Man in antiquity and much later time capsules

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The Maltese Islands have sustained a stream of human life since the very early people, probably from Sicily first settled here around 5500 B.C., and gradually developed mostly in fertile areas where water was available . The first settlers were agriculturists. Looking back, one can realize that their survival depended mainly on a widening of their understanding of nature and a deepening of their knowledge on how to handle and use what nature provided. Aside this, they tried to safeguard themselves as much as possible against disease, accidents and catastrophe.

They grew barley, lentils and in due course wheat and ground part of their meals in stone mortars and querns. They kept herds of goats, sheep and perhaps fenced their land. In due course the fig and olive trees were cultivated. The sea trade which gradually developed in Phoenician times in countries bordering the Mediterranean and in later centuries other traders must have affected the Maltese set-up and the introduction of new skills.

As time went on, Malta and Gozo had contact with other civilizations. The tools in Maltese prehistory were made out of a) Chert - a form of quartz available locally, b) Bones, c) Obsidian - a sort of volcanic glass imported from Lipari and Pantelleria, d) Flint - Imported. This was fairly easy to work and could be given a sharp edge. A pebble or bone hammer was used to strike long flakes of flint from the main stone. Axes with flint blades were also made.

The local inhabitants could have acquired knowledge from other countries regarding some uses of plants and herbs which grew in other Mediterranean lands. Our forebears continued to use them, especially when they realized that these grew in our Islands. This far back in the past, we can only wonder about the contemporary uses and our conclusions have to be somewhat speculative. In the era A.D. and over the centuries that followed, it is likely that more and more plants and herbs were utilized with a view to help them in health and disease.

It is impossible to describe clear visions that reflect conditions that came to pass in prehistoric times regarding Man's attempts to lessen pain and the practice of some form of crude surgery. Man is distinguished from animals, among other attributes by his ability to make and improve tools of various shapes and sizes and to communicate ideas. Considered functionally, tools are utilized in what may be described as extensions of the forelimb - indeed a wonderful multipurpose vital part of our anatomy.

Human skulls unearthed in some countries show that trepanation, as described in my paper published in the Family Physician, no., 24, Dec 03, was carried out in prehistoric times. Sharpened flints were probably used to perform trepanation, before the discovery of bronze and iron. Flint was imported from Sicily, such as from Monte Ibles. It is surmised that probably it was also used to open abscesses and let out pus and blood and to remove a superficial growth on the skin. Teeth of fish were possibly also used for this purpose.

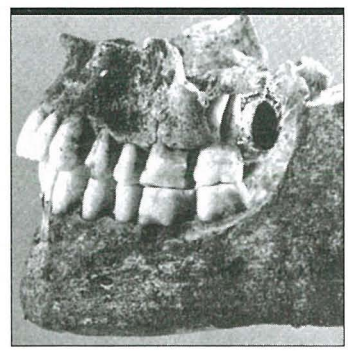
As learning in the use of tools increased, saws for use in amputations were made from flints and bronze. This is known because certain mummies, (not in Malta) indicate such operations. In due course with the introduction of bronze and iron, suitable knives, daggers, saws, scissors, forceps and needles came into use. The relics found at Pompei included some strange looking, but interesting surgical instruments.

It is believed that sewing with a waxed thread, besides other material, of a bad cut or wound was an already established procedure in Roman times, possibly earlier.

Because dietary habits influence many aspects of lifestyle, theories based on dietary models have been important in the study of human development. Comparative anatomy does help in understanding certain features including tooth wear, but allows only the most specialized diets to be ruled out. A biomechanical analysis shows that jaw tooth forms are rather subtle. Major dietary types can generally be distinguished by their microwear.

Within limits, we can comment about the diet of early Man in our Islands. This probably included a considerable amount of rather hard food, besides edible plants, seashells and pods - which consisted of small seeds with fairly hard protective cases. Since the biting forces of the mandible and muscles of mastication are used to generate pressures over occlusal surfaces, gradual abrasion resulted in attrition. The pressures which are applied vary between individuals, as the size of the jaws and the related strength is linked with the biomechanics of human chewing. The hardest tissue in the body is tooth enamel which can withstand pressures.

The left side of the jaws of a child of about 4 years, showing extensive buccal caries in the upper deciduous molars and caries free lower deciduous molars



The jaws and teeth of an adult, probably just past middle age which show some attrition on the molars

However these pressures over the years, affect toothwear and over a very long period of years can also affect the temporo-mandibular joint, and can withstand some adaptation to a changing mastication pattern. This is another aspect outside the confines of this paper.

And now some reference to cutting or pointed tools. It is likely that the first razors were of obsidian or flint. Bones, sometimes including bird bones, were used for making points. Perforated needles of bone were also found at the Tarxien temples, both straight and curved. Often the teeth from ancient skulls unearthed from graves and elsewhere are found to be in a ground-down condition. The rate of attrition is influenced by the diet, occlusion and the way a person bites. A coarse diet brings about more attrition. Another minor factor which may be suggested is that the grit which forms in limestone and pottery querns where food is mixed, affected the enamel of the teeth. Neolithic folk and later communities utilized hollowed stones for milling. The friction generated with a pestle in a mortar resulted in the formation of some grit; that is countless minute particles of stone became incorporated with the milled mixture.

With the end of the Middle Ages a gradual development began, characterized by new concepts and analysis of the work of Greek and Roman medical practice and related matters. This was the beginning of the so-called Humanism, within the wider framework of what is referred to as Renaissance.

It is not easy to assess the standard of medicine and surgery of those times, but the death mortality was very high. The avant garde reasoning of the eminent physician Paracelsus of the first half of the 16th century is noteworthy. He recorded (liberal translation): "Medicine is not merely a science and an art. It does not consist only in compounding pills and plasters and drugs of all kinds, but deals with the human processes of life which must be understood before they can be aided and guided".

In the following century another important consideration was addressed in various teaching medical centers. Human dissection - a vital part in a medical curriculum became obligatory and gave students the chance to broaden their knowledge and understand better in a practical way, the human body, its insights and functions.

As the knights of St. John gradually established their presence in Malta and Gozo, more fields and areas not far from the coastline were brought under cultivation. Life in general improved with a more safe and stable existence. In the early days of the Knights, much of the medical and surgical procedures were in general still based on the Greek physician Hippocrates, the Roman Galen and the Avicenna principles. The wise Hippocrates, among his various writings noted (liberal translation): "Prayer indeed is good, but while calling on the gods, a man should himself lend a hand". Hippocrates also advocated the importance of varied nutrition and exercises. The Roman physician Claudius Galen (131-201 A.D.) was instrumental in creating a system of therapy that influenced European practice for the next century and a half.

And now to a much later time horizon. The Salerno School in the Kingdom of Naples was in 1224, Europe's first officially recognized medical school. Its training of medical students, which for the first time ever included some female students, contributed to improvements in medicine and surgery.

The topic of the significance of urine is very useful to study the interaction of causes and effects. Circa 1450, the importance of the examination of urine was realized further and charts were made to help doctors make a diagnosis, within limits, with information on what colour, odour and consistency implied. Over the years, these charts were gradually improved and remained a diagnostic aid for centuries.

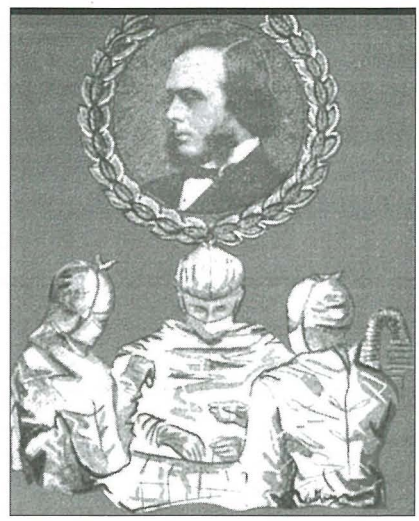
At this point I may well mention Healing of Wounds. There is a manifest inequity between the treatment of wounds in the medieval times and the present. Healing is a delicate process which triggers the body to start an anabolic process in its metabolism. In a fairly healthy person there are three main phases: first inflammation, secondly the hyperplastic phase and lastly the gradual remodeling of the scar. The depth of the wound, the growth of new tissue and the microenvironment are important factors involved in healing.

One of the avant-garde doctors (outside Malta) was the Frenchman Ambrosio Pare (b.1510, d.1590). He campaigned against some incredible practices which did not make sense,

such as the medieval custom of placing hot irons on a wound to stop bleeding and sometimes treating gunshot wounds with boiling oil which did more harm than good. These procedures brought about serious complications such as burns, interference with blood supply, destruction of tissues and sometimes the loss of a limb. How long boiling oil and cauterization remained in use in Malta is not clear. However it is known that some physicians and barber surgeons were against it and it had already been discontinued by the early 17th century, perhaps earlier. Besides these horrors, diseases and poverty; the population suffered immensely at times of pestilence, sadness heaped upon sadness as widespread deaths ravaged their lives.

And now some focus on the Knights Hospitallers. The Sacra Infermeria was under the control of the Knights with medical, surgical and nursing staff. The impressive great ward, which runs almost parallel with the Grand Harbour is 502 feet in length and 34.5 feet wide. The novices of the order also attended to the needs of the sick and infirm - irrespective whether they were Maltese or slaves. Each Langue was in duty bound to serve one day every week; the Grand Master also attended on Fridays - indeed a laudable gesture. The service rendered was of a high standard and attention was given to adequate cleanliness, a good diet and regular daily care. Although the mortality rate was high, many operations carried out had a positive outcome. All instruments were boiled, so a form of sterilization was practised. It is surmised that at a period in time, patients with certain wounds, while recuperating were occasionally given the opportunity to wash them in clean seawater (saline), which in moderation was beneficial, especially in summer.

The average age of death used to be much lower than it is now. "To every man upon this earth, Death cometh sooner or later". The coming of death must have been in many cases even harder to bear then than now and physically painful as well, because soothing drugs were not available. Old age must have been a difficult time. The shortsighted had no proper spectacles. The deaf had no aids except ear trumpets. The toothless lacked dentures. Lepers were ostrasized from society, even those who developed skin disease, or thick scales and sores.



Dr Joseph Lister used carbolic acid as an antiseptic in an effort to reduce hazards in surgery

The extraction of carious teeth was generally very painful and dreadful. Events continued to unfold with more developments, among others the use of anaesthetic.

An important breakthrough took place in 1846, when ether was used at the Massachusetts General Hospital. Ether was the first anaesthetic. Various types of surgical interventions became possible. Yet the success rate remained unsatisfactory, mainly because germs from the air and the operating theatre infected open wounds. The infections often ended in death. Around 1865, an English surgeon - Joseph Lister used carbolic acid with a view to control the germs threat. This was not a satisfactory method and it took many years later for all round effective sterilisation to evolve.

This brings me to what to some extent, I may refer to as the end of an era and the beginning of a new chapter in the ascent of the long road of medicine, surgery and dentistry for the good of humanity.

An old type tongs used for removing foreign bodies, such as bullets or splinters, typical of the Knights' period