



# History of Surgery in Ancient, Middle and Modern Era – A Review Article

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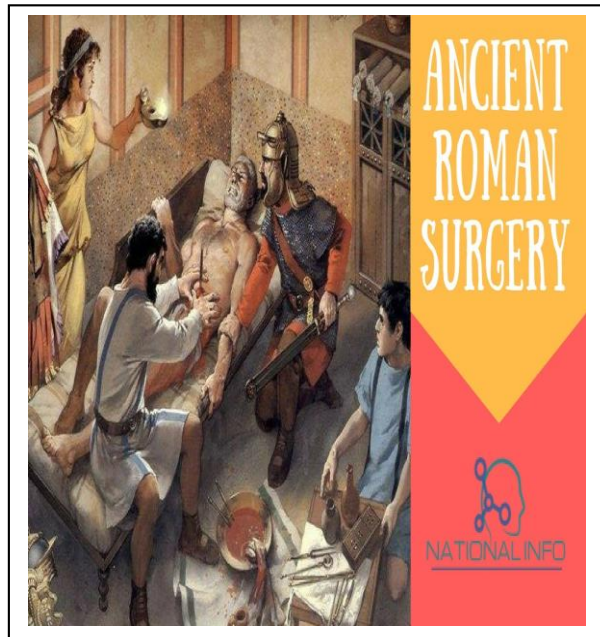
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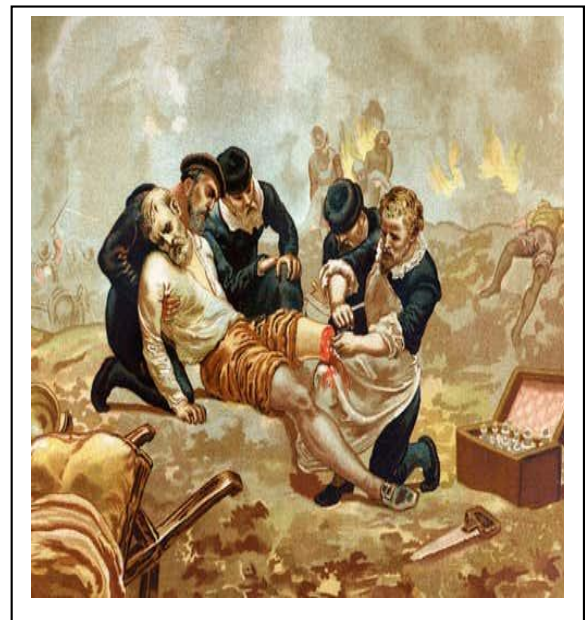
## 1. Introduction of Surgery.

There was a very long period in human history when science, witchcraft, and superstition were closely connected and conflicted. Although the ancient Greeks felt the need to develop ways to treat diseases and heal injuries, their attempts were attached to religion and the supernatural. Magic and medicine were the two sides of the same coin, a process run by ancient priests. During these pre-historical times, several civilizations had developed worldwide. Some of the most important in human history evolved around the Mediterranean basin and in the Middle East: the Egyptians, the Sumerians, the Babylonians, and the Persians; each of them was defined by different social and religious customs. All these archaic cultures possessed and developed knowledge, acquired for practical purposes, with no desire for spiritual or philosophical considerations. They did not try to understand, decode and interpret the very "essence of life" and discover the deeper causation of matter and cognitional beings; therefore, they failed to transform knowledge into wisdom or science. Ancient Greeks were somehow different, as their culture had been inspired by an extroverted and free spirit. They always looked for the cause of things, obvious or not, and never stopped wondering and trying to comprehend the laws of natural world. The Greek intellectual approach to life is summarized in the words of Aristotle (ca 384-322 BC), "all that exists are either known or should be defined". Soon, philosophy was implanted in all

disciplines, including medicine, to sterilize it from religious and folklore practices. The critical and philosophical way of thinking facilitated the organization of the existing knowledge and the development of science, which illuminated neighboring civilizations.

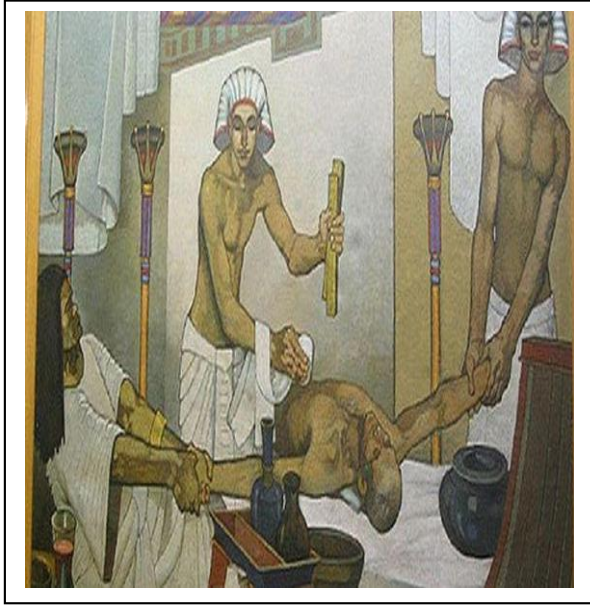


**Fig. 1 Surgery in ancient Roman Era**

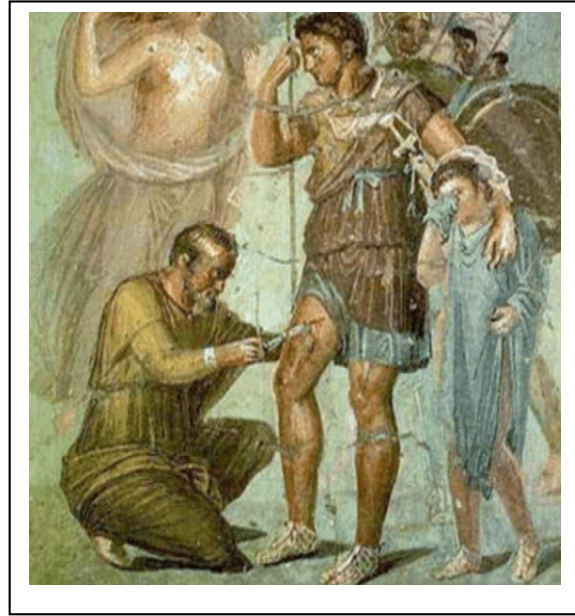


**Fig. 2 Surgery during war in Roman**

This sui generis ability has been noted by Plato (ca 448-347 BC) as a particular and unique feature of ancient Greeks, "whatever the Greeks receive from the barbarians, they will eventually work to make it much better", Although major developments that changed world history and shaped modern medicine took place in ancient Greece, the lack of written records hampers our knowledge of them. Almost 3000 years ago, the great Trojan War took place: a fierce clash that lasted for 10 years. Many other battles had already taken place in human history, but this was spectacular in numbers and brutality as the ancient Hellenic world collided with Trojans during a long-lasting siege. A detailed description of this war was saved in the epic Homers' "Iliad" and narrated from mouth to mouth through the ages until it was finally written down in the version available today. A blend of history and mythology created Iliad's epos, which included the starting point of surgical science and introduced Machaon as the Father of Surgery. Overall, the term "physician" (ancient Greek: ιητήρ) is frequently mentioned in Iliad's text. In addition, a Mycenaean clay Table from "Ano Egliauou Palace" in ancient Pylos, written in Linear B, testifies the existence of physicians in the ancient Hellenic world. The notion that surgical interventions during wars greatly contributed to the development of surgical practice, was summarized in the Hippocratic aphorism "War is the surgeons' school and everyone who wishes to practice surgery must go to war". This historical review tries to narrate Machaon's tale and unearth the relevant scientific data from ancient Greek mythology.



**Fig. 3 Surgery in Egyptian kings**



**Fig. 4 Surgery in ancient Egypt**

## 2. Machaon, the father of surgery

Machaon (Greek: Μαχάων) was the eldest son of Asclepius and the most famous among his children. His name derives from the Greek word "μάχη" (machi), which means battle, or from the word "μάχαιρα" (machaera) which means knife (or scalpel in surgery). Thus, "Machaon" means the man who fights, the warrior and the one who cures with his surgical skills. Machaon studied medicine at Mount Pelion under the guidance of Centaur Chiron who was the esteemed teacher of the first physicians. His tutoring proves the divine origin of Machaon's medical expertise. Furthermore, the ancient texts suggest that Asclepius himself taught both his sons the basic principles of medicine. Podalirius was the internist, but Machaon became synonymous to traumatology and surgery. The name of Machaon supports the bipolar nature of things in ancient Greece, like war and peace, good and bad, trauma and healing. The soldier injures and kills, while the physician helps and cures. Injury and therapy were the two opposite cornerstones of medicine.

According to myth, the Greeks attacked Troy to take back Helen, the wife of Menelaus, King of Sparta, although modern historians suggest that the real motives were mostly economic, commercial and military. King Menelaus and his brother Agamemnon, King of Mycenae and commander-in-chief of all Greeks, asked the two sons of Asclepius to take part in the expedition. Machaon and Podalirius, the commanders of Trikki and Ithome, agreed to join the Greek forces, not only as physicians, but also as the leaders of an army of 30 ships manned with "hoplites" (Greek: οπλίτες, men in arms).



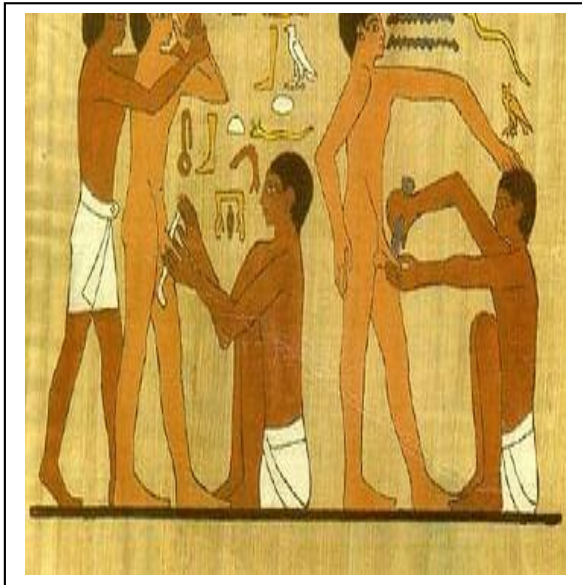
### 3. Definition of Surgery:

Surgery is the branch of medicine that deals with the physical manipulation of a bodily structure to diagnose, prevent, or cure an ailment. Ambroise Paré, a 16th-century French surgeon, stated that to perform surgery is, "To eliminate that which is superfluous, restore that which has been dislocated, separate that which has been united, join that which has been divided and repair the defects of nature."

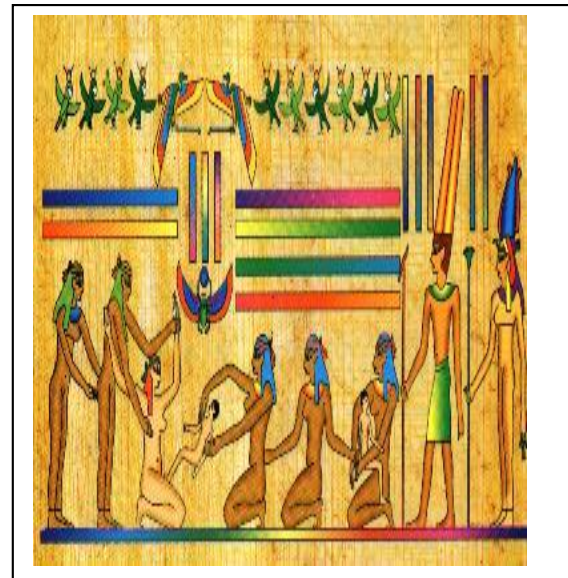
Since humans first learned how to make and handle tools, they have employed their talents to develop surgical techniques, each time more sophisticated than the last; however, until the industrial revolution, surgeons were incapable of overcoming the three principal obstacles which had plagued the medical profession from its infancy bleeding, pain and infection. Advances in these fields have transformed surgery from a risky "art" into a scientific discipline capable of treating many diseases and conditions.

### 4. Origin of Surgery.

The first surgical techniques were developed to treat injuries and traumas. A combination of archaeological and anthropological studies offer insight into much earlier techniques for suturing lacerations, amputating unsalvageable limbs, and draining and cauterizing open wounds.



**Fig. 5 Circumcision in male in ancient Roman Era**



**Fig. 6 Delivery in female in ancient Egypt and Roman Era**

Many examples exist: some Asian tribes used a mix of saltpeter and sulfur that was placed onto wounds and lit on fire to cauterize wounds; the Dakota people used the quill of a feather attached to an animal bladder to suck out purulent material; the discovery of needles from the Stone Age seems to suggest they were used in the suturing of cuts; and tribes in India and South America developed an ingenious method of sealing minor injuries by applying termites or scarabs who bit the edges of the wound and then twisted the insects' neck, leaving their heads rigidly attached like staples.

**A. Trepanation in Surgery:**

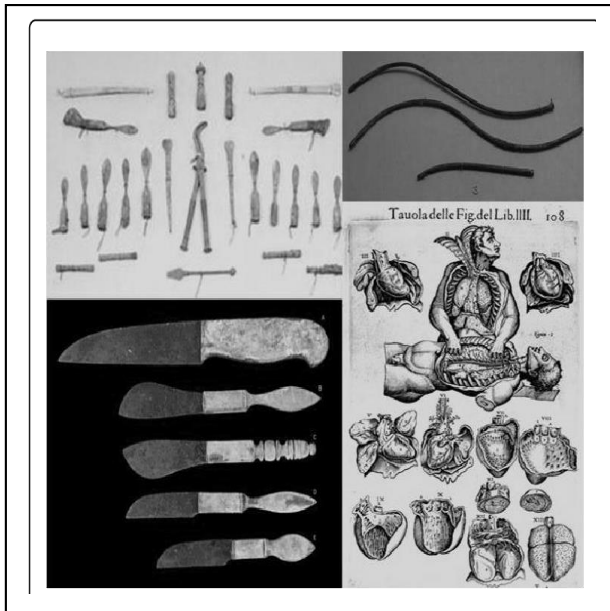
The oldest operation for which evidence exists is trepanation, in which a hole is drilled or scraped into the skull for exposing the duramater to treat health problems related to intracranial pressure and other diseases. In the case of head wounds, surgical intervention was implemented for investigating and diagnosing the nature of the wound and the extent of the impact while bone splinters were removed preferably by scraping followed by post operation procedures and treatments for avoiding infection and aiding in the healing process. Evidence has been found in prehistoric human remains from Proto-Neolithic and Neolithic times, in cave paintings, and the procedure continued in use well into recorded history (being described by ancient Greek writers such as Hippocrates). Out of 120 prehistoric skulls found at one burial site in France dated to 6500 BCE, 40 had trepanation holes. Folke Henschen, a Swedish doctor and historian, asserts that Soviet excavations of the banks of the Dnieper River in the 1970s show the existence of trepanation in Mesolithic times dated to approximately 12000 BCE. The remains suggest a belief that trepanning could cure epileptic seizures, migraines, and certain mental disorders. There is significant evidence of healing of the bones of the skull in prehistoric skeletons, suggesting that many of those that proceeded with the surgery survived their operation. In some studies, the rate of survival surpassed 50%.

**B. Setting bones in surgery:**

Examples of healed fractures in prehistoric human bones, suggesting setting and splinting have been found in the archeological record. Among some treatments used by the Aztecs, according to Spanish texts during the conquest of Mexico, was the reduction of fractured bones: "...the broken bone had to be splinted, extended and adjusted, and if this was not sufficient an incision was made at the end of the bone, and a branch of fir was inserted into the cavity of the medulla..." Modern medicine developed a technique similar to this in the 20th century known as medullary fixation.

## 5. History and background of Greek.

Surgeons are now considered to be specialized physicians, whereas in the early ancient Greek world a trained general physician had to use his hands to carry out all medical and medicinal processes including for example the treating of wounds sustained on the battlefield, or the treatment of broken bones.



**Fig. 7 various surgical instruments used ancient Greek & Roman Era**



**Fig. 8 various surgical instruments used for surgery**

In *The Iliad* Homer names two doctors, “the two sons of Asklepios, the admirable physicians Podaleirius and Machaon and one acting doctor, Patroclus. Because Machaon is wounded and Podaleirius is in combat Eurypylos asks Patroclus “to cut out this arrow from my thigh, wash off the blood with warm water and spread soothing ointment on the wound.” Following are various scientists from Greek have great services in Medicine and surgery.

### A. Hippocrates

Hippocrates was a Greek doctor who made many contributions to medicine. He founded the first school of medicine, which was the first place where medicine was separated from philosophy and religion. Instead of believing that illness happened as a punishment from the gods, Hippocrates suggested that people got sick because of how or where they lived. Although Hippocrates did not understand a lot about anatomy and physiology, he believed in the importance of careful attention and technique as doctors treated their patients.

The Hippocratic Oath, written in the 5th century BC provides the earliest protocol for professional conduct and ethical behavior a young physician needed to abide by in life and in treating and managing the health and privacy of his patients. The multiple volumes of the Hippocratic corpus and the Hippocratic Oath elevated and separated the standards of proper Hippocratic medical conduct and its fundamental medical and surgical principles from other practitioners of folk medicine often laden with superstitious constructs, and/or of

specialists of sorts some of whom would endeavor to carry out invasive body procedures with dubious consequences, such as lithotomy. Works from the Hippocratic corpus include;

*On the Articulations or On Joints, On Fractures, On the Instruments of Reduction, the Physician's Establishment or Surgery, On Injuries of the Head, On Ulcers, On Fistulae, and On Hemorrhoids.*

## **B. Celsus and Alexandria**

Herophilus of Chalcedon and Erasistratus of Ceos were two great Alexandrians who laid the foundations for the scientific study of anatomy and physiology. Alexandrian surgeons were responsible for developments in ligature (hemostasis), lithotomy, hernia operations, ophthalmic surgery, plastic surgery, methods of reduction of dislocations and fractures, tracheotomy, and mandrake as anesthesia. Most of what we know of them comes from Celsus and Galen of Pergamum

## **C. Galen**

Galen's *On the Natural Faculties*, Books I, II, and III, is an excellent paradigm of a very accomplished Greek surgeon and physician of the 2nd century Roman era, who carried out very complex surgical operations and added significantly to the corpus of animal and human physiology and the art of surgery. He was one of the first to use ligatures in his experiments on animals. Galen is also known as "The king of the catgut suture"

## **D. Medicine in Ancient Greek (Unan)**

People in ancient Greece had a major influence on how we live today in many ways, including in the areas of science, math, philosophy, astronomy, literature, theater, and medicine. The Greeks are known for the questions they asked about science and their ability to apply logic to find answers. Hippocrates was a Greek doctor who lived during ancient times, and he had a major influence on the development of medicine. He wrote many arguments and reports about diseases, and his recommended treatments have formed the foundation of medical practices today.

## **E. Mathes, Science, and Medicine in ancient Greek.**

Ancient Greeks placed a strong emphasis on numbers because they thought that specific numbers had meanings. Alcmaeon was a scientific philosopher who connected illnesses with people's lifestyle, nutrition, and even the environment. Greek people had enough money to give them the freedom to enjoy entertainment, culture, and impressive architecture in their buildings. Greeks were also very interested in the sciences and mathematics, and they wanted to understand these concepts. As philosophers considered matter and elements, Greek doctors began to delve into the possibility that medicine and religion was not intricately connected, as the Egyptians believed they were. Instead of focusing on repelling evil spirits to heal the sick, doctors began looking at physical cures to help their patients.

**I.** Medicine in Ancient Greece: People in ancient Greece valued their health, and ideas about health had previously been largely based on religion and superstitions.

**II.** History of Ancient Greek Medicine: The cult of Asclepius provided medical care in ancient Greece, devising treatments based on older theories.



- III. Ancient Greek Medicine: Medical practices looked at mental, emotional, spiritual, and physical reasons behind either health or lack of it.
- IV. Health Care Practices in Ancient Greece: The Hippocratic Ideal: Hippocrates and Asclepius had natural approaches to medical practices that focused on the importance of harmony between people and their surrounding environment.
- V. Seven Unusual Ancient Medical Techniques: One medical practice in ancient Greece was called bloodletting, which involved draining blood if a doctor thought a patient had too much.
- VI. What Is Ancient Greek Medicine? Greek physicians were the first to consider that illnesses had natural causes.
- VII. Ancient Greek Medicine: Initially, the Greeks thought that illnesses were religious punishments. Eventually, Greek doctors looked for natural causes instead of spiritual causes.
- VIII. Ancient Greek Medicine: Asclepius to Hippocrates: Because people tended to die young in ancient Greece, doctors worked hard to figure out why people got sick and how to heal them.
- IX. Medical Politics in Ancient Greece: Separating medicine and religion was an important step for Greek doctors, and this gave them the ability to explore scientific reasons for illness.

#### F. Surgery in ancient Greek

Ancient Greek doctors performed some surgical procedures on patients. A doctor might set a broken bone, amputate an arm or a leg, drain fluid from the lungs, or perform a procedure known as bloodletting. Bloodletting involved the draining of blood from a patient; doctors thought that having too much blood contributed to illness. Ancient surgeries were often performed as a result of war as doctors tried to save the lives of those involved in battles.

- I. History of Surgery: Greek surgeons performed surgeries such as bloodletting, amputations, and draining lungs of fluid.
- II. Chirurgia (Surgery): Surgery was rudimentary in ancient Greece because they did not have a full understanding of anatomy.
- III. Hippocrates and Greek Medicine: Learn more about Greek doctors and their practices, including the most famous Greek doctor, Hippocrates.
- IV. Surgery: A Violent Profession: Without effective anesthesia, surgery in ancient Greece was very painful for patients.
- V. Surgery: Ancient Surgeons: In Greece and Rome, doctors turned to surgery as a last resort to assist patients.
- VI. Military Medicine in Ancient Greece: Greek doctors used herbs to help treat pain and to stop bleeding.
- VII. The Cataract Operation in Ancient Greece : Greek doctors are known to have performed cataract operations in the third century B.C.
- VIII. Advanced Ancient Knowledge: Brain Surgery 2,500 Years Ago: Evidence shows that Greek doctors performed skillful brain surgery.
- IX. Signs of Brain Surgery Found in Ancient Greek Skull: Archaeologists have found the remains of patients who obviously had brain surgery performed on them by ancient Greek doctors.

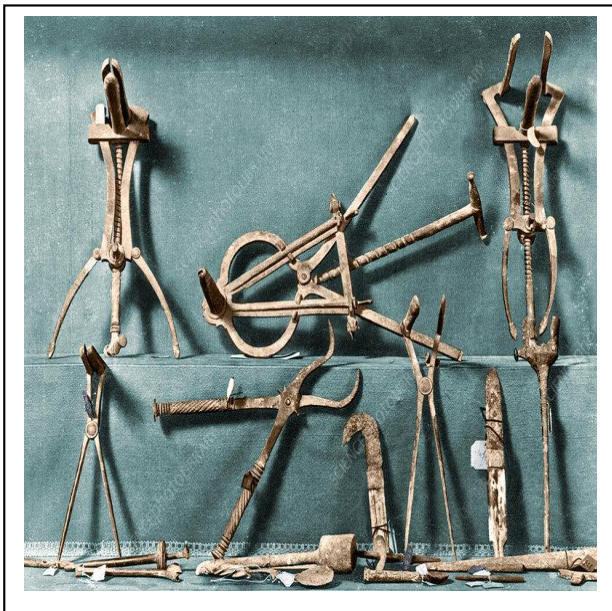


- X. Surgery before Common Era: Battlefield injuries in ancient Greece likely led to the development of surgical procedures to treat patients.

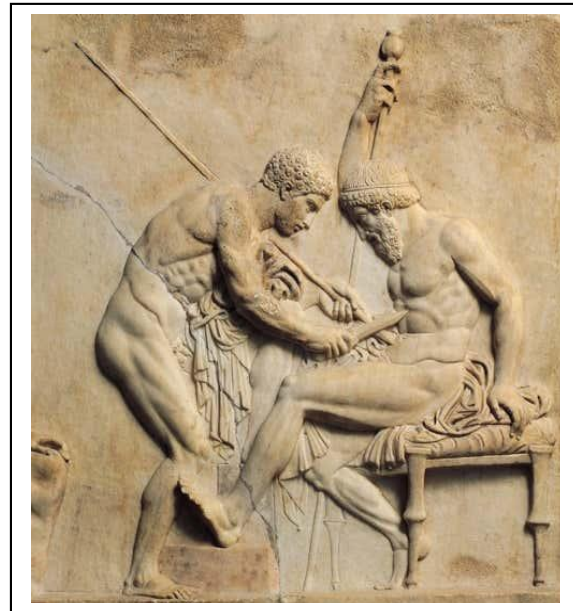
## 6. Surgery in Unani system of Medicine:

In Unani System of Medicine since very ancient times, Surgery (Ilaj-bil- Yad) has always been a part of treatment. It is the treatment of injuries or disorders of the body by incision or manipulation, especially with the help of some instruments.

Ilaj-bil- Yad is an ancient medical specialty that uses operative manual and instrumental techniques on a patient to investigate and/or treat a pathological condition such as disease or injury, to help improve bodily function or appearance or to repair unwanted ruptured area (for example, a perforated ear drum). Unani physicians were pioneers in surgery and had developed their own instruments and techniques. They practiced surgery and wrote many remarkable books on the subject like, Kitab-al-Tasreef by Abul Qasim Zahravi, Kitab-al-Umda fil Jarahat by Ibn-al-Quf Masihi, Kamilus San'a by Ali Abbas Majoosi etc.



**Fig. 9 various surgical instruments used ancient Greek & Roman Era**



**Fig. 10 Method of surgery used ancient Greek & Roman Era**

An Arab Unani physician, Abul Qasim Zahravi, wrote a book entitled Kitab al-Tasrif li-man 'ajiza 'anit -Ta'leef with illustrations of surgical instruments, consisted of 30 volumes on topics of medicine, surgery, pharmacy and other health sciences. The last volume of the book, comprising 300 pages, is dedicated to only Surgery related topics. He treated Surgery as a separate subject for the first time in the history of Medicine. He described several procedures, inventions, and techniques, including tonsillectomy, tracheotomy, craniotomy, thyroidectomy, extraction of cataract, removal of kidney stones, caesarian section, dentistry etc.

In ancient times, Unani surgeons did perform several surgeries like brain surgery, laparotomy and plastic surgery. In spite of the apathy generated by colonial rule, the faith of people in their culture and traditional medicine kept the remaining branches of Unani alive. It is because of this mass base and utility that after Independence, the Government of India took several steps to further this health science.

In Unani System of Medicine, certain categories of drugs are used in cases where surgical interventions are needed.

- I. Dafa-e- Ta' affun Adwiya: (Antiseptic drugs)- Cinnamomum camphora (Kaafoor), Azadirachta indica (Nīm), Santalum album (Sandal) etc.
- II. Haabis-e- Dam Adwiya: (Styptic drugs)- Alum (Shibb Yamānī), Quercus infectoria (Māzū), Polygonum bistorta (Anjibār) etc.
- III. Mudammil-e- Qurooḥ Adwiya: (Wound healing drugs) - Dracaena cinnabari (Dam al-A khwayn), Soap stone (Sang Jaraahat), Red Ochre (Gerū) etc.
- IV. Anaesthetics: (Mukhaddir Adwiya)- Datura innoxia (Jawz al-Māthil), Hyoscyamus alba (Ajvā 'in Khurāsānī), Lactuca sativa (Kāhū) etc.
- V. Musakkin-e- Alam Adwiya: (Analgesics)- Colchicum autumnale (Suranjaan), Conium maculatum (Shokran), Syzygium aromaticum (Qaranfal).
- VI. Khaatim Adwiya: (Cicatrizants)- calcified shell (SadafSokhta), Slaked lime (Aahak Maghsool), Nummulite (Shadinaj) etc.

## 7. Definition and scope of modern surgery:

Surgery, branch of medicine that is concerned with the treatment of injuries, diseases, and other disorders by manual and instrumental means. Surgery involves the management of acute injuries and illnesses as differentiated from chronic, slowly progressing diseases, except when patients with the latter type of disease must be operated upon.

## 8. History of modern surgery:

Surgery is as old as humanity, for anyone who has ever stanching a wound has acted as a surgeon. In some ancient civilizations surgery reached a rather high level of development, as in India, China, Egypt, and Hellenistic Greece. In Europe during the Middle Ages, the practice of surgery was not taught in most universities, and ignorant barbers instead wielded the knife, either on their own responsibility or upon being called into cases by physicians. The organization of the United Company of Barber Surgeons of London in 1540 marked the beginning of some control of the qualifications of those who performed operations. This guild was the precursor of the Royal College of Surgeons of England.

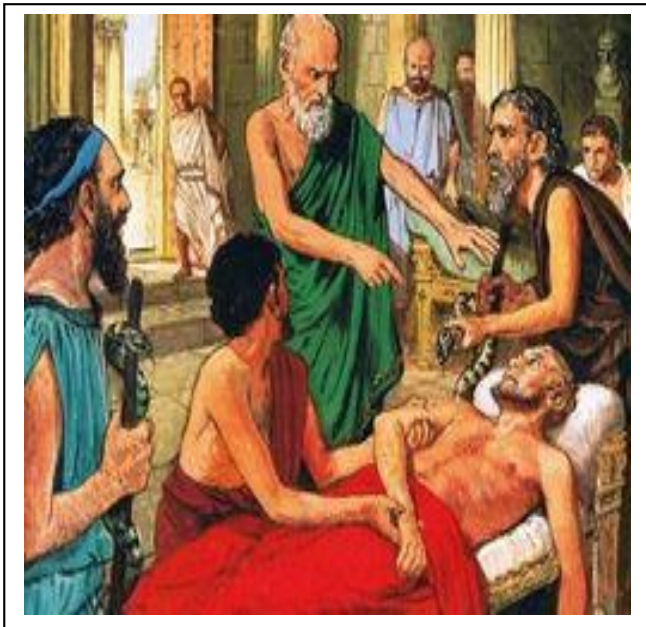
In the 18th century, with increasing knowledge of anatomy, such operative procedures as amputations of the extremities, excision of tumours on the surface of the body, and removal of stones from the urinary bladder had helped to firmly establish surgery in the medical curriculum. Accurate anatomical knowledge enabled surgeons to operate more rapidly; patients were sedated with opium or made drunk with

alcohol, tied down, and a leg amputation, for example, could then be done in three to five minutes. The pain involved in such procedures, however, continued to limit expansion of the field until the introduction of ether anesthesia in 1846. The number of operations thereafter increased markedly, but only to accentuate the frequency and severity of “surgical infections.”

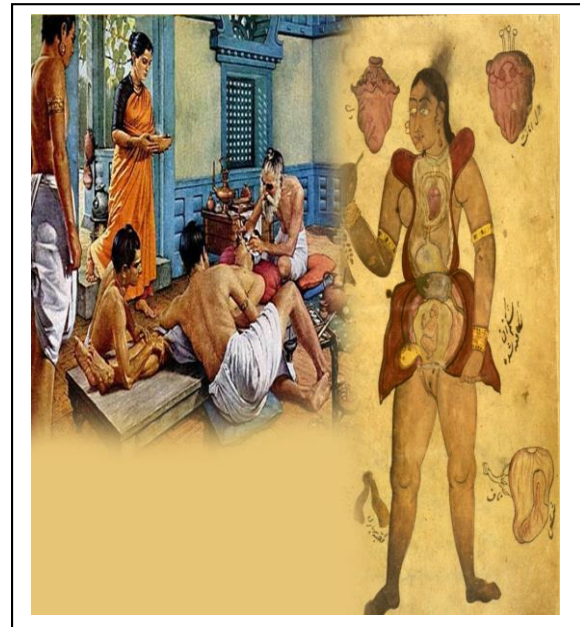
### **William Thomas Green Morton administering ether anesthesia**

Thomas Green Morton administering ether anesthesia during the first successful public demonstration of its use during surgery, undated engraving.

In the mid-19th century the French microbiologist Louis Pasteur developed an understanding of the relationship of bacteria to infectious diseases, and the application of this theory to wound sepsis by the British surgeon Joseph Lister from 1867 resulted in the technique of antisepsis, which brought about a remarkable reduction in the mortality rate from wound infections after operations. The twin emergence of anesthesia and antisepsis marked the beginning of modern surgery.



**Fig. 11 Shushruta- The father of Indian surgery**



**Fig. 12 Shushruta- The father of Indian surgery**

Wilhelm Conrad Röntgen’s discovery of X-rays at the turn of the 20th century added an important diagnostic tool to surgery, and the discovery of blood types in 1901 by Austrian biologist Karl Landsteiner made transfusions safer. New techniques of anesthesia involving not only new agents for inhalation but also regional anesthesia accomplished by nerve blocking (spinal and local anesthesia) were also introduced. The use of positive pressure and controlled respiration techniques (to prevent the lung from collapsing when the pleural cavity was opened) made chest surgery practical and relatively safe for the first time. The intravenous administration (injection into the veins) of anesthetic agents was also adopted. In the period from the 1930s to the 1960s, the replenishment of body fluids by intravenous infusion, the introduction of chemicals and antibiotics to fight infection and to treat the metabolically disturbed body, and the



development of heart-lung machines helped bring surgery to a state in which every body cavity, system, organ, and area could safely be operated on.

## 9. Present-day surgery

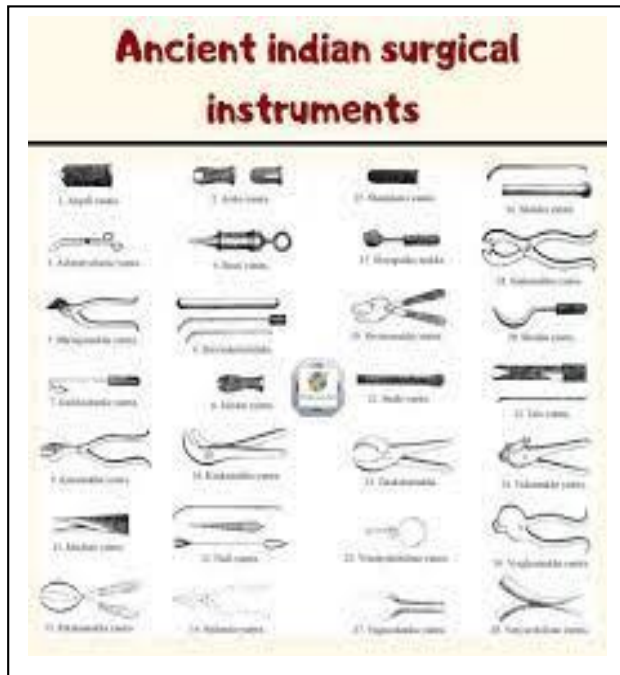
Contemporary surgical therapy is greatly helped by monitoring devices that are used during surgery and during the postoperative period. Blood pressure and pulse rate are monitored during an operation because a fall in the former and a rise in the latter give evidence of a critical loss of blood. Other items monitored are the heart contractions as indicated by electrocardiograms; tracings of brain waves recorded by electroencephalograms, which reflect changes in brain function; the oxygen level in arteries and veins; carbon dioxide partial pressure in the circulating blood; and respiratory volume and exchange. Intensive monitoring of the patient usually continues into the critical postoperative stage. Asepsis, the freedom from contamination by pathogenic organisms, requires that all instruments and dry goods coming in contact with the surgical field be sterilized. This is accomplished by placing the materials in an autoclave, which subjects its contents to a period of steam under pressure. Chemical sterilization of some instruments is also used. The patient's skin is sterilized by chemicals, and members of the surgical team scrub their hands and forearms with antiseptic or disinfectant soaps. Sterilized gowns, caps, and masks that filter the team's exhaled air and sterilized gloves of disposable plastic complete the picture. Thereafter, attention to avoiding contact with nonsterilized objects is the basis of maintaining asepsis.

## 10. Autoclave for sterilization of surgical instruments.

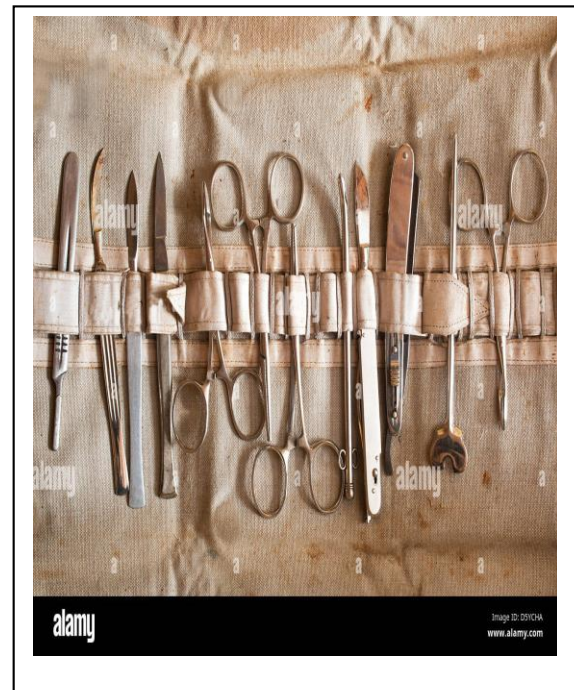
During an operation, hemostasis (the arresting of bleeding) is achieved by use of the hemostat, a clamp with ratchets that grasps blood vessels or tissue; after application of hemostats, suture materials are tied around the bleeding vessels. Absorbent sterile napkins called sponges, made of a variety of natural and synthetic materials, are used for drying the field. Bleeding may also be controlled by electrocautery, the use of an instrument heated with an electric current to cauterize, or burn, vessel tissue. The most commonly used instruments in surgery are still the scalpel (knife), hemostatic forceps, flexible tissue-holding forceps, wound retractors for exposure, crushing and non-crushing clamps for intestinal and vascular surgery, and the curved needle for working in depth.

The most common method of closing wounds is by sutures. There are two basic types of suture materials; absorbable ones such as catgut (which comes from sheep intestine) or synthetic substitutes; and non-absorbable materials, such as nylon sutures, steel staples, or adhesive tissue tape. Catgut is still used extensively to tie off small blood vessels that are bleeding, and since the body absorbs it over time, no foreign materials are left in the wound to become a focus for disease organisms. Nylon stitches and steel staples are removed when sufficient healing has taken place.





**Fig. 13 Ancient Indian surgical instruments**



**Fig. 13 Ancient Indian surgical instruments**

There are three general techniques of wound treatment; primary intention, in which all tissues, including the skin, are closed with suture material after completion of the operation; secondary intention, in which the wound is left open and closes naturally; and third intention, in which the wound is left open for a number of days and then closed if it is found to be clean. The third technique is used in badly contaminated wounds to allow drainage and thus avoid the entrapment of microorganisms. Military surgeons use this technique on wounds contaminated by shell fragments, pieces of clothing, and dirt.

The 20th and 21st centuries witnessed several new surgical technologies to supplement the techniques of manual incision. Lasers became widely used to destroy tumours and other pigmented lesions, some of which are inaccessible by conventional surgery. They are also used to surgically weld detached retinas back in place and to coagulate blood vessels to stop them from bleeding. Stereotaxic surgery uses a three-dimensional system of coordinates obtained by X-ray photography to accurately focus high-intensity radiation, cold, heat, or chemicals on tumours located deep in the brain that could not otherwise be reached. Cryosurgery uses extreme cold to destroy warts and precancerous and cancerous skin lesions and to remove cataracts. Some traditional techniques of open surgery were replaced by the use of a thin flexible fibre-optic tube equipped with a light and a video connection; the tube, or endoscope, is inserted into various bodily passages and provides views of the interior of hollow organs or vessels. Accessories added to the endoscope allow small surgical procedures to be executed inside the body without making a major incision. Preoperative and postoperative care both have the same object: to restore patients to as near their normal physiologic state as possible. Blood transfusions, intravenous administration of fluids, and the use of measures to prevent common complications such as lung infection and blood clotting in the legs are the principal features of postoperative care.

There are four major categories of surgery:

- I. Wound treatment,
- II. Extirpative surgery
- III. Reconstructive surgery, and
- IV. Transplantation surgery.

The technical aspects of wound surgery, already partly discussed, centre on procuring good healing and the avoidance of infection. Extirpative surgery involves the removal of diseased tissue or organs. Cancer surgery usually falls into this category, with mastectomy (removal of the breast), cholecystectomy (removal of the gallbladder), and hysterectomy (removal of the uterus) among the most frequent procedures. Reconstructive surgery deals with the replacement of lost tissues, whether from fractures, burns, or degenerative-disease processes, and is especially prominent in the practice of plastic surgery and orthopedic surgery. Grafts from the patient or from others are frequently used to replace lost tissues. Reconstructive surgery also uses artificial devices (prostheses) to replace damaged or diseased organs or tissues. Common examples are the use of metal in reconstructing hip joints and the use of plastic valves to replace heart valves. Transplantation surgery involves the use of organs transplanted from other bodies to replace diseased organs in patients. Kidneys are the most commonly transplanted organs.

### **Conclusion:**

Surgery and traumatology were born 3300 years ago in ancient Greece, in an era when heroes and gods, myths, and legends were indivisible. It was the time when all sciences were founded and developed in this small part of the world, the Hellenic peninsula. Machaon, a Greek heroic warrior and king, who ascended to a deity in the ancient world, is deemed as the Father of Surgery. In his name, battle and medicine were attached together and glorified. His divine origin granted prestige to the discipline of surgery, which was celebrated in his name by Homer. Machaon became the first documented surgeon of the history of medicine, opening the way to surgery's evolution through the eons to come. Anatomy and surgery share a common bond, forged in the ancient battlefields. Surgery was born during the ferocious clashes of the antiquity, where warrior heroes had to treat their fellows. Machaon is the first documented surgeon, rejoicing a blended nature of human hero and god physician. In an era of myths and brutality in the Hellenic peninsula, Machaon planted the seed for the most prestigious branch of medicine, and became the father of surgery.

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