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Preservation techniques for dead bodies in Ayurveda

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ABSTRACT

According to *Acharya Sushruta* to become a best physician and surgeon the dissection of the dead body is very necessary. For dissection of the dead body preservation with a good method is necessary. According to Ayurveda, *Sushruta* is the Father of the surgery. *Sushruta* describes about the preservation and dissection in details. *Sushruta Samhita* emphasized surgical matters, including the use of specific instrument and types of operation. There are also convincing evidences suggesting that the knowledge of human anatomy was revealed by both inspection of the surface of the human body and through human dissection. The preservation methods are still authentic after thousands of years.

Key words: Dissection, Dead Body Preservation, *Acharya Sushruta*

INTRODUCTION

Sushruta, a practitioner of ancient Indian medicine has made significant contribution to various branches of medicine. He is glorified as father of Indian surgery. He performed surgeries in the era when no diagnostic facilities were available. The exhaustive knowledge of basic sciences he had would have made him a versatile surgeon. The famous sir Astley Cooper, President of the Royal college of Surgeons, said that without dissection there can be no anatomy, and that anatomy is our Polar Star, for without Anatomy a surgeon can do nothing, certainly nothing well.

Anatomy is widely appreciated as being one of the cornerstones of the medical education. Learning anatomy through the dissection is viewed as the uniquely defining features of medical courses. Explosion of knowledge in the field of medicine was

feasible due to exploration of human body through human cadaver dissection.^[1]

AIMS AND OBJECTIVES

Aim

To evaluate techniques of dead body preservation described by *Acharya Sushruta*.

Objectives

1. To study detailed review of *Mrutshodhan* and preservation technique from *Granthas*, *Ayurveda* and Modern textbooks, and data available online.
2. To evaluate scientific explanation of the data available.

MATERIALS AND METHODS

1. All the literary data was collected from available *Samhitas*, *Granthas* and textbooks.
2. Related websites have also been searched.
3. Previous articles and dissertations were referred.

Historical changes in Anatomy

The historical changes that occur in Rachana Sharir (anatomy) over ancient period may be divided into

1. The Vedic period: it was said that dead body of Raja Dasharatha was kept for preservation in *Taila Drona* for about two years.^[2]

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2. Pyramids of Egypt: Pyramids of Egypt's are known for the preservation of dead body before many centuries.^[3]
3. The Buddhist period & Post Buddhist period: in this period sharp instruments were not allowed because of *Buddhist Ahimsa Siddanta*. Nothing much changed in this period.^[4]
4. Mughal period: This period was a great setback for Rachana Sharir (Anatomy). The Mughal emperor neglected the ancient science and burned many Ayurvedic scripts.^[5]
5. The British period: this period marks the beginning of modern medicine as they spread the British medicine along with Christianity. The first Medical College began in India in Calcutta. The first body dissected was by Madhusudan Gupta in 1936.^[6]
6. The post independent period and at present: The same British methodology is still continuing. But now a days the new method of teaching Anatomy with lumen casting and plastination which is very helpful to the students to study Anatomy.

Securing a dead body

While securing a dead body the following points should be checked

- All the limbs should be intact
- Cause of Death is not due to poison
- The diseased person must not have suffered from a prolonged illness
- The cadaver must not be of a very old age person^[7]

Procedure for preservation

- First the intestines and the fecal matter should be removed
- Then the body should be placed in a stout cage covered with mattresses or fibers of *Kusha*, flax or similar material.
- A water source should be chosen where there is no interference from the local people or wild animals
- Then the cage was then immersed in a running water of river or water source where the water flow is not very strong.

- The body should be allowed to decompose in this water for 7 days, when every part is loose, it should be taken out.
- Then every organ should be examined and peeled off with starting from the skin a brush of bamboo bark, or similar material.
- Every internal and external part and organ is minutely observed & studied^[8]

According to Sushruta, the study of human cadaver has two major aims such as;

1. *Shariravichaya* - Dissection
2. *Sharirashodana* - To explore or search

The purpose one should keep in mind that is *Sharirapakarartha*^[9]

Preservation of dead body in the cold water

If the water contains some dissolved substances it may act as a "preservative". Extreme cold water like Himalaya and Jammu Kashmir rivers could be an ideal river for dissection particularly when the water containing dissolved substances.

Dissection was dependent upon the water flow and also the bed of the river should be sandy and not muddy. From this description given by Acharya Sushruta only the Himalayan rivers could be effectively used for dissection and some from Karnataka and Kerala. In winter season rivers have low temperature. The mechanical washing action of the river water is the main factor to keep the cadaver sterile. Himalayan rivers have very clean water as good as sterile & also contains less number of bacteria, The extreme cold water helps to stop the further decomposition.^[10]

Preservation technique as per Acharya Sushruta

Cadavers were collected from the *Dharmashalas* and places of pilgrimage where a traveler died and there was no near and dear one to cremate it. Probably, King's permission was necessary for this purpose.

Removing the GIT and the adnexa clearly indicates the awareness that if these are allowed to remain in cadaver, the putrefaction of the body is uncontrollably quick. The knowledge about "*Antras* (Intestines)," "*Amashayas*" (Stomach) and "*Pakwashaya*" (Large

Intestine) etc. was first gained and then attention was given to the rest of the parts.

- The lividity begins from caecum with the bacteria which spreads to all parts of the body.^[11]

After collecting the body, the body is wrapped with *Munja* (*Saccharum munja*) and *Kusha* or *Darbha* (*Desmotachya bipinnata*). The recent researches show that these act as preservatives.^[12] The whole covering of the body will delay the decomposition. Whenever it is needed for the dissection the wrapped grass is removed and dissected.

- Placing the cadaver in a cage is for protection from wild animals. Wrapping it in layers of grass may also help to delay the decomposition. The instruments were prepared from Bamboo or wood.
- A bird's eye view of the possible dissection site at the time of Ayurveda. The place is lonely, away from the human disturbances and interferences, clean, calm and quiet with plenty of water for the cadaver as well as from the students to bath and clean themselves.
- Natural canals and natural deviated water streams were selected.
- Method of placing the cadaver in a bamboo cage in supine position wrapped with *Munja* and *Kusha* (*Darbha* grass) and fixing the same in running water stream.^[13]
- The stones are used for weights to fix and to immerse the cadaver completely underwater. All the parts are fully dipped in water and no part is left exposed to air.



Fig 1: Diagrammatic representation of preservation technique of dead body based on description given by Acharya Sushrut.

Dissection of Skin layers

During the first 7 days of the dissection there was full separation of all seven layers of the skin. The skin came off with ease as time proceeded. The deep fascia and muscles perhaps got separated in the next 7 days or so and in the remaining fortnight the ligaments of the various joints separated.^[14]

Instruments

With the help of the naturally occurring instruments one was able push, pull, tease or separate the various organs. The hollow horns and bones were used for blowing away the particles or the dirt. Some time they were used for sucking the fluids which interfered with the site and also used as measures.^[15]

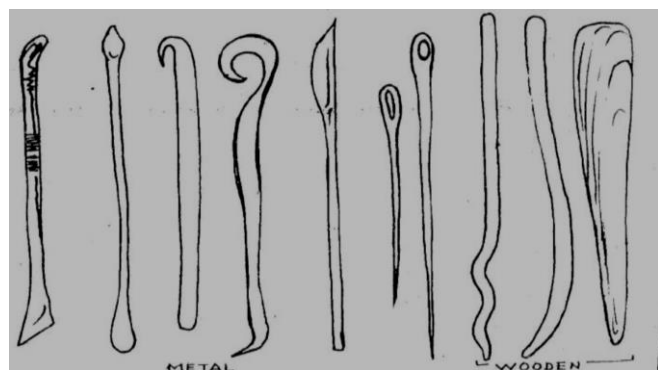


Fig 2: Diagrammatic representation of instruments used for dissection based on description given by Acharya Sushrut^[15]

Time period for dissection

The course of dissection may be within a month. Probably the winter is the best season i.e., November, December and January and according to Hindu calendar *Kartik*, *Margasheersha*, *Pausha* and *Magha*.^[12]

One week of decomposition in air is equivalent to two weeks in water, which in turn is equivalent to eight weeks in the ground.^[16]

DISCUSSION

In ancient period only way to learn Anatomy was by doing dissection of a cadaver, which was the basis for becoming a physician and a surgeon. Bodies were collecting most probably from Dharmashala or Pilgrames death, where there is no near and dear, with the permission of supreme authority.^[10]

The description about the place of dissection will give an idea how they were conducting dissection in unknown place which is silent near the river away from locality. Natural Cannels or natural deviated water streams were selected as a spot of dissection area.^[11]

According to Acharya Sushruta the dissection should be conducted in an extreme cold river. This low temperature will stop the further decomposition the body.

Layers of skin were dissected by the current of running water in 7 days. Instruments for the dissection were made up of bamboo sticks, horns & bones of the animals.

Bodies were covered by grass which prevents further decomposition. The period of dissection was conducting was around within one month.^[12]

CONCLUSION

Preservation of dead body is must for dissection. In Ayurveda method of preservation is simple and natural. In Ayurvedic method no chemical is used for preservation, hence, decomposition on the dead body is delayed naturally. Thus, we can conclude that Ayurveda method of preservation is simple, natural and safe, we can preserve a body in minimum cost but the course of dissection may be within a month.

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