

# \* Surgery

Content and history

Operating room



\* *The Origin of the word Surgery comes from the Greek word „ Cheirourgiké“*

\* *Cheir - hand*

\* *Ergein - work*



- \* Surgery may be defined as „ the art of treating lesions and malformations of the human body by manual operations, mediate and immediate.“
- \* The Surgeon should be familiar not only with the normal anatomy and physiology of the body and various pathological conditions to which it is liable, but also with the nature of process by which repair of injured or diseased tissues is affected.
- \* All forms of surgery are considered invasive procedures

## \* Content of surgery



Surgical procedures are commonly categorized mainly by:

- \* Urgency
- \* Type of procedure
- \* Involved body system
- \* Degree of invasiveness
- \* Special instrumentation

Three main categories of therapeutic surgery

- \* Emergency - stopping rapid internal bleeding, as soon as possible to save life
- \* Urgent - removal of inflamed appendix - within hours
- \* Elective - planned operations - hip joint replacement

# \* Division of surgery

Basic surgical field - **General surgery**

Specialized surgical fields:

- \* **Thoracic surgery** - surgery of lung, mediastinum, chest wall and pleural cavity
- \* **Cardiac surgery** - surgical treatment of disease of heart and great vessels
- \* **Neurosurgery** - surgery of the central, peripheral and autonomic nervous system
- \* **Urology** - surgery of urinary tract of males and females and reproductive system of males
- \* **Vascular surgery** - surgery of vascular system - arteries, veins and lymphatic circulation
- \* **Plastic surgery** - corrects surgically appearance and function of external shape of the body
- \* **Transplantation surgery** - surgical transfer of tissues and organs
- \* **Ortopedic, Maxillofacial and Pediatric surgery, Otorhinolaryngology, Ophthalmology etc...**

# \* Surgical Specialities



Evidence that the surgical assistance was provided was found from the period around year 4600 BC - the period of Assyria, Babylon, Ancient Egypt and India

\***Mesopotamia**: Sumerians developed several important medical techniques, used bronze instruments with sharpened obsidian



\***History of surgery**



\***Egypt**: 2700 BC first tract on surgery written  
by **Imhotep**



The oldest recorded engraving of a medical procedure:  
circumcision on the doorjamb of the entrance to the  
Temple of Memphis





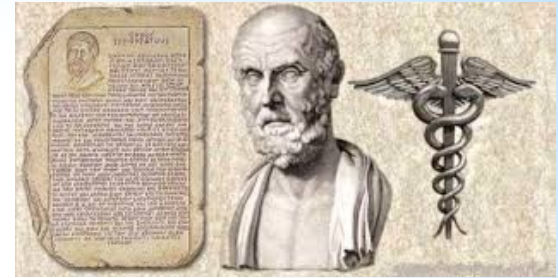
\* **India:** The **Susrutha Samhita** - oldest known surgical text written by Sushruta (600 BC), first known description of several operations- uniting of bowel, the removal of prostate gland, rhinoplasty, draining of abscesses, removal of cataract lenses





\* **Greece : Hippocrates**

- the father of medicine (460-377 BC)-
- first monography - Corpus hippocraticum - summarized all medical knowledgenad experiences of Ancient world, contains The Hippocratic Oath.



\* **Alexandria period (300BC- 400 AD)**

- report of human body section, basic knowlege of human anatomy

**Galénos (129-216AD)**

- teacher and surgeron
- autopsies of live animals,
- report eye a brain operations



\* **Ancient China**

**Hua Tuo** (140 -208 AD)

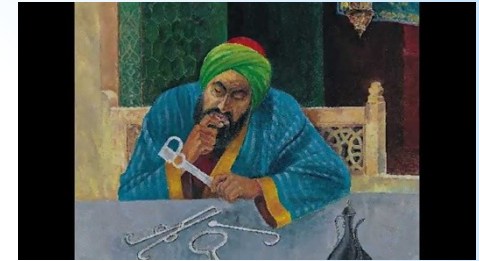
- famous Chinese physician
- first person who performed the surgery with the aid of anesthesia
- drink containing hashish and akonitine
- performed skull trepanation, laparotomy, splenectomy, anastomosis of intestines



## \* Arabic period

### Al- Zahrawi (Abukasim) (936-1013)

- specialized in curing disease with cauterization
- Invented several devices used during surgery
- Pioneer in neurosurgery, treatment of head, and spinal injuries, subdural effusions
- First clinical description on an operative procedure for hydrocephalus



### Ibn Sina ( Avicenna , 980-1038)

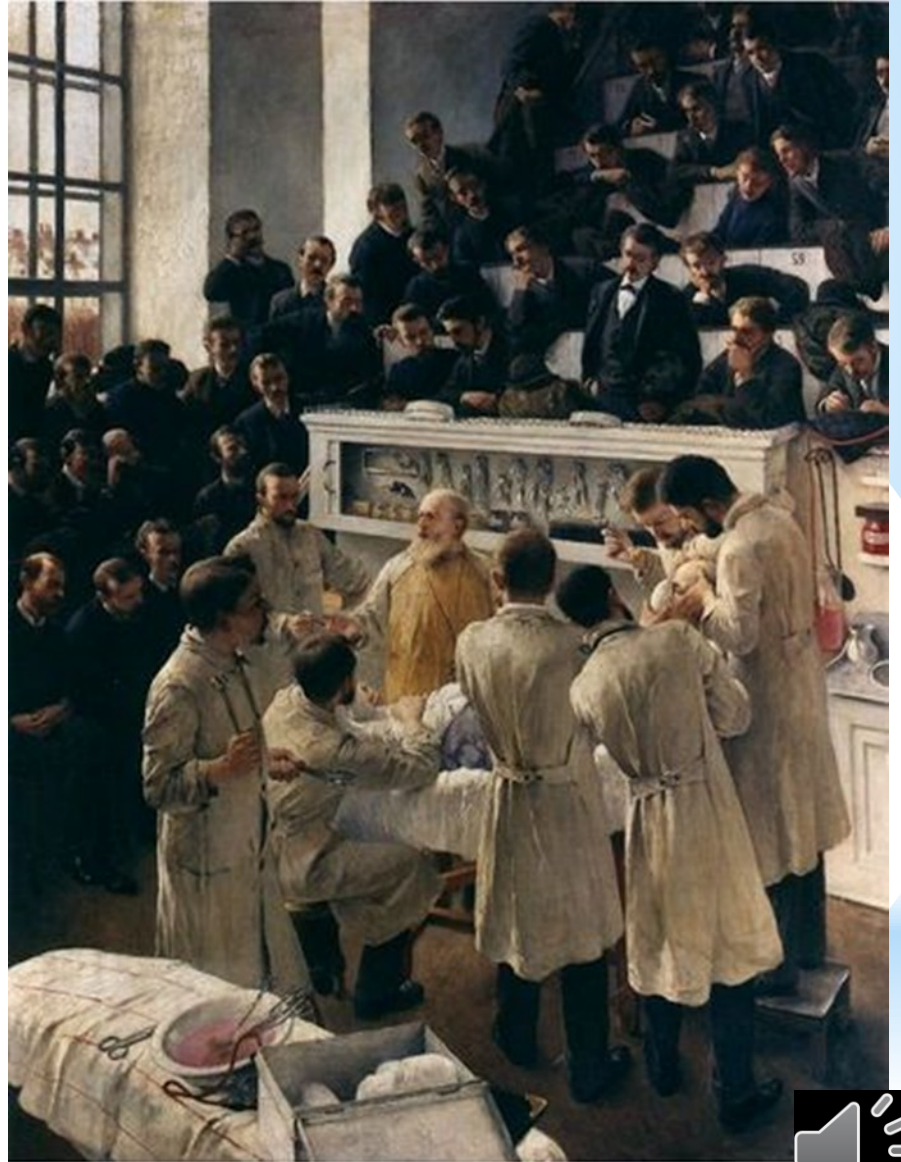
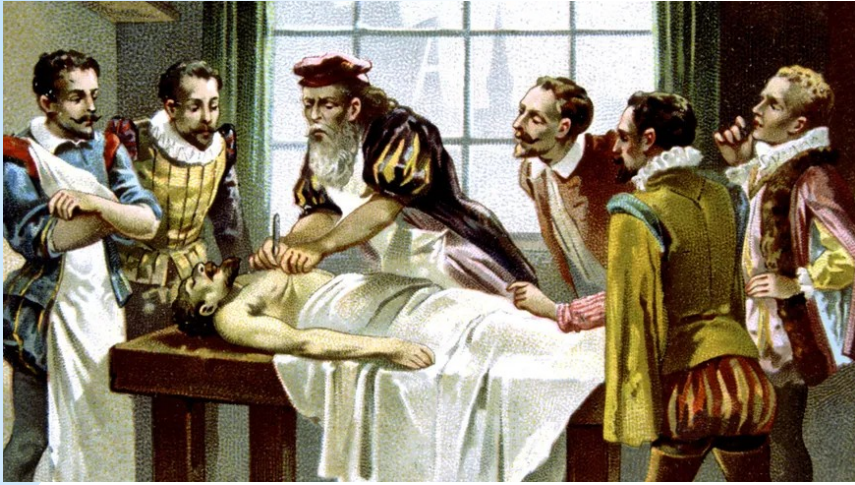
Canon Medicinae - medical knowleges and experiences of Arabic and Greek medicine



# \* Medieval world





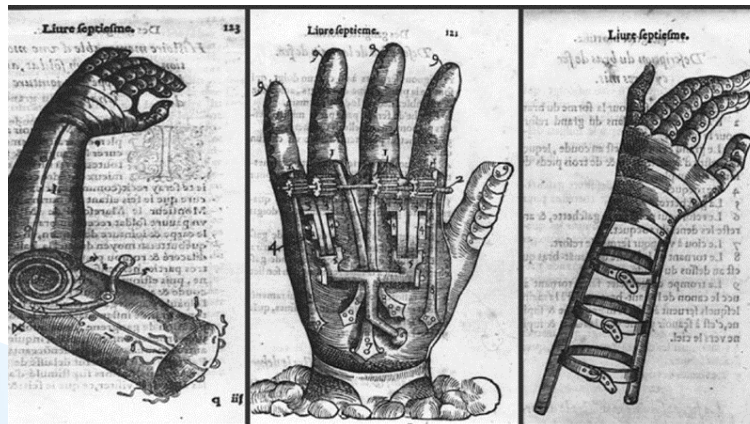
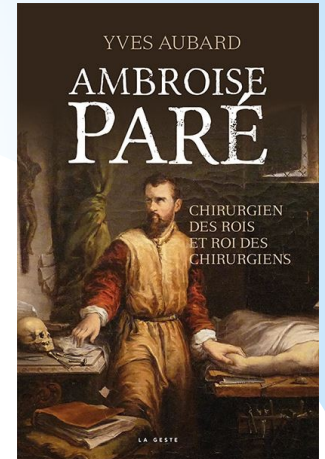




**France** - surgery has lower status than pure medicine until **Rogierius Salermitanus** wrote file „Chirurgia“ - surgery was considered as craft, performed by healers and barbers

The first real surgeons were the healers from numerous wars - especially **Ambroise Paré (1510-1590)**. Became a royal healer (French kings Charles IX and Henry III)

- tying blood vessels in amputated limbs, he replaced the painful burning, he wrote his experience in many volumes
- Prosthetics in 16th century (Ambroise Paré)



**Le Chirurgien du Roi  
Ambroise Paré**

\* At this time, the anatomy ( **Vesalius, Eustachio, Fallopi**a) developed boisterously

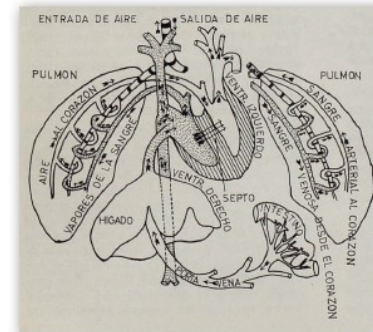
\* First physiological findings

- **William Harvey**

1628 - described systemic circulation

- **Michael Servetus**

1553 - described pulmonary circulation

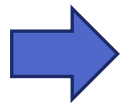


Since 15th century surgery was taught as a separate branch at the universities of Montpellier, Padua, Bologna.



- \* Modern Surgery developed rapidly with scientific era.
- \* Three main developments permitted the transition to modern surgical approaches

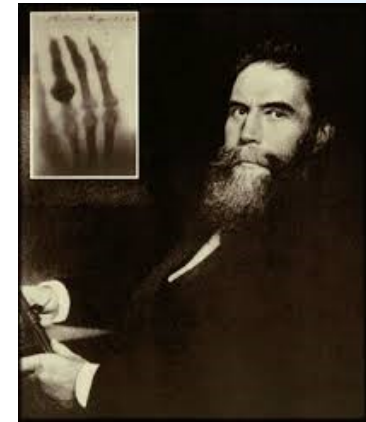
1. control of bleeding
2. control of infection
3. control of pain (anesthesia)



- operations without excessive risk to the patient ( control of bleeding, blood transfer, knowledge of shock conditions, etc.)
- operation without the spread of the infection
- operations without pain ( anesthesia)

## \* Modern Surgery

- \* 1847 **I.F. Semmelweis** discovered basic principles of **antisepsis** (washing hands with chlorine of lime solution)
- \* **Joseph Lister** - introduced carbolic acid ( phenol) to sterilize surgical instruments and to clean wound
- \* **Louis Pasteur** - discovered reasons of purulence, surgeons started to disinfect operation field with disinfectants
- \* **W.S. Halsted** - set up wearing of rubber gloves for surgery
- \* 1846 **Charles Jackson** - discovered ether for anesthetic use
- \* **C. Roentgen** discovered X-rays for medical use
- \* 1929 - **A. Fleming** described first true antibiotic-Penicilin



After the Second World War were discovered and used subsequent antibiotics. Many diagnostic methods were improved and new technologies were discovered (ultrasound, CT, MRI, endoscopy, etc.)



\* **Operating theatre**

# What is a “Operation Theatre” ?

Operation Theatre is a facility within a hospital where surgical operations are carried out in a sterile environment.

Historically, the term "operating theatre" referred to a non-sterile, tiered theater or amphitheater in which students and other spectators could watch surgeons perform surgery.

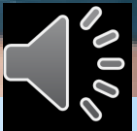
# Old Operation Theatre.



*The Agnew Clinic*, 1889, by Thomas Eakins, showing the observers watching the operation.













## 1. Surgical gloves.

It prevents contamination between doctor & patients



**\*Surgeon and assistant  
equipment**

## 2. Caps

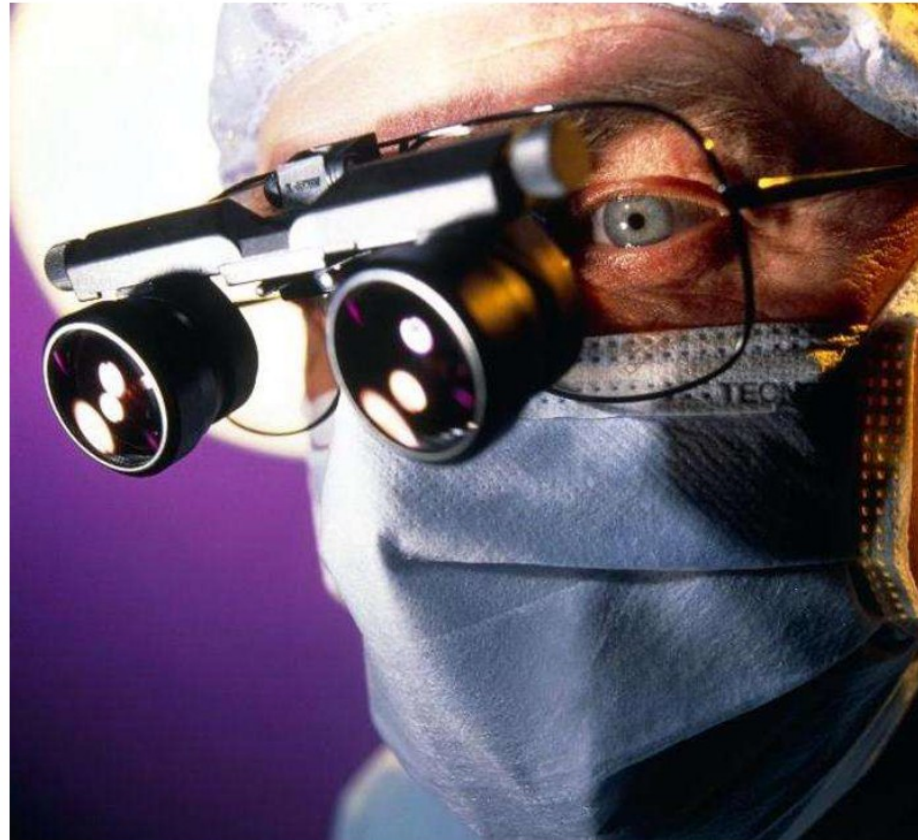
Protective cap covering hair.





### 3. Glasses

Surgeon with magnifying lenses over his glasses. These lenses magnify the area being operated on, allowing precise surgery to be carried out.



## 4. Mask

A surgical mask is intended to be worn by health professionals during surgery and during nursing to catch the bacteria shed in liquid droplets and aerosols from the wearer's mouth and nose.



## 5. Apron/ Surgical Dress.

Protects from blood stains etc..







**\* Operating room  
equipment**

# 1. OPERATING TABLE

Multi-Purposed Side Controlled Operating Table



## 2. Monitors.

- ✓ Monitors display different output parameters of the patient which help the doctor in diagnosing.
- ✓ Ex: ECG monitor.



# LAPAROSCOPIC TOWER



## Other Monitors.

### PULSE OXIMETRY



### BLOOD GLUCOSE MONITOR





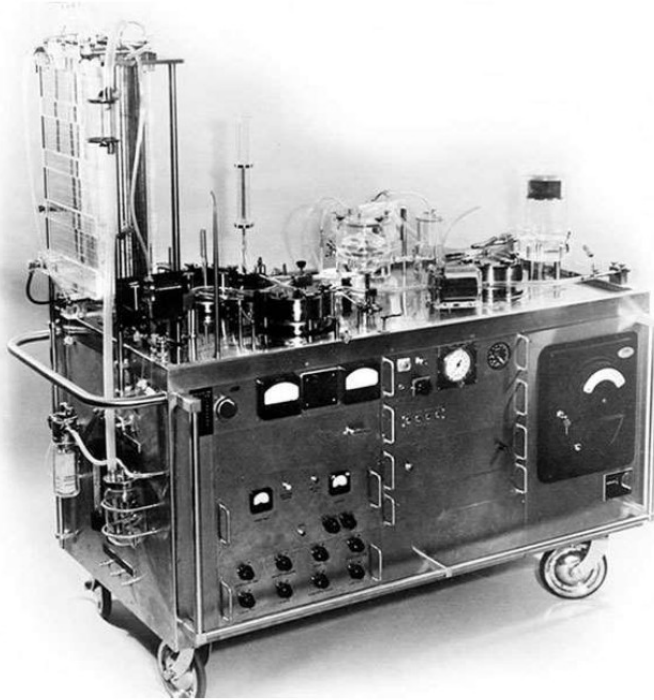
### 3. Anaesthesia Machine

- ✓ Assists patients breathing during surgery.
- ✓ Invented by: William T. G. Morton on 16 October 1846



## 4. Heart Lung Machine.

- ✓ Invented by: John Heysham Gibbon in 1937.
- ✓ The first heart lung bypass machine was first used on a human in 1953.





## 5. Surgical Ceiling Lights

- ✓ Surgical Light is a medical device intended to assist medical personnel during a surgical procedure by illuminating a local area or cavity of the patient.
- ✓ It was first used in 1880's.



# STERILIZATION & DECONTAMINATION OF SURGICAL THEATRES

## ➤ Why?

1. Cleaning removes contaminants, dust, organic matter.
2. Disinfection reduces number of microbes.



# Other Procedures.

- Washing Hands.
- Cleaning the floor.
- Planning and management of hospital laundry.
- Environmental cleaning (Gases Exchange)  
etc...



