

ADVANCES IN MEDICINE—ANSWERS

Surgery is the branch of medicine concerned with treatment of diseases, deformities, and injuries through procedures called operations. People have practiced surgery since ancient times. The modern practice of medicine has developed over thousands of years. Modern surgery looks very different from those early days. This tour will help you to discover some of the advances in medicine that made modern surgery possible.

AMPUTATION PAINTING

This painting depicts an amputation of a man's leg.

Why would the surgeon amputate the patient's leg?

Because the leg has been wounded or because of an infection or gangrene.

Why are there four men holding the patient down?

This operation took place before anesthesia. Although they tried many different methods of numbing the pain of an operation, operations were very painful for the patient.

What do you think happened to the patient after his leg is amputated?

The patient could have survived the operation and healed quickly.

The patient could have died due to too much loss of blood, shock or new infection.

SECOND
FLOOR

HALL OF IMMORTALS

Antisepsis is the elimination or reduction of the spread of germs (microorganisms) that cause infection, disease or decay.

Read the stories next to the statues to help you identify the names of the three men who contributed to the understanding of antisepsis.

1. **Joseph Lister**
2. **Ignaz Semmelweis**
3. **Louis Pasteur**

HALL OF MURALS

Find the painting of Michael Servetus. He is an example of a medical pioneer whose beliefs about anatomy were not accepted by most people in his time.

If you were Servetus in his time, would you have published such a controversial book for the sake of medical discovery?

Would you have taken different actions? Why?

Answers will vary and can be used to prompt class discussion

WINDOWS TO THE WORLD

Surgical techniques pioneered by ophthalmologists are frequently adopted by the rest of the medical profession.

What is an example of this?

Corneal transplants during the 1940's, led to methods that would later be adapted to the transplantations of other organs.



International Museum of Surgical Science

POLIO

The large, grey steel device around which this exhibit is centered is an Iron Lung.

How was the iron lung used to help polio victims?

The iron lung helped polio victims if their lung muscles had been paralyzed. When this happened they could not breathe on their own, so the iron lung took over that function. The air pressure is changed inside the iron lung by the apparatus moving on the right of the machine. This change of air pressure moves the chest up and down, and forces the patient to breathe. Most of the stays were brief, only a few days, but some people stayed in the iron lung for as long as 10 years.

What device would be used today to help someone who was unable to breath?

Ventilators are used for acute respiratory failure.

SECOND
FLOOR

LATIN AMERICA

The three murals on the walls depict important surgical "firsts" in Central and South America. These procedures were revolutionary at the time.

What are some of the things taking place in the murals that would be different from surgery today?

A few common examples: the main players are all men, no anesthetic or use of chloroform as an anesthetic, no one is wearing masks and the people are in suits.

THIRD
FLOOR

EUROPE

Examine the surgical tools from Ancient Rome 79 A.D. and the Surgical set from the early 1800's. Even though the materials that make the tools changed, the form and function did not change much.

What can you determine the basic functions of these tools might be based on the shape and overall appearances?

Before the discovery of anesthesia surgical tools were used for basic functions: cutting, extracting, and holding things open or closed. The use of anesthesia allowed for more time during operations and more specialization.

JAPAN HALL OF FAME

Today, doctors close wounds using a variety of methods, including stapling and stitching.

What was the procedure used in the 10th Century BC in Japan for closing a wound?

An ant would be held over the wound until it seized the wound edges in its jaws. The ant was then decapitated and the death grip from the ant's jaws kept the wound closed.

MEDICAL IMAGING

The discovery of the x-ray was an important milestone for surgeons. They could see into a patient's body without having to cut into it. This innovation caused a revolution in medical diagnostics.

Who discovered the x-ray?

Wilhelm Konrad Röntgen

What were the 3 basic elements in an early X-Ray Laboratory?

1. Patients Chair
2. Tube Stand
3. Operator's Protective Screen



International Museum of Surgical Science

NURSING

Modern nurses dedicate their lives to helping those who are sick and injured.

Who is considered the "Founder of Modern Nursing"?

Florence Nightingale

ENDURING PAIN

The Civil War saw the first widespread use of general anesthesia, which was used on over 80,000 patients.

What type of anesthesia was commonly used?

Chloroform

In the mid-19th century patent medicines, which were not required to list their ingredients, were often just traditional herbal pain remedies repackaged.

What was a major ingredient in many of these "cure-all" medicines?

Alcohol

In 2004, a new drug, Prilact, was approved by the FDA for managing pain in Cancer and AIDS patients.

Why is it not used for many other conditions and ailments?

It has neurologic side effects including dizziness, drowsiness and confusion.

ORTHOPEDICS

The prostheses of the ancient cultures began as simple crutches or wooden and leather cups. The prostheses on display were developed after the Civil War.

How did the Civil War affect the development of prostheses?

The large number of amputees (30,000) created a demand for improvements in prostheses.

Arthroscopy, a minimally invasive procedure is often employed during meniscectomy, the removal of all or part of a torn meniscus.

What surgical instrument was adapted for arthroscopy?

Cytoscope—a tube fitted with lenses and light inserted through the urethra to view inside the bladder.

SPAIN ROOM

Find the painting on the far wall with two scenes of surgery from 1901 and 1819. These two images illustrate surgery during two different eras.

Compare the scenes. List three differences.

Some of the differences include: use or lack of use of anesthesia, street clothing versus white clothing, face masks, patient tied down and female nurses.



SUPPORTING STRUCTURE

Science and technology advance through the contributions of many different individuals.

Name three surgeons and their contributions to the early development of spinal surgery.

Charles Brown-Séguard worked on the spinal cord syndrome “Brown-Séguard paralysis.”

Jean-Martin Charcot is perhaps the world’s first professor of neurology.

Wilhelm Heinrich Erb worked with various forms of muscular dystrophy.

DeForest Willard dealt with spinal tuberculosis and supported the use of new X-ray technology.

Robert Abbe removed the first extradural tumor in the United States.

Fred Albee and Russell Hibbs, performed spinal fusion operations to treat spinal tuberculosis.

Paul Harrington sought a way to stabilize the spine rather than through external braces.

Sir Frank Wild Holdsworth published a severity index for fractures and dislocations of the spine.

Francis Denis challenged Sir Frank Wild Holdsworth’s classifications. With minor adjustments, Denis’ model has withstood more than two decades of scrutiny.

FOURTH
FLOOR

CONQUERING HEART DISEASE

Many individuals have contributed to our understanding of the heart and heart disease.

What famous aviator invented the machine that set the stage for the invention of the heart-lung machine?

Charles Lindbergh

What was his machine called?

His machine was called the Lindbergh perfusion pump.

FOURTH
FLOOR
(ANNEX)

