



**GENERAL CONSIDERATIONS RELATED TO THE DISSECTION TECHNIQUES AS
PER AYURVEDA AND MODERN SCIENCES**

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ABSTRACT

The dissection of human cadaver is one of the important approaches to learn human anatomy. In traditional aspect *Shusrutha* also described importance of dissection of dead body for becoming learnt physician & surgeon. The medical science emphasized that physician should be aware about all aspect of dissections such as; collection and preservation of body, period of dissection, parts to be dissected and knowledge about dissection techniques. Ayurveda and modern science described some rules, safety guideline and ethical consideration related to cadaveric dissection. Considering these all aspect present article described various aspects of dissections techniques as per ayurveda and modern science in a view to explore this area for upcoming researchers.

KEYWORDS: *Ayurveda, Cadaver, Dissection Techniques, Shareera Anga Pratyanga.*

INTRODUCTION

Ancient physicians of ayurveda science utilized dissection of the dead body to describe important information related to the *Shareera Anga Pratyanga*. It is believed that sacrifice of animal, observations of human bodies and examinations of patients provides anatomical knowledge to the ancient physician of India. *Susruta Samhita* and *Charaka Samhita* are two foundational texts of Ayurveda principle out of that *Susruta Samhita* provided surgical and anatomical information during 6th century BCE.

Initially dissection of cadaver was only method that provided fundamental knowledge about human anatomy.

The scraping of body layer by layer described by *Sushruta* that provides useful information about anatomical structures of human body. Historically the developments of traditional medical science take places that started from *Vedic* period; this period encompasses references regarding preservation of body (it was believed that *Raja Dasharatha* body was preserved for two years). In modern period when medical college was established then *Madhusudan* Gupta dissected body first in 1936. General consideration related to the dissection techniques depicted in **Figure 1**.

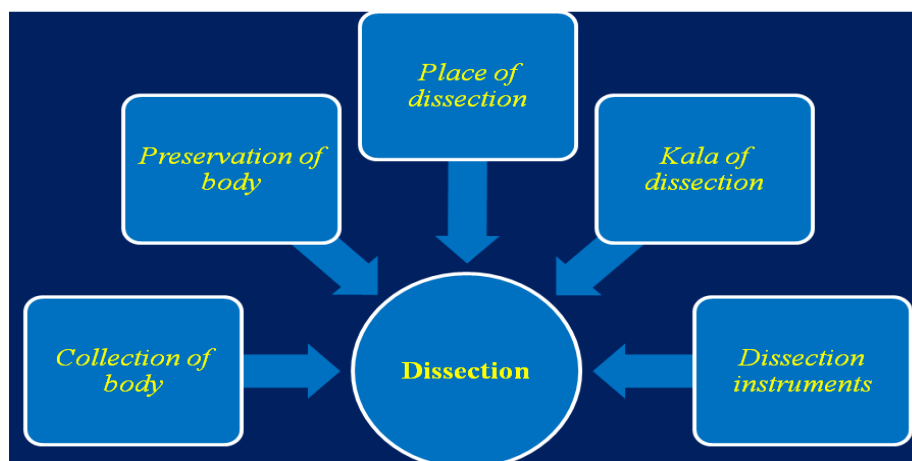


Figure 1: Consideration of Dissection Techniques.

Dissection Techniques as per Ayurveda**Collection of body**

The dead body should be collected from *Dharmashala*, *Piligrames* dead body can also be used. The person dead in *Dharmashala* or as *Piligrames* not possesses nearest relatives so emotional affection of any person can't affect process of dissection. Body should be collected with the permission of higher authority.

Method of preservation

Bodies should be covered with grass, *Kusha* and flax to prevent further decomposition. As per modern concern body can also be placed in a stout cage with fibers after removal of *Antargata Mala* (fecal matter). Water from cold rivers flowing slowly, *Bambucage*, *Munja* and *Chal* can also be used for preservation of dead body. Body should be placed on the dissection table in supine position then preservation fluid can be applied on to the body.

Place of dissection

Traditional literatures suggested that dissection should be conducted around cold river so to prevent further decomposition of body due to the low temperature. The traditional text suggested that body should be dissected near Himalayan rivers, away from public area and wild animals.

Kala of dissection:

The traditional text suggested that body should be dissected in winter seasons; *Kartik*, *Margasheersha*, *Pausha* and *Magha* are the best time for dissecting body.

Dissection instruments

Bamboo sticks, horns & sharp edge bones of animals can be used to make dissection instruments. While dissecting every organ should be peeled off and examined using brush made of *Ushira*, *Hair*, *Bamboo* and *Balvaja*.

Steps involve in dissection

- ❖ As per general criteria during dissecting dead body it should be ensure that limbs are intact to body, death should not occur due to poison, prolonged illness should be the cause of death and the cadaver of very old person not recommended for dissection.
- ❖ Current of running water for 7 days can be used for the dissection of skin layers.
- ❖ Body can be taken out after this process when all parts loosened and dissection started from the skin.
- ❖ Natural Cannels can be selected as a dissection point.
- ❖ *Susruta Samhita* mentioned that physician should first practice to make cuts through *Puspaphala*, *Alavu* or *Ervaruka* prior to dissecting human cadavers.
- ❖ Initially physician should gain knowledge about *Amashayas*, *Antras* and *Pakwashaya* etc. then knowledge about rest parts can be acquired.
- ❖ Separation of all layers of skin can be achieved during first 7 days of dissection, muscles and deep

fascia can be separated out in next 7 days and later on ligaments of the various joints can be separated out.

Dissection Techniques as per Modern Science

The literature study suggested that Andreas Vesalius a medical professional started dissecting cadaver (1514-1564).

Collection of body

In modern practice generally human cadavers are obtained from the government hospitals as unclaimed dead bodies. Sometimes bodies also donated by the family members or by the wish of diseased person.

Modern preservation method

Initially glutaraldehyde was used to preserve dead body however it used to stain body therefore later on it was replaced with formaldehyde.

Dissection Preparation

Physician should follow lab's rules before dissection to maintain safety and ethical consideration. One should wear clothes that fully cover body during dissection. Physician should wear clean gloves and lab coat before performing dissection.

Dissection instruments

Small & sharp scissors, forceps to pick up internal body parts, thin & blunt probe, hooked end that help to point and move structures, dissecting pins that fix skin and organs during dissection, dissecting tray to hold cadaver, scalpel and knife for cutting purpose. The tools used for dissection must be cleaned, free from rust, sharp and not very old.

Steps involve in dissection

- ❖ The initial step for dissecting body is removal of the skin that can be done by superficial fascia skin removal as flaps. It is also suggested to remove skin and superficial fascia as one layer by blunt dissection from the underlying deep fascia.
- ❖ Deep dissection can be achieved by further striping deep fascia from muscles and attachments of muscle should be followed sequentially to understand functioning of muscle.
- ❖ Lifting of muscle exposed neurovascular bundle and provide idea about their origin. Blunt dissection can be used to identify and follow branches of neurovascular bundles.
- ❖ Sometimes it is advised to remove the veins so to obtained clear view of the arteries and other structures when arteries are obscure by the veins.
- ❖ Blunt hook or forceps can be used to loosen layers of connective tissue to make clear view of other organs without damaging associated parts like; blood vessels or nerves.
- ❖ Contrary to traditional science modern science does not prescribed any specific times for dissection.

However it is suggested to perform dissection in separate place away from general crowd.

General guideline and safety rules

- Care of the cadaver should be taken during dissection
- Moist environment should be maintained around cadaver
- Cadaver should be immersed in preserving liquid while not in used
- The entry of outsider should not be allowed in dissection hall
- Edible materials and personal bags should not be allowed near dissection area
- Sharp instrument should be used with proper safety
- Removed body parts should be kept as specimens
- Silence and decorum of dissection hall should be maintained.

Ethical concern related to the cadaver dissection

- Dissection of human cadaver should be done with respect and sensitivity towards the dead body
- Body parts of cadaver should not be mutilated
- Belonging of cadaver should be disposed properly
- Dissection of human cadaver should be done without religious, spiritual and social consideration
- Photographs should not be allowed until/unless permitted
- Finally all learners should be thankful to the diseased person and his/her family that they provide body for social cause.

CONCLUSION

Dissection is one the important techniques for acquiring practical knowledge about human body. Ayurveda as well as modern science mentioned various approaches for dissecting human cadaver and most of the considerations related to the dissection are same in Ayurveda and modern sciences. However method of preservation and instruments used for dissection differ up to some extent. Both Ayurveda and modern science mentioned that dissection of human cadaver should be done with great ethical consideration along with safety conduction.

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