayurveda (*ashtang ayurveda*), prime importance has been given to *Shalyatantra* i.e., surgical branch which exclusively deals with shalya nirharan means removal/extraction/treatment/management of anything disturbing physical and mental status of the body. *Pranashta Shalya* is a Sanskrit word meant for foreign particles embedded in human body which is not seen externally but body gives some specific signals of its identification or few special activities are need to discover a foreign particle in human body. In modern surgery it's still a challenge for detection and excavation of retained foreign body. Due to lack of modern diagnostic tools in ancient period removal of retained foreign body could have been more challenging. *Acharya Sushruta* has described accurate and precise *lakshana* (symptoms and signs) along with *chikitsa* (treatment) of retained foreign body by the name of *Pranashta Shalya* in a separate chapter of *Sutrasthana* which helps surgeon of past and even today to overcome this difficulty.

Keywords: *Shalya; Pranashta Shalya; Lakshana; Chikitsa*

1. Introduction

The fundamental principles of *Ayurveda* are eternal and can be applied in any era. The principles of other sciences have changed from time to time, but the basic Principles of *Ayurveda* have not changed. Since ancient time, *Shalyatantra* ie surgical discipline is important branch dealing with all types of trauma, accident, foreign body removal and various operative procedures.

The father of surgery, *Acharya Sushrut* Considered, that which is causing pain to body as “*Shalya*.” The term “*Shalya*” [1] described by *Acharya Sushruta* is very broad and include a basic foreign body to embolus. He even includes stress of mind (*mana*) in *Shalya*.

Shalya is of two types [2]-*sharirik* (physical) and *mansik* (mental) *Sharirika Shalya-Roma* (hairs), *Dantaa*(Tooth), *Smrashu*(hairs of beard), *Rasadi Dhatu, Anna*(food), *mala*(Faecal matter), *Vitiated Vata* etc *doshas* and *Aagantuja Shalya* i.e. rest all foreign body. *Pranashta* means invisible foreign body hidden inside the body. [3] If it is left unnoticed it may lead various conditions and, in some cases, it becomes fatal too. So early diagnosis of such hidden foreign body and its removal is necessary. *Acharya Sushruta* has given detailed description of *Pranashta Shalya* in *Sutrasthana* 26th chapter and it's *Nirharana* in 27th chapter. He has explained about Definition of *Shalya and Pranashta Shalya*, it's *Bheda, Gati, Ashraya*, composition, *Samanya and Vishesha Lakshanas, Shalya sthana Jnanopaya, Anthah ShalyaAvastha, Visheshena Asakta Shalyas* and different methods of *Nirharana* in detail. He had also explained about the features which will indicate whether *Shalya* is removed from the affected area or not. *Acharya Sushruta* has mentioned fifteen methods to remove *Pranashta Shalya* (foreign body) including incision [4]. Many of these methods are used for removal of foreign body in

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present era also. Ayurveda emphasizes thorough examinations and investigations to diagnosis followed by an appropriate intervention. [5]

2. Types of Shalya [Bheda]

Shalya has two types-*Sharirika and Aagantuja*. [6]

Sharirika Shalyas are *Danta, Roma, Nakha, Dhathu and Anna mala, Dushta Dosh*.

Agantuja Shalyas are those factors (substances and emotions) which are other than those of the body and which produce pain. [7]

There are also two types -*Dwividha shalya*

Avabaddha- Fixed/stuck up

Anavabaddha- Not fixed/free/loose

2.1. Directions of Shalya (Gati) - [8]

Shalya can take only five directions.

- *Urdhva* (Upward)
- *Adhah* (Downward)
- *Arvachina* (Backward)
- *Tiryak* (Sideward)
- *Riju* (Straight)

2.2. Shalya Ashraya

Due to the obstruction in the force of the *Shalya*, it gets lodged in places such as *Twagadi Vrana Vastu* (*Twak, Mamsa, Sira, Snayu, Asthi, Sandhi, Koshta and Marma*), *Dhamani, Strotas, Asthivivara* and *Pehsi*. [9]

2.3. Symptomatology (Shalya Lakshana)- [10]

Symptoms and signs having foreign body can be *Samanya and Visheshika*.

2.4. Samanya Lakshanas[general]

- *Shyavam* (blackish discolouration)
- *Pidakaachitham Sopha* (Swelling associated)
- *Vedanavantham Muhurmuhu* (pain often)
- *Sonitasravinam* (Hemorrhage)
- *Budbudavadunnatham* (Elevated like Bubble)
- *Mrdumamsam* (surrounding skin is soft).

2.5. Visheshika Lakshana [specific]

- *Twak Gata - Vivarnata* (discolouration), *Aayatha sopha* (widened swelling), *Katina* (hard).
- *Mamsa Gata - Sophaathivrddhi* (increase of swelling), *Shalyamargan upasamrohana* (appearance of new growth in the path of the foreign body), *Peedanaasahishnutha* (Inability to tolerate pressing), *Chosha* (Sucking pain), *Paaka* (formation of pus).
- *Pesi antara*– Same symptoms of *Mamsa Gata* except *Chosha* (sucking pain), and *Sopha* (swelling).
- *Sira Gata – Siraadhmanam* (distention of veins), *Sirashoola* (Pain), *Sira sopha* (Swelling of vein).
- *Snayu Gata – Snayujaalotkshepanam* (Lifting up of ligament), *Samrambha* (Swelling), *Ugra ruk* (severe pain).
- *Sroto Gata – Srotasam Svakarmagunahaani* (loss of function and quality of *srotas*). As Airway-respiratory distress/ coughing, As *Git*-Signs of intestinal obstruction, Auditory canal- pain, decrease hearing on affected side, sense of fullness, Nasal Canal-Difficult breathing through affected nostril, feeling of fullness, irritability.

- Dhamani Gata – Saphenam Rakta meeray annanilaha Sasabdo Nirgachath (vata getting aggravated cause flow of frothy blood associated with sound, *Angamarda* (pain all over the body), *Pipasa* (thirst), *Hrillaasa* (nausea).
- *Asthi Gata* – *Vividhavedana Pradurbhava* (different kinds of pain), *Sopha* (swelling). *Asthi Vivara Gata*–*Asthipoornatha* (filling of the cavity), *Asthinisthoda* (constant pricking pain), *Samharsho Balavaamscha* (profound horripilation).
- *Sandhi Gata* – Symptoms same as that of *Asthi Gata* along with Cheshtoparama (loss of function).
- *Koshta Gata* – *Aatopa* (Gurgling noise), *Aanaha* (flatulence), *Mootrapurishaaharadarsanam chavranamukhath* (appearance of flow of urine, feaces and food particles from the orifice of the wound).
- *Marma Gata* – *Marma viddha vacheshta* (symptoms similar to marmabhighata mentioned in 25th chapter of Sushruta Samhitha Sutrasthana. Sookshma Shalya - Lakshanaanyaspashtani (Symptoms will be present but slightly).

2.5.1. General features of any part of body having retained foreign body [11]

- Toda-pricking sensation
- Suptata- numbness
- Guruta-Heaviness
- Ghattetae Bahusho yatra Sruyate-any type of discharge while rubbing
- Tudhyate-Painful

2.5.2. General features of any part of body devoid of foreign body [12]

- *Alpaabadham* -mild or no pain
- *Ashunam*-no swelling/inflammation
- *Nir-upadravam, prassana* -no complication
- *Mridu-paryantam*-soft margin/edges of wound
- *Ann-unnatam*-no an-elevated.

3. Shalya Sthana Jnanopaya [13]

Acharya Sushruta has mentioned in detail about how to know the exact site or place where foreign body gets lodged as follows-

3.1. Twak Gata

It should be anointed, fomented and then a paste of mud, flour of *masa, yava, and godhuma* or *cow dung* is applied on the skin, the site/place where swelling, redness or pain develops, that should be determined as the site of lodging of the foreign body.

When a lump of solid ghee or paste of mud or *chandana* is applied on the body, the place where the ghee spreads out and the paste dries up quickly by the heat of the foreign body, that place is to be understood as the site of lodging.

3.2. Mamsa Gata

Patient should be administered Oleation, Sudation and other therapies which are not harmful to him. By these the patient becomes emaciated, the foreign body becomes loose and non-sticking and when moved, gives rise to redness and swelling or pain, the place where these symptoms develop should be determined as the site of presence of foreign body.

When it is lodged in the *Koshta, Sandhi, Pesi Vivara and Asthi*, the place should be determined by these methods only.

When it is lodged in *Sira, Dhamani, Srotasand Snayu*, the patient should be made to sit in a chariot with broken wheels and taken for a fast ride. Then the place where swelling, redness or pain develops that should be understood as the site of the foreign body.

When it is lodged in the *Asthi*, the patient should be given oleation, fomentation and then the bones should be tied with bandage tightly or squeeze hard, the place where redness, swelling or pain develops, that should be determined as the site of the foreign body.

When it is lodged in Sandhi, the joints should be given Oleation and Sudation and the joint subjected to movements such as extension and contraction, or bandaged or squeezed tightly. The place where redness, swelling, or pain develops, that should be understood as the site of the foreign body.

When it is lodged in Marma, since these are not other than the tissues, the same methods described so far may be adopted for determination of the site of foreign body.

3.3. Internal foreign body (*Antah Shalya Avastha*)-[14]

If *Asthi*(bone) gets broken inside the body or split into small pieces; those of *Sringa*(horns) and *Aayasa*(iron) get bent without doubt, those of *Vrksha* (wood), *Venu* (bamboo), and *Trna*(grasses), when not pulled out quickly, will cause suppuration of blood and muscles; those made of *Kanaka*(gold), *Rajatha* (silver), *Tamra*(copper), *Raittikam*(brass), *Trapu*(tin), and *Seesakam*(lead) stay long, get dissolved in the same place by the heat of pitta; those which are cold and soft by nature and such their qualities get liquefied inside the body and become fused with the tissues; those foreign body such as *Srng*, *Danta*, *Kesa*, *Asthi*, *Venu Daaru*, *Upalado* not get destroyed inside the body.

3.4. Shalya Nirhana

Shalya is of two types **Avabaddha and Anavabaddha**. [15]

Methods of removal of foreign body which are not fixed are fifteen in brief such as- [16][17]

- Svabhava - By nature/on its own accord.
- Pachana - Ripening/Suppuration/creating formation of pus
- Bhedana - Cutting/Breaking
- Darana - Bursting/ causing bursting
- Pidana - Squeezing/ kneading
- Pramajana - Sweeping/ Clearing
- Nirdhmapana - Blowing/Insufflation
- Vamana - Causing vomiting
- Virechana - Causing Purgation
- Prakshalana - Washing with water/draining
- Pratimarsha - Instilling liquids into nose
- Pravahana - Straining/ making effort expel out
- Achushana - Sucking
- Ayaskanta - Use of magnet to pull out
- Harsha - Creating joy

3.5. Shalya Aharana Marga-

There are two modes of extraction for all kinds of foreign bodies whether big or minute- **Pratiloma and Anuloma**; in Pratiloma-pulling out is in backward direction and in Anuloma pulling out is in forward direction.[18]

3.6. Visheshena Asakta shalyas-[19]

When the face of the foreign body is seen protruding out, then it should be shaken, then cut with cutting materials and pulled out. In places such as abdomen, chest, axilla, groin, and spaces in between two ribs, the foreign body if seen protruding out and if possible, to hold by the hand, attempt should be made to pull out by hand itself, in the same route.

If it is not possible to pull it out by hand, then it should be cut with a sharp instrument and pulled out using blunt instruments.

3.6.1. Shalya in Sira and Snayu

Foreign body when stuck up in veins and ligaments should be freed by using metal rods etc. and then pulled out; if the handle is embedded in the swelling; then it should be pulled out by squeezing the swelling; if the handle is weak, it should be tied to kusa etc. and pulled out.

3.6.2. *Shalya near Hridaya*

When the foreign body is near the heart, then it should be pulled out in the same direction of its entry; comforting the patient who is agitated by the use of cold water; that which is at other places should be pulled out by cutting it.

3.6.3. *Asthivivaragata Shalya Aharanopaya*

When the foreign body has entered into the cavity of the bone or stuck up tightly in the bone, then the physician should hold the patient by the legs and pull out the arrow using blunt instruments. If by this method it is not possible to remove it, then the patient should be held tightly by strong persons, the handle of the arrow should be bent with help of an instrument, and then fastened with five tailed bandage to the string of a bow at one end and the reins of the horse at the other end, then the horse should be whipped so that it lifts its head suddenly with force, resulting in pulling the arrow out or a strong branch of a tree bent down and the arrow pulled out as before and released, the resulting force pulls out the arrow.

Foreign body if stuck up in a wrong place and seen protruding out, it should be stroked by a stone hammer or any such thing, made loose and then pulled out in the same way of its entry. Foreign body having ears which are not troublesome and seen protruding out, then its ear-like attachments should be bent and the arrow pulled out from the front only.

3.6.4. *Kanta Shalya*

When a foreign body made of shell lac is found stuck up in the throat, then hollow tube should be introduced first and a heated metal rod inserted through it till it touches the foreign body, when the foreign body adheres to the heated rod it should be bathed with cold water and after it becomes stable it should be pulled out. Foreign body which is not made of shell lac should be pulled out by using a rod smeared with lac or bees wax in the same manner as described earlier. A piece of bone or any similar foreign body, if found stuck up in the throat horizontally, then the patient is made to swallow a ball of hairs, fastened to a strong and lengthy thread, along with liquid food, followed by consuming more liquid food, till his stomach becomes full, then he is made to vomit. During vomiting, after determining that the foreign body has stuck to the ball of hair, the thread should be pulled suddenly or a soft tooth brush may be used. If by these acts, it does not come out, then it should be pushed deep inside. Any injury to the throat happening by this act, then the patient should be given a mixture of honey and *ghee* or powder of *triphalā* added with honey and sugar, to lick.

3.6.5. *Annagrasa shalya* [20]

When a bolus of food is present in the throat acting as a foreign body, then the person should be made to bend and given a hard hit with the fist over his neck without his knowledge or he may be made to drink fats, wine or water.

Kanta rodha [21]-When the throat is held tight by the arms, rope or creepers, then *vata* gets aggravated along with *shlesma* and blocks the passage and brings about flow of saliva, froth in the mouth and loss of consciousness. Such a person should be anointed with oil, given sudation, administered strong purgative therapy to the head and given soup of meat mitigating *Vata*.

3.6.6. *Management of complications (Upadrava Chikitsa)* [22]-

There could be some complication seen in patients. The patient who has fainted should be sprinkled with cold water, his vital spots should be protected and he should be assured. The patient should be monitored till he becomes free from complications.

3.6.7. *Post procedure care (Paschat Karma)*-[23]

After removal of foreign body, the wound should be cleaned and made free of blood; if the person is suitable for sudation, then the area should be burnt by fire or *ghee* etc., smeared with mixture of *ghee* and honey, bandaged and regimen of food and activities advised. The person should be given liquid and light diet. The patient should strictly follow the regime advocated for wounded person.

4. Discussion

Shalyatantra mainly deals with removal of physical and mental foreign bodies. *Shalya* is a foreign body and *Pranashta Shalya* is foreign body which is embedded and not visible to the naked eye. These *Shalya* can move inside the body, gets *Ashraya* in different places and lead to discomfort. Hence it must be removed at the earliest. Foreign body can be inert

or active. Active foreign bodies are those which causes inflammation and discomfort; hence it is to be removed at earliest. Some foreign bodies are found to be inert which do not cause any adverse reactions even if it is retained.

Acharya Sushruta, the pioneer of surgery, has highlighted the concept of foreign bodies while explaining about *Pranashta Shalya Anaharana* from *Vishalya pranahara Pradesha* and stressed upon *Kanakadi Shalyas* which are inert in nature and thus harmless if retained inside the body. Most of the *Lakshana* (Signs and symptoms), *Nidana* (Diagnosis) mentioned by *Acharya Sushruta* can be seen in the clinical features of foreign body mentioned in *samhitas* and contemporary texts.

5. Conclusion

Pranashta shalya has been a difficult entity since ancient time. In ancient era, without having much instruments, equipment's, investigatory methods and anesthesia, Surgeons put their best effort to extract the Shalya (foreign body) without much complication and damage to the body. Now a day, we are having advanced techniques to detect foreign body. *Acharya Sushruta* has also mentioned that whatever may be the method used the main aim is to remove *Pranashta shalya*. By using Ayurveda's surgical principles and techniques (*Aptavachana*) and advanced techniques, we can diagnose and remove/extract foreign body more appropriately. Its need of time to have integrated approach.

Compliance with ethical standards

Disclosure of conflict of interest

Both authors declare that they have no conflict of interest.

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