



# Making surgery a safer place for everyone

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Breast Surgeon



# INTRODUCTION – CV


- Medical degree , Aristotle University of Thessaloniki 2010
- Master of Science “Obstetric Medicine”, 2012-14
- OBGYN specialty at National Board , 2018
- OBGYN European Boards, 2019
- Breast Oncoplastic Fellowship , 2022-3, FTFH,UK
- European Boards of Breast Surgery, FEBS 2024

# Disclosure

- NO disclosure or conflict of interest with the presented material in this presentation.



# OVERVIEW

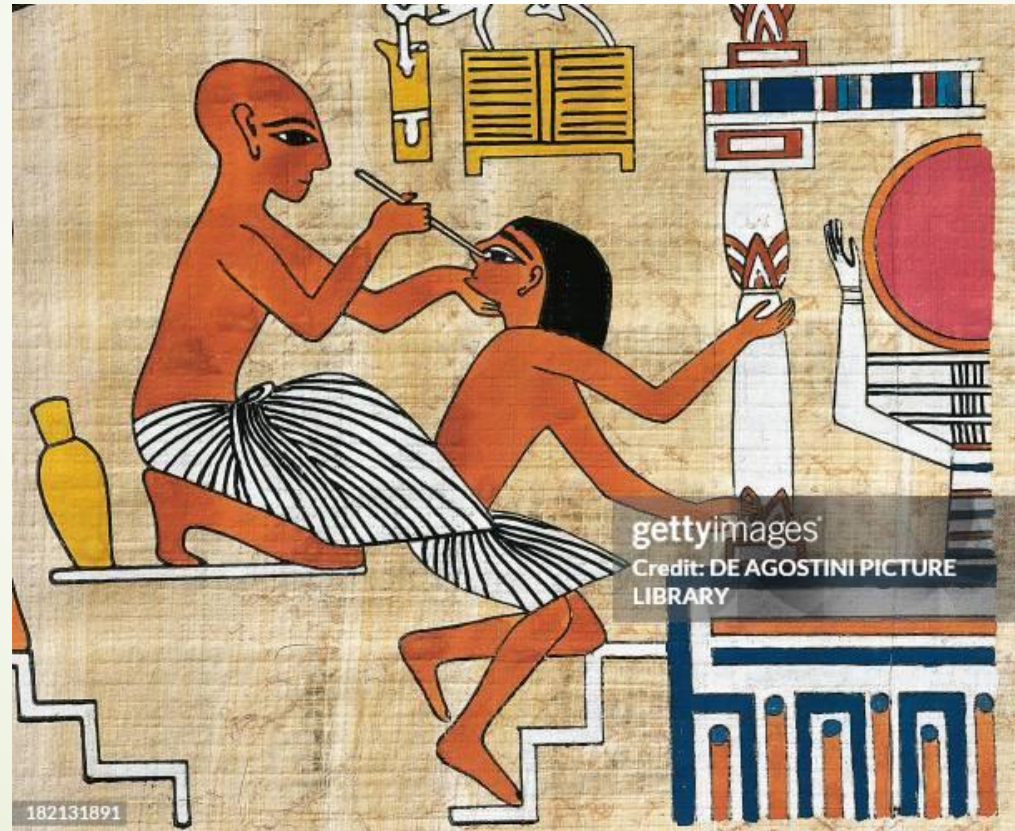
- History of medicine
  - Landmarks in evolution of surgery
  - Today's challenges
  - Engineering
  - Recap
- 



# History of surgery

- ▶ History of surgery is as old as humanity
- ▶ It is said that “where medicine ends, surgery begins”
- ▶ Surgery derived from latin word CHIRURGIA
  - Cheir- hand (French<latin)
  - Ergon- work (Greek)
- ▶ Edwin Smith Surgical Papyrus 3000-2500BC

# Surgery through the ages



# Primitive neurosurgery

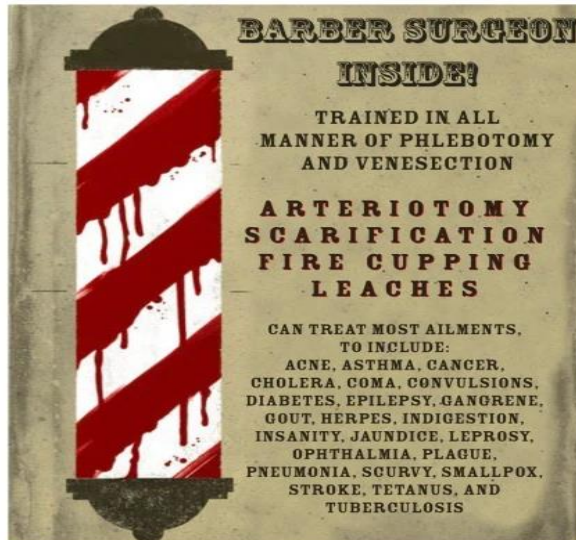


# Medieval Barber Surgeons

10th to 15th century

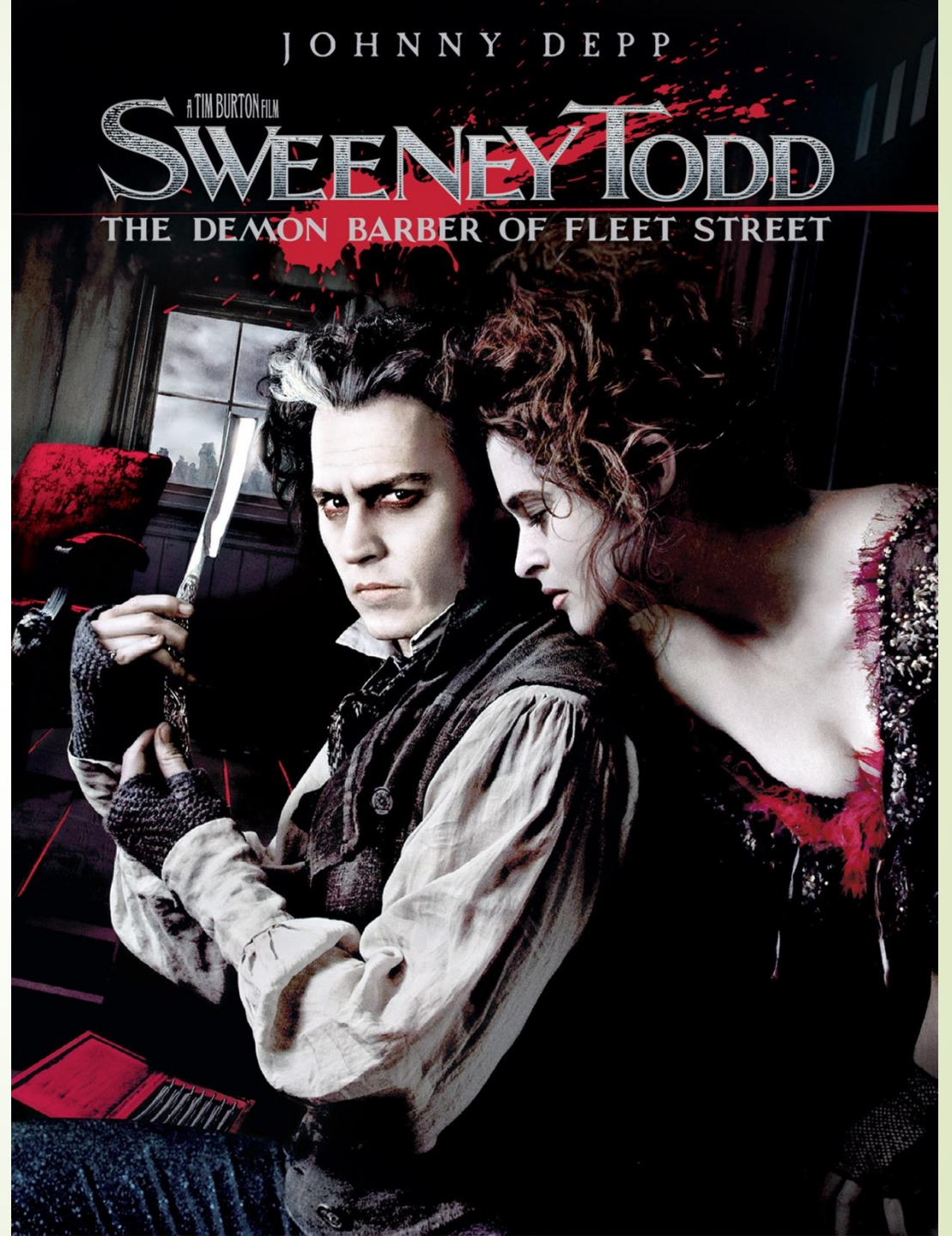
## Medieval Barber Surgeons

In addition to cutting hair, barbers during medieval Europe also practiced a variety of surgical procedures such as removing bullets, pulling teeth and even amputating limbs. They also performed bloodletting using leeches. The red and white stripes on a barber's pole refer to the blood and towels used to clean up during bloodletting, and the silver bowls on the top and bottom represent basins containing leeches.






My personal favourite





# LANDMARKS OF SURGERY

- ANAESTHESIA (1840s with ether & nitrous oxide)
  - ASEPTIC TECHNIQUE (Lister, 1827-1912 carbolic acid as antiseptic)
  - DISINFECTANT OF SURGICAL WOUNDS (Louis Paster germ theory)
  - BLOOD TRANSFUSION
  - ANTIBIOTICS
  - INTRODUCTION OF GLOVES (late 1800s, W.Halsted sterile rubber gloves)
  - ELECTROCAUTERY (early 1900)
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# Anesthesia- Analgesia introduction

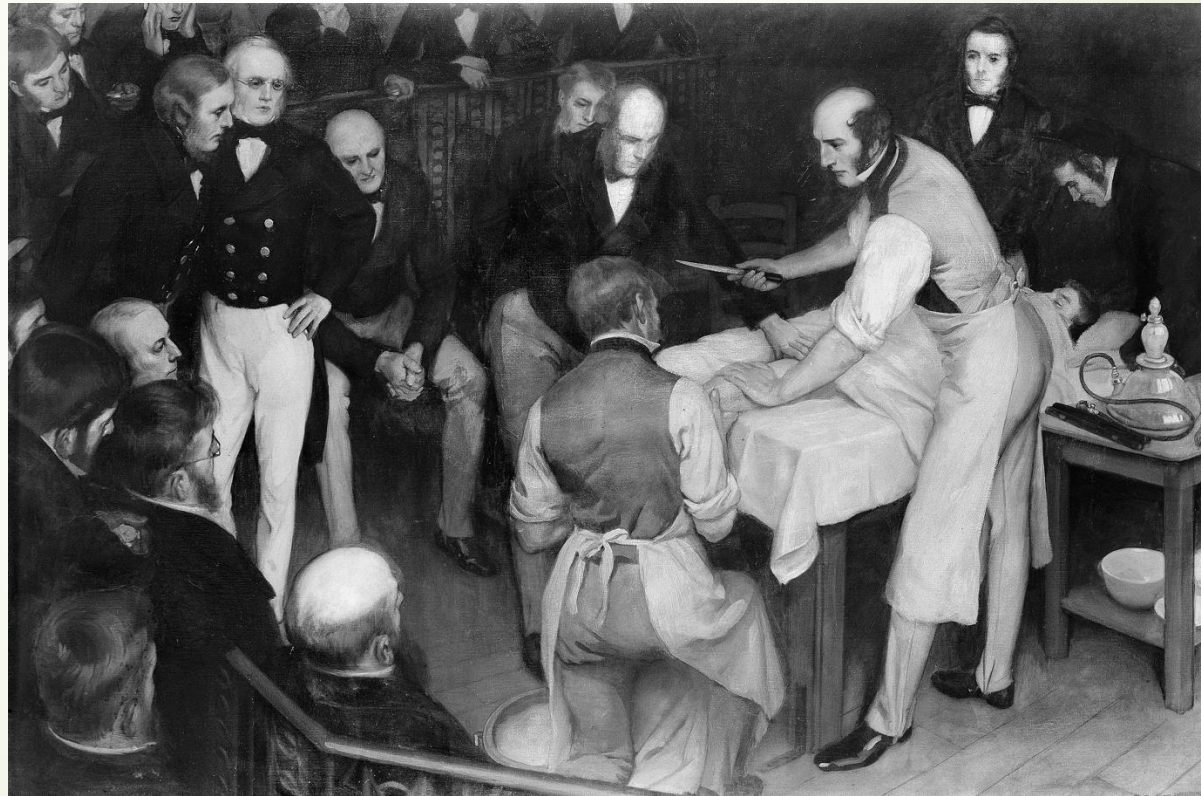




# LANDMARKS OF SURGERY

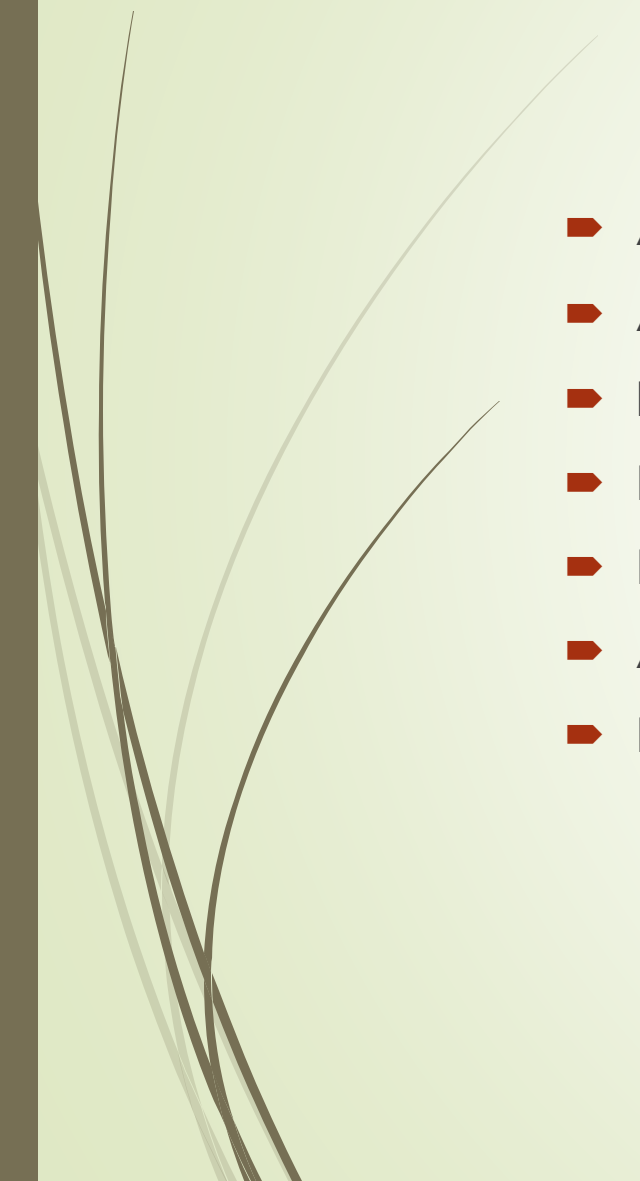
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Realistic depiction of early 19<sup>th</sup> century,  
R. Liston, surgeon





# LANDMARKS OF SURGERY

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- 

# Modern era in Surgery





# THE LIST GOES ON AND ON.... GAMECHANGERS

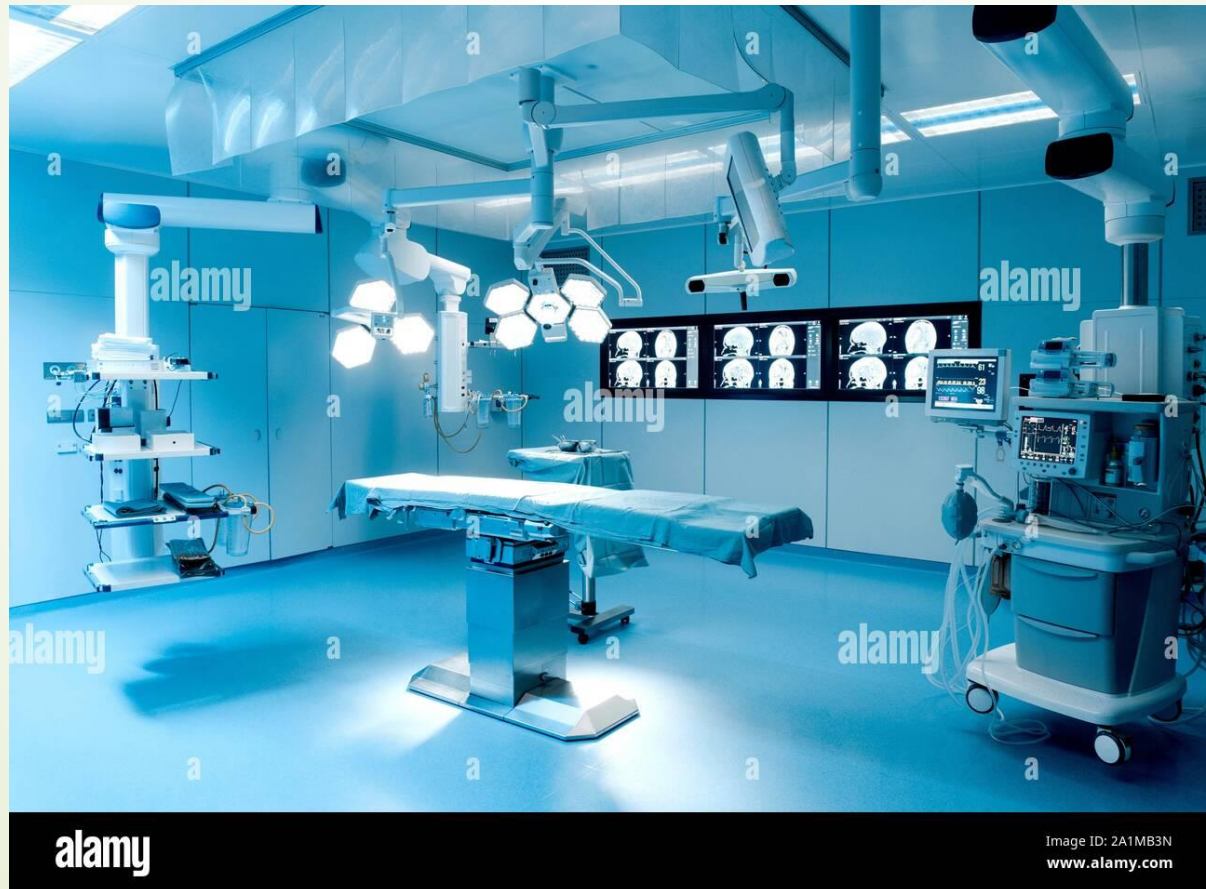
- MINIMALLY INVASIVE SURGERY (early 19<sup>th</sup> century, developed in 1980-90 cystoscopes)
- ROBOTIC SURGERY (late 20<sup>th</sup> century, 1980)
- AI IN SURGERY (21<sup>ST</sup> century)
- INNOVATIVE DEVICES , MACHINERY – IMPLANTS

**BUT...**

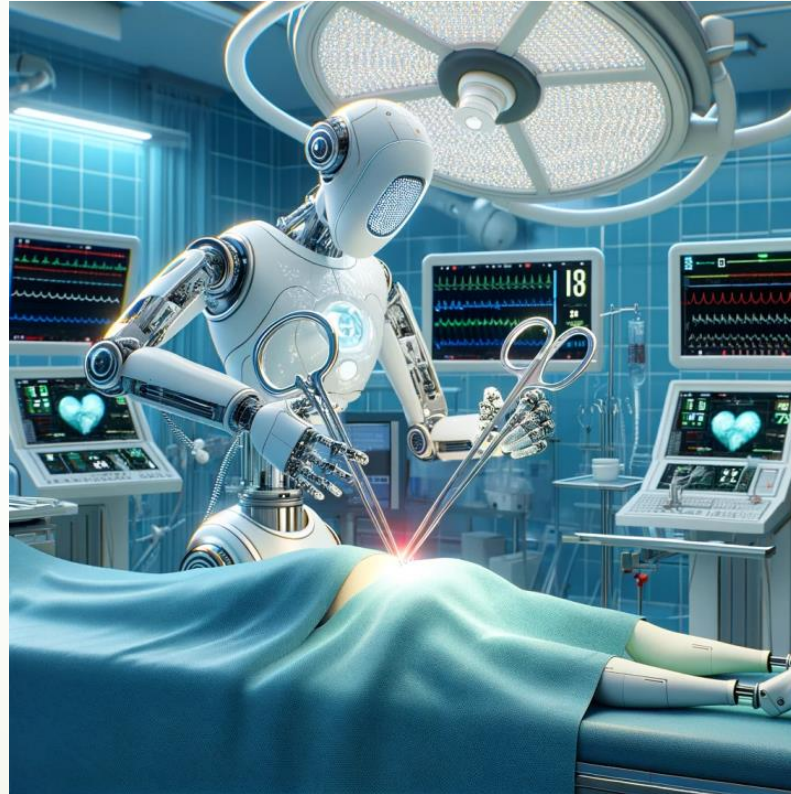
- **Safety Considerations**



Where we are now .



What do we opt for ..  
is it safe ?



«ΩΦΕΛΕΕΙΝ ἢ ΜΗ ΒΛΑΠΤΕΙΝ»,  
Ἱπποκράτης 460-377bc ,  
to heal and not to harm





# PRE-OP CHECKLIST

(DEVICES – IMPLANTS ON OR)

- Perioperative antibiotic
- Alcohol containing skin preparations
- Minimum theatre traffic
- Minimum duration of surgery
- Laminar airflow
- Double gloving
- Conductive warming
- Equipment/device check



# Risks- complications in the post-op setting (immediate or late)

- **INFECTION**
- BACTERIAL CONTAMINATION
- BIOFILM
- SHORT/LONGTERM COMPLICATIONS
- LIST..... INFECTION –IV ANTIBIOTIX – HOSPITAL ADMITTIONS – TOXICITY – LOSS OF IMPLANTS – REVISION SURGERY
- SO NOT...**COST-EFFECTIVE** (HEALTHCARE SYSTEMS ) HEALTH ECONOMICS

# Early signs of bacterial infection



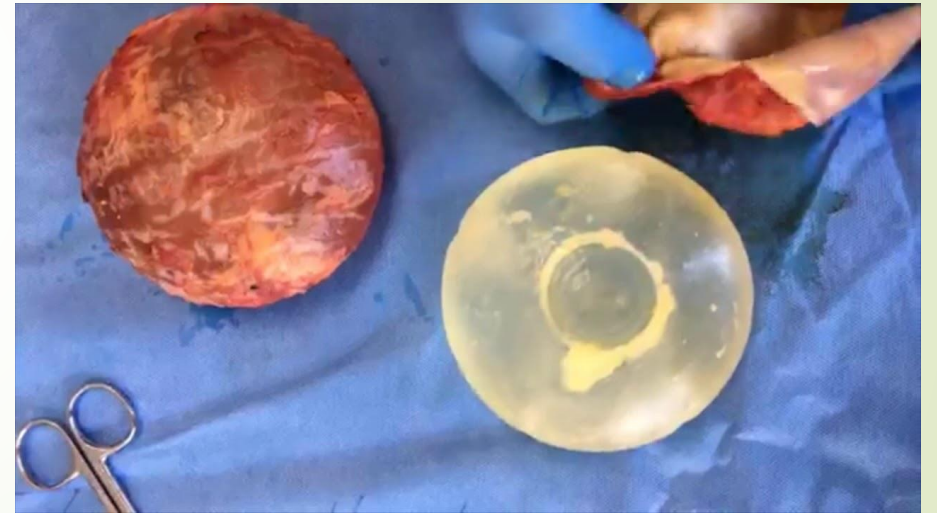
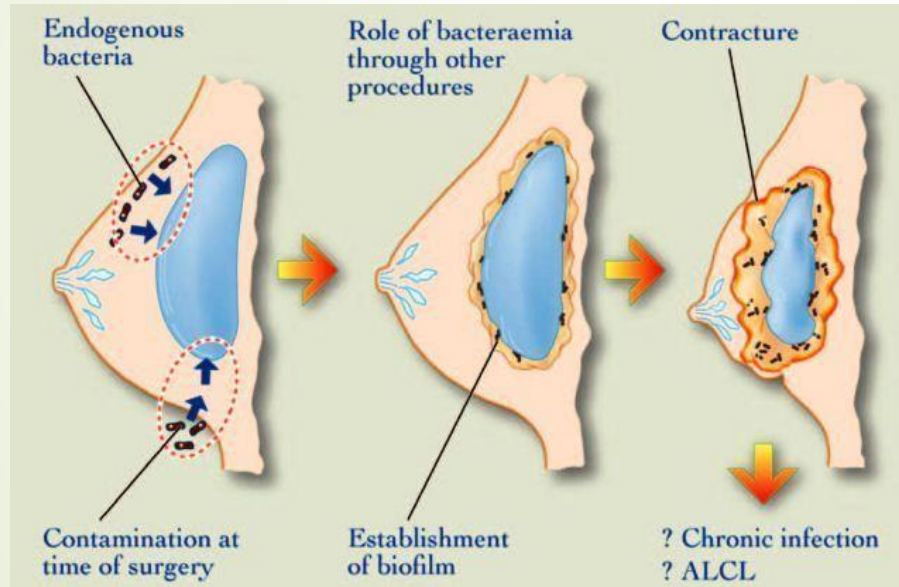
Intravenous antibiotic treatment or implant removal was required for infectious complications in implant-based immediate breast reconstructions.



# Systemic infection - sepsis



# Biomechanism of capsular contracture BIOFILM on implant






Case of capsular contracture grade 3/4





# OPERATING ROOM (OR)

- **DEFINITION** :The operating room (OR) is the location where surgical procedures are performed. It's a sterile environment intended to prevent infection during the surgical procedure. ORs are also brightly lit to ensure surgeons can see what they are doing and air-conditioned to further prevent infection.
- Controlled environment
- Infection factor



# Engineering is science - Medicine is applied science

- ▶ Laminar air flow is referred to as a system that provides continuous air flow that is uniform in both direction and velocity. Laminar air flow cabinets facilitate unidirectional air flow in a confined space.
- What is laminar airflow in OR?
- ▶ Laminar air flow uses positive pressure air currents through filtration units to direct air streams away from the operative field in order to create an ultraclean zone around the operative site.
- ▶ The Laminar airflow system with HEPA Filter creates an extremely homogeneous laminar flow with very little turbulence. Any bacteria, viruses or dust particles are extracted directly before the air enters the area.



# Engineering is true science - Medicine is just applied science

- ▶ <https://youtube.com/clip/Ugkx4Hv-67KIQ-XTwiJRbwqJ2ulaTTDB1idF?si=7gzAAu2Crfn0Hf3T>
- ▶ [https://youtube.com/clip/Ugkxp\\_0IXaPAIzOMvMZFEzaiTMBE2HCnSEVz?si=YIvj9SxPlo2NizMp](https://youtube.com/clip/Ugkxp_0IXaPAIzOMvMZFEzaiTMBE2HCnSEVz?si=YIvj9SxPlo2NizMp)
- ▶ <https://youtube.com/clip/Ugkxa5hBEcKXKF-PwqhnuCoa7tNgtGKOfTMQ?si=Kb5k81QvqQIRj9Np>
- ▶ <https://youtube.com/clip/UgkxyQ3bWrkomwjHfBOZZQNoa7vP9JkSw5Fc?si=u-cNx5Th2nP4pI15>
- ▶ <https://youtube.com/clip/Ugkx77jFZ-tLdmye3MODZzzzS5ZGTFaNNHTh?si=Uaf-9U3DDJ439ap1>

Operating Theatre CAN & MUST be a safe place

Thank you for your attention

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\*The Anatomy Lesson of Dr. Nicolaes Tulp,  
Rembrandt 1632, oil on canvas

