ULTRA-FAST TRACKING IN CARDIAC SURGERY

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MANDATORY OVERNIGHT MECHANICAL VENTILATION
TRADITIONAL CARDIAC ANESTHETIC PROTOCOL

- High-dose narcotic technique
- Long-acting muscle relaxants
- Mandatory overnight ventilation

TIME BASED WEANING
• Modern cardiac surgery is faced with the challenge of finding the right balance between patient safety and economic restrictions.

• The motto is [“to do more with less”]
EARLY TRACHEAL EXTUBATION

PROLONGED OVERNIGHT VENTILATION
EARLY TRACHEAL EXTUBATION

STANDARDIZED SURGICAL PROCEDURES

STANDARDIZED ANAESTHETIC TECHNIQUES

PROLONGED OVERNIGHT VENTILATION
EARLY TRACHEAL EXTUBATION

COST CUTTING
EFFICIENT RESOURCE UTILIZATION
PATIENT COMFORT

PROLONGED OVERNIGHT VENTILATION
FAST TRACK ANAESTHESIA (FTA)

Early tracheal extubation within [6 hours] in the ICU.

ULTRAFAST-TRACK ANESTHESIA (UFTA)

Tracheal extubation in the operating room to extubation within the first [2 hours] in ICU.

PHYSIOLOGY - BASED WEANING

Regardless of the timing of extubation, the patient must meet standard respiratory, hemodynamic, neurological and temperature criteria.
BENEFITS OF FASTRACKING

• Patients recuperate more rapidly.
  • Shortens the period of critical care
  • Psychological boost for patient and relatives

• Reduces stress on the health care system.
  • Reduced stress on the ICU staff

• Cost-saving
BENEFITS OF FASTRACKING

• Reduced requirements of sedatives and inotropes
• Reduces cardiac complications.
• Fewer ventilator associated complications
• Reduced wear and tear on the ICU equipment
ROLE OF CARDIOTHORACIC SURGEON

• Patient selection
• Optimal surgical correction
• Speed and precision
• Minimize ACC and CPB time
• Adequate hemostasis
• ERROR-FREE
ROLE OF CARDIAC ANAESTHESIOLOGIST

- Choice and titration of drugs
- Fine-tuning hemodynamics
- Invasive monitoring
- Efficient Pain relief
- Availability 24 x 7
IT’S A TEAM WORK

PERFUSIONIST
- Smooth conduct of CPB
- Myocardial protection
- Sustained normothermia
- ERROR - FREE

THEATRE TECHNICIANS
- Smooth conduct of anaesthesia
- Efficient patient transfer

NURSING STAFF
- Smooth conduct of surgery
- Smooth transition out of the ventilator
## OUR EXPERIENCE IN ULTRA FASTRACKING

**SRM MCH & RC**

<table>
<thead>
<tr>
<th><strong>Type of study:</strong></th>
<th>Retrospective analysis</th>
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</thead>
<tbody>
<tr>
<td><strong>Period of study:</strong></td>
<td>June 2009 – Till date</td>
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<tr>
<td><strong>Study group:</strong></td>
<td>Postoperative cardiac pts</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td>Database /CT ICU charts</td>
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<tr>
<td><strong>Total no of patients</strong></td>
<td>377</td>
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AIMS AND OBJECTIVES

• To review the safety, efficacy and feasibility of a newly developed ultrafast-track concept at our center.

• The fast-track protocol was applied to a wide variety of cardiac surgical patients undergoing simple and complex operations.
PATIENT PROFILE

AGE: 7 mths - 74 yrs

WEIGHT: 5 - 92 kgs
ANAESTHETIC REGIMEN

INDUCTION
- Fentanyl (5-10 mics/kg)
- Midazolam (0.05 - 0.1mg/kg)
- Thiopentone (2-5 mg/kg)
- Vecuronium (0.15mg.kg)
- Ketamine

MAINTENANCE
- Fentanyl (2-3 mics/kg/hr)
- Midazolam (.02 mg/kg/hr)
- Isoflurane (1%) + N₂O (50%)
- Vecuronium / Pancuronium
- Morphine

MULTIMODAL PAIN RELIEF PATHWAY
CPB DATA

- Number on CPB: 304 cases
- CPB time (mins): 27 - 279 mins
- ACC time (mins): 10 – 197 mins
STRATEGIES TO FACILITATE FASTTRACKING

- NORMOTHERMIA
- INVASIVE MONITORING
- ROUTINE IMMEDIATE POST OP ECHO
- ARRYTHMIA PREVENTION
- MULTIMODAL ANALGESIA
- METICULOUS HAEMOSTASIS
NUMBER OF FAST TRACKED CASES

- FTA: 344 cases (91%)
- UFTA: 263 cases (70%)
- CONV: 33 cases (9%)

- Total number of cases: 680
OVERNIGHT VENTILATION
[n=33]

- Coronary artery bypass (CABG) 10 *
- CABG + DVR 01
- CABG+MVR 01
- Mitral valve replacement 08 *
- Aortic valve replacement 05 *
- Double valve replacement 02
- Tetralogy of Fallot 05
- DCRV 01

* INCLUDES 6 CASES OF FAILED WEAN
DELAYED ANAESTHETIC RECOVERY
IMPACT OF FAST TRACKING ON PATIENT RECOVERY

TIMING OF PATIENT MOBILIZATION

- POD 1: 52%
- POD 2: 16%
- POD 3: 19%
- POD 3+: 13%
BLOOD TRANSFUSION (18%)

HAEMOFILTRATION (n= 8)
CARDIAC PACING (8.5%)  INOTROPES (23%)
IABP (n=7)
REINTUBATION  
n=2

RE-EX  
n=4

MORTALITY  
n=7
VARIOUS STUDIES ON FASTRACKING....

- Smaller case series
- Longer fast tracking period - 8 hrs
- Expensive anaesthetic agents
- Higher re-intubation rates
- Valve surgeries were excluded
PHARMACO-ECONOMICS OF FASTRACKING

• **COST - CUTTING:**
  
  • Ventilation/Oxygen: Rs.1200/patient
  • ABG’s: Rs.1200/patient
  • Sedatives: Rs.200/patient
  • Suction catheters/Gloves: Rs.200/patient
  • Power consumption

Approximately **Rs.3000** can be saved per patient by UFTA
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Approximately **10 lakh rupees saved over 2 years**
A SUCCESSFUL FASTTRACK PROGRAMME

- A state of the art Cardiothoracic unit
- Patient selection
- Optimal surgical correction
- Physiology based approach
- Interaction with Surgeon, Perfusionist, Nursing staff
- Cardiac Anaesthesiologist - 24 x 7
ORIGINAL ARTICLE

ULTRA FASTRACKING IN CARDIAC VALVE REPLACEMENT SURGERY
THANK YOU