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- Introduced in early 1990s
- Uptake slow
 - Steep learning curve
 - Requirement for equipment
 - Concerns regarding outcomes
- Improved outcomes



• Outcomes from multiple RCTs

- Equivalent oncological outcomes
- Longer operation times
- Reduced wound infection rate
- Less pain & narcotic use
- Less blood loss & usage
- Shorter hospital stay
- Reduced incisional hernias
- Decreased adhesional small bowel obstruction
- Lower morbidity (e.g. pneumonia)
- Lower perioperative mortality
- Less costly overall

- Low rates of laparoscopic surgery in NSW
 - 20.7% of colonic resections
 - 15.5% of rectal resections
 - Percentage probably lower in rural & regional hospitals



ERAS

- Enhanced recovery after surgery (ERAS)
- Multimodal approach to improve functional outcomes
- ERAS combined with laparoscopic surgery further improves results
- Combined approach GOLD STANDARD in colorectal surgery

ERAS



ERAS

- Designed to reduce surgical stress response & consequences
- Traditional hospital stay 10 14 day
- Laparoscopic surgery + ERAS = hospital stay 2 3 days



Reducing Metabolic Stress

- 6 hours starvation for solids before surgery
 - Prevent aspiration
 - Increase insulin resistance
 - Induce state like T2DM
 - Increase postoperative complications
- Surgery best conducted in the fed state

Reducing Metabolic Stress

Preoperative carbohydrate loading

- Complex carbohydrate drink allowed up to 2 hours preoperatively
- Protein balance better maintained
- Decrease postoperative insulin resistance
- Early postoperative oral nutritional supplements
 - Reduce postoperative complications
 - Decrease fatigue
 - Maintain nitrogen balance



Preoperative Bowel Preparation

- Physiological insult
- Does not reduce anastomotic leakage
- May increase wound infections
- Still a role in rectal cancer surgery?



Perioperative Fluid Balance

Excessive fluid & sodium harmful

- Delayed gut function (ileus)
- Impaired tissue healing
- Increase postoperative morbidity (esp. cardiopulmonary)
- Longer hospital stay

Aim to maintain preoperative body weight & euvolaemia

Perioperative Fluid Balance

- Intraoperative 'goal-directed' fluid therapy
- Optimise cardiac function





Surgical Technique

- Smaller incisions
- Decrease stress response
- Lower levels of IL-6 & CRP
- Faster recovery



Drain Tube

- No benefit for routine drainage
- Impairs patient mobility
- Increased analgesic use
- Does not protect against anastomotic leak
- May be appropriate in low rectal surgery





Mobilisation

- Early mobilisation
- Less feasible if multiple attachments limiting mobility
- Avoid tubes (e.g. drain, NGT, CVC)
- Remove tubes as early as possible (e.g. IDC)





Pain Control

- Epidural anaesthesia/analgesia
 - Hastens return of GI function
 - Improves pain control
 - Reduces pulmonary morbidity
 - Less nausea
 - Thoracic to avoid urinary retention & paralysis
- Paracetamol
- NSAIDs
- Avoid opiates
- Laparoscopic technique



ERAS Trials

- Multiple RCTs & meta-analyses
- Safe & effective
- Lower pain & fatigue scores
- Maintained muscle mass
- Reduced non-surgical complications
- Decreased hospital stay

ERAS Trials

- Earlier return to work
- Lower overall costs
- No difference in readmission rates, surgical complications & mortality
- No deterioration in quality of life
- Contribution of individual components of ERAS uncertain

ERAS & Open Surgery

- Benefits of ERAS demonstrated in open surgery
- Laparoscopic surgery greatly facilitates ERAS
- Benefits of laparoscopic surgery additional to ERAS
- RCT of ERAS in laparoscopic vs open surgery
 - Length of hospital stay 32% shorter
 - Combined hospital, convalescent & readmission stay 37% shorter
 - Readmission rate less (5% vs 26%)

Controversies

- Need for modification for different patient populations
- Role of epidural anaesthesia/analgesia in laparoscopic surgery
- Use of NSAIDs
- Contribution of individual components of ERAS

Challenges

- Multidisciplinary approach
- Significant change in healthcare culture
- Extensive retraining of staff
- Resource requirements
- Audit compliance
- Measure outcomes



Summary

- Evidence-based approach to perioperative care
- Aims to reduce stress response to surgery
- Now successfully adopted in diverse areas of surgery
 - Vascular
 - Orthopaedics
 - Upper GI
 - Hepatobiliary
 - Gynaecology
 - Urology
 - Breast



Summary

- Decrease postoperative complications
- Reduce length of stay
- Decrease healthcare costs
- Improve patient satisfaction



Laparoscopic surgery + ERAS = GOLD STANDARD