



Surgical Instruments at the Alahana Parivena Hospital in Polonnaruwa

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Introduction

Surgery is known to have flourished in the Indian Subcontinent from before the onset of the Christian Era [1,2]. Surgery is known to have existed as a science in Greek times, and in many parts of the world [1] surgical type instruments have been described in texts, and found in several places [3-6]. In Taxila, in what is now Pakistan, instruments, at least some of which are surgical, were found in and around Sirkat [6-8] without any hospital like building, but not at Mohenjo-daro. Models on Arab instruments are on display in Kuwait [9]. In the heyday of the Roman Empire surgery was done, and instruments were found in Pompeii in Italy and a house called a surgeon's house as the instruments (presently in the Museum in Naples) were there, but there is no other evidence of the real occupation of the householder [10]; In Britain there are examples on Roman era instruments [11]. Surgery was known in China but surprisingly there were no instruments in one of the best sites in that country [12]. In the old Hotel Dieu Hospital in Lyon in France surgery is said to have been done but although remains of that hospital form part of the present hospital complex there are no instruments extant from that time [13] (Figure 1).

The Alahana Parivena Hospital at Polonnaruwa in Sri Lanka was a part of a large Monastic complex. There is independent textual, epigraphic, and archaeological evidence that this building was a hospital- notably the location of a stone medicinal bath [14,15] (Figure 2). This is the only occasion

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Figure 1:



Figure 2:



Figure 3:



Figure 4:



Figure 5:



Figure 6:

when the purpose for which the instruments were used- namely a surgical one- could be deduced from the location of the artifacts and not just from their shape. These were therefore very significant finds-made during routine excavations of the area [14,15]. The then King-Parakramabahu the Great, is said to have been a 'surgeon'.

The artifacts and instruments with a comment on each (similar drawings exist in Indian and other texts [1], and the artifacts and instruments seen in Figures 3-17 resemble very closely items in use now.

1. The Hospital skeleton
2. The stone medicinal trough that provides archaeological evidence that the building was a hospital
3. A oblong grindstone
4. A circular grindstone- both 3 and 4 used for making medications

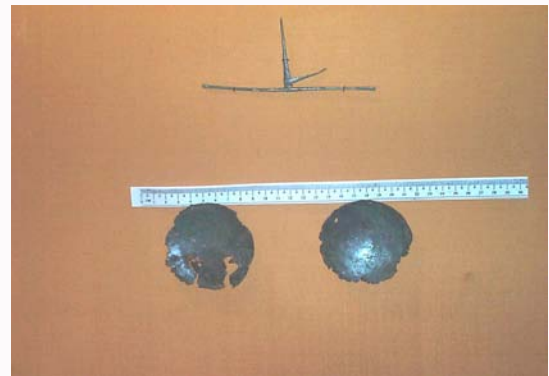


Figure 7:



Figure 8:



Figure 9:



Figure 10:



Figure 14:



Figure 11:



Figure 15:



Figure 12:



Figure 16:



Figure 13:



Figure 17:

5. Slaked lime containers and --
6. Areca nut cutters- for helping to make the chew with Betel and tobacco for relaxation
7. A spoon- a very nonspecific object
8. Weighing scales and pans- large- used for weighing raw material and medications. These and the articles in Figures 9-11 were made of a copper/bronze. The other instruments seem to be iron the technology was available to make steel several hundred years before this time in Sri Lanka.
9. Weighing scales and case- very small- used perhaps for weighing heavy metals (for medications) or opiate like substances. There were known to be methods of rendering people insensible during surgery and then waking them again [4].
10. Metal applicators for applying medications or cosmetics around the eye?
11. Probes- known to have been used to sound cavities and in the delineation of fistulae and sinuses (these are short examples). Very similar instruments were found near St Albans.
12. Large scissors of which there are several examples- of the kind used to cut cloth for bandages and dressings
13. Smaller scissors- to be fitted with wooden handles- perhaps used for cutting tissue
14. A lance- a type of instrument used for 'stabbing' open tissue very quickly to drain pus from an abscess or cut through the perineum (between the anus and the scrotum) for stones in the urinary bladder.
15. Forceps with very strong jaws as might be used for removing dead bone or extracting teeth.
16. Forceps with more delicate structure that might be used to handle tissue like skin or intestine- even more delicate forceps were found here and in Taxila
17. A scalpel to be used with a wooden handle. Scalpels made entirely of metal exist at Taxila and in Edinburgh from around the same period. The modern scalpel is lighter but of very similar shape. This is the instrument, par excellence, used for starting to cut open the skin in non-emergency operations such as the removal of lumps under the skin, problems in the abdomen, and so on.

Discussion

A reference to other finds of instruments is made in the Introduction. The hospital in Polonnaruwa was more fully described in the context of Sri Lanka history by Premathilleke et al. [1,6]. The weighing scales, lime containers and areca nut cutters are virtually identical with modern equivalents. More important these instruments- particularly the scissors, forceps, lance, and scalpel are almost identical with modern instruments. There are texts of Susrutha and Charaka (see 8) which describe old instruments and the operations done at that time before and just after the beginning of the Christian era. Finding instruments at Polonnaruwa is a very great significance as it indicates that operations were actually done- and not just imagined. The finds also ratify the statements about surgery in Sri Lankan texts (Leonardo Da Vinci's drawings of submarines did not mean that he had one).

The decline of the surgical skills that existed is blamed variously on a supposed discouraging of animal experiment by Buddhism, colonial occupation, Malaria and so on. A fascinating theory is that the physicians and surgeons argued amongst each other too much to present a united front on any medical policy matter, and also thought themselves too important to attend policy meetings on national finance, agriculture, transport, military, or other policy [4] with the result that they cut themselves off from major policy making and resource allocation decisions- leading to them losing control of the funding of their profession and facilities and their decline. Perhaps they did not realize that most people are healthy and of those that get ill many get better without medical or surgical help.

Conclusion

The skill of the ancients is well shown by these finds. Assessment of possible reasons for the decline of the specialty in old Asia may have lessons for the surgical power bases of the present.

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