

THURSDAY 17TH MAY 2007



**Innovations in the Prevention and Management of
Obesity**

**ANAESTHESIA CARE FOR
THE MORBIDLY OBESE:
High Technology And
Improved Drug Delivery
To Minimize Risk And
Improve Outcome**

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FANZCA



- **IDEAL BODY WEIGHT (IBW) (Kg) = height in Cm – 100**
(males) (105 for females)
- **TOTAL BODY WEIGHT (TBW) WEIGHT AS MEASURED BY ACCURATE SCALES***
***(RATED TO 300+KG)**
- **LEAN BODY MASS**
= $1.10 \times \text{weight} - 128 \times (\text{weight}/\text{height})^2$ (males)
= $1.07 \times \text{weight} - 148 \times (\text{weight}/\text{height})^2$ (females)

Pathophysiology

- ***PROFOUND PATHOPHYSIOLOGICAL CHANGES AND CO-MORBIDITIES ACCOMPANY INCREASING LEVELS OF MORBID OBESITY***

A-Z Of Disease In The Morbidly Obese

- ANGINA
- ATHEROSCLEROSIS
- CHOLECYSTITIS
- DYSPEPSIA
- DYSPNOEA
- HERNIA
- HYPERTENSION
- INSULIN RESISTANCE
- LIVER DYSFUNCTION
- NEPHROSCLEROSIS
- NIDDM
- OSTEOARHTRITIS
- PICWICKIAN
- RESPIRATORY DISEASES
- SWEATING
- THROMBOEMBOLISM

Anaesthesia Management

RISK

- **OLDER TEXTBOOKS: PERIOPERATIVE MORTALITY OF 6%!**
- **CURRENT RISK DEPENDING ON SURGICAL PROCEDURE: 30-DAY MORTALITY SHOULD BE LESS THAN 0.3%**
- **MORBID OBESITY AUTOMATICALLY SCORES ASA CLASS 3**

Basic Preoperative Techniques

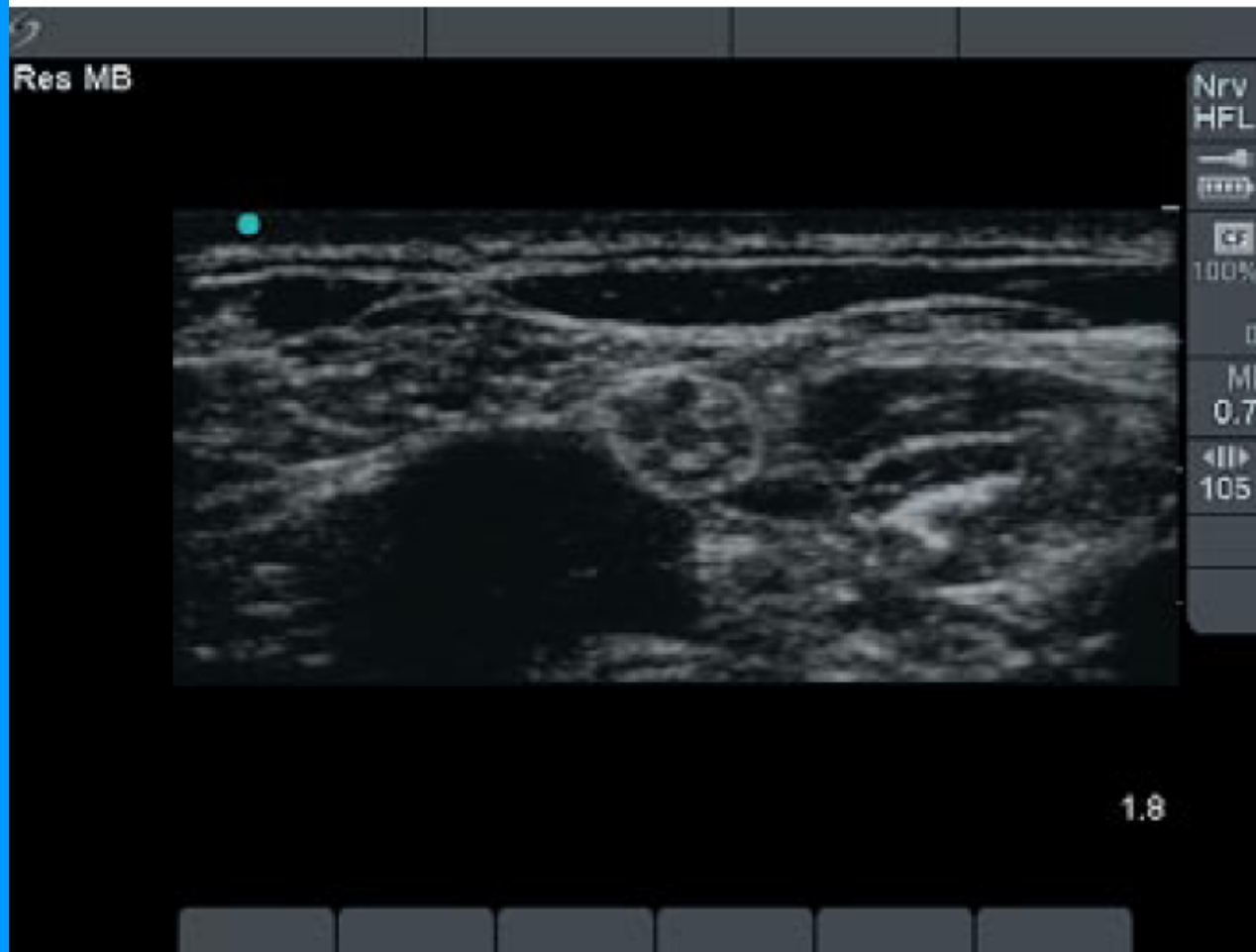
- **!!NO SURPRISES!!**
- **EXPLANATION TO PATIENT: SPECIAL RISKS OF ANAESTHESIA & SURGERY IN MORBID OBESITY**
- **OBTAIN DATA:**
 - **AIRWAY PREDICTION:**
 - **WEIGHT /HEIGHT/BMI**
 - **MALLAMPATI**
 - **TM DISTANCE**
 - **SHAPE OF FACE**
 - **NECK: SHAPE /SIZE*/MOVEMENT**
 - **DENTITION**
 - **SLEEP APNOEA = ABNORMAL UPPER AIRWAY**

Extended Preoperative Review

- **ADDITIONAL RISK FACTORS: SEE A-Z ABOVE**
- **SPECIAL FOCUS ON CVS RESP GI ENDOCRINE**
- **BASIC TESTS**
- **CONSULTS**
- **CARDIAC ECHO**
- **POLYSOMNOGRAPHY**
- **LUNG FUNCTION**
- **ABGs**

Plan

- INTUBATION
- CONVENTIONAL: EXTRAS
- AWAKE: TECHNIQUE
- ANAESTHESIA CHOICES:
- REGIONAL ANAESTHESIA
- MUST NOT HINDER MOBILIZATION: THORACIC vs. LUMBAR EPIDURALS
- SUCCESSFUL BLOCKADE IN THE MORBIDLY OBESE
OLD AND NEW IMAGING TECHNIQUES:
- FLUOROSCOPY
- ULTRASOUND



Brachial plexus, captured using the MicroMaxx ultrasound system, SonoMB compound imaging and the HFL38/13-6 MHz transducer

Premedication

- **BENZODIAZEPINE**
- **GASTRIC ACID CONTROL: OMEPRAZOLE/ H2 BLOCKER/ CITRATE**
- **THROMBOPROPHYLAXIS: SUBCUTANEOUS HEPARIN/ENOXAPARIN/FRAXIPARIN**
- **BETA BLOCKADE IF INDICATED**
- **ANTICHOLINERGIC IF AWAKE FIBREOPTIC**
- **SALBUTAMOL IF INDICATED**

Intraoperative

- POSITION:
- TABLES CAN NOW BE RATED TO 460KG (ELECTRIC MANDATORY)
- HOVER-MATT
- PRESSURE CARE
- KEEP BODY PARTS AWAY FROM HINGED PARTS OF OP TABLE STABILITY: BELTS/ STRAPS/ SKI BOOTS
- LARGE BP CUFF (42CM BLADDER)
- INVASIVE LINES: RECOMMENDED
- CVP GENERALLY NEEDED FOR OPEN ABDOMINAL PROCEDURES
- 5 LEAD ECG
- ART LINE + IF CANNOT FIT BLOOD PRESSURE CUFF OR INDICATED BY SURGICAL PROCEDURE AND/ OR CARDIAC CO-MORBIDITY

Intubation

CONVENTIONAL

- 13% DIFFICULTY
- RAPID SEQUENCE
- SUXAMETHONIUM STILL RELAXANT OF CHOICE (1-1.5Mg/KgTBW)
- MCCOY LARYNGOSCOPE
- LMA STANDBY; ROLE OF PROSEAL AND C-TRACH
- BOUGIE STANDBY
- YOUR FIRST GO IS YOUR BEST GO!
- BAIL OUT EARLY!

CTtrach LMA





Intubation

- **FIBREOPTIC**
- **FULL SIZE ADULT VIDEOBRONCHOSCOPE**
- **ORAL**
- **LIGNOCAINE 4% NEB ***
- **10% SPRAY ***
- **4% AS YOU GO VIA BRONCHOSCOPE***
- ***Longer waiting times because of fat infiltration of larynx**
- **STANDARD MOUTH GUARD**
- **NASAL PRONGS FOR OXYGEN: SPLIT DELIVERY/ CO2 SAMPLING PRONGS AVAILABLE**
- **MINIMAL SEDATION**
- **REMIFENTANIL $\leq 0.1 \mu\text{g}/\text{Kg}/\text{min}$ (single drug)**



FIBROPTIC VIEW OF LARYNX



Ventilation

- **GOOD VENTILATOR: (MAY NEED ICU VENTILATOR IN OT)**
 - **VT: 10ml –12ml / kg**
 - **f: X10-14**
 - **PEEP 5-20 cm**
 - **FiO2 50% OR MORE**



Drug Management

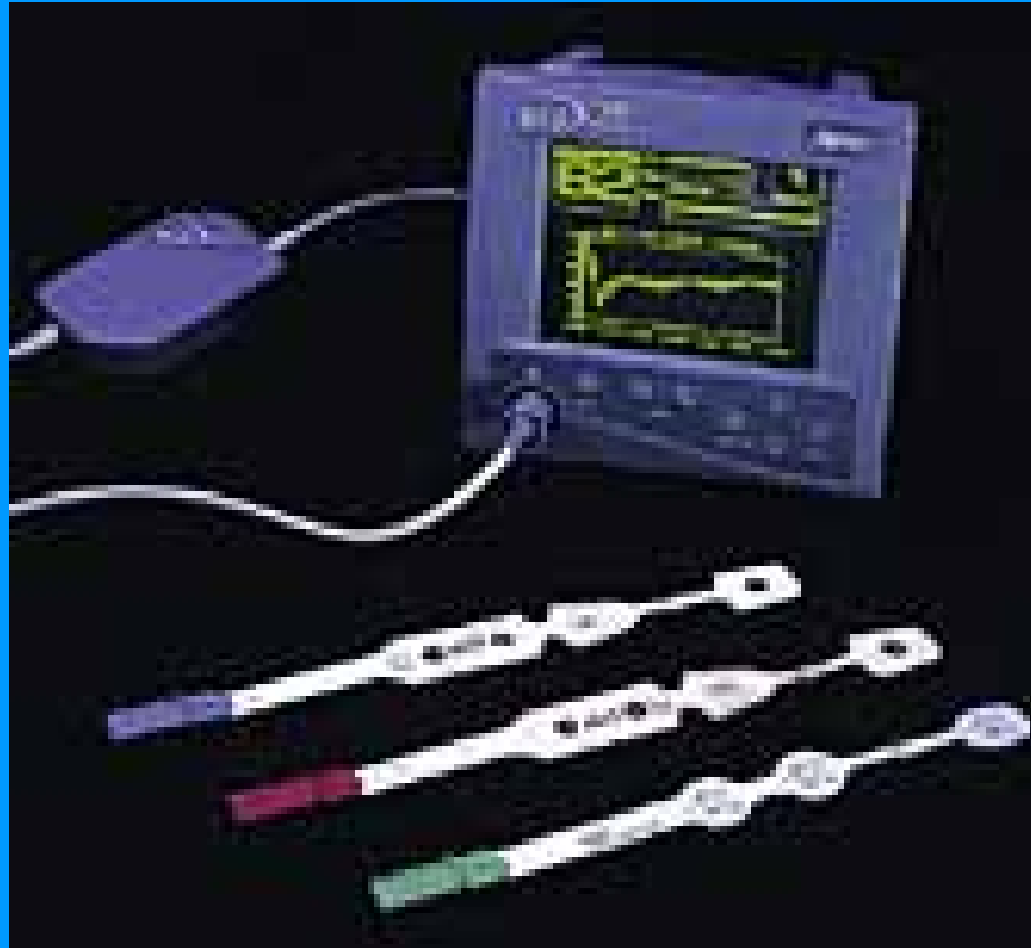
- MIDAZOLAM DOSE BASED ON TBW BUT BEWARE PROLONGED SEDATION
- PROPOFOL: INDUCTION BASED ON IBW / TCI MAYBE BASED ON TBW DEPENDING ON MODEL
- DESFLURANE LOGICAL AND SUPPORTED BY LITERATURE
- REMIFENTANIL PREDICTABLE BASED ON IBW AND AGE
- ALL OTHER FENTANYLS CAN BE UNPREDICTABLE
- CISATRACURIUM IS LOGICAL CHOICE AND CAN BE BASED ON TBW
- ROCURONIUM BASED ON IBW BUT KINETICS/ DYNAMICS UNALTERED IN OBESE
- MUST MONITOR NMBAs!
- TRAMADOL: BENEFITS Vs RISKS
- PARECOXIB
- PARACETAMOL
- ROUTINE ANTIEMETICS

TCI IN MORBID OBESITY

- TCI PROGRAMMES LIMITED BY INABILITY TO INPUT HIGHER ACTUAL BODY WEIGHT SINCE THESE PROGRAMMES DID NOT INCLUDE SUPEROBESE PATIENTS IN POPULATIONS STUDIED
- BIS MONITORING OVERCOMES THIS LIMITATION



BIS MONITOR



The Bispectral Index® (BIS®)

- A MEASURE OF THE EFFECTS OF ANESTHESIA AND SEDATION ON THE BRAIN
- A NEW “VITAL SIGN” THAT ALLOWS CLINICIANS TO DELIVER ANESTHESIA WITH PRECISION
- ALLOWS US TO ASSESS AND RESPOND MORE APPROPRIATELY TO A PATIENT’S CHANGING CONDITION DURING SURGERY.

BIS MONITORING

How BIS Works

- 1** EEG information is obtained via a sensor placed on patient's forehead
- 2** A number between 0 and 100 is displayed on the monitor, which corresponds with the patient's level of consciousness
- 3** Automatic impedance checking and artifact filtering assure reliable performance
- 4** No calibration of baseline recording is required

BIS MONITORING

- BIS MONITORING PROVIDES DIRECT INFORMATION ABOUT THE EFFECTS OF ANESTHETICS AND SEDATIVES ON THE BRAIN. THE TECHNOLOGY WORKS BY PLACING A BIS SENSOR ON A PATIENT'S FOREHEAD TO OBTAIN INFORMATION FROM ELECTRICAL BRAIN ACTIVITY, OR EEG.
- THE BIS MONITOR THEN TRANSLATES THIS INFORMATION INTO A SINGLE NUMBER FROM 100 (INDICATING AN AWAKE PATIENT) TO ZERO (INDICATING THE ABSENCE OF BRAIN ELECTRICAL ACTIVITY) THAT OBJECTIVELY REPRESENTS EACH PATIENT'S LEVEL OF CONSCIOUSNESS.
- BIS MONITORING THEREBY ENABLES CLINICIANS TO MINIMIZE THE RISK OF UNDER- AND OVER- DOSING OF ANESTHETICS AND SEDATIVES.
- OTHER VITAL SIGNS, SUCH AS HEART RATE AND BLOOD PRESSURE, DO NOT CORRELATE WITH DEPTH OF CONSCIOUSNESS AND ARE UNRELIABLE MEASURES OF ADEQUATE ANESTHESIA AND SEDATION.

Emergence

- COMPLETE REVERSAL OF ALL ASPECTS OF THE ANAESTHETIC
- RESIDUAL PAIN RELIEF
- TAKE NO RISKS!!!
- *DETERMINANTS FOR POST-OP MECHANICAL VENTILATION:
 - MALE
 - >50 YEARS OLD
 - BMI >60KG/M²
 - PULMONARY CO-MORBIDITIES
 - COMPLEX/OPEN /RE-DO SURGERY
 - ONLY NEEDED IN 3.5% OF MY OWN SERIES (7)

Postoperative

- SITTING POSITION
- SCDS
- SC HEPARIN
- EARLY AMBULATION
- ANALGESIA
- CARDIOVASCULAR CARE
- RESPIRATORY CARE
- CPAP
- PHYSIO .TO CHEST ETC
- LAPAROSCOPIC SURGERY IS USUALLY BENIGN AT THIS STAGE
- MORE COMPLEX FOR OPEN CASES

HOVER MATT®



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