

An Archaeological Study of Surgical Instruments Used in Hospitals during the Rajarata Civilization Period

[රජරට ශිෂ්ටාචාර සමයෙහි ආරෝග්‍ය ශාලාවන්හි භාවිත ශල්‍ය වෛද්‍ය උපකරණ පිළිබඳ පුරාවිද්‍යාත්මක අධ්‍යයනයක්]

Ulpthagama Amitharathana¹

සාරසංකෂේපය

ශ්‍රී ලංකාවේ බුදුදහම ව්‍යාප්තියත් සමඟ ආරාම මූලික කොටගෙන විවිධ වර්ගයේ වාස්තුවිද්‍යාත්මක ගොඩනැගිලි නිර්මාණය විය. ඒ අතරක සෞඛ්‍යාරක්ෂාවට සම්බන්ධ රෝහල් සහ වෛද්‍ය මධ්‍යස්ථාන රාශියක් බිහි වූ බව පුරාවිද්‍යාත්මක සාධක මගින් සනාථ වේ. එම වෛද්‍ය මධ්‍යස්ථානයන්හි භාවිත කරන ලද ශල්‍ය වෛද්‍ය උපකරණ පිළිබඳ ව අධ්‍යයනය කිරීම මෙම පර්යේෂණයේ මූලික අරමුණ වේ. එමෙන් ම රජරට ශිෂ්ටාචාර සමයට අයත් ශල්‍ය වෛද්‍ය උපකරණවල උපයෝගිතාව හා ඒවා සෞඛ්‍ය සංවර්ධනය සඳහා කෙබඳු ආකාරයකට බලපෑවේ ද යන්න විමසා බැලීම. අනුරාධපුර යුගයේ නිර්මාණය කරන ලද මිනින්තලේ රෝහල් භූමිය කැණීමෙන් ඉතා සියුම් ශල්‍ය වෛද්‍ය උපකරණ රාශියක් හමු වී තිබේ. ඒ අතර කැපුම් සඳහා භාවිත

කරන ලද විවිධ වර්ගයේ තල, මැහුම් සඳහා භාවිත සියුම් උපකරණ හා ගිරා කැති කිහිපයක් ද ඒ අතර වේ. අනුරාධපුර යුගයෙන් පසු පොළොන්නරුවට රාජධානි මාරු වීමත් සමඟ මෙම ක්‍රමවේදයන් ඉතා දියුණු මට්ටමකට ගමන් කළ බව ආලාහණ පිරිවෙන් රෝහල කැණීම තුළින් විද්‍යමාන වේ. බෙහෙත් ඇඹරුම්ගල්, කතුරු වර්ග, ශල්‍ය කර්ම උපකරණ, කැපුම් උපකරණ, බෙහෙත් දැමීම සඳහා භාවිත කළ විවිධ වර්ගයේ භාජන, විවිධ වර්ගයේ අඬු, බොහෙත් වර්ග අවශ්‍ය ප්‍රමාණයට කිරීම් මැනීම් සඳහා භාවිත කුඩා ප්‍රමාණයේ තරාදිය ආදී ශල්‍ය වෛද්‍ය විද්‍යාවට අදාළ බොහෝ පුරාවිද්‍යාත්මක සාධක රජරට ශිෂ්ටාචාර සමයෙන් හමු වේ. එසේ හමුවන ශල්‍ය වෛද්‍ය උපකරණ විෂයෙහි අවධානය යොමු කිරීම ඉතා වැදගත් වේ.

Key words: Surgical instruments, Cutting blades, Scissors, Sutures.

1. Sub-Wordan, Bhiksu University of Sri Lanka.

E-mail: uamitharathana@gmail.com  <https://orcid.org/0009-0008-1796-4822>



Received: 05 Feb. 2025, Accepted revised version: 22 June 2025.

This work is licensed under a Creative Commons Attribution-Share A like 4.0 International License.

Introduction

With the dissemination of Buddhism in Sri Lanka, various types of architectural buildings were created based on monasteries. Archeological evidence proves that many hospitals and medical centers related to healthcare were created among them. The primary purpose of this research is to study the surgical instruments used in those medical centers and also to examine the usefulness of surgical instruments belonging to the Rajarata civilization period and how they affected the development of health. Excavation of the Mihintale hospital site, which was created during the Anuradhapura period, has found a lot of surgical instruments. Among them are various types of blades used for cutting, fine tools used for sewing and some sharp knives. After the Anuradhapura era, with the transfer of kingdoms to Polonnaruwa, these methods advanced to a very advanced level. Medicine grinding stones, scissors, surgical instruments, cutting instruments, different types of pots used for putting medicine, different types of pincers, small scales used for measuring the required amount etc. were found. It is very important to pay attention to the subject of surgical instruments encountered in this way.

Research problem

Study of other medical instruments such as cutting blades, scissors, various types of needles, scalpels used for cutting medicines, scales used for weighing and measuring, etc., used for medical purposes.

Research methodology

When discussing the origins and evolution of metal technology in Sri Lanka, information can be studied under several sections.

- I. Source of literature on infertility etc.
- II. rchaeological sources, inscriptions, material evidence, paintings and sculptures, carvings
- III. Recent research conducted by local and foreign scholars through archaeological explorations and excavations

Discussion

In any civilized human society in the world, it is very important to pay attention to their daily health activities. Accordingly, cleanliness is extremely important for the survival of all beings. It is a factor that both lay and clergy should have. In the gradual development of a certain society, it is possible to find out how these affairs become complex as well as how these affairs are organized. It appears that this statement is also justified regarding the period from the 4th century to the end of the Anuradhapura and Polonnaru periods. (A.D. 3-12) Information is also heard about health professionals, health centers and other concepts related to hygiene and their administration as mentioned in written texts and folklore. Accordingly, scholars have presented various interpretations regarding health care or cleanliness. Accordingly, it is indicated in the Buddhist dictionary.

Swastha (composite Swastha goodness, comfort, happiness (Bud. Dict, 2007 : 1676). and in the Pali Sinhala alphabet Sukha Viharana Sapase Viseema, Sukha Vihari Sapase Vasanna (Buddhadatta Thero, 1998 : 549). in the Sri Sumangala dictionary, samadagita - well-being is sukha paṭipada, suvau pratipadava sukhita - being healthy (Soratha Thero, 2006 : 1101). Tripitaka Artha Kosha's Sukha Samvatnikan, Sukhudriyaan Sukha for long life, the one who creates happiness, the good person (Vijithananda, 2250 : 251-252). and in Vimal Hevamana's book Buddhist Health, Arogya, Swastya, Arogita, Kusala, Aroga, Susthatha, Susthiti., reports, it has been stated that the words disease, restlessness, anonymity, longevity, body, health, and health are used as synonyms of health (Hevamanage, 2008 : 2). When studying the facts about surgical medicine, it is important to study the science of surgery. Surgery :- The operative branch of medicine a room where Surgical operations are performed or where medicines are prepared a surgical. The surgeon :- A medical man whose profession is to cure diseases or injuries of the body by manual operation or by medical appliances employed externally or internally as distinguished from a physician operator doctor (Sudhaman, 1999 : 1147).

Various medical treatment methods are followed to cure the diseases that occur in the human body. Among them, the surgical method can be identified as a special treatment method. Accordingly, very delicate and sharp instruments should be used for

dissecting the human body. It is seen that iron technology has been used to create those surgical instruments. It is well reflected in the medical equipment found by the excavations of both Anuradhapura and Polonnaru eras that due to the transmission of iron technical knowledge to man, highly advanced technical medical equipment has been created.

In studying the information regarding the human settlement that has been done in Sri Lanka so far, it is evidenced that the technical ability used by the human who lived there has made a strong contribution to the social and cultural development of that country. It is seen that prehistoric man used different types of micro stone tools to fulfill his daily needs. Over time, with the development of the human brain, the background for iron technology can be seen. Among the technical knowledge possessed by a country, metal technology has a special place. It is also assumed that the technology was clearly of a more refined nature and was in use with simpler equipment and nuclear or allied families. Among these, it appears that the manufacturing industry was ahead. This iron technology has been the reason behind Sri Lanka's simple rural society based on agriculture to the growing urbanization on economic basis. The knowledge of these metal technologies possessed by Sri Lankans can be revealed not only through historical and archaeological remains but also through anthropological studies.

Cheenachatti, also known as raw iron, is a very pure type of iron. It is rich in

carbon, silicon, manganese, phosphorus and sulfur. Difficult to crush and bend, these are brittle and have a melting point of 1200 Celsius. Wrought iron is the best iron. Here, carbon is only 0.1-0.25%, and impurities such as silicon, phosphorus, and sulfur are less than 5%. These are very tough due to their fibrous nature. Crushes well and is not brittle. Overexertion can cause reflexes. Since these are stronger, the melting point is also higher than that of Chinachatti. That is, 1400-1500 celsius. There are 03 types according to the amount of carbon contained in steel. Average steel Fairly good steel Best steel (Lagomuwa, Mandis, 2016 : 80-81).

In the late 1980s, in the Postgraduate Institute of Archeology, together with the Swedish National Board of Antiquities, in Sigiriya, Dambulla area, with the Department of Archeology and British National Archaeologists under the Settlement Archeology Collaborative Project. According to the facts found by the studies conducted regarding the ancient metal technology, it has been confirmed that there was an iron industry that spread throughout the island and people with special privileges were also living there. Also, the data found in the Anuradhapura Abhayagiri, Jethavanaramaya and Polonnaru projects supported by the Central Cultural Fund in the eighties and nineties further corroborate the facts revealed by the literary sources about ancient metal technology. The set of surgical instruments found during the excavation of the hospital in Alahana Piriven Complex in Polonnaruwa can

be described as a unique case of metal technology in this country. It is believed that these tools, made of iron metal, belong to the twelfth century AD. Metal scales, scales of various sizes, scissors, spoons etc. have been found. It is important that fine sharp needles were also found (Prematilake, 1988) research conducted in the vicinity of Abhayagiri found about the metal factories in the area. Seven metal extraction furnaces were found 200 meters south-west of the Abhayagiri stupa (Piyarathana, 1994 : 28-29). In addition, in 1995, by the Department of Archeology and the French cooperation project, furnaces used for iron extraction have also been found at Ridigama.

The Anuradhapura Urbanization Society was keen to apply its scientific and technical knowledge not only in construction and various industries but also in medicine. It is because of their interest in healthcare. Ancient Anuradhapura city has many scientific techniques and techniques that influenced hospital medical equipment and therapeutic methods etc. Medicine boats in Medirigiriya and Mihintale hospital grounds and near Ruwanweli Saya Thuparamaya are also valuable factors in this regard. Instruments and tools used for medicine have been found in the area surrounding Mihintale Hospital. These include medicine boats, medicine millstones, and metal medical equipment used for local medicine. Among these are some metal pincers which can be assumed to have been used for cutting medicines and some

medical instruments which can be assumed to have been used for surgery or other therapeutic actions (Chandima Thero, 2007 : 115 -116).

This information reveals that a sick person has been taken as a parable while analyzing a Dharma point of the Visuddhi path. According to the information found here, it can be seen that Buddhagos Thero had extensive knowledge in the field of anatomy (Visuddhi Marga, 2015 : xix). For the first time we come across a surgical method in Sri Lanka during the reign of King Buddhadasa. Accordingly, these methods are a method that must be performed very carefully. Currently, various safety methods are followed for patients who are undergoing surgery. Special disinfection methods are used. Accordingly, it is possible to think that a special method may have been followed during that period as well. One day, the king was going to Tisa Lake to bathe in Magulatu, and he saw a cobra suffering from stomach disease on the side of a temple called Maha Maga Puttabha. The king saw the cobra and thought that it was a stomach disease. After removing the error, he made a great medicine and immediately cured that snake" (Buddhadatta Thero, 1986 : 113-168).

The medical book called Sushratha Samhita elaborates on surgical methods. This book has six chapters namely Sutrasthana, Nidhanasthan, Chikitsasthan, Kalpasthan and Uttaratantra. Sushrata's medical center was Varanasi, and definite conclusions about his time have not been decided

so far. Sushratha Samhita also once followed Charaka's compositional tradition. Also, 120 diseases are mentioned in this book and they can be divided into three parts such as diseases of the body such as injuries, mental diseases, and diseases caused by natural causes (Sushrata Samhita, 2007 : 64).

In ancient times as well as today, it is seen that doctors were classified as specialists for each disease. This is confirmed by the inscription "Adun Vej" found in the Anuradhapura Jetavanarama burial grounds. (Hettiarachchi, 2007 : 253). We were able to find out that "Adun Vej" are doctors who practice ophthalmology. Just like in Indian texts like Charaka Susrata, also in Indian texts such as Bhesajja Manjusava, Yogarnavaya, etc., ophthalmology is mentioned. Another example of this is that the Medirigiriya stele (Karunaratne, 2004 : 49-51).

Information about Sutikagaras that started in Sri Lanka can be found in genealogies including the Mahavansaya as well as in Charaka Samhita di books which were inspired by Uttara Bharatiya (Charaka Samhita, 1996 : 388). Baddegama Wimalawansa Thero, who is investigating the cell inscriptions, mentions that kings like Dutugemunu and Buddhadasa have given special support to health centers. It has also been pointed out that midwives were employed for mothers about to give birth (Wimalawansa Thero, 2016 : 161). Various types of medicines have been prepared to give to a pregnant mother before or after giving birth to her pain in the sutikas. According to this, grindstones and stone mortars were used

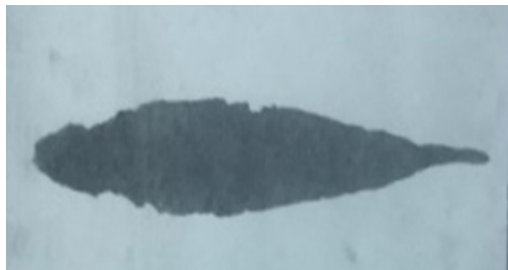
to grind and pulverize the medicines. According to the Mahavamsa, the princess Bhaddakaccayana gave birth to ten sons and one daughter. "A Mehesi Thomo gave birth to ten sons and one daughter" (Mahavamsa, 2012 : 01). This example is clear It is because even at that period, man had a great understanding of health care, and an aspect that should be paid attention to here is that after giving birth to a child, the umbilical cord should be cut. For that, a very good method and a safe method without germs was followed.

It is said that King Buddhadasa was an expert in surgical therapy. That is, a person who suddenly drinks water containing toad eggs will rise up from the nose and develop into a toad in the skull. There, the king split the scalp and removed the toad and again the scalping habit cured the patient. It is also mentioned that he performed several difficult surgeries. There is evidence in the Mahavamsa that the king engaged in surgery and that he had studied surgical therapy well and taught it to others. The doctors who saw his painful crying behavior gave him advice and cured him by using remedies (Ramanayake 2016: 42).

Surgical instruments found at Mihintale Hospital

Several surgical instruments are found in the Mihintala hospital grounds. They have been dead and destroyed due to the fact that they have been stored underground for a long time. But those devices are still available at a detectable level. Among them are a small knife

which is believed to have been used for cutting, a delicate instrument which is believed to have been used for sewing, and several parrots. The medium used to create these instruments is iron. This is for cutting delicate parts of the body.



Surgical instruments found at Polonnaru Alahana Piriven Hospital.

A lot of surgical instruments have been found in Polonnaru Alahana Piriven hospital complex. Among those tools are different types of scissors, scissors, cutting tools used for surgery, sewing tools, grinding stones, trays used for putting medicines, scales used for weighing medicines. Almost all of these devices are similar to the medical devices used in modern hospitals.

01. Probes

02. forceps

03. Scalpel

There are similar tools and various types of scissors. These instruments are made of bronze or iron mixed with a small amount of steel (Premathilaka, Prasanna, 1982 : 16). It is a special fact that such instruments and weapons, which reveal many important medical information, have not been found in any old hospital in this country before. Among the medical equipment, only one badly worn pair of scissors was found in

the hospital field, and there was also a curved copper tool with a hook, which can be pointed out as an important tool for cutting tumors and cleaning wounds (Siriweera, 2004 : 280). Various types of cutting blades and medical equipment found in the hospital complex, the device arranged in the form of a hoof, is a medical device that can be thought to have been used for saving something or thrusting.



In addition, scissors of various sizes, which are believed to have been used for surgery, have been found. Several lower types have been found in this excavation and one of the lower parts of one of them is broken. Also, some scissors used for surgical work are found. A part of the waiting window is also broken. Much has been also damaged when he meets these scissors which are similar to scissors found in hospitals today.



Several arecanut cutters have also been found in this excavation site. It can be assumed that these may have been used for tasks related to the cutting of medicines. In addition, a large number of different types of grinding stones and stone mortars are found in Mihintale hospital complex and Polonnaruwa Alahana Piriven complex. It can be

assumed that they may have been used for grinding and grinding medicines. Also, various types of clay pots and stone pots used to put medicines have been found in these places. Also, a fine scale used for measuring medicine has also been found in this hospital complex. With a stem of about 8 cm, small holes can be seen at the end of the two branches so that pots can be hung. But these pots could not be found. This scale may have been used on a very small scale to make powerful medicinal substances such as mercury. The torso of this scale is still in working order. A well-preserved spoon was also found at this site. Made of metal, it can be determined that the handle is made of wood. But with the passage of time its true form cannot be seen at present. However, it is believed that it was used in the mixture or use of medicinal substances (Premathilaka, Prasanna, 1982 : 27).



Conclusions

It is seen that the root of the discussion about the health of the human race in Sri Lanka goes back a long way. According to Tripitaka information, with the light of Buddhism, many health care methods were born. We have always tried to live a healthy life based on the beginning of kingdoms and the rise of human civilization. BC in Sri Lanka Even before the 3rd century, it can be assumed that

the medicines needed for health were prepared according to the environment. Otherwise, it is impossible to think that all these things came together with the beginning of kingdoms. Accordingly, BC In the period from the 3rd century to the 12th century, during the periods of Anuradhapura and Polonnaru many advanced health conservation methods have been adopted. In the study of the health care during this period, it is clear that the inspiration of Uttara Bharatiya system of medicine came to this country. However, it can be concluded from these facts that a suitable medical system was developed for this country with that inspiration in mind. The medical system that gradually started in BC. It can be seen that even after the migration to Polonnaruwa in the 10th century, it remained at a very advanced level. Accordingly, many advanced surgical equipments are found in Polonnaruwa Alahana Piriven hospital complex rather than the surgical equipments found in Mihintale. Accordingly, it can be seen that medical activities developed according to the needs in both these eras. Accordingly, new methods have not been born from age to age.

Bibliography

- Karunaratne Saddhamangala, (2000).
Collection of Inscriptions, Department of
Archaeology, Colombo.
- Kumarasingha Ariyadasa, (1996). Charaka
Samhita-Part III (Department of Ayurveda
Gangodawila, Nugegoda.
- Chandima Thero Ambalantota, (2007).
Anurapura Puranaya, Yuvanseva Press,
Maharagama.
- Premathilaka P.L, Alahakone, Udit Prasanna,
(1982). Alahana Pirivena Polonnaruwa
(Third Archaeological Excavation Report).
- Buddhadatta Thero Polwatte, (2012). Pali
Literature, Ratna Printers, Battaramulla.
- Buddhadasa R, (2007). Sushruta Samhita,
Department of Ayurveda, Deepani Press,
Nugegoda.
- Buddhist Dictionary, (2007). Siri Liyanage,
Iduru Offset Printers, Kottawa.
- Mahavansaya, (2012). Buddhist Cultural
Centre, Nadimala, Dehiwala.
- Ramanayake Leela, (2016). Oriental Vedic
Purana, Deepani Press, Gangodawila,
Nugegoda.
- Wimalawansa Thero Badadegama, (2016).
inscription society, Janani Publishers, Offset
Press, Nugegoda.
- Kultura Purana (Volume 03), (2011). Central
Culture Fund, Rajye Printing Legalized
Corporation, Padukkah.
- Culture Purana (Volume 5, Series 1), (2012).
Central Culture Fund Press, Colombo.
- Siri Sumangala Thero Kolonnawe, (2015).
Laundering Investigation, (Ed. Imashi
Printers, Gangodawila.
- Hewamanage, Wimal, (2008) Buddhist Health,
Samayavardhana Thayayo, Maradana,
Colombo.
- Etchestarchius, General Library (2011). Image
above