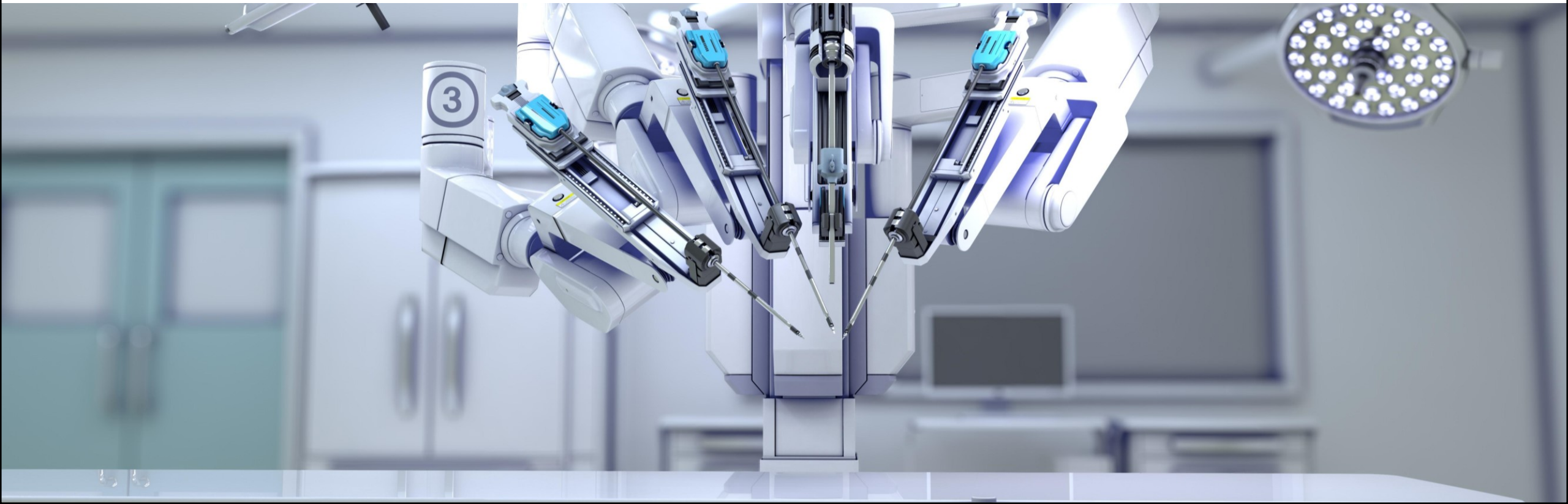

MINIMALLY INVASIVE ABDOMINAL AND PELVIC SURGERY

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LEARNING OBJECTIVES

- Physiological impact of minimally invasive surgery
- Effects of pneumoperitoneum
- Problems with position and patient access
- Analgesia and IV fluids

LAPAROSCOPIC SURGERY

- Described more than 100 years ago
- Technological advances since 1980
 - High quality 3D images
 - Robotic assisted surgery – first in 1990
 - Looking into potential haptic feedback
- Shortened recovery
- Reduced complications



PNEUMOPERITONEUM

- CO2 used
 - Inert
 - Not support combustion
 - Highly soluble
- Issues:
 - Intra-abdominal pressure
 - Patient position
 - Effects of CO2 absorption





INTRA-ABDOMINAL PRESSURE

Effects of increased IAB is biphasic

- Vena cava compression
 - Reduced preload
- Increased SVR
- Reduced CO
 - May lead to LVF if pre-existing cardiac problems
- Reduced organ perfusion
- Venous pooling
 - DVT
 - Increased ICP
- Splint diaphragm – V/Q mismatch



CONTRAINDICATIONS TO MIS

- Severe RVF or biventricular failure
- Right to left cardiac shunt
- Hypovolemic shock
- Retinal detachment
- Raised ICP

ANAESTHETIC MANAGEMENT

- ETT
 - ?Supraglottic – ProSeal
- Avoid gastric distension
 - Care with BVM
 - Orogastric tube
- Ventilation
 - Permissive hypercapnia
 - Avoid N2O





- IV Fluids

- Correct pre existing fluid deficit
- Aim near zero balance
- Treat hypotension with vasopressors
- Give fluids at end of surgery if needed
- Urinary catheter
 - ?Permissive oliguria
- Can drink early post-op

- Monitor K

- For urology surgery – if ureters clamped

MONITORING/ LINES

- IABP
- ?CVP
- ?BIS
 - Avoid excessive deep anaesthesia
 - Avoid postop cognitive dysfunction
- Secure your lines!



POSITIONING

- Trendelenburg – extreme!
 - Cerebral oedema
 - Raised ICP/IOP
- Reverse Trendelenburg
- Robotic – position is locked

- Problems:
 - Patient sliding
 - ETT moving
 - Gastric content spillage
 - Nerve injury





ANALGESIA

- Multimodal
- Remifentanyl
- Epidural
 - Problems with reduced mobility, more IV fluids
- Spinal + Intrathecal morphine/ diamorphine
- Others
 - Lignocaine
 - Ketamine
 - Pregabalin



NEUROMUSCULAR BLOCKERS

- Deep NMB
 - Minimise harm - robotic
 - Especially for HPB
 - Lower IAP -> less post op pain and cardiovascular instability
- Rocuronium (bolus or infusion)
 - Suggamadex
- Atracurium/cisatracurium infusion
- Vecuronium



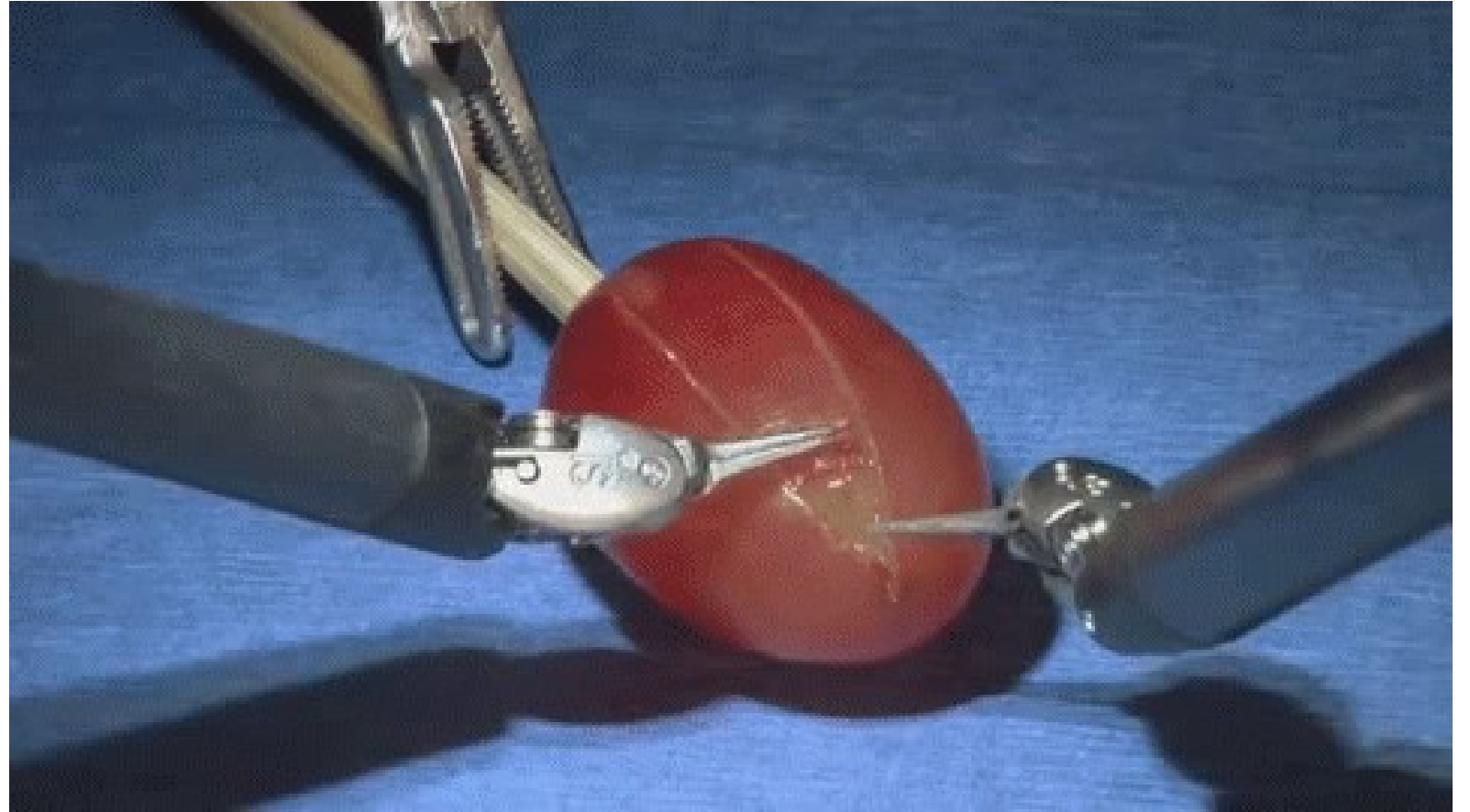
ANTIEMETICS

- Multi-modal

EMERGENCIES, COMPLICATIONS

- Surgical access
 - Injury to abdominal content
 - Uncontrolled movements
 - Spontaneous powering on
 - Arcing from diathermy
- Pneumoperitoneum
 - Subcutaneous emphysema
 - Mediastinal emphysema
 - Pneumothorax
 - Retained gas – post op pain
 - Air embolism
- Positional
 - Compartment syndrome in legs – lithotomy
 - Oedema – face, eyes, upper airway
 - Post-extubation respiratory distress

THANK YOU





REFERENCES

- Anaesthesia for minimally invasive abdominal and pelvic surgery#
 - BM Carey
 - BJA May 2019