

# Doctors Who Treated the Harappans

Dilshad Fatima

*University of Allahabad, Prayagraj, India*

**Keywords:** Harappan Doctors, Paleo-Pathology, Skeleton, Burials, Disease, Orthopaedic, Anaemic.

**Abstract:** The system of burying dead has been in existence since primitive times. When Marshal, some hundred years ago contented that cremation was the only mode of disposal of the dead was taken seriously with all the claims of superior and standardized ceramic tradition, seals and sealing, weighing system, lapidary art, city layout and planning and even distribution of resource. However, later researches into the Harappan Civilization brought to light a system of burying their cadavers. Hitherto scholars like A. K. Sharma, Lucas, Kennedy and the likes have worked on these skeletal remains to report the causes of death as well as the nutrition levels and how well they coped with their injuries. The present paper intends to study in detail paleo-pathological diagnosis and interpretation of diseases prevailing in those times and their treatments, pointing to the possible existence of various medical branches and specialists of doctors.

## 1 INTRODUCTION

The introductory excavated site Harappa is the brand-site of the Harappan Civilization that flourished from c. 2600-1900 BCE in the River Valley of Indus Ghaggar-Hakra in modern India and Pakistan. The Harappa Civilization is characterized by standardization in well-planned cities, ceramic traditions, seals and sealings, weighing systems, lapidary art and their system of burying cadavers. From the very Stone-age, pieces of evidence of burying humans have been reported from many sites. As Harappans are known to have disposal of their dead, and the same was learnt at various sites during the course of the excavations. The usual method of the disposal of the dead was to in turn the body in a pit, sometimes lined with mud bricks. The body was laid supine in an extended position, with the head towards the north. Over a dozen exemplary burials were excavated. In all these case studies the pit was rectangular, with either sharp or rounded-off corners and large enough to take in an extended human body (Ghosh, 1969). Over the decades a variety of ways of disposing of their dead have been brought to the notice many with the skeletal remains and some without. A number of necropolises have also come to light in recent times. Burials with skeletons not only show the rituals and customs associated with the dead giving an insight into the society's view of life after death but the skeletons also provide the health chart

of the people buried. There are several injuries and diseases like Exostosis, Joint Diseases, burning marks, Dental attrition, Trauma, Congenital Perforation, Hematopoietic Disorders, Infection and Inflammation, Sharp Cut marks, Neoplasia, Hydrocephaly and Trepanning, Crippled man, Paralytic man etc., which have come to notice that need to be discussed in detail and uncover the existence of Doctors in Harappa-Civilization. Hitherto scholars like A. K. Sharma, Lucas, Kennedy etc. have worked on these skeletal remains and so far, only cultural, social, and technological aspects have been approached and examined the vestiges. Only further studies would be able to throw some light on this issue in a manner that skeletal remains from the graves have thrown some interesting sidelight on numerous substantive stances of Paleopathological diagnosis and interpretation. One of the remains has proved that there might be Neurosurgeon existed in 3000 BCE because a skull of a child was unearthed from Kalibangan to be rather unusually large, a hydrocephalic patient. To treat this, the 'Harappan Neurosurgeon' took recourse to trephination, perforations on the right temporal region and possibly some heated instrument used to brand it. Another instance of trephination has been reported from Lothal.

This paper is specifically focusing on the diseases and their treatments which might have been taken after these diseases were diagnosed. Archaeologists

and anthropologists have reported such details in unearthed skeletons from sites such as Kalibangan, Lothal and Harappa, as only bones can be collected and observably studied. So, keeping that in mind, this paper would tackle the diseases which had occurred in bones only. So, there is great potential in this paper to have a clear picture of from where the Harappa's pathology evolved that would have given rise to the Paleopathological existence, which can be dated back to the Harappa civilization. The Harappan sites contain one of the richest and continuous records of hominine behavior. These evidences have been yielded in diverse palaeoecological settings. The pattern of disease or injury that affects any group of people is never a matter of chance. It is invariably the expression of stresses and strains to which they were exposed, a response to everything in their environment and behavior. It reflects their genetic inheritance (which is their internal environment), the climate in which they lived, the soil that gave them sustenance and the animals or plants that shared their homeland (Calvin, 1994). Diseases and injuries reflect the happenings, which at times get occurred in bones. The occurrence of disease or injury has a particular pattern which is influenced by the individual's occupations or a specific sustained activity, at times by climatic environments and dietary habits. Palaeopathology attempts to study such variations and abnormalities reflected in the anatomical and morphological profile. Some of the deformities may be since birth itself. Such abnormalities can be studied mostly through the skeletal remains recovered from various archaeological excavations at Harappan sites. Scholars have made strenuous efforts in the study of palaeopathology; however, it is difficult to be too precise while arriving at conclusions. This becomes difficult, particularly in the absence of clinical knowledge and training. Even then some attempts can be made. In the majority of skeletons, no trace of the cause of death is present, only those, which get recorded in bones can be studied. Human skeletal remains were excavated and examined in the laboratory. During the course of the study, the author noticed certain pathological and other interesting features, some of which are described below:

## 2 HYDROCEPHALY AND TREPHINING

The huge globular size of the child's skull from Kalibangan suggests a case of hydrocephaly, caused

due to excessive accumulation of fluid in the brain. This swelling and accumulation of fluid results in severe pain. The right side of the child's skull from Burial no. 9 at Kalibangan shows three small trephined holes on the squamous part of the temporal, above the right acoustic meatus. The black streak joining the upper two holes and running up to the opisthocranium might have been caused by some hot-pointed instrument. The burning mark and the holes suggest that probably some sort of primitive surgical operation was performed on the skull of the child to give him relief from severe pain, caused by the swelling of the skull. This also accounts probably for the presence of more than usual sutural marks or wormian bones on the same skull. Another example of Trephination has been earlier observed in one of the human skulls from Lothal. At Lothal the operation was performed on the right parietal bone of a child of about 9-10 years of age. As per Dr S. K. Basu, "the right parietal bone shows a deficiency anteriorly at the anterior and lower quadrant almost mid-way between the parietal eminence and the squamous suture (Rao, 1979). In the absence of any bone repair, one would conclude that the person did not survive long after the cut was done or the cut was made post-mortem." These trephinations appear to have been made with some sharp instrument with circular edges, the margins of the perforations do not show any osteogenesis in the form of callous formation. The cutting edges of the circular openings are neither smooth nor beveled indicating that these perforations were made post-mortem. These have always been regarded as post-mortem cuts made the evidence of trephination for medical purposes at Kalibangan is the earliest instance of a surgical operation in the world which goes back up to the middle of the third millennium BCE. The above instances of trephination substantiate the later literary references to Neurological surgery practiced in India.

## 3 SUPRATROCHLEAR FORAMEN

It is an anatomical variation where a perforation presents in the lower end of the humerus bone, which is also called epitrochlear foramen. Certain jobs require robust and repeated action of the elbow, which impacts the humerus by olecranon and coronoid processes of the ulna on the olecranon fossa region, which is reported from two skeletons at Kalibangan that show such enlarged perforations. The presence of such enlarged perforations in both the

humerus bones is indicating that the man was engaged in such a type of work as wood cutting. The man could manage to survive for many years, as some had not died immediately after injury, so it is assumed, that there might be some kind of aid used to carry work on, which pieces of evidence help us to make an assumption about the existence of specialists concerned with orthopaedics.

#### 4 EXOSTOSIS

At times the excess formation of a bone on the surface of a bone, resulting in extra growth, takes place due to some injury. This is due to the clotting of blood on the damaged muscle. This phenomenon has been observed in the proximal end of the right ulna belonging to the skeleton from Burial no. eight at Kalibangan, in the form of a craggy mass of bone on the upper part of the shaft. The result was triangular outgrowth bone as compared to the normal one on the right. The cut marks around it suggest that an orthopaedic specialist attempted surgery on this extra-grown bone.

#### 5 DENTAL ATTRITION

The description of dental remains from Harappa is woefully incomplete and dental remains from Lothal, Rupar and Kalibangan have not yet been published, however, it can be surmised that the Kalibangan Harappans were at least not vigorous flesh consumers. Anadi Pal, who studied the permanent dentition of 314 individuals represented by skeletal remains unearthed from Harappa, Mohenjodaro, Kalibangan, Lothal and Rupar etc. concluded that the dental health of the ancient Indians was better than that of the people of contemporary civilizations. As the Harappan sites are located in different geographical and slightly different climatic zones, naturally having different food habits, the collective conclusion is likely to give a distorted picture. The right first and second molars and premolars of the mandible from the skeleton from Kalibangan show marked attrition of the cusps. The attrition is not uniform on all the teeth. The left teeth are relatively free from any marked wear and tear. The attrition of right molars and premolars can be attributed to two causes, firstly habit of using the left side more for chewing and secondly coarse food, mixed with powdered stone grains. The presence of powdered stone may be due to the use of crumbly sandstone

grinders (Emery, 1963). This is also supported by the recovery of grinders of sandstone from Kalibangan excavations. Incidentally, it may not be out of place to mention here that among all the skeletons recovered from the excavation, teeth are present in good condition even in the skeletons of persons of advanced age. This general absence in antemortem loss of teeth in Kalibangan skeletons even in that of grown-up adults could observe. The stated data above is suggesting about the contemporary existence of the dentist.

#### 6 CRIPPLED MAN

Another oblong burial from Kalibangan oriented in the north-south direction, length-wise, yielded a human skeleton and its closer examination showed that the skeleton belonged to a male adult of about 30 years of age (Sharma, 1999). A glance at the in-situ condition of the skeleton revealed that the individual was a crippled man, showing marked pathological deformities of the radius, ulna and hand bones of the left side. The left hand was placed in a prone position with the carpal and metacarpal bones badly twisted to left outwards so that the thumb bones rested below the bones of the second phalanges and the rest of the fingers were twisted outwards from its point. A comparative analysis between the ulna and radius bones of the two sides showed that the left radius was smaller from its right counter and similarly left ulna was shorter from its right counter respectively. The position of different bones and their size show that the left side is deformed. In the case of left foot bones, it was noticed that, though all the metatarsal bones were present, phalanges were represented only by rudimentary bones. These retarded rudimentary phalanges indicated the pathological deformity of the right foot. The left femur and tibia were shorter in comparison to their right counterparts. So, this can be stated that there must have been a doctor who treated this man so that at least he could have walked antemortem.

#### 7 JOINT DISEASE

Joint diseases have not been commonly found in the remains of Harappa. This appears most often in the spine, where it affects both the synovial posterior facet joints and the non-synovial joints between vertebral bodies (Lovell, 1994). Not every articular surface was observable for pathological lesions,

because of preservation issues and difficulty extracting skeletal elements from a clay-like matrix in some locations of the cemetery. Around 160 appendicular joints, were examined for evidence of marginal lipping, pitting, and eburnation. Overall, the knee was the joint most affected by the degenerative change. Eburnation is considered to be the most severe expression of degenerative joint disease and among the Harappans it affects the knee, wrist, and ankle. Only the knee displays all three conditions. As this has been recovered in many skeletal remains from various sites, so it made us think that either Harappans were using mobility aids without any treatment or there might be an orthopedic specialist, who diagnosed joint disease and attempted a treatment as well.

## 8 HEMATOPOIETIC DISORDERS

One possible case of porotic hyperostosis (Lovell, 1997) and another of cribra orbitalia, both thought to represent an anaemic condition, unfortunately, are documented only by fragments of bone, and diploic expansion could not be confirmed. These lesions are consistent, however, with acquired iron deficiency, which often results from chronic infection or excessive blood loss caused by gastrointestinal parasites.

## 9 INFECTION AND INFLAMMATION

One individual exhibited a lesion indicative of a localized infection, secondary to a penetrating wound on a pedal phalanx. Other inflammatory lesions are generalized and affect the shafts of long bones. Although postmortem damage hinders diagnosis, these non-specific lesions indicate a chronic inflammation of the periosteum that affected one or more long bones in five individuals, predominantly on the tibia and fibulae.

## 10 TRAUMA

Several injuries were observed in the Harappan remains and resulted from both direct and indirect trauma. Ten individuals exhibited a total of 13 traumatic lesions, but only six of these individuals were complete skeletons in primary contexts so interpretation is fraught with difficulty (Lovell 2014).

Two adult females from primary contexts exhibit vertebral crush fractures. The distal right radius of a middle-aged female exhibits a Colle's fracture that perhaps resulted from falling onto an outstretched hand. Of the 28 adult crania in the Harappa sample, two exhibited traumatic lesions. One adult female had remodelled lesions on the occipital bone, at least one of which may be due to a blow to the back of the head. Cranial trauma is thought to be more likely due to interpersonal violence than to accidents. Other injuries may also result from interpersonal violence. A well-healed scapular fracture, involves the lateral border and body in a middle-aged female, although this injury can only be caused by a blow or a fall. Furthermore, a fall from a greater height is unlikely, because the articulating clavicle and humerus are unaffected and such falls usually are associated with additional injuries. Two well-healed rib fractures were also observed, one in an adult of indeterminate sex found among commingled elements and the other in an adult female with healed trauma to the occipital bone. There is a possibility of some kind of treatment just after the fall off by analyzing the skeletal remains, as it is not proven that this was an accidental death.

## 11 CONCLUSIONS

Although excavations at Harappa in recent decades have substantially increased, the amount of information about the skeletal remains has not been well recorded and published. Harappans were very meticulous about the location of the cemetery area (Sharma, 1977-78). The first fully published report is by Lovell (1994, 1997 & 2014) with proper descriptions of the skeletal paleopathology of the adult remains excavated in 1987 and 1988, and of a skeleton excavated by Dr R. Mughal in 1966. The Harappans were very meticulous about the location of the cemetery area. At Kalibangan, it is located southwest of the habitation area, on the left bank of Saraswati, far away from the living area. In order to have better and more comprehensive knowledge regarding patterns in diseases' occurrence during Harappan times and related treatments, this study would be worthwhile to identify the treatments. Detailed study of skeletal remains would be helpful for making palaeo-pathological theories.

## REFERENCES

- Calvin, W. (1994). Bone, Bodies and Disease. 135-37.
- Dutta, P. C. (1983). The Bronze Age Harappans. Calcutta: Anthropological Survey of India.
- Emery, G. T. (1963). Dental Pathology and Archaeology. *Antiquity* Vol. XXXVII No. 148, 280.
- Ghosh, A. (1969). *Indian Archaeology 1964-65 A Review*. New Delhi: Archaeological Survey Of India.
- Gilmax, H. (1882). On the Prehistoric Trephinning and Cranial Amulets. Washington: North America Ethnology.
- Kennedy K. A. R., Nancy C Lovell, J R Lukacs, B. E. Hemphill. (1993). Scaphocephaly in a Prehistoric Skeleton from Harappa, Pakistan. *Anthropologischer Anzeiger* Volume 51 No. 1, 1 - 29
- Lovell, N. C. (1994). Spinal arthritis and physical stress at Bronze Age Harappa. *American Journal of Physical Anthropology*, 93(2), 149-164.
- Lovell, N. C. (1997). Anaemia in the ancient Indus Valley. *International Journal of Osteoarchaeology*, 7(2), 115-123.
- Lovell, N. C. (2014). Skeletal paleopathology of human remains from cemetery R37 at Harappa, excavated in 1987 and 1988..
- Pal, A. (1981). Dental Health In Ancient India. *Journal of the Anthropological Society* Vol. XVI No. 2.
- Rao, S. R. (1979). Lothal A Harappan Port Town (1955-62) Volume I. New Delhi: Archaeological Survey Of India.
- Sarma, A. K. (1999). *The Departed Harappans of Kalibangan*. New Delhi: Sandeep Prakasan.
- Sharma, A. K. (1977-78). Locating the Graves at Kalibangan. *Puratattva* no. 09.